



**ANNUAL INSPECTIONS ON  
MARINE FINFISH AQUACULTURE SITES  
FOR 2004 AND 2005 INSPECTION CYCLES**

**JOINT REPORT OF**

**Ministry of Agriculture and Lands**

**AND**

**Ministry of Environment**

**July 2006**

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## **EXECUTIVE SUMMARY**

The success of the aquaculture industry depends on farms being environmentally sustainable and socially acceptable. Government sets the terms and regulates the activities of salmon aquaculture farms in the province, and one of our roles is to ensure that the aquaculture industry responsibly meets these objectives.

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

### **Service Agreement:**

While the lead agency for aquaculture development and compliance is the Ministry of Agriculture and Lands (MAL), authorities and functions also reside with the Ministry of Environment (MOE) who has a key interest in regulating the industry.

As reported in previous years, a significant development occurred in 2002 when a Service Agreement between the two agencies was formalized that coordinated responsibilities amongst relevant provincial agencies. Under this Service Agreement MAL inspection staff are responsible for assessing overall compliance of the industry. MOE is responsible for monitoring compliance with environmental requirements designed to protect benthic conditions underneath and adjacent to farm sites as well being the lead for enforcement.

MAL and MOE continue to review and refine their respective roles with respect to this agreement. "Compliance" means adherence to the conditions set out in the various regulations for the industry and can include activities to increase awareness regarding regulatory requirements. This can be accomplished through education, and monitoring and reporting as a means of determining the level of compliance, and on-site inspections to evaluate the degree of compliance. "Enforcement" activities are carried out by MOE, and include verifying and substantiating alleged offences, and recommending and implementing necessary enforcement actions.

### **Public Reporting:**

Starting in 2000, in an effort to improve communications with the public and industry and to demonstrate accountability for the province's compliance and enforcement regime for finfish aquaculture, a decision was made to publish comprehensive public reports on the status of compliance for marine finfish aquaculture. Relevant agencies initially published two separate reports; however, with the advent of the Service Agreement, the Marine Finfish Inspection Reports are now jointly released.



The 2004 and 2005 inspection cycles report represents the fifth year that a comprehensive compliance report has been released. In previous years, a single year report has been published. This report represents the results of two consecutive inspection cycle years – 2004 and 2005. A number of factors contributed to the decision to release the results in one combined report, including the desire to create efficiencies, and recognizing some delays given the government reorganization that occurred in 2005. It is anticipated that the 2006 cycle compliance results on marine finfish aquaculture will be published as a single year report within the next year.

The Fish Health Audit and Surveillance program is separate from the compliance and monitoring programs outlined in this report. The fish health program is highly technical and MAL has staff trained for collection and evaluation of fish health information. MAL is in the final stage of preparation of a comprehensive review of the results of the Fish Health and Sea Lice Audit Program. The Fish Health Audit and Surveillance Report will provide a comprehensive review of the results of both components of the program from 2003 to 2005. MAL anticipates release of the report by the end of September, 2006.

### **Ministry of Agriculture and Lands:**

Prior to 2000 the Aquaculture Regulation under the *Fisheries Act (BC)* was fairly non-specific and only required that a licence holder “take reasonable precautions to prevent the escape” of fish, and that the holder report an escape. In the absence of specific regulated standards, inspection officials had to review on-site activities and determine if these activities were reasonable and consistent with industry standards to determine if an operator was compliant.

The Salmon Aquaculture Review, completed in 1997, recognized that the legal framework to set and enforce specific escape prevention and recapture requirements needed refinement. This decision was supported by a major investigation into a large escape of Atlantic salmon in September 1999, where a number of recommendations were suggested for industry and government to develop more prescriptive escape prevention, detection and response standards.

Government responded to these recommendations by developing regulatory standards; the Aquaculture Regulation has undergone two major revisions to effectively address these issues.

