

2003 RESULTS

ANNUAL INSPECTION REPORT ON MARINE FINFISH AQUACULTURE SITES

JOINT REPORT OF

Ministry of Agriculture, Food and Fisheries

AND

Ministry of Water, Land and Air Protection

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1. **EXECUTIVE SUMMARY**

Salmon aquaculture factors significantly in the British Columbia economy, and is estimated to contribute to more than 3,500 direct and indirect jobs. Ninety percent of those jobs are in coastal communities, and 50 percent of those jobs are for women and First Nations. These are full-time, year-round jobs.

The success of the aquaculture industry depends on farms being environmentally sustainable and socially acceptable, as well as economically viable. Government's role is to ensure that the aquaculture industry meets these objectives. Government sets the terms and regulates the activities of farms licensed by the province.

The Ministry of Agriculture, Food and Fisheries (MAFF) is responsible for adjudicating aquaculture applications and for issuing aquaculture licences under the provincial *Fisheries Act*. Aquaculture operations are subject to the conditions of this act, and other provincial legislation, including: the *Aquaculture Regulation*, the *Waste Management Act*, the *Finfish Aquaculture Waste Control Regulation*, the *Water Act*, the *Land Act*, the *Wildlife Act*, the *Right to Farm Act*, and other relevant provincial, municipal and federal legislation.

The development of the 2002 joint agency Service Agreement (see Appendices 1, 12) between the Ministry of Water, Land and Air Protection (MWLAP), Land and Water BC (LWBC), and the Ministry of Sustainable Resource Management (MSRM), and MAFF, coordinates responsibilities amongst the provincial agencies to reduce duplication of effort, increase efficiencies, and demonstrate an accountable compliance and enforcement regime. Under this Service Agreement, MAFF Inspection staff are responsible for assessing compliance of the industry. "Compliance" activities include awareness, education, monitoring, and inspection activities. "Enforcement" activities are carried out by MWLAP, and include verifying and substantiating alleged offences and recommending and implementing necessary enforcement responses.

This year's report marks the fourth year of publication, and documents the status of compliance for marine finfish aquaculture sites for the inspections conducted during the 2003 cycle. The 2003 cycle marked the first year where the joint agency Service Agreement was considered fully implemented, and MAFF Inspection staff assessed compliance at all active farm sites on behalf of all agreement partners.

Inspection Activities and Results:

Regular inspections were carried out on farm sites by provincial inspections staff in order to ensure compliance with the relevant standards and regulatory requirements. During 2003, Inspections were conducted at

77 operational marine salmon farms, and in excess of 80 compliance points were assessed by Inspectors at each farm site.

Results for the 2003 inspection cycle found generally high compliance levels, and in most cases, an increase in compliance rates when compared to the 2002 inspection cycle. Areas of noted improvement over 2002 results included: marginal improvement in site configuration; biomass; tie-off points; boat docking signage; and out of water record requirements.

A higher percentage of non-compliance was evident for those issues assessed that fall under MWLAP's authority. It is believed that the reason for these higher non-compliance levels can be attributed to the fact that this was the first year where all active salmon farms in British Columbia were assessed for MWLAP-related issues (for 2002, approximately **28 percent** of active farm sites were assessed for MWLAP issues)

Areas of highest concern relative to MWLAP requirements included:

- For those sites that required water licences, failure to have water licences in place;
- Identified deficiencies with respect to the recent requirement for written Best Management Practices requirements;
- Maintenance records pertaining to domestic sewage treatment and disposal; and,
- To a lesser degree, fuel storage issues, primarily related to a company's failure to supply secondary containment for diesel tanks and fuel jerry cans.

Areas of highest concern relative to MAFF requirements included:

- Industry meeting the terms of their approved Management Plans with respect to site configuration issues (i.e., changing the cage size configuration);
- Biomass levels – while results highlight an improvement over 2002 results (86 percent compliance for 2003), securing compliance to approved biomass levels is considered of high importance to MAFF inspection officials;
- Best Management Practices (BMP) plans – deficiencies generally related to the company's failure to include a statement on plan that their BMP has been reviewed and endorsed by the operator and understood by farm site staff.

For both MWLAP and MAFF identified issues for 2003, agencies expect a much higher level of compliance for 2003, as a result of:

- With respect to BMPs for both MAFF and MWLAP, regulatory requirements are fairly new, and agencies recognize there may be a period of transition. Almost all sites have BMPs in place, but elements of those plans require more attention. It is anticipated companies will address any deficiencies in the coming year.
- With respect to site configuration, MAFF's current approval methods are lengthy, oftentimes for simple configuration changes that do not impact environmental objectives. MAFF recognizes the constraints within our approval methods and has now identified a means that allows industry to make the operational and necessary infrastructure changes on site that maintains our regulatory objectives, without the requirement of an involved and lengthy approval process. Details on these changes can be found in the main body of the report.

Other Activities and Results:

In 2003, a number of enforcement measures were implemented by both MAFF and MWLAP. A number of violation tickets and warnings were issued by MAFF, with some referrals made to MWLAP for further enforcement review and investigation. Specifics on enforcement activities are found in section 6-D of this report.

The 2003 report also highlights other activities undertaken by MWLAP and MAFF with respect to regulation of the salmon aquaculture industry, such as the dive audit program, and highlights some of the continuing enhancements to our compliance and enforcement regime.

Summary:

Overall inspection results for 2003 indicate, in general, high levels of compliance. Compliance and enforcement staff at both MAFF and MWLAP will continue to address identified issues, to ensure industry is meeting necessary requirements.

2. INDUSTRY BACKGROUND

Preliminary data for 2003 indicates that total landings and production for farmed salmon is estimated to be 61,000 tonnes. This is down from 85,400 tonnes reported in 2002. The 2003 volume equates to a landed value of \$214 million and a wholesale value of \$231 million.

The total landings and production levels for farmed finfish reflect production from a portion of the 129 licensed marine aquaculture farms in British Columbia.

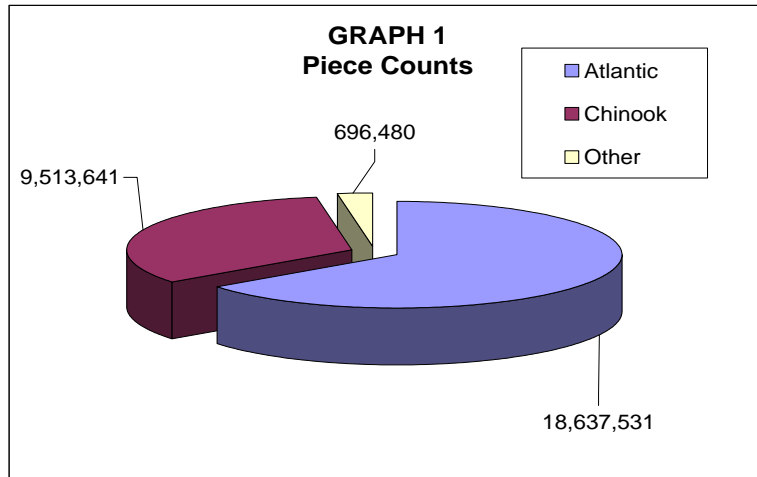
The map included as **Appendix 15** shows the distribution of salmon farms in British Columbia. Licensed sites are located in the following general areas of the province:

- Northern Vancouver Island – 41 sites;
- East Coast of Vancouver Island – 31 sites;
- Clayoquot Sound – 26 sites;
- Sechelt coastal waters – 10 sites;
- Mainland North of Cape Caution - 6 sites; and,
- the remaining 15 sites are scattered in various locations throughout British Columbia coastal waters

More detailed and site specific information can be found at the following link: <http://www.fishwizard.com/aqua/index.asp>.

At any given time a percentage of the licensed sites are being fallowed and are not operational. During the 2003 inspection cycle there were 77 operational sites inspected. The remainder were fallowed for this inspection cycle or were inoperative for other reasons at the time of inspection. “Fallow” sites are those finfish aquaculture farms that are inactive to allow the seabed to recover from any organic input prior to stocking the next production cycle, and ensure that operations are compliant with performance-based waste standards prescribed by MWLAP.

The following graph provides the breakdown for species currently being held on provincially licensed fish farms and reflects data that was collected by Inspectors during the 2003 inspection cycle.



3. MANDATE

A. MINISTRY OF AGRICULTURE, FOOD AND FISHERIES - LEGISLATIVE AND REGULATORY FRAMEWORK

Fisheries Act

The (BC) *Fisheries Act* provides the authority for MAFF to license aquaculture operations and regulate on-site farming activities. It also provides MAFF with the authority to set out licensing requirements such as species and production limits approved for each operation, and any additional licence terms and conditions that might be appropriate.

Aquaculture Regulation

The *Aquaculture Regulation* (**Appendix 5**), establishes regulatory requirements for specific on-site farm activities. These requirements in general identify a minimum standard with which farm operators must comply. The *Aquaculture Regulation* has undergone several changes, the most recent of which came into force on April 19, 2002.

Some of the more substantive changes include the introduction of:

- new powers allowing provincial Aquaculture Inspectors to have suspect net cages removed from the water;
- streamlined record keeping requirements for salmon farms;
- increased flexibility around diving requirements that link dive inspections more closely to higher-risk activities or events such as severe storms;
- requirements for farms to develop best management practices plans to guide routine activities that could lead to escapes; these replace similar but less effective requirements that were in the October 2000 amendments;
- changes to minimum net-strength standards, making them more consistent with other jurisdictions;
- a mandatory net-strength testing protocol, making net-strength requirements more enforceable; and
- increased emphasis on staff training, based on research that suggests human error is a leading cause of escapes.

B. MINISTRY OF WATER, LAND AND AIR PROTECTION - LEGISLATIVE AND REGULATORY FRAMEWORK

As noted earlier, the 2003 inspection cycle marked the first year during which MAFF inspectors conducted inspections at all active sites on behalf of MWLAP and MSRM in accordance with the Service Agreement.

MWLAP manages its compliance functions through staff associated with the Centre of Excellence for Aquaculture, Environmental Protection Division, Nanaimo and the Conservation Officer Service (COS).

MWLAP staff are involved in reviewing and auditing environmental monitoring data submitted by farms to ensure compliance with the environmental standards established in the *Finfish Aquaculture Waste Control Regulation*.

The focus of these inspections is directed at compliance with legislative and regulatory requirements under pertinent Acts and Regulations administered by MWLAP ensuring protection of the marine environment, fisheries, wildlife and human health.

Inspection activities were conducted to determine compliance with waste management requirements dealing with:

- domestic sewage;
- disposal and storage of fish mortalities (morts);
- transport, disposal and storage of blood water;
- disposal of refuse and other wastes;
- storage of hazardous materials; and,
- control of predators through the use of trapping and firearms.

There are a number of Acts and associated regulations regulating these issues:

- *Waste Management Act*
- *Finfish Aquaculture Waste Control Regulation¹*
- *Wildlife Act*
- *Water Act*
- *British Columbia Fire Code Regulation*

Waste Management Act

The *Waste Management Act* regulates the discharge of waste into the environment. Waste is defined as refuse, effluent, or air contaminant, capable of impacting human health, or the environment. The Act prohibits all waste discharges, except discharges conducted in accordance with a permit, approval, or an applicable regulation.

Possible waste discharges from salmon farms include sewage, fish faeces, fish feed, refuse, mortalities (dead fish), blood water, net cleaning waste, used disinfectant from footbaths, and fuel spills.

Finfish Aquaculture Waste Control Regulation

In September of 2002, the *Finfish Aquaculture Waste Control Regulation* (FAWCR) came into effect, replacing the *Aquaculture Waste Control Regulation*. The FAWCR requires all operating farm sites to be registered with MWLAP prior to stocking a facility with finfish.

Under the FAWCR farm operators are required to implement a Best Management Practices Plan to address the management of potentially harmful materials, promote the reduction of the discharge of wastes and pollutants, prevent the attraction of wildlife to feed, foodstuffs and mortalities, collect and dispose of mortalities in a timely fashion and in a manner to prevent spillage to the environment and minimize odours during storage and transportation.

The FAWCR establishes standards for the discharge of domestic sewage from farm sites and requires the operator to maintain records related to the construction, operation and maintenance of sewage treatment and disposal works.

The FAWCR also has provisions requiring environmental monitoring of sediments and reporting of monitoring results. It establishes chemical and biological standards for sediments at farm sites and defines when farms can be restocked based upon specific sediment conditions.

Wildlife Act

The *Wildlife Act* and the *Wildlife Act Commercial Activities Regulation* deal with trapping of fur bearing animals by licensed trappers and landowners. Fur bearing animals such as mink and river otter that become conditioned to feeding on farmed fish may be trapped by a licensed trapper during the open season or during closed season with authority from the Regional Wildlife Manager.

The *Wildlife Act* also regulates hunting and requires a person to hold a license when hunting wildlife.

Water Act

Agencies that share a role in administering and regulating activities related to the *Water Act* include MSRM, LWBC and MWLAP. MSRM is responsible for taking water resource issues into consideration during planning processes. LWBC is responsible for addressing compliance issues and MWLAP continues to undertake enforcement activities in consultation with LWBC.

The *Water Act* regulates the use of surface water for domestic, industrial and commercial use. A water licence is required in order to use surface water for domestic use in industrial settings such as marine fish farms.

British Columbia Fire Code, 1998

The BC Fire Code, administered by the BC Office of the Fire Commissioner, requires 110% containment for flammable or combustible liquids. The 110% containment requirement of the Code supports the *Waste Management Act* and its regulations in regards to spill prevention measures.

4. **OVERVIEW OF LICENSING AND COMPLIANCE PROGRAM - 2003**

The mandate of MAFF's Licensing and Compliance Branch recognizes the need for transparency and accountability. This mandate is met by the application of an integrated licensing and compliance program that applies personal and institutional independent decision-making principles to meet our public interest objectives.

A key function of the Licensing and Compliance Branch is the receipt and adjudication of commercial seafood applications and the issuance of licences and permits for the following industries:

- finfish aquaculture operations and hatcheries on both private and Crown land, including freshwater operations;
- shellfish aquaculture operations and hatcheries on both private and Crown land;
- commercial seafood activities, including fish buying stations, fish and marine plant processing and cold storage facilities, fish vendors and fish brokers;
- commercial harvest of marine plants and wild oysters.

A. **LICENSING:**

With respect to the review of new salmon farm licence applications, including relocations, the licensing procedure is thorough and complex. Considerable review is required to determine if the proponent's application meets identified policy criteria. General principles guiding the deliberations on salmon farm applications include: fairness, transparency, efficiency, and accountability.

The key values that are applied and considered by licensing officials include:

- protection of public health and safety;
- protection of the environment; and
- sustainable economic development.

The licensing policy, attached as **Appendix 2** to this report, provides the guidelines applied by the licensing authority in considering licence applications.

Inherent in the licensing decision review process is consideration of the past or demonstrable performance of the applicant which includes a review of compliance history. This includes consideration of the following factors:

- whether the applicant has had any previous convictions under relevant provincial legislation;
- whether the applicant has been the subject of any licence suspensions, cancellations or refusals to license pursuant to the BC *Fisheries Act*;
- whether there are any outstanding fees or royalties owed to the Crown with regard to current or previously held aquaculture licences; and,
- whether the applicant has the necessary experience and qualifications in the aquaculture sector.

Information and data collected during annual inspections, the dive audit program and through previous investigations provide licensing authorities with critical information relative to the past or demonstrable performance of the applicant.

The Licensing and Compliance Branch also has the responsibility to:

- monitor, inspect, and report on commercial fisheries and finfish and shellfish aquaculture industries.

An inter-agency Service Agreement, implemented in 2002, was developed to reduce duplication of effort, increase government efficiencies and demonstrate a strong, integrated and accountable compliance and enforcement regime.

The goals of the Service Agreement include:

- efficient use of staff resources to minimize duplication;
- one window approach to aquaculture development;
- high level of compliance;
- early intervention to avoid non-compliance;
- effective enforcement, successful prosecution and rehabilitation where required;
- public confidence; and,
- transparency.

The Service Agreement specifies that MAFF inspection staff serve as the lead in conducting all finfish and shellfish inspections, monitoring and audits on behalf of MWLAP, LWBC and MSRM. MWLAP enforcement staff serve as the investigative lead on all enforcement activities associated with formal prosecutions, court orders and administrative penalties for finfish and shellfish aquaculture on behalf of MAFF, LWBC and MSRM.

MWLAP continues to conduct environmental monitoring of benthic conditions at and near farm sites as part of its compliance program and to support collection of further scientific information that will be used to evaluate the effectiveness of the standards prescribed in the *Finfish Aquaculture Waste Control Regulation*.

A compliance matrix provides guidance to staff when addressing non-compliance issues. Specific compliance issues are defined in the matrix, along with the action required to be taken by the licensee to achieve compliance. The matrix also indicates what information will be required by the Inspector to confirm that the issue is being resolved, as well as provide guidance as to the appropriate enforcement response to apply.

While the matrix provides specific guidance, it is important to recognize that Inspectors and officers evaluate each incident of non-compliance on its own merits and, based upon the specific fact pattern, decide on an appropriate course of action.

The details of the service and enforcement agreement can be found in **Appendix 1** and details of the compliance matrix can be found in **Appendix 12** of this report.

B. LICENSING RELOCATIONS:

As part of the provincial Salmon Aquaculture Policy, the provincial government committed to relocating farms that were inappropriately located. With recent improvements in science and increased knowledge of the effects of net cage aquaculture, government and industry now have a better understanding of those factors that make an area suitable or unsuitable for aquaculture.

Since 2000, government and industry have identified a total of 37 salmon farms that should be relocated to more suitable sites. These 37 sites were identified based on consideration of a number of environmental, social and economic factors.

Environmental factors included the site's proximity to salmon-bearing streams, kelp beds, herring spawn areas, shellfish beds and other sensitive marine habitat.

Social factors included proximity to parks or other protected areas and proximity to First Nations reserves. Consideration was also given to environmental factors such as current speed and waste dispersal, the site's susceptibility to algal blooms, known conflicts with nearby residents or resource users, and proximity to industrial pollution sources. Economic factors consider benefits to coastal communities that may arise from moving a site to a more suitable area.

Farm relocations comply with new, stricter environmental standards and will ensure the continued protection of wild fish, marine mammals and other wildlife. Relocating poorly sited farms will also reduce the potential for social conflicts with other marine resource users.

A guide for completing site applications that will outline more stringent siting, monitoring and reporting requirements has also been developed. The Guide to Information Requirements for Marine Finfish Aquaculture Operations is complete and has been available at the MAFF website since June 2003; it can be found at the following link:

http://www.agf.gov.bc.ca/fisheries/siting_reloc/marineff_applic_guide_main.htm

C. COMPLIANCE AND ENFORCEMENT:

i. MAFF

In keeping with the inter-agency Service Agreement, the compliance and enforcement regime for MAFF Inspection and Compliance staff includes:

- promoting awareness, education, and training;
- promoting industry best practices;
- developing cooperative partnerships and agreements contributing to government objectives;
- conducting monitoring activities, inspections and audits;
- referring and assisting MWLAP in conducting investigations on alleged legislative and/or licensing violations; and
- reporting publicly on the compliance status of salmon farm inspections.

ii. MWLAP

MWLAP's compliance and enforcement program for the finfish aquaculture industry includes:

- developing and communicating standards to protect human health and safety and to protect and restore the environment and the natural diversity of ecosystems, including fish and wildlife species and their habitats;
- conducting annual field audits of fish farm sites to ensure compliance with MWLAP's (*Finfish Aquaculture Waste Control Regulation*);
- conducting legal investigations to address non-compliance with regulatory standards; and
- reporting publicly on the compliance status of salmon farm inspections.

Government continues to improve its compliance and enforcement programs to meet its commitment to have an environmentally sustainable aquaculture industry with high standards of environmental protection.

To meet these objectives, a number of enhancements to government's inspection and compliance programs were implemented during the 2003 inspection cycle. These included:

- In 2003, MAFF and MWLAP staff continued to refine and enhance working relationships and communication efforts between agencies. The 2003 season marked the first season where MAFF conducted inspections at all active farm sites under the new joint agency Service Agreement (**Appendix 1**), that defines the roles and responsibilities in finfish and shellfish aquaculture.
- All Inspectors received enhanced vessel training and are now certified to Transport Canada standards for marine emergency duties.
- Part of the MAFF and MWLAP Service Agreement team participated in a Protective Safety System Training course.
- Expanded regional contacts through enhanced cross compliance efforts with other agencies, most notably the Department of Fisheries and Oceans by conducting joint inspections, investigations and broadened communication efforts.

- The addition of full time staff located in the Courtenay regional office has increased resources so that enhanced efforts can be put into finfish compliance. As well the new resources provide for more timely responses to non-compliance issues as well as enhanced compliance efforts in other areas of MAFF responsibilities, most notably shellfish site inspections.
- Enhancements were made to the inspectors' uniforms raising standards and providing a more visible profile. Additional equipment was added to improve visibility and provide a higher degree of safety.

Generally speaking, 2003 results demonstrate higher compliance results when compared to 2002 results. These results can be attributed to a number of factors, including recent regulatory amendments, development of industry led BMP's, and enhanced C & E regimes through implementation of inter-agency Service Agreement.

5. METHODOLOGY

A. INSPECTION ACTIVITIES

While inspections can occur at any time during the year, most annual inspections are completed between the months of May and October. The objective of these inspections is to measure compliance with regulatory requirements of MAFF and MWLAP and licence terms and conditions as set out in the Aquaculture Licence issued by MAFF.

An Inspector will visit every active salmon aquaculture site a minimum of once a year. Some farms may be subject to repeat inspections; particularly if there is an open investigation or ongoing non-compliance issues.

An inspection form (**Appendix 6**), and compliance report (**Appendix 7**), are completed by the Inspector for every inspection at an active finfish aquaculture site.

Inspection form: The inspection form is primarily designed for the use of the Inspector and assists with reviewing the site's compliance with regulatory requirements. The inspection form also forms part of the record of the site's compliance history.

Compliance Report: The compliance report is filled out at the time of inspection and a copy of this form is left on-site with the site manager or their designate. The compliance report details any deficiency, identifies the relevant regulatory requirements, specifies the corrective measure to be implemented and identifies the time frame for expected compliance.

Notification: The company headquarters will be notified as soon as practical and in writing of the results of each inspection. A copy of the compliance report that was completed on-site will be provided along with any other applicable compliance information. The notification letter that is sent to the company requests that the company responds to the identified deficiencies within a specified time frame. Companies are also requested to provide written notification once corrective measures have been implemented.

Review and Sign-off of Corrected Deficiencies: Once the Inspector has received notification that the company has corrected the identified deficiency; the Inspector must verify compliance in writing. This verification procedure may or may not involve a site visit depending on a number of factors including the nature of the deficiency.

On-site Inspection Procedure: During the on-site inspection, Inspectors interview company officials and review the farm's operational procedures and maintenance records for completeness and compliance with *the BC Fisheries Act and Aquaculture Regulation*. The Inspector also performs an above-water visual examination of the site, including a perimeter inspection of each containment pen and infrastructure including anchors, walkways and other associated hardware.

In addition, each year spot dive audits are conducted at a limited number of randomly selected sites; a dive team is contracted to review the underwater portion of the containment and anchoring system. Details and the results of the dive audit are described later, in section 6 – B of this report.

B. KEY COMPONENTS OF THE ON-SITE INSPECTION – MAFF REGULATORY ISSUES:

Management Plan, Terms and Conditions, and Licensing: The management plan is a document the farm operator is required to submit that specifies design and operation criteria of the fish farm. Management plan applications undergo extensive reviews and once approved, compliance with the plan is a condition of the site specific Aquaculture Licence. Companies are required under the BC *Fisheries Act* to operate within the provisions outlined in these plans.

During the on-site inspection, the Inspector will assess compliance with the Aquaculture Licence and related management plan by observing and detailing site specific information. The Inspector will compare these observations against the most current management plan to determine compliance. This assessment includes information on biomass, species cultured, site configuration, licensing and any special provisos that may be attached as a condition of licence.

Escape Reports: The company must provide information on any escape events that have occurred in the last 12 months. While escapes must be reported within 24 hours to the Licensing and Compliance Branch, on-site inspections provide opportunities for Inspectors to audit this requirement by reviewing on-site records and to question farm site employees or managers.

Inventory Records: Companies are required to keep accurate and complete inventory of stock on hand for each net cage. These records must be maintained until that stock is removed from the site.

Inspection Records: Farm operators are required to conduct specific inspections on-site as part of the precautionary measures to prevent escapes. Regulations require these inspections to be documented and records must be kept on-site and produced at the request of an Inspector.

Best Management Practices Plan (BMP): Companies are required to develop these plans for each site. The BMP must include a description of specific practices and procedures used to prevent fish escapes during higher risk activities conducted at the farm site.

Amendments to the *Aquaculture Regulation* establishing the BMP requirement came into effect at the end of October, 2002. The 2003 inspection cycle marked the first year that industry's compliance to this requirement was assessed.

Escape Response: Inspectors verify that the company has developed and posted an escape response plan. Farm staff are often questioned to determine if they can accurately describe the contents of these plans.

Therapeutant Use and Records: On-site inspections provide an opportunity to ensure that therapeutant usage on the farm site is properly documented and these records are properly maintained.

Installation of Containment Structures: A walk-around inspection is conducted in which the Inspector ensures that the cage support equipment is designed, installed and maintained to prevent entanglement and chafing against containment nets, predator nets and shark guards.

Each year the ministry also conducts a random dive audit at a selected number of sites. Dive audits provide an additional opportunity to examine the underwater infrastructure for these inspection points in more detail.

Information on this year's audit program is described later in the report.

Net Cage Configuration & Storage: The installation of the net cage is examined to ensure that the net cage is properly installed, the tie off points are secure, the jump net is the required height, the net is the proper mesh size and there is sufficient weight on the net to prevent excessive billowing. Net storage is also reviewed to ensure nets are properly stored and under protection.

Net Cage Inspections: The Inspector reviews the condition of each containment net in use and may order or conduct net strength testing if there is any concern or issue over the integrity of any net cage. This may involve on-site testing or a request by the Inspector to remove the net for a complete out-of-water servicing.

The Inspector will also examine mesh size, frequency and quality of repairs, if the company is compliant with the specified net cage inspections and the required frequency of these inspections, and will also determine if the nets are properly tagged with an inventory control number and repairs are carried out as required.

Boat Docking: Inspectors review areas where boats tie up to ensure areas are designed to prevent propeller damage to net cages and that proper signage has been provided to identify these as designated boat moorage areas.

Fish Handling: If fish are being harvested or handled, the Inspector ensures that the company complies with requirements to have spotters and are using catch nets to help prevent accidental loss of fish through human error.