### **Ministry of Environment:**

A major consideration of the MOE is the protection of the marine environment and fisheries. A key component to achieving this objective was the introduction in 2002/03 of the Finfish Aquaculture Waste Control Regulation (FAWCR). This regulation requires operators to develop best management practices that address a number of environmental concerns.

One of the more significant provisions of the FAWCR is the requirement for environmental monitoring under the farm site. This provides a true determination of the environmental impacts of the biomass at any given site and establishes biological standards that define when farms can be restocked based on specific sediment conditions.

### **Inspection Activities and Compliance Results:**

Regular inspections were carried out on farm sites by provincial inspections staff in order to ensure compliance with relevant standards and regulatory requirements. Inspectors visit all operating farms at least once yearly and in some cases repeated inspections are necessary to ensure compliance or to investigate additional reports of potential non-compliance.

In addition to MAL inspector visits, other provincial and federal authorities also regularly visit marine finfish sites. On average, each operational finfish facility may be visited at least three to four times a year by various government representatives. Such representatives include MAL Fish Health technicians, Ministry of Environment Waste Biologist staff, Fisheries and Oceans Canada and the Worker's Compensation Board.

During 2004, MAL conducted inspections at 77 operational marine salmon farms with approximately 100 compliance points relating to both MAL and MOE requirements assessed by Inspectors at each farm site.

For the 2005 inspection cycle, 75 operational farms were inspected by compliance staff.

## **Ministry of Agriculture and Lands:**

### **General 2004 Results:**

For the 2003 inspection cycle one area of higher non-compliance level was failure of industry to meet the terms of their approved Management Plans, in particular site configuration and biomass levels. These are two components that are identified within a site's specific management plan. Any change to the site configuration and/or biomass level requires an amendment to the plan, typically a lengthy and involved process. In part, this likely attributed to a higher level of non-compliance in these areas.

In 2004 the ministry proposed a new administrative procedure in an effort to streamline management plan amendments and timelines for review. The concepts of Maximum Pen Area (MPA) and Intensive Use Area (IUA) was introduced. While 2004 was a year in transition where only 30% of the farms were assessed for compliance with respect to the MPA and less than 10% against the IUA, compliance levels in both these areas were encouraging. Ninety-six percent of the farms inspected were in compliance with the MPA and 83 percent were in compliance with their IUA. These concepts are discussed in more detail later in the report.

Total Maximum Production per Production Cycle (TMP) is a term synonymous with biomass as previously used in earlier inspection reports. This represents only a change in terminology as TMP identifies the maximum production per cycle that companies are permitted at each site.

Another area of higher non-compliance noted in 2003 for MAL's requirements was in meeting the specific requirements of the Best Management Practices Plan (BMP), a requirement introduced in the 2002 amendments to the Aquaculture Regulation. Inspections in 2004 found a general improvement in meeting this requirement.

For the 2004 inspection cycle, areas of highest concern relative to MAL requirements included:

- TMP - While there was a notable improvement in compliance levels between 2002 and 2003, inspection results show an 88 percent compliance rate to this requirement, resulting in a 2 percent improvement between 2003 and 2004. MAL continues to pursue this area with industry.
- BMP plans - Deficiencies in this area largely relate to a company's failure to demonstrate staff endorsement of the plan, namely employee sign-off that they have received training in all aspects of the plan.

- Therapeutics, Use and Record Keeping - A comprehensive review of the existence of drug record logs revealed there were a number of sites deficient with respect to record keeping requirements. At 20 percent of the sites inspected, operators failed to include the aquaculture licence number and holder's name on the log recording the use of drugs. All other aspects of the drug record keeping requirements were found to be in compliance.
- Inspection by Anchoring Specialist<sup>1</sup> - There were 15 sites where this requirement was applicable and 73 percent of these farms were in compliance.