Predator Control: The Inspector reviews the predator control program for the farm site to ensure that the operator has responded to any repeated predator attacks by implementing additional measures to prevent damage to the containment structures that might lead to loss of stock.

C. **KEY COMPONENTS OF THE ON-SITE INSPECTION – MWLAP REGULATORY ISSUES:**

Registration: Company officials will be requested to provide verification that they have registered their sites with MWLAP.

Best Management Practices: Companies are required to document procedures that identify practices and operations consistent with the objectives that are defined in the (*Finfish Aquaculture Waste Control Regulation*). These practices are designed to minimize the discharge of wastes and/or reduce the risk of accidental spillage of potentially harmful materials.

The Inspector will check to ensure all the required elements have been addressed in the BMP plan.

Blood Water Disposal: Fish handling procedures are reviewed with the operator and in cases where fish are bled on-site the Inspector will determine how the farm operator disposes of or contains the blood water.

Net Treatment, Cleaning and Waste Disposal: The Inspector examines net handling procedures to determine the location and manner in which containment nets are handled and cleaned to remove marine growth.

Disinfectant Use and Disposal: The type of disinfectant the farmer uses to treat equipment or in foot baths to prevent the spread of fish disease is investigated by the Inspector. Storage methods, use, disposal and any treatment prior to disposal are examined.

Mort Storage and Disposal: The Inspector determines where fish morts are stored after they are collected from individual net pens. Where morts are stored on-site the Inspector reviews storage methods as well as the frequency of mort removal. Final destination of the morts is determined to ensure proper removal and disposal.

Refuse Storage and Disposal: The Inspector reviews disposal methods and determines the disposal location of domestic or industrial refuse produced on the finfish farm.

The above items are addressed within the *Finfish Aquaculture Waste Control Regulation* and are to be managed through a Best Management Practices Plan.

Sewage Treatment and Disposal: The Inspector determines the method of domestic sewage disposal and ensures proper authorization is in place if required. In addition, the Inspector will ask for the operator to produce the required documentation or sewage maintenance records.

Water Use and Licensing: The Inspector determines the source of domestic water supply to ensure that where required, the proper water use licence is in place.

Wildlife Predator Trapping: Trapping wildlife that prey on finfish is occasionally arranged by the farm operator. The Inspector determines the number and species trapped, how they are trapped, the trapper's name, and will ensure that a proper permit is in place for this activity.

Predator Management: Occasionally problem mammals that prey on farmed salmon are destroyed with firearms as approved by DFO. Inspectors review usage of firearms at the farm site.

Fuel Product Use, Storage and Containment: The Inspector reviews fuel storage on site to determine if the fuel is securely stored in an environmentally safe manner and that diesel tanks and generators have a minimum 110% containment or other adequate containment method. Inspectors also determine whether the operation is otherwise in compliance with the applicable section of the BC Fire Code.

Environmental Management: The Inspector determines if a spill contingency plan is available on site, reviews the plan, and determines whether adequate spill equipment is present to support the plan.

D. COMPLIANCE RATES FOR 2003 – REGULATORY AND LICENSING REQUIREMENTS

PART #1

MAFF REQUIREMENTS

A. Management Plans and Licensing

The management plan is a key element in establishing and maintaining performance-based standards for environmental sustainability, stewardship and compliance. The plan and accompanying information is used by biologists in the Aquaculture Development Branch (ADB) to analyse the technical feasibility and biophysical capability of proposed and existing fish farm operations. ADB then makes recommendations to statutory decision makers in the Licensing and Compliance Branch (LCB). LCB uses the plan to establish conditions of licence under the BC *Fisheries Act*, and as a compliance measure under that and other attendant acts and regulations. LCB has the authority and the capacity to inspect fish farm operations for compliance with the Aquaculture Licence.

Non-compliance with the operational conditions of a plan may, in some cases, have the potential to result in negative effects to the marine environment as well as the environmental sustainability of the operation itself. This can result from having more than the approved maximum biomass, or by altering the approved cage system configuration so that it no longer makes optimal use of the biophysical attributes of the site to avoid environmental impact. There may be technical concerns, as well, if there is variance from the originally approved engineering specifications in the plan. Variance from the plan may also put the operation in conflict with the siting criteria (e.g. proximity to salmonid streams or sensitive habitat) under which the original plan was approved.

Every aquaculture facility must have an approved management plan in order to obtain an aquaculture licence. Currently, the holder of an aquaculture licence must comply with the approved plan. Failure to follow the plan is deemed non-compliant with licence conditions and is subject to enforcement action.

Several aspects of the management plan that MAFF Inspectors reviewed for compliance this inspection cycle included: the number and size of the pens that are on site and their lay-out (or site configuration), the species being cultured, the biomass levels on site, and the licence status and compliance with any special provisos that are attached as a condition of licence.

The compliance level for most of the above aspects, except for site configuration, and biomass levels, was 100 percent.

With respect to the approved biomass limits, industry compliance levels were found to be better from 75 percent in 2002, to 86 percent in 2003. As well, compliance to site configuration has also improved from 25 percent in 2002, to 45 percent in 2003.

Despite the relative increase in compliance levels to site configuration over the 2002 findings, compliance levels in this particular area remain low. Site configuration and biomass levels are interrelated factors and two of the components that have been considered together when establishing an estimate of the requested biomass capability of a site. (These numbers are determined through a modelling process and are established in anticipation of meeting performance-based standards for that particular site.) Once these elements of the management plan are approved, the company's compliance with these criteria become a condition of licence.

Before implementing any changes to the on-site operations that are components of an approved management plan, the company must obtain approval through a formal application procedure. In many cases industry has not followed this procedure and has made changes to meet operational needs without the necessary approvals prior to, and in some cases without seeking approval.

The restriction with this method of management plan approval is that industry cannot make, often what are simple changes to the infrastructure on site that are needed to meet operational needs without submitting an amendment to have their management plan reviewed, typically a lengthy and involved process.

With this in mind, a review has recently been undertaken at MAFF on internal administrative procedures in an effort to streamline management plan amendments and timelines for review and approval, while nonetheless maintaining policies and procedures on performance objectives that are important from an environmental sustainability perspective.

In order to simplify administration and clarify requirements for compliance, specific elements of the Management Plan (identified below) should be added directly to the Aquaculture Licence as specific Terms and Conditions.

Those elements are:

The Total Maximum Production per Production Cycle (TMP) **and** the approved species established for the site. Companies will be prohibited from producing more fish or different species than identified on the Licence unless these elements are amended via L&C Branch approval;

A Maximum Pen Area (MPA) will be established for each Aquaculture Licence. Companies may, if circumstances warrant, increase the number of pens utilized on each site up to the MPA without requesting an amendment to the Management Plan. If the MPA is to be exceeded, approval for an amendment must be obtained from L&C Branch prior to this occurring;

A modified Site Layout Diagram, described in the licence as “Typical” will be appended to the licence. Variances between the site diagram and actual site layout will be permitted where reconfigured designs are engineered and anchored to appropriate standards, endorsed by an approved anchoring specialist and variances don’t exceed the specified MPA for that site.

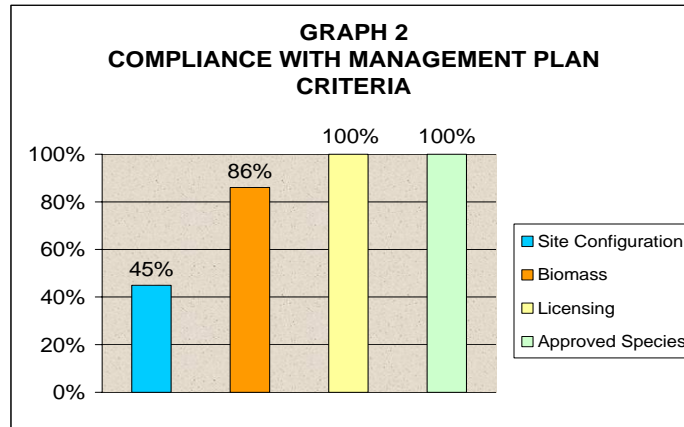
As part of longer term changes to the Management Plan, the concept of Intensive Use Areas will be introduced. In subsequent years, pens will be confined to an area designated as the Intensive Use Area (IUA). It is anticipated that the upcoming 2004 inspection cycle will be a year of transition as MAFF and industry adjust to this new approach of accessing compliance to the management plan.

The end result of this adjustment means that cage size, type, number and orientation are no longer as important a variable in determining approved biomass and throughput production levels. This also means that industry has now been provided some limited flexibility for adjustments of cage infrastructure on site without the requirement to submit and wait for approval of management plan amendments.

It is important to recognize that the true determination of the environmental impact of the amount of fish or biomass at any given site is the indicator of **organic loading** regulated under the *Finfish Aquaculture Waste Control Regulation*. This means that future harvest tonnage at a particular site will be adjusted to comply with performance-based standards defined under the FAWCR and could be higher or lower than initially established biomass numbers.

MAFF continues to be committed to ensure that on-site operations reflect the approved conditions identified in a company's management plan. The compliance and enforcement approach applied in the 2002 inspection year continued in 2003. In some cases, a number of enforcement sanctions have been initiated for continued and repeat non-compliance in this area.

Graph 2 illustrates compliance rates with the management plan and licensing requirements. It shows specific compliance rates with various factors including current licensing, approved species on site, net cage configuration and biomass.



B. Escape Reports

The *Aquaculture Regulation* requires that fish escapes or suspected escapes be reported to MAFF verbally within 24 hours and in writing within one week from the date of discovery. On-site inspections provide the opportunity for Inspectors to interview site employees and view log entries and other farm documents to assess compliance with this requirement.

On occasion, escape events or suspected events are encountered that have not been reported. Usually, numbers in these cases are small and are isolated instances where fish have been lost during handling or harvesting operations.

As all escapes are viewed as serious, these isolated instances are investigated and where warranted referred to MWLAP for further investigation.

No evidence of unreported escapes was encountered during the 2003 on site inspections.

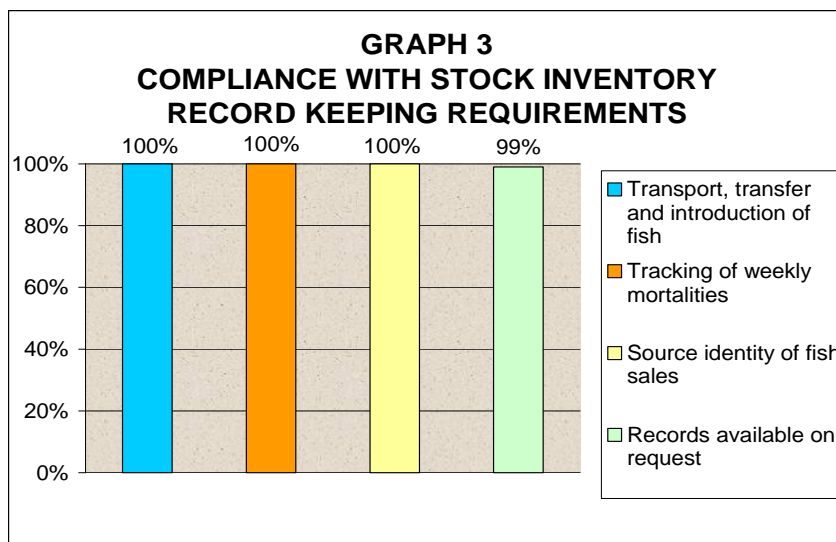
C. Stock Inventory Reports and Record Keepingⁱⁱ

The *Aquaculture Regulation* requires that licence holders keep accurate and complete inventory records of stock on hand and requires these records to be maintained for each net cage in the system. These records must show the inventory introduced to the farm site, the source of the stock and documentation should reconcile any fish transferred in or out, including escapes and mortality.

The objective of this requirement is for the farm operator to know at any given time what the stock levels are for each net cage on the farm. This is not only important from an animal husbandry perspective but also to enable the operator to more accurately assess and report incidents of escape, and provide a measure of compliance with approved biomass. Accurate records are also important for the statistical database that MAFF maintains.

The inspection team does not complete detailed forensic audits and reconciliation of inventories with paper documentation. Instead, compliance is based on evidence presented by the farm operator, to the satisfaction of the Inspector that these records are being kept in the manner prescribed. Part of the regulatory requirement also assessed is the requirement for these records to be kept on-site and made available to the Inspector upon request.

Inspectors found that at all 77 sites operators were maintaining records as required. Only at one site did the operator fail to have the records on site and available at time of inspection.



D. Inspection Recordsⁱⁱ

Inspection records are important not only for the farm operator as a method to review daily activities and for keeping a history of maintenance activities, but they also provide an audit tool so Inspectors can verify that the operator has complied with specific inspection points.

There are a number of key record keeping requirements specified in the *Aquaculture Regulation*. This section examines the compliance with the requirement to maintain daily logs of inspection activities, any inspections that occur after a high risk activity and net maintenance records.ⁱⁱⁱ

Records of Visual Inspections – Equipment:

The *Aquaculture Regulation* contains a variety of record keeping requirements, including documentation of daily visual inspections or any inspections conducted after an occurrence that might be considered as creating a higher risk of escape.

Record keeping requirements for visual observations include: daily records of all above-water inspections of cage support systems, any inspections completed after extreme environmental conditions, and high risk activities such as net cage changes, fish delivery, recurring predator attacks, and vandalism to net cages or equipment.

This information must be kept on site for one year from the date of recording and must be presented to an Inspector upon request.

Records of Net Maintenance:ⁱⁱ

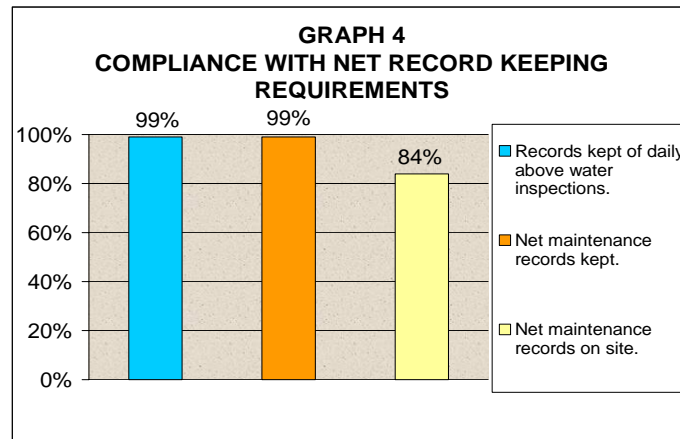
The *Aquaculture Regulation* requires that specific information is collected and maintained for each containment net on site.

Net maintenance records include specific details such as: net inventory number, dimensions, mesh size, the accumulated time in the water since the most recent out-of- water inspection, a description and the dates of each underwater inspection performed since the most recent complete out-of- water servicing and inspection, and a description and date and reasons for all recent repairs.

Many of these records must be kept on site and must be produced at the request of an Inspector.

Inspectors found that at the 77 operational sites inspected, 14 sites had deficiencies noted in relation to inspection record keeping requirements.

These included one site where there had been failure to record the results of the daily inspection in a log book, one site where the net servicing records were lacking information on the net breaking strength and a further 12 sites where the required net cage records were not on site. These included eight circumstances where the out-of-water service records were not available, two where net maintenance records were missing and two sites that did not have any of the required net maintenance or servicing records.



E. Best Management Practices Plan

Both the *Finfish Aquaculture Waste Control Regulation* and the *Aquaculture Regulation* contain requirements for marine fish farms to develop and implement a Best Management Practices Plan (BMP).

Under the *Aquaculture Regulation*, the requirement to have a plan in place came into effect in late October, 2002 and the requirement for a BMP under the *Finfish Aquaculture Waste Control Regulation* came into effect in March, 2003.

At the time of 2002 inspections, it was not mandatory for operators to meet the BMP requirement and compliance was not evaluated during that inspection cycle. The first compliance audit for the BMP was completed in 2003.

The purpose of the BMP requirement under the *Aquaculture Regulation* is for the companies to identify and address operational procedures to prevent escapes. Detailed summary information is provided in **Appendix 10** that describes common causes of escapes.

Companies must develop and follow a written BMP for the operation and maintenance of their marine finfish facilities. Operational procedures identified in the BMP must be consistent with or exceed practices described in Appendix 2: Standards of Practice for Marine Finfish

Aquaculture Escape Prevention and Response in the *Aquaculture Regulation*.

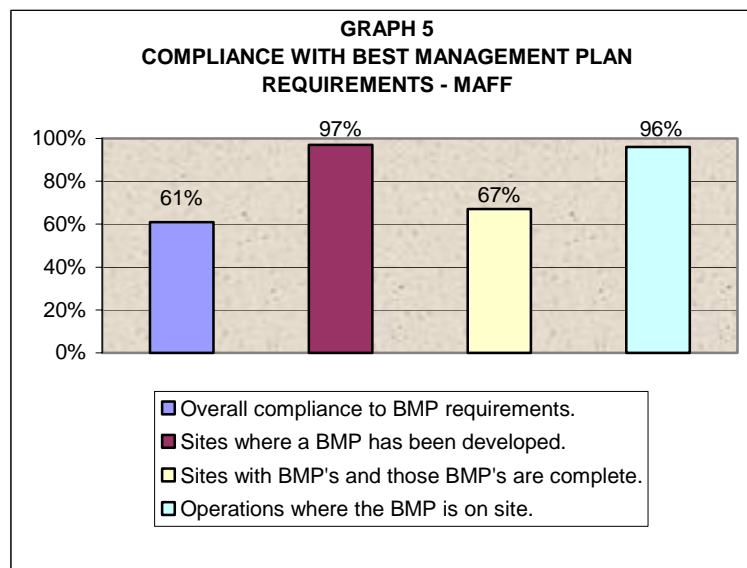
The BMP will identify how a wide range of operational activities are to be carried out. These will include as a minimum, finfish delivery, handling and grading, net cage changing, boat operations and maintenance, towing containment structures, management of predation and recovery of mortalities.

As all these activities carry some risk, it is critical that the BMP is developed to address these issues. All employees must understand and follow the BMP at all times.

It is important to note that the Inspector does not make any assessment of the adequacy of the BMP, rather they check to ensure the operator has addressed all the elements required under the *Aquaculture Regulation*.

Any time there is a change in the operation of the marine finfish aquaculture facility the BMP must be updated to reflect these changes. Companies should periodically review operational procedures to ensure consistency between on-site operations and what is described in the BMP.

The results of the 2003 inspections found 30 sites (out of 77) that were deficient in some aspect of the BMP requirement: two sites where the operators had not yet developed a BMP, three sites where the company did not have a copy of the BMP on site, and 25 sites where the operators could not produce a statement that the BMP has been reviewed and endorsed by the holder.



F. Escape Response

Every operator must have a written escape recapture plan. To initiate an effective escape response in the event of an incident, staff must be well trained in the elements of these plans. There must be step-by-step procedures for preventing further escapes and for reporting escapes. These plans must be posted in a visible location at the facility and the location and contents of this plan must be well understood by all staff.

All 77 facilities inspected had developed an escape response plan. There were two sites where the plans were not posted in a visible location as required.

PHOTOGRAPH #1



Escape recovery kit containing dedicated seine net and equipment to be used in the event of an escape. In the event of an incident this net and equipment is generally deployed inside a damaged containment net in an effort to prevent further loss of fish.

Another aspect of the escape response plan is for the operator to have arrangements with federal and local government authorities to obtain without delay the approvals necessary to attempt a recapture effort. This is a requirement of Section 40 of the Aquaculture Regulation. To facilitate industry meeting this requirement DFO created a special ZZA permit that is issued to fish farm companies for the recapture of escaped Atlantic salmon only. The permit is not site specific and is issued to the salmon farming company.

If the company is farming Atlantic salmon part of the assessment to determine compliance to Section 40 is determining if a ZZA permit is in place.

In 2003 DFO issued seven ZZA permits.

G. Therapeutics - Use and Record Keepingⁱⁱ

There are specific regulatory standards for documenting use of prescription therapeutics on farmed fish. Documentation of therapeutics is an important record keeping requirement for the finfish farmer. Records that identify treatment and treatment schedules must be kept. The *Canadian Food and Drug Act* provides standards governing the use of drugs and fish destined for human consumption, and the holder must comply with those standards. Fish may be harvested if the drug has been prescribed and the mandatory period of time, as specified by the veterinarian, has passed since the administration of the drug.

To satisfy the inspection, the operator must be able to demonstrate that all appropriate paper work has been completed to document and track the administration of any therapeutics.

This includes a record and log of:

- the aquaculture licence number and name of the holder;
- the location of the facility;
- the species of finfish being cultured;
- the name of the veterinarian;
- the name of the therapeutics administered;
- how the therapeutics were administered;
- the treatment schedule including the date treatment commenced;
- the date of last treatment;
- the species of finfish; and,
- the name and signature of the person responsible for administering the therapeutics.

In the event treated fish have been harvested the holder must be able to produce a statement with specific information on the treatment history of the lot harvested. This statement must then accompany the fish to the processing plant. It provides the operator of the plant with documentation of any drug use and if fish have been treated, verifies compliance with the withdrawal periods.

MAFF Inspectors conducted reviews of drug record keeping requirements only at farms where fish had been medicated and where these records were available on-site for inspection. In total, 74 sites were included in the 2003 survey. The inspections revealed that 73 sites were in compliance with all drug reporting requirements under the *Aquaculture Regulation*.

The deficiency noted at the one site related to failure of the operator to meet specific record keeping requirements that are required during the administration of the drug MS 222. MS 222 is an anaesthetic that is prescribed by a veterinarian and in this case was being used in conjunction with a sea lice count. Prior to being handled fish are first anaesthetized by dipping into contained treated water. MS 222 is a low risk product with a short withdrawal period, generally 5 days and in this particular case did not represent any human health hazard.

MAFF Inspectors encountered 16 sites where therapeutics were in use. Staff at these sites were able to satisfy the requirements of the *Aquaculture Regulation* by identifying treatment lots, the therapeutics used, the name of the veterinarian and the withdrawal time.

H. Net Cage Installation, Configuration, Storage and Inspection

Installation of Containment Structures:

The design of the cage support system is important when considering the potential for snagging and tearing the containment net. Containment nets can be, and are, subjected to extreme loading, especially if they are fouled with growth, are in a high current situation or are exposed to a combination of these and other factors. The net mesh, if snagged on an anchor shackle or other catch point, cannot tolerate extreme loads and a snag can quickly develop into a significant tear under certain conditions.

All equipment that comes into contact with the containment net must have smooth exteriors designed to prevent snagging the net on rough edges that might result in tears and subsequent loss of fish. This includes both external and internal weights as well as any attachment points and other parts of the infrastructure. This also includes any harvesting, feeding or grading equipment that might be used on or around the site.

Not only is it important for equipment in contact with the containment net to be properly designed, it is also important for the operator to regularly ensure that equipment is in good repair and has not been fouled with marine growth. Heavily fouled equipment creates an increased potential for snagging and tearing nets.

PHOTOGRAPH # 2



An above-water review of the containment structure.

In investigations of incidents where fish have been lost or suspected losses have occurred, it has been found that some tears and subsequent loss of fish can be attributed to improper weighting or through contact with various components of the net weighting or system anchoring points. Industry is continually reviewing these aspects of containment structures and improvements are constant.

The above-water inspections did not identify any deficiencies at the 77 operating sites.

One of the features of the dive audit survey conducted under contract by the ministry is that it provides the opportunity to view the containment system and supporting infra structure below the waterline. In 2003, five dive audits were conducted. Findings from the audit are discussed in a later section of this report.

Net Cage Attachment Points and Jump Nets:

The *Aquaculture Regulation* specifies that the primary point of attachment for net cages is at the water line rope. The water line rope is designed to support the heavy load of a containment net. Secured to this water line rope are numerous reinforced tie-off points that take the bulk of the strain on the nets once they are deployed. These are the primary attachment points for the containment net and are required to be secured to the walkway with lines that are sound and adequate to withstand the strain of the net. Nets should not be supported by the stanchions or uprights as these are normally not designed to withstand the load and can fail under extreme conditions.

PHOTOGRAPH # 3



Net cage properly tied off at the water line.

Inspectors found that out of 77 sites, 71 were in compliance with this requirement. The majority of the deficiencies noted in this area were usually the tie-off points in one corner of the system. Corners are often used by divers for access points to the net cage and occasionally these points were not re-secured after a dive. Where tie-off issues such as these were noted, they were identified as deficiencies.

Jump nets are the portions of net that extend above the water and are designed to prevent fish from jumping over the containment system. The regulation specifies that the height of these jump nets must extend at least one meter above the surface of the water.

Jump nets were in place at all 77 farms inspected. There were four deficiencies noted where the height of the jump net was less than the required one meter.

The regulation also requires that net stanchions and net cage railings are not used to moor large vessels that could cause damage during strong wind or tidal exchanges.

There were no situations where large vessels were found to be moored inappropriately.

Net Weights and Attachment Points:

The weighting system must be designed so that net weights are sufficient to prevent excess billowing of the net. It is also important to ensure that weights are evenly distributed at a sufficient number of points along the net for even weight distribution which prevents point loading on the containment net.

A taut and properly weighted net is important, as billowing nets are more subject to becoming snagged as well as more susceptible to tears or damage from predators. Of the 77 sites inspected one site was noted to have excessive billowing occurring.

Mesh Size and Net Storage:

Containment nets with varying mesh are used during a grow-out period. As the fish increase in size, they are moved into bigger containment nets with larger mesh. The farm operator is required to ensure the net mesh is always kept to a size that is small enough to contain the smallest fish. Alternatively an operator may have to grade the fish prior to, or when, moving the fish into a pen with larger mesh size to avoid losing smaller fish.

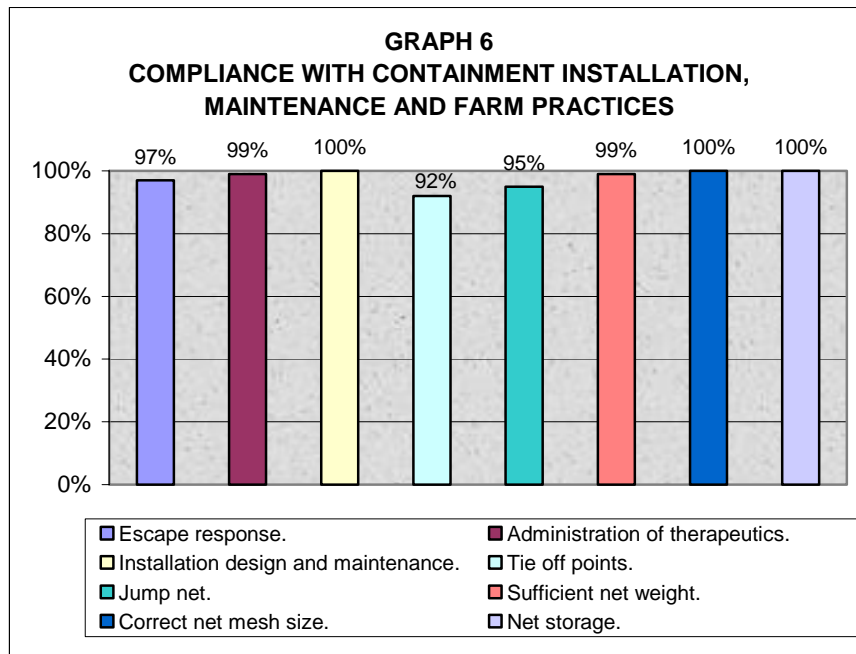
Ultra-violet rays can degrade containment nets. Failure to properly cover a net can expose small sections of the net to harmful ultraviolet sunlight. Sections of the net weakened in this manner can be in isolated locations that can be easily over-looked during servicing and testing. The regulations require that storage of nets on dry land must be done in a manner that prevents exposure to UV light.