### **General 2005 Results:**

Upon further review of the new administrative procedure that was proposed and introduced on a trial basis in 2004 on the use of IUAs and MPAs, it was determined by ministry biological staff that the concept of Intensive Use Areas had some shortcomings. Namely staff identified that IUAs could overlap with established buffers, causing concern that such overlaps may be perceived as a weakening of the province's commitment to environmental protection. Therefore this portion was abandoned shortly after implementation. As for the establishment of the Maximum Pen Area, it was determined that further review of this concept is required before it can be used to assess compliance. The review has not yet been completed; Inspectors will, in 2006, return to assessing compliance to net cage/pen configuration as outlined in the management plan.

A continued improvement in compliance to TMP was noted in 2005 at 96 percent, an 8 percent improvement over 2004 levels.

Confirmation of an inspection by an anchoring specialist was noted as a compliance issue in 2004; in 2005, this requirement was applicable to 7 sites and all were found to be in compliance, a noticeable improvement compared to the 2004 inspection cycle.

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<sup>1</sup> For installation of systems at new facilities, inspection by a qualified anchoring specialist must be completed prior to the introduction of fish. For sites which are altered or added to, inspection must be completed prior to utilization of newly installed infrastructure. This inspection should confirm that the design, equipment used and installation of the facility is consistent with the anchoring system layout diagrams attached to the approved management plan and the specifications in Appendix 2 of the Aquaculture Regulation. Proof of this inspection must be provided by the site operator to the Fisheries Inspector upon request.

## **Ministry of Environment:**

### **General 2004 Results:**

In 2003 a higher percentage of non-compliance was evident for those compliance points that apply to MOE's regulatory authority. The likely reason for this is the fact that 2003 was the first year where all active salmon farms in British Columbia were assessed for MOE-related issues. Inspections in 2004 support this rationale, as a general improvement in compliance levels over all compliance points was evident with some notable examples.

In 2003 there were a number of sites using water from a source that would have required a water licence; 67 percent of these sites were in compliance. In 2004, this compliance issue improved to 97 percent.

Between 2003 and 2004, there was a noticeable improvement in overall compliance with meeting the BMP requirements of MOE's Finfish Aquaculture Waste Control Regulation.

Compliance with domestic sewage treatment and record keeping requirements for 2003 was assessed at 70 percent and in 2004 compliance levels had improved to 94 percent for meeting the sewage treatment requirements and to 81 percent for proper record keeping.

There was also an improvement evident in proper storage and containment of fuels on site. In 2003, operators at 67 percent of the sites were in compliance with this requirement. In 2004 operators at 99 percent of the sites were in compliance with the requirement to supply secondary containment around diesel tanks and at 91 percent of the sites with the requirement to supply containment for other fuels in smaller containers such as jerry cans.

In 2004, all compliance points were 80 percent or higher for MOE requirements.

### **General 2005 Results:**

Continued improvements with respect to meeting the BMP requirements were again evident in 2005.

Compliance with domestic sewage treatment and record keeping requirements have improved over 2004 to 100 and 91 percent respectively.

In 2005 Inspectors noted that all sites were in compliance with the requirement to supply secondary containment around diesel tanks, and for containment of other fuels in smaller containers.

## **Other Activities and Results:**

In 2004 and 2005 a number of enforcement measures were implemented by both MAL and MOE officials. A number of violation tickets and warnings were issued by MAL, with some referrals made to MOE for further enforcement review and investigation. Specifics on enforcement activities are found later in this report.

This report also highlights other activities undertaken by MOE and MAL 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 both the 2004 and 2005 inspection cycles generally demonstrate continual improvements in compliance rates for the finfish aquaculture industry. In particular industry has responded well to those issues identified during previous inspection cycle years.

Compliance and enforcement staff at both MAL and MOE continue to conduct follow up inspections addressing identified issues to ensure industry is meeting all necessary requirements.

Inspections are well under way for the 2006 inspection cycle and preliminary reports indicate that industry continues to maintain a high level of compliance.

MAL and MOE compliance and enforcement officials continue to strive for improvements to the inspection and compliance program, some of which are highlighted later in the report. Staff will continue to work actively with governments, First Nations, industry and stakeholders in an effort to demonstrate an effective and accountable compliance and enforcement regime.

## **SECTOR BACKGROUND**

Data for 2004 indicates that the total landings for farmed salmon was 61.8 thousand tonnes. This is down from the 72.7 thousand tonnes reported in 2003. The 2004 volume equates to a landed value of \$225.2 million and a wholesale value of \$287.4 million. In 2005, there was an estimated 70.3 thousand tonnes landed. This equates to a landed value of \$318.3 million and a wholesale value of \$351.1 million.

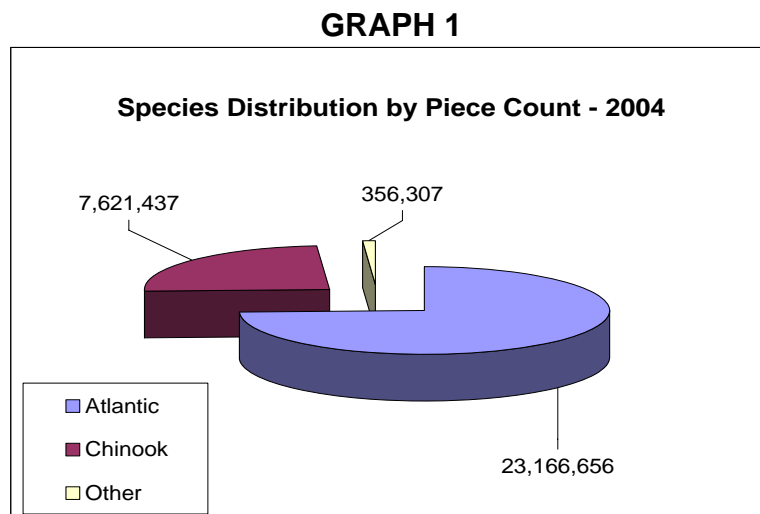
These values for farmed finfish reflect landings and production from only a portion of the licensed marine aquaculture farms in British Columbia. At any given time there are percentages of sites being fallowed or not in operation. "Fallow" sites are those finfish aquaculture farms that are inactive to allow the seabed to recover from any organic input prior to stocking the next production cycle. This helps ensure that operations are compliant with performance-based waste standards prescribed by MOE.

The map included as Appendix 11 shows the distribution of salmon farms in British Columbia. More detailed and site specific information can be found at the following link:

[http://maps.gov.bc.ca/imf406/imf.jsp?site=dss\\_coastal](http://maps.gov.bc.ca/imf406/imf.jsp?site=dss_coastal)

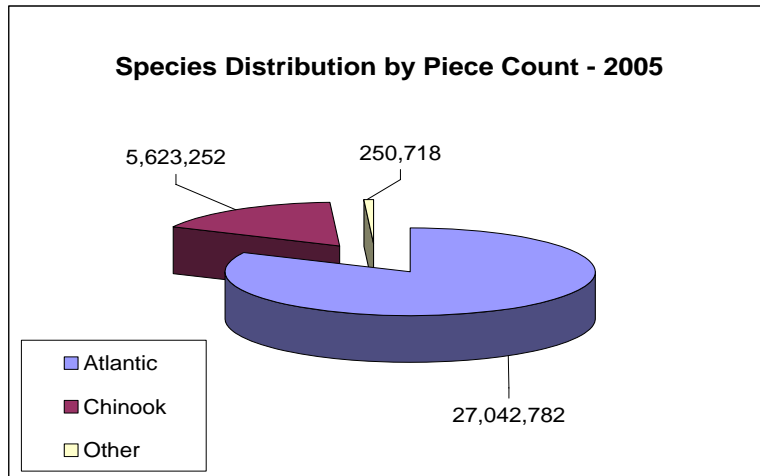
During the 2004 inspection cycle there were 77 operational sites inspected. In 2005, there were 75 sites inspected. The remaining licensed sites were fallowed or were inoperative for other reasons at the time of inspection.

Graph 1 provides a comparison of species currently being held on provincially licensed fish farms and reflects data that was collected by Inspectors while they were on site during the 2004 inspection cycle.