PHOTOGRAPH # 4



Net properly bagged and protected from UV.

The following (**Graph 6**) provides compliance rates to the various requirements for net cage installation, configuration, storage and inspection as described in the above sections.



I. Net Cage Inspections

During the 2003 inspection cycle at the 77 operating sites, there were close to 700 deployed net pens containing fish.

The integrity of these containment nets is an important factor in finfish farming. Nets must be able to withstand the rigours of the marine environment and weak nets are more susceptible to breakage and subsequent loss of fish. The *Aquaculture Regulation* specifies that all containment nets must be properly tagged, maintained and regularly inspected.

Net Marking:

To effectively document and maintain net history, the regulation requires that each net must be marked in a unique and permanent manner. In most cases, this consists of a coded tag attached to one or more of the upper corners of the net cage.

Containment nets must be properly identified to ensure that the operator can maintain a complete history of the net. In the event of an incident, net records are a key component of the investigation and complete records must be provided to the Inspector upon request.

Inspectors found two sites out of the 77 inspected where nets were not adequately marked with an identification number.

PHOTOGRAPH # 5



Tag on net cage used for identification.

Out-of-Water Servicing:

The frequency of net testing is left up to operators thus providing them flexibility to meet operational needs.

Inspectors, however, have authority to require an operator to demonstrate that a net cage meets the minimum breaking strengths where the condition of any net may be in question. If an Inspector has reason to doubt the integrity of a containment net, in addition to reviewing service records, they can require the operator to conduct an on-site test of the net or can require that the net be removed from the water for a complete servicing and inspection.

No additional inspections or actions were requested by the Inspectors under this section in 2003.

In general, companies are now servicing and strength testing their nets at the end of a grow-out period.

The out-of-water servicing includes net strength testing, assessment of overall condition and any necessary repairs. A record of the testing must be completed and this record must accompany the net to the farm site and be presented upon request to the Inspector as the most recent out-of-water servicing record.

The *Aquaculture Regulation* also specifies the minimum breaking strengths for containment nets. A standardized mesh strength testing procedure has been developed and must be followed when conducting these tests. **Appendix 4** describes this procedure and an electronic copy can be found at the following link:

http://www.agf.gov.bc.ca/fisheries/compl/Final_net_testing_protocol.pdf

Operators at 67 out of 77 farms sites inspected had the required out-of-water servicing records on site.

Net strength testing and record keeping requirements were areas in the 2002 regulatory amendments that underwent extensive revision. As a result of the new requirements, it was expected that companies would need some time to comply with the new testing and documentation requirements and that by 2004 compliance levels will show a substantive improvement.

Sections 14 and 15 and Tables 1 through 6, in *Appendix 2* of the *Aquaculture Regulation*, found as **Appendix 5**, describes the minimum breaking strength requirement that various size containment nets must meet.

Any nets that do not meet these requirements are inadequate and they cannot be re-deployed as containment nets. These nets should either be disposed of or relegated to other purposes.

Net Inspections and Repairs:

The *Aquaculture Regulation* specifies that daily above-water inspections of net cages are required to ensure integrity of the system. This information must be maintained in the daily maintenance logs.

Daily above-water checks were being conducted at all 77 sites.

Deployment of a containment net is a high risk activity. Before the net is properly stabilized there is an increased risk that the net may catch and tear on a snag point. The *Aquaculture Regulation* requires that once a containment net is in place and prior to the introduction of fish, and in addition to any above-water inspections, an underwater inspection must be made to ensure that no damage has occurred during the net deployment that might contribute to a fish escape.

Inspectors determined that 75 out of 77 sites were conducting pre-inspections prior to the entry of fish.

The *Aquaculture Regulation* requires that underwater inspections of containment nets be completed every sixty days or after any activity that may increase the risk of net failure and present a risk of escape. Examples of this would include extreme environmental conditions, net cage changes, fish delivery, predator attacks, towing net cages and vandalism.

PHOTOGRAPH # 6



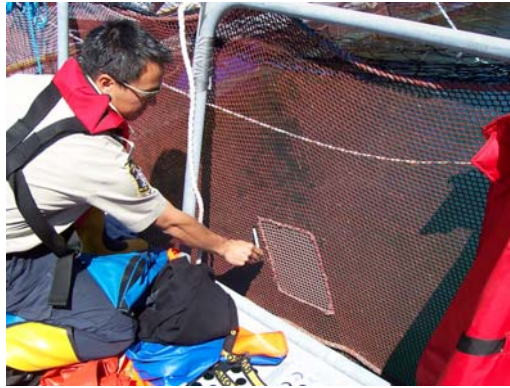
Company divers preparing for a net cage inspection and mort recovery.

The *Aquaculture Regulation* currently specifies that these under water inspections be conducted by divers but also provides the opportunity for flexibility in the event that an alternative suitable method is proposed. Any proposed method will have to be reviewed and approved by MAFF before it can be used. In 2003, all underwater inspections were conducted by divers and no alternate method has been approved to date.

In all cases underwater inspections were being conducted on the containment nets every sixty days as well as after high risk activities. As well all operators were in compliance with the record keeping requirements.

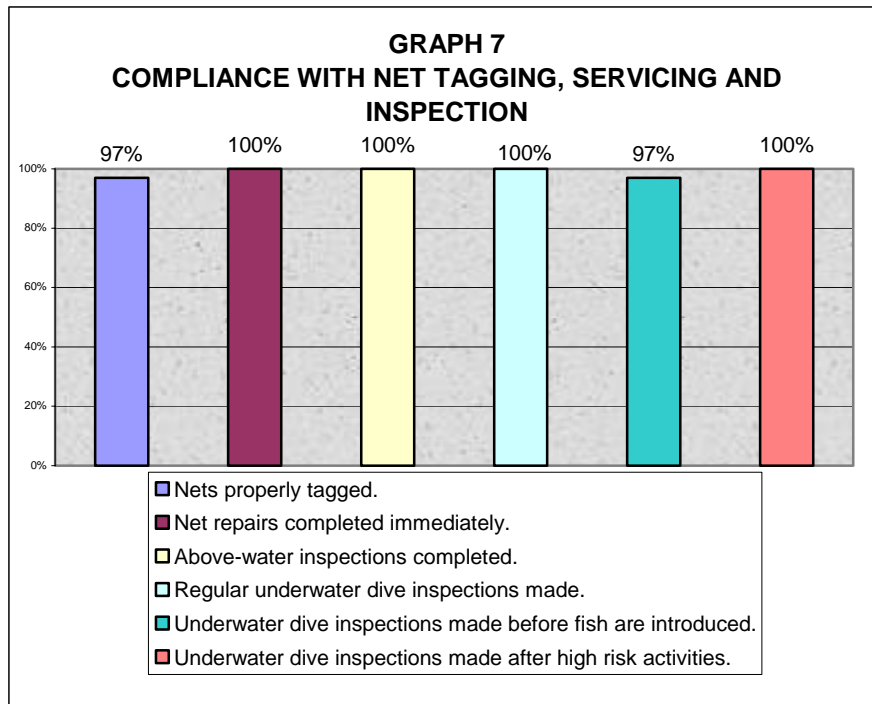
It is also important and a requirement that all net damage found during regular inspections of nets that are in use, is immediately repaired. This includes both the containment net as well as the jump net portion. Any temporary net repairs should be replaced with more permanent repairs as soon as possible. There were no deficiencies noted with respect to this requirement at the 77 sites inspected.

PHOTOGRAPH # 7



Net repairs completed on the jump net portion of a containment net.

The following graph illustrates the compliance rates with various net maintenance and inspection requirements. It includes compliance with net tagging, net repairs, any above-water inspections, regular underwater inspections, pre-dive inspection before the entry of fish, and dive inspections after high risk activities.



J. Boat Docking

To reduce or eliminate potential damage to net cages from vessels travelling to and from farms, a specific docking site for vessels must be identified on the farm site. The regulation requires this docking site to be designed or located in a manner to prevent propeller damage to the cage systems and must be marked with a highly visible sign. The regulation also prohibits mooring large vessels to cage support system rails or stanchions.

Operators at the 77 sites inspected were able to identify designated docking areas and all were designed or located in an area to prevent net damage. There were no circumstances identified where large vessels were inappropriately moored. Operators at 62 of the 77 sites had erected signs directing boat traffic to these designated areas.

PHOTOGRAPH # 8



Properly designated and signed vessel docking area.

K. Fish Handling

Catch nets:

The *Aquaculture Regulation* requires the use of catch nets when operators are conducting higher risk activities such as transporting, harvesting, grading, sampling and/or moving fish. Catch nets act as a back-up and help prevent possible loss in the event of human error or equipment failure.

One operator out of 77 inspected did not meet the requirement to have proper catch nets in place.

PHOTOGRAPH # 9



Grading operation covered with catch net to prevent accidental loss of fish.

Spotters:

Another preventative measure that the *Aquaculture Regulation* requires is the use of spotters during high risk activities. A spotter is a farm employee who has been assigned the specific task of visually watching for any event during a high risk activity that might in any way, contribute to an escape of fish. Ideally, spotters should be experienced farm employees that are familiar with the operation in progress and should not be engaged in other activities at the time. Depending on the event, it may be appropriate to have one or more individuals acting as spotters.

At all farm sites inspected operators indicated spotters were used during high risk activities.

Predator Control:

Although the *Aquaculture Regulation* does not specify that finfish farm operators must deploy predator controls it is expected that farm operators will initiate measures against predator attacks where necessary.

The *Aquaculture Regulation* requires that if a pattern of predator attacks is established, holders must initiate measures to prevent net damage and loss of fish. Failure to comply with these requirements could be viewed as failure to take reasonable measures to prevent an escape.

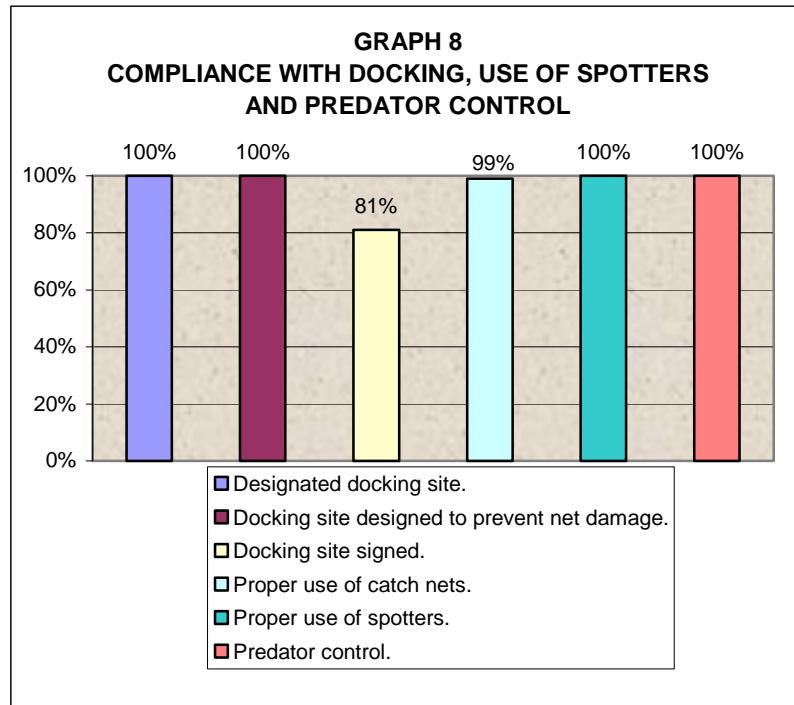
Most farm sites inspected had some measure of predator deterrent in place. In some cases, two or more systems were in place. Common types of predator systems include predator nets, shark guards, and bird exclusion netting above water. No violations were noted with respect to predator control.

PHOTOGRAPH # 10



Bird netting used as a predator control.

The following graph indicates compliance with boat docking requirements, use of spotters and predator control.



E. COMPLIANCE RATES FOR 2003 – REGULATORY AND LICENSING REQUIREMENTS

PART #2

MWLAP REQUIREMENTS

Best Management Practices Plan and Site Registration

As noted previously, all farm sites as of March, 2003 required a Best Management Practices Plan (BMP) in accordance with the provisions of the *Finfish Aquaculture Waste Control Regulation* (FAWCR). Finfish farm operators are required to prepare and implement a BMP that is specific to each fin fish farm. As well the FAWCR requires that the facility has applied to and is registered by MWLAP.

The objective of the BMPs under the FAWCR are:

- to ensure compliance with waste standards in the FAWCR;
- to provide for continuous reduction of potentially harmful discharges and quantity of wastes;
- management of potentially harmful materials;
- continual improvement in feed conversion ratios to reduce the amount of fish waste;
- prevention of spillages into the environment;
- prevention of the attraction and access of wildlife to feed foodstuffs and morts;
- prevention of access to containment structures by wildlife;
- minimization of spillage and odors from mort storage and disposal;
- management of major fish kills via an emergency fish kill contingency plan.

The BMPs should offer a model of management practices that include the best structural and non-structural controls and operational and maintenance procedures available.

The FAWCR identifies a number of key elements that the BMP should include:

- a description of specific management practices and standard operating procedures used to achieve the objectives
- a finfish kill contingency plan
- a statement that the BMP has been reviewed and endorsed by the operator, and reviewed and understood by the individuals responsible for implementation.

The Inspectors or Conservation Officers examine the BMP on site to ensure that the plan correctly identifies the elements that are prescribed in the regulation. In addition the Inspector may review parts of the plan to access if key points within these elements are included.

It is important to distinguish that during this review the Inspector does not make an assessment of the adequacy of the plan, only that the BMP documents contain all the required elements.

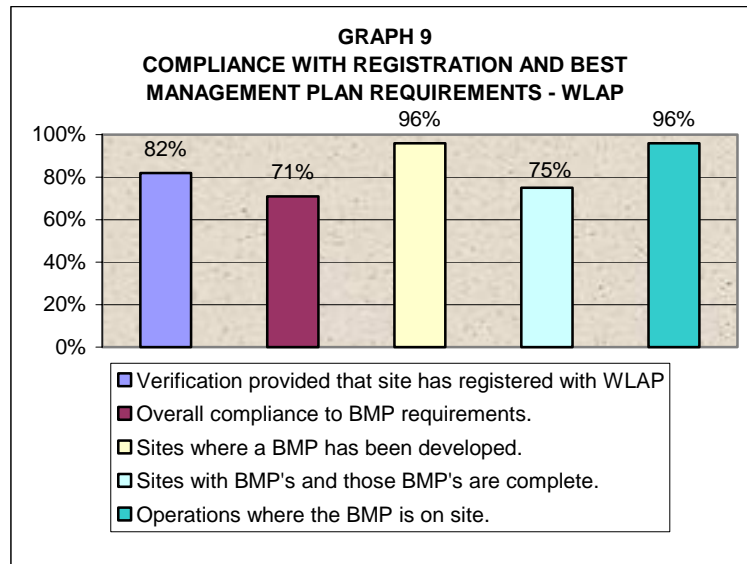
Inspectors reported the following compliance levels:

- At 63 of the 77 sites the company officials were able to verify that registration with MWLAP had been completed.
- Overall compliance indicated that at 55 of the 77 sites the BMP was considered complete in all aspects.
- At 74 of the 77 sites a BMP plan had been completed.
- 71 operators had the BMP on site.

Inspectors were able to review 71 operations where the BMPs were on site. Findings indicate that 18 sites were missing various components of the BMP. These included:

- 14 sites where the company had not complied with provisions of section 5 and 6 and standards described in Section 4.
- 12 sites where the BMP did not address continual reduction of the discharge or potential discharge of wastes and pollutants.
- 5 sites where the BMP failed to address continual improvements in the feed conversion ration for feed fed to finfish.
- 2 sites where the BMP failed to address feed spillage.
- 2 sites where the BMP failed to address the prevention of access to containment structures by wildlife.
- 1 site where the BMP did not address prevention of the attraction of wildlife to feed, foodstuffs or wildlife.

- 1 site where the BMP did not have a finfish kill contingency plan. An additional 9 sites where the company had developed a finfish kill contingency plan but were missing what are considered key elements to the plan. This included 6 instances where contact numbers were missing and 5 that had not considered fish kill thresholds.
- 6 sites where the BMP did not have a statement that the BMP has been reviewed and endorsed by the operator.



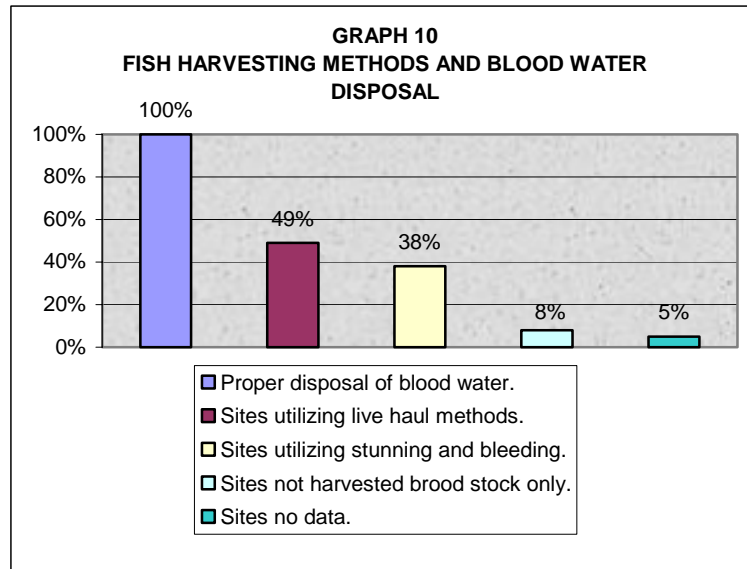
A. Blood Water Disposal

In an effort to maintain the high quality of farmed fish, salmon farmers rely on two methods to deliver their fish to the processing facility in prime condition. One is using a live haul vessel where the fish are harvested and delivered live, while the other is a stunning and bleeding operation carried out either on site or during delivery. Intentional discharge of untreated blood water to the environment is not permitted.

Blood water associated with a stunning and bleeding operation has a very high biochemical oxygen demand (BOD), and can negatively impact dissolved oxygen levels in the marine environment. It has been suggested that the release of blood water to the environment may also result in disease transmission. Predators may also be attracted by released blood water.

Disposal methods for the blood water included transfer into mort containers, or transport and disposal of blood water at a processing facility.

There were no deficiencies reported at the 77 sites inspected with respect to disposal of blood water. Approximately 49 percent of site operators utilized a live haul system, 38 percent a stun and bleed operation during harvest, 8 percent of the sites did neither, as they were for brood stock only. Data was not collected on transport methods from the remaining 5 percent of sites.



B. Net Cleaning Waste Disposal

Net Treatment:

Predator and containment nets may be chemically treated in order to increase their longevity and strength, as well as to reduce fouling by marine plants and organisms. Typically, treatment consists of dipping the containment net into an approved antifoulant solution that inhibits marine growth.

Net Cleaning:

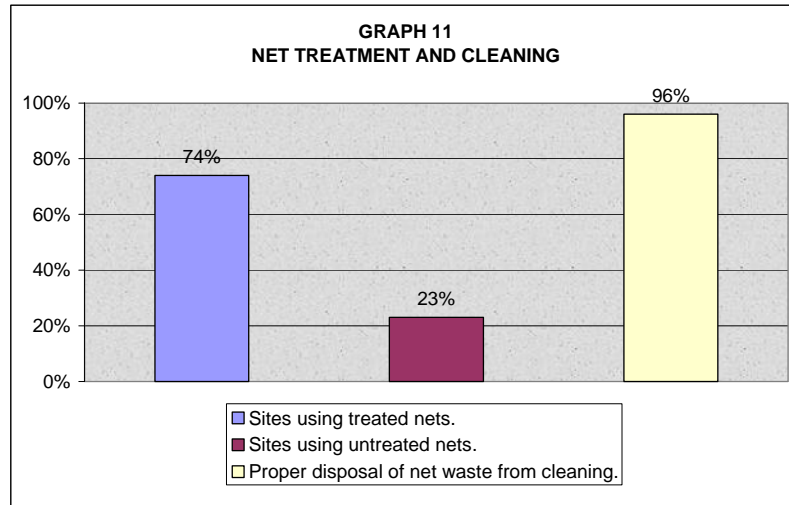
The frequency of net cleaning is largely dependent on the degree and condition of antifoulant treatment as well as the environmental conditions at the grow out site where the nets are deployed.

Typically, nets are cleaned at least once a year. The cleaning process is necessary to allow unrestricted flow of water through the net cage as well as to reduce the weight and resulting strain on the net cage and support equipment. Cleaning the nets removes mussels, algae, and other materials that have fouled the nets and in the case of treated nets will also remove some of the antifoulant during the cleaning process.

The wastewater and debris generated through the net cleaning process if completed on site may have a negative impact on oxygen levels in the marine environment and the benthic community.

Net cleaning is conducted both on and off site with the resulting waste discharged on land or into the marine environment.

Of the 77 salmon farms inspected, the majority of the operators had their nets cleaned at their net loft facilities located off site. There were three sites where non-compliance issues were identified, where the waste generated from cleaning nets on site was not properly managed.



PHOTOGRAPH # 11



On-site net cleaning drum system.

C. Footbath Waste Disposal

Footbath disinfectants are utilized at farm sites to minimize the transfer of disease from farm to farm, as well as disease transfer within a farm. Commonly used footbath solutions are virkon, ovidine and bleach. Over time, especially when exposed to sunlight, the disinfectant's effectiveness lessens and it becomes necessary to periodically refresh footbaths. Depending on the solution used, the period of time between refreshing the foot baths varies but generally most footbaths are replaced on a weekly basis.

PHOTOGRAPH # 12



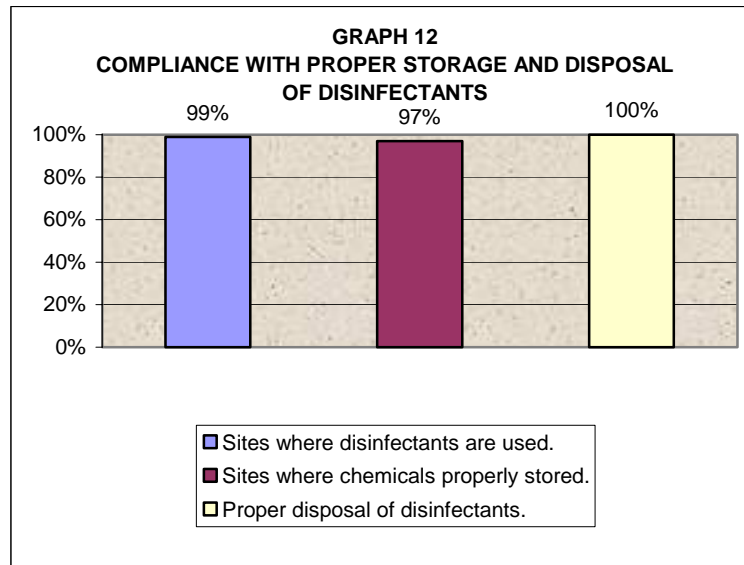
Footbaths with disinfectants used as disinfectant.

In order to safely manage the disposal of used liquids, footbath materials must not be capable of causing harm or injury to plant or animal life-forms in the marine environment. Any discharge or storage must meet the requirements of the *Waste Management Act*.

Discharging the footbath waste into septic tanks and mort containers prevents direct discharge into the environment; however, these practices may have a negative impact on the septic tank operation, or the mort composting process.

Of the 77 farm sites inspected there was only one site where disinfectants were not used. At the majority of the remaining sites used disinfectants were disposed of directly into the mort containers. In some cases, treatment of the disinfectants was practiced prior to discharge.

Inspectors found two circumstances where the storage of disinfectant chemicals did not meet the requirements. There were, however, no situations where compliance issues were noted, with respect to their disposal.



D. Mort Disposal

Fish mortalities, or morts, are fish that have died prior to harvest due to a number of reasons including stress, plankton blooms, predator strikes or disease. Due to the high number of fish raised at fish farms, morts are anticipated and regularly encountered. It is important not only from a health perspective to remove morts on a regular basis but it is also important from a predator avoidance perspective. Mortalities left in the net cages can attract predators that may in turn damage nets in their attempt to access the morts.

For these reasons it is important that the farm operator implement a regular mort collection program. At all the farms inspected, the mortalities were collected on a regular basis by divers.

Morts were stored on-site in sealed containers some distance from the grow-out operation and remained there until final collection for disposal. Collection times varied from weekly to every three months or in some cases, as required.

At all farms inspected, the morts collected were delivered to disposal companies off site.

There were no compliance issues identified with mort containment and disposal requirements.

E. Refuse Disposal

Operators at the farms inspected removed domestic or industrial refuse produced on site for disposal at one of the approved landfills on Vancouver Island or the Lower Mainland.

There were no compliance issues identified with refuse storage and disposal requirements at the farms inspected.

F. Sewage Treatment, Disposal and Record Keeping

The majority of fish farms have living quarters on site, and collect, treat and discharge sewage at or near the farm location. Untreated sewage has elevated biochemical oxygen demand which may negatively impact the environment and fish. This waste also contains solids that may be deposited on the ocean floor.

The FAWCR permits discharge of domestic sewage under specific circumstances. It is not to exceed 2.5 cubic meters per day, it must be treated by holding in a septic tank for two days, (or a device other than a holding tank with suspended solids not exceeding 130mg/l), the location of the sewage discharge point is at a depth no less than 15 meters below the water surface and all construction, operation and maintenance of sewage treatment and disposal are maintained.

Inspectors found that 54 of the 77 sites inspected were in compliance with these requirements. Deficiencies at the remaining 23 sites included four sites where washrooms were not available, 5 sites that did not have proper holding facilities, 3 sites where the sewage discharge pipe did not meet the minimum discharge depth requirements and 14 sites where sewage maintenance records were not being kept.

G. Water Licensing

Fish farms that use freshwater from a lake, river or stream are required to hold an authorization issued pursuant to the *Water Act*.

Many of the finfish farms inspected obtained their domestic water supply from a variety of sources. These included rain water, water from lakes or streams, well water and water transported to the site. Some operations relied on a combination of these sources.

There were 34 sites that either used stream water exclusively for their domestic water supply or relied upon a combination of stream water and other sources. Operators at 23 of these sites were in compliance with water licensing requirements.

H. Wildlife Trapping - Predator Prevention and Response

Predators such as seals, sea lions and dogfish can cause significant tears in the containment nets and have been suspected as the primary cause for a number of escapes. It is the responsibility of the farmer to ensure that protective measures are implemented to prevent predator attacks.

If a farmer did not take appropriate measures against increased predator attacks, this could be construed as not taking reasonable precautions to prevent escapes, an offence under the *Aquaculture Regulation*.

Typically, salmon farm operators will use non-lethal methods to control predators at the farm site. These include the use of predator nets, shark guards, bird netting, electric fences and ensuring nets are kept taut. Despite these precautions, persistent predators may have to occasionally be destroyed. This is accomplished either through trapping or with a firearm.

Hunting and trapping is carefully regulated under the *Wildlife Act*.

Operators at two of the 77 farm sites inspected reported wildlife being trapped in the last year. In these cases problem otters were live trapped and removed. At five sites firearms were present but were not associated with predator kills and operators at another three sites advised that company contracts were in place with individuals for predator control.

No violations were noted at the inspected sites.

I. Fuel Product Use, Storage and Containment

PHOTOGRAPH # 13



Diesel fuel with 110% containment (double walled) and protection from precipitation.

Storage of fuels is common at finfish farms as fossil fuels are widely used to run generators for electricity, boat engines and heat. The *BC Fire Code* requires that a spill containment barrier capable of containing 110% of the volume of the fuel being stored, or another adequate form must be in place.

Operators at 54 of the 77 sites had taken measures to ensure that proper secondary containment systems had been installed around fuel storage containers and generators to meet the 110% percent requirement.

Deficiencies noted included six sites where the diesel tanks were not properly contained, 12 sites for generators and 12 sites where fuel jerry cans and motor and compressor oils were not properly stored.

PHOTOGRAPH # 14

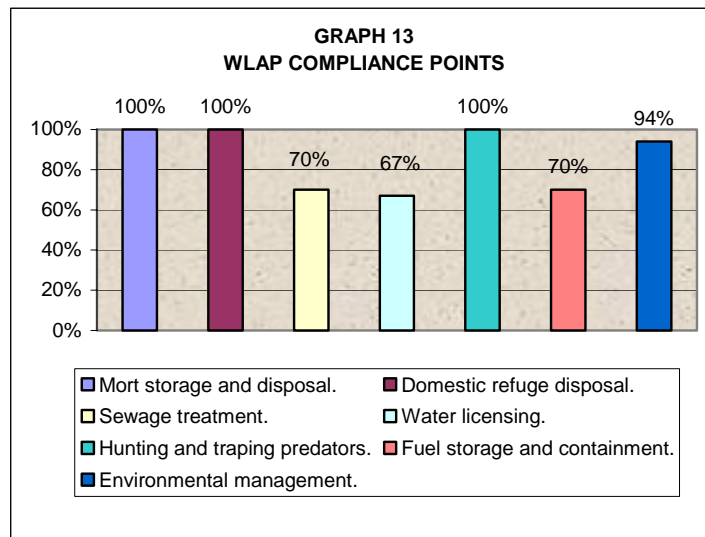


Gasoline containment and protection from precipitation

J. Environmental Management Practices

Many farm sites store a variety of petroleum products, chemicals and other products that if released into the surrounding environment could potentially have a negative impact. In an effort to minimize the severity of any spill most companies have developed spill contingency plans and have adequate equipment that would assist in managing any accidental spill.

At 72 of the 77 sites operators had an adequate spill contingency plan with equipment on site to support the plan. Deficiencies included two sites that did not have adequate equipment on site, two sites where the spill contingency plan was not on site and two sites where the spill reporting number was not posted.



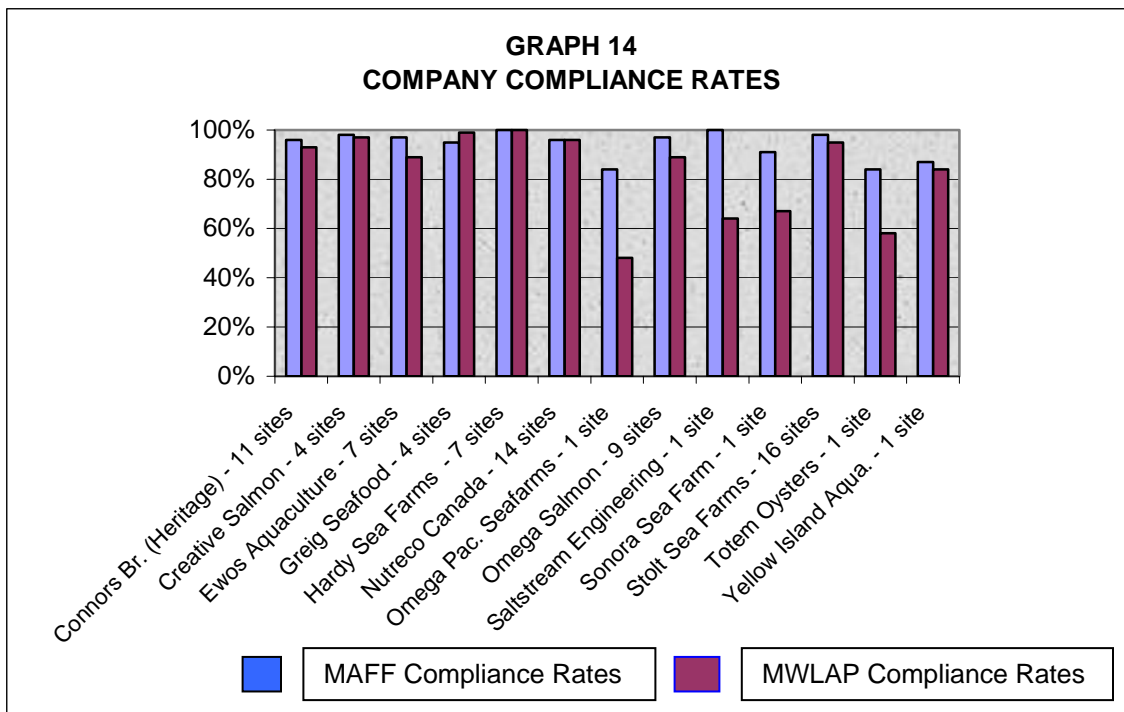
PHOTOGRAPH # 15



On-site spill kit and cleanup equipment.

F. 2003 COMPLIANCE RATE SUMMARY

The following graph illustrates the overall percentage of compliance rates with the regulatory requirements reviewed during the inspections. The percentage calculations were derived by factoring the number of compliance issues examined at each site, the number of sites and the actual number of violations noted.



G. 2003 COMPLIANCE NUMBERS – SITES IN COMPLIANCE

MAFF REQUIREMENTS

Table 1 provides a detailed summary of issues examined and the number of sites found in compliance during the 2003 inspection cycle. **Appendix 11** provides a comprehensive report of the deficiencies noted for each company at each of their operating sites inspected in 2003.

The following information is based on the annual above-water inspections and does not include any non-compliance issues that may have been identified during the dive audit program.

Information and findings of the dive audit program are provided later in this report.

TABLE #1:

MAFF Compliance Issue Assessed On Site	Sites in Compliance
<p>Management Plan Compliance to Aquaculture Licence:</p> <ul style="list-style-type: none"> • Approved species on site • Current Licence • Biomass requirements^{iv} • Site Configuration (Number and size of nets and their deployment) 	<p>77 of 77 77 of 77 66 of 77 35 of 77</p>
<p>Inventory Records:</p> <ul style="list-style-type: none"> • Transport, transfer and introduction of fish • Maintenance of mortality records • Maintenance of stock source identity records • Record of fish sales • Required records on site (not present at one site) 	<p>76 of 77</p>
<p>Best Management Practices (BMP)</p> <ul style="list-style-type: none"> • Companies that have developed a BMP • Those with BMPs on site • BMP reviewed complete in all required aspects 	<p>75 of 77 72 of 75 47 of 72</p>

MAFF Compliance Issue Assessed On Site	Sites in Compliance
<p>Inspection Records:</p> <ul style="list-style-type: none"> • Records kept of daily visual inspections • Records kept of all net cage inspections. • Records of inspections kept after high risk activities or events including extreme environmental conditions, net cage changes, fish delivery, recurring predator attacks, vandalism, and towing • Net cage records kept that include inventory control number, dimensions, mesh size, records of most recent out of water servicing, records of accumulated time in the water, description and date of each underwater inspection, description, dates and reasons for all repairs • Net cage maintenance, inspection and out of water service records kept on site 	<p>76 of 77 77 of 77 77 of 77 76 of 77 65 of 77</p>
<p>Escape Response:</p> <ul style="list-style-type: none"> • Written escape response plan • Escape plan posted • Arrangements in place for recapture permits^v 	<p>77 of 77 75 of 77 See footnote</p>
<p>Therapeutant use and Records:</p> <ul style="list-style-type: none"> • Current treatment – groups identified • Current treatment therapeutant, prescribing vet and withdrawal time identified • Records kept that include licence number and holder, location of facility, species of finfish, vet name, log of drug records 	<p>16 of 16 16 of 16 73 of 74</p>
<p>Net Cage Configuration:</p> <ul style="list-style-type: none"> • Water line rope primary attachment point • Jump net extends at least 1 meter • Sufficient weight or pressure for taut net • Net cage weights distributed sufficient points • Net mesh small enough to contain smallest fish • Proper storage of nets 	<p>71 of 77 73 of 77 76 of 77 77 of 77 77 of 77 77 of 77</p>
<p>Net Cage Inspections:</p> <ul style="list-style-type: none"> • Net tears immediately repaired • Daily above water visual inspections completed • Underwater inspections completed every 60 days • Underwater inspections done before fish entry • Nets permanently marked with inventory number 	<p>77 of 77 77 of 77 77 of 77 75 of 77 75 of 77</p>

MAFF Compliance Issue Assessed On Site	Sites in Compliance
Containment Structures Inspected After: <ul style="list-style-type: none"> • High risk activities that include extreme environmental conditions, net cage changes, fish delivery, recurring predator attacks, vandalism, towing of active structures 	77 of 77
Boat Docking: <ul style="list-style-type: none"> • Designated area to dock boats • Signs posted to direct boats to designated docking area • Dock sites designed to prevent net damage 	77 of 77 62 of 77 77 of 77 77 of 77
Fish Handling: <ul style="list-style-type: none"> • Use of spotters • Use of catch nets 	77 of 77 76 of 77
Predator Control: <ul style="list-style-type: none"> • Implemented measures to address any increase in predator attacks 	77 of 77

**H. 2003 COMPLIANCE NUMBERS – SITES IN COMPLIANCE - MWLAP
MWLAP REQUIREMENTS**

The following table provides a detailed summary of issues examined and number of sites found in compliance during the 2003 inspection cycle.

TABLE #2:

MWLAP Compliance Issue Assessed On Site	Sites in Compliance
REGISTRATION	
• Proof of Registration with MWLAP on site ^{ix}	63 of 77
Best Management Practices (BMP)	
• Companies that have developed a BMP	74 of 77
• Those with BMPs on site	71 of 74
• BMP reviewed complete in all required aspects	53 of 71
Blood Water Disposal:	
• Blood water properly disposed	77 of 77
Net Cleaning and Waste Disposal:	
• Proper containment of waste generated from net cleaning	74 of 77
Disinfectant Use and Disposal:	
• Proper disposal of disinfectants	77 of 77
• Proper storage of disinfectants	75 of 77
Mort Storage and Disposal:	
• Morts properly contained without spillage	77 of 77
• Morts properly disposed	77 of 77
Refuse Storage and Disposal:	
• Refuse properly stored on site	77 of 77
• Refuse properly disposed	77 of 77
Sewage Treatment and Disposal:	
• Overall compliance	54 of 77
• Washroom on site	73 of 77
• Domestic sewage properly treated prior to disposal	68 of 73
• Sewage discharged properly	70 of 73
• Sewage records maintained	59 of 73
Water Use and Licensing:	
• Approved use of water	23 of 34
Wildlife Predator Trapping:^{vi}	
• Predator trapping done with appropriate permits	See footnote
Firearms on site for Personal Use or Hunting:^{vii}	
• Firearms on site	See footnote
Fuel Product Use, Storage and Containment:	
• Diesel tanks protected with 110% containment	71 of 77
• Generator sets protected with 110% containment	65 of 77
• Proper storage of fuels	65 of 77

MWLAP Compliance Issue Assessed On Site	Sites in Compliance
Environmental Management: <ul style="list-style-type: none"> • Adequate spill equipment on site • Spill contingency plan available • Spill number posted 	<p style="text-align: center;">75 of 77</p> <p style="text-align: center;">75 of 77</p> <p style="text-align: center;">75 of 77</p>

6. OTHER 2003 COMPLIANCE AND ENFORCEMENT ACTIVITIES

A. PRE-INSPECTIONS FOR NEW APPLICATIONS AND RELOCATIONS

As noted earlier, a number of salmon farming sites were considered for relocation in 2002 as recommended by the Salmon Aquaculture Review.

When the licensing authority approves a new licence application, such as for a relocation, a condition of licence prior to any introduction of fish is a satisfactory pre-start up inspection by a MAFF Inspector to ensure compliance with all regulatory and licence requirements. This includes a review of all components identified in the applicant's management plan, compliance with legislative and regulatory requirements and verification that the company has met all general licence terms and conditions and any additional conditions that may have been added.

A satisfactory pre-inspection by MAFF Inspection staff will likely be adopted as a required condition of any new Aquaculture Licence prior to commencement of operations.

B. DIVE AUDIT PROGRAM

During the 2003 inspection cycle dive audits were completed at five randomly selected sites.^{viii} Dive audits are generally unannounced and consist of an experienced dive teams along with a MAFF Inspector who coordinates the inspection activity of the dive team.

The purpose of these dive audits are to assess underwater farm features and ensure that the operator is in compliance with regulatory requirements and properly managing the underwater maintenance of the containment nets, anchoring systems and other supporting infrastructure.

Dive audits focus primarily on the underwater aspects of the salmon farm where divers concentrate on the condition of net pens, net pen repairs, design and installation of the anchoring system, net weigh design and installation, condition of lines, and associated hardware along with any other significant below water features. The duration of the dives vary according to underwater visibility, size, depth and condition of the net cages. In some cases an entire day can be spent viewing the entire system while in other situations it may not be possible to view the entire site and a smaller representative portion of the system will be selected for an intensive audit.

To increase the effectiveness of the audits the divers are able to communicate directly with the MAFF Fisheries Inspectors on the surface who are linked through a [video and voice communication](#) system. The ability to communicate directly with the divers in this manner provides the

inspector the opportunity to direct the activity of the divers enhancing the inspection efforts.

The following table identifies the company, sites and dive locations of the 2003 dive audit program:

TABLE #3

Company Name	MAFF REF#	General Area	Site Name	Date Audited
Hardy Sea Farms Inc.	412	Sechelt	Salmon Inlet	March 10, 2003
Nutreco Canada Inc.	137	Quadra Island	Conville Bay	March 11, 2003
Connors Bros. Ltd. (Heritage)	1070	Alberni Inlet WCVI	Mactush Bay	March 17, 2003
Omega Salmon Group Ltd.	1351	Broughton	Marsh Bay	March 27, 2003
Omega Pacific Seafarms Inc.	270	WCVI	Jane Bay	March 31, 2003

Some of the more common issues identified during these dive audits are provided below. A more detailed summary for each site inspected can be found attached as **Appendix 16**.

- 1) Net tension was an issue in some cases. Excessive billowing can be a concern as it creates more potential for net snag and subsequent tearing.
- 2) In some cases the main anchor weights for the net pens or associated hardware were had rough edges or points that could potentially snag on the containment nets.
- 3) Excessive build-up of debris that can potentially come into contact and damage the containment nets.
- 4) Predator nets that may not be effective due to the number and or size of holes.
- 5) At some sites company officials were asked to review the quality of on site net repairs.
- 6) In some cases the predator net was deemed likely ineffective due to the weighting system used as there may not be sufficient clearance between the containment and predator nets.
- 7) The build up of marine growth on lines and other hardware and infrastructure creates potential snag points and additional drag in high current situations.

Where deficiencies were noted, farm site operators were given 30 days to notify MAFF in writing that corrective measures had been implemented.

PHOTOGRAPH # 16

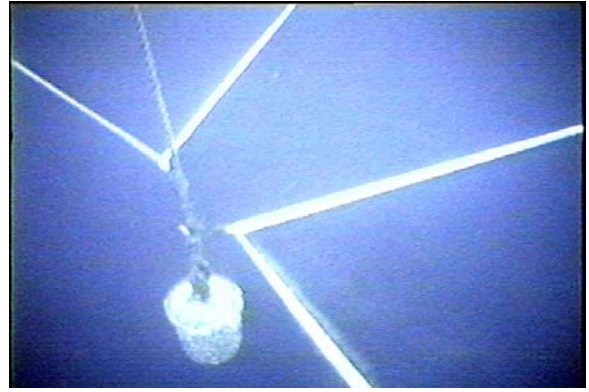


Dive contractor preparing for dive audit.

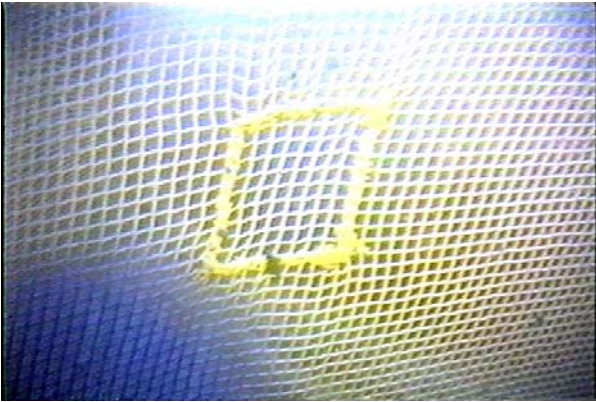
DIVE AUDIT PHOTOGRAPHS



Use of internal weights, in this cases feed bags that have been filled with beach sand.



Central external weight with tie-down lines going to four net pens.



Typical hole repaired at net loft.



Holes in the predator system .



Typical external weights.



25 pound lead internal net weight checked for wear against net.

C. ENVIRONMENTAL AUDITING

During 2003, MWLAP conducted chemical and biological sampling of bottom sediments at selected farm sites. Where the chemical standards are not met or are exceeded, biological samples for marine benthic organisms are collected for compliance purposes. Results of the chemical and biological sampling will be published by MWLAP in a series of Data Reports which will be made available on its web site upon completion of the analysis.

The following farm sites were audited for compliance with environmental standards in 2003:

TABLE #4

Company	MAFF REF#	Farm Site	General Area
Connors Bros Ltd. (Heritage).	1070	Penny Creek	Alberni Inlet
Connors Bros Ltd. (Heritage).	728	Sir Edmund Bay	Broughton Archipelago
Nutreco Canada Inc.	112	Centre Cove	Kyuquot Sound
Nutreco Canada Inc.	763	Young Passage	Quadra Island/Campbell River
Omega Salmon Group Ltd.	892	Bell Island	North Vancouver Island
Omega Salmon Group Ltd.	270	Jane Bay	Barkley Sound
Omega Salmon Group Ltd.	831	Shelter Passage	Broughton Archipelago
Ewos Aquaculture Ltd.	314	Ross Passage	Clayoquot Sound
Ewos Aquaculture Ltd.	527	Saranac	Clayoquot Sound
Stolt Sea Farm Inc.	466	Arrow Pass	Broughton Archipelago
Stolt Sea Farm Inc.	467	Midsummer Island	Broughton Archipelago
Hardy Sea Farms Inc.	754	Jervis Cove	Sechelt
Hardy Sea Farms Inc.	219	Power Bay	Sechelt

D. BRANCH INVESTIGATIONS

Under provincial legislation, MAFF Inspectors or MWLAP Conservation Officers have six months from the date of the event to investigate and, if appropriate, pursue enforcement sanctions. Investigations are considered highly confidential until concluded.

Results of investigations may lead to one or more of the following outcomes:

- determination that the incident (i.e., escape) or possible violation does not warrant any enforcement sanction;
- issuance of a written warning;
- issuance of one or more violation tickets;
- referral to appropriate regulatory agencies such as MWLAP, LWBC or DFO;
- submission of a report to Crown Counsel with recommended charges; or,
- recommendation to the licensing authority for aquaculture licence suspension or revocation.

From January 2003 to December 2003, Licensing and Compliance Branch initiated a total of 488 case files. Cases varied from finfish and shellfish inspections to possible non-compliance under the *Fisheries Act*, *Aquaculture Regulation*, *Fish Inspection Act*, *Fish Inspection Regulation* and various other Provincial Statutes.

Statistics on numbers of investigation are as follows:

E. INVESTIGATIONS

- 77 active finfish farm sites were inspected;
- 44 shellfish sites inspected;
- 181 cases pertained to finfish aquaculture inspections and investigations including escape incidents;
- 93 cases pertained to shellfish aquaculture inspections and investigations;
- 185 cases pertained to commercial fish licensing;
- 29 cases pertained to marine plant, wild oyster harvesting, work tracking, or waste management inspections and investigations;
- 32 violation tickets/warning tickets were issued to various finfish, shellfish and commercial licence holders;
- One (1) warning letter;

- 3 cases were referred to Crown Counsel for charges approval, those cases are now before the Courts;
- 57 referrals to various agencies such as MWLAP, LWBC and DFO;
- Number of fish escapes reported in 2003 totalled 40 fish, dramatic decrease over the previous years.

Status of 2003 Investigations:

The following table shows companies that have been issued violation tickets or warnings for non-compliance by MAFF Inspectors and where the tickets have been paid without dispute. It does not include any open investigations currently being conducted by MAFF or MWLAP compliance and enforcement staff.

TABLE #5:

Licence holder	Act or Regulations	Date	Action	Fine
512004 BC Ltd.	Fisheries Act Section 13 (1)	January 26, 2003	Violation Ticket	\$173
Centennial 2000 Inc.	Fisheries Act Section 13 (1)	May 1, 2003	Warning Ticket	n/a
Grieg Seafoods BC Ltd.	Fisheries Act Section 25 (2)	April 29, 2003	Warning Ticket	n/a
Grieg Seafoods BC Ltd.	Fisheries Act Section 25 (2)	April 29, 2003	Warning Ticket	n/a
Grieg Seafoods BC Ltd.	Fisheries Act Section 25 (2)	April 30, 2003	Warning Ticket	n/a
Grieg Seafoods BC Ltd.	Aquaculture Regulation Section 4 (1)	n/a	Warning Letter -	n/a
Hatfield Biotechnology Ltd.	Aquaculture Regulations Section 3 (2)	November 1, 2003	Violation Ticket	\$173
Heritage Salmon Ltd.	Fisheries Act Section 25 (2)	June 5, 2003	Violation Ticket	\$115
Kitasoo Aquafarms Ltd.	Fisheries Act Section 25 (2)	June 26, 2003	Warning Ticket	n/a
Kyuquot Sound Farms	Fisheries Act Section 25 (2)	May 28, 2003	Violation Ticket	\$115
Nutreco Canada Inc.	Fisheries Act Section 25 (2)	April 17, 2003	Warning Ticket	n/a
Nutreco Canada Inc.	Fisheries Act Section 25 (2)	April 17, 2003	Violation Ticket	\$115
Nutreco Canada Inc.	Fisheries Act Section 25 (2)	April 17, 2003	Violation Ticket	\$115
Nutreco Canada Inc.	Fisheries Act Section 25 (2)	April 24, 2003	Violation Ticket	\$115
Nutreco Canada Inc.	Fisheries Act Section 25 (2)	April 24, 2003	Violation Ticket	\$115
Nutreco Canada Inc.	Fisheries Act Section 25 (2)	June 26, 2003	Violation Ticket	\$115
Stolt Sea Farm Inc.	Aquaculture Regulation Section 3(2)	April 8, 2003	Warning Ticket	n/a
Stolt Sea Farm Inc.	Aquaculture Regulation Section 4 (1) b	October 22, 2003	Violation Ticket	\$173

7. **CONCLUSION**

During the 2003 inspection cycle, agencies found generally acceptable levels of compliance, with most inspection points found to be in the 80 to 90 percent range.

For all identified non-compliance issues, companies have been provided with a letter and copy of the compliance report outlining inspection findings and necessary remedial action. The majority of finfish farm operators are in the process of, or have implemented, necessary actions identified during inspections. Some follow-up inspections have been completed where companies have failed to comply with remedial instructions or failed to comply within the requested timeframe. In some cases, appropriate enforcement sanctions have been applied, including the issuance of violation tickets, and in some cases, referrals to MWLAP have been made.

In summary, many of the non-compliance issues identified during 2003 are correctable. In conjunction with some agency changes (such as streamlined site configuration approval processes), continued enhancements to the compliance and enforcement regime, and continued communication with industry, it is anticipated compliance levels will continue to improve in to the 2004 inspection cycle.

Provincial government agencies are committed to ensuring the aquaculture industry meets our regulatory objectives in an environmentally sustainable and socially acceptable manner.

ⁱ Formerly the *Aquaculture Waste Control Regulation*.

ⁱⁱ **Appendix 9** provides a detailed summary of all record keeping requirements and the storage location of these records.

ⁱⁱⁱ Compliance with drug record keeping, and inventory records are examined in other sections within this report.

^{iv} As outlined in the report, many sites had submitted management plan amendments prior to inspections conducted in 2003; however, for the purpose of MAFF inspections, sites were identified as out of compliance if amendments had not yet been approved by regulatory authorities. In addition, many sites have since submitted amendments as a result of inspection.

^v Recapture permits are not site specific, instead they are issued to the company. In 2003 DFO issued seven ZZA permits. The ZZA permits were valid only for Atlantic salmon recapture attempts.

^{vi} Live trapping was reported at two sites.

^{vii} At five sites firearms were present but not associated with predator kills. At three sites company officials indicated company contracts were in place with individuals for predator control.

^{viii} An additional six dive audits were conducted in November 2003. The findings of these audits will be presented as part of the 2004 annual inspection report.

^{ix} MWLAP advises that in 2003 all sites were registered. Deficiency noted is failure of the company to provide verification of registration.