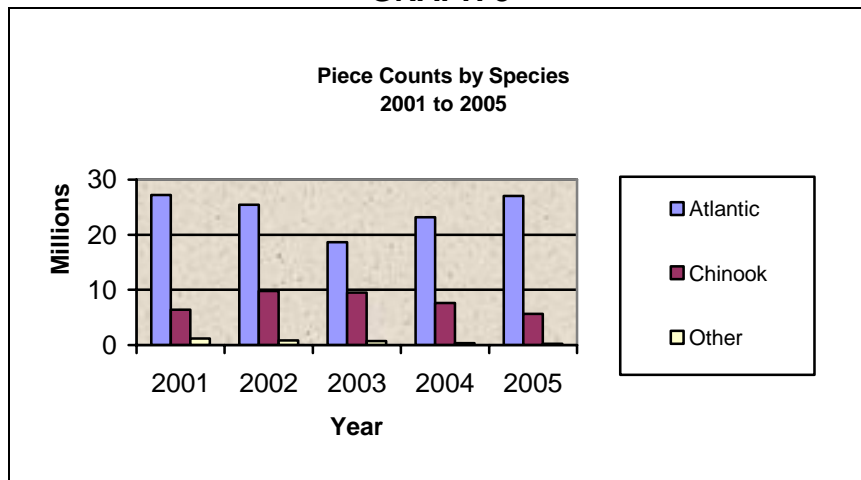
Graph 2 provides a comparison of species currently being held on provincially licensed fish farms and reflects data that was collected by Inspectors while they were on site during the 2005 inspection cycle.

**GRAPH 2**



Graph 3 compares these same findings over the last five inspection cycles.

**GRAPH 3**





## **MANDATE**

### **MINISTRY OF AGRICULTURE AND LANDS - LEGISLATIVE AND REGULATORY FRAMEWORK**

#### ***Fisheries Act***

The (BC) *Fisheries Act* provides the authority for MAL to licence aquaculture operations and regulate on-site farming activities. It also provides MAL 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 4), establishes regulatory requirements for specific on-site farm activities. These requirements identify a minimum standard that farm operators must meet.

The Aquaculture Regulation has undergone several changes, the most recent of which came into force on April 19, 2002.

Some of the more substantive powers within the regulation include:

- the authority allowing provincial Aquaculture Inspectors to order suspect net cages to be removed from the water;
- detailed and streamlined record keeping requirements for marine aquaculture sites;
- diving requirements that link dive inspections more closely to higher risk activities or events such as severe storms;
- the requirement for farms to develop best management practices plans to guide routine activities that could lead to escapes;
- 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
- an increased emphasis on staff training, based on research that suggests human error is a leading cause of escapes.

## **MINISTRY OF ENVIRONMENT - LEGISLATIVE AND REGULATORY FRAMEWORK**

MAL inspectors conducted inspections in 2004 and 2005 at all active sites on behalf of MOE and MSRM in accordance with the Service Agreement found in Appendix 1.

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

MOE 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 MOE, 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 dealing with these activities:

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

## ***Environmental Management Act***

The *Environmental 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, mortalities (dead fish), blood water, net cleaning waste, refuse, 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 MOE 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 licence when hunting wildlife.

### ***Water Act***

The agency principally responsible for administering and regulating activities related to the *Water Act* is the MOE. 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 *Environmental Management Act* and its regulations in regards to spill prevention measures.

## **OVERVIEW OF LICENSING AND COMPLIANCE PROGRAM – 2004/2005**

The Fisheries and Aquaculture Licensing and Compliance Branch (FALCB) recognizes the need for transparency and accountability in all its licensing and monitoring functions. This mandate is met by the application of an integrated licensing and compliance program that applies personal and institutional independent decision-making principles.

A key function of the Fisheries and Aquaculture 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; and,
- commercial harvest of marine plants and wild oysters.

This report only discusses the branch's activities related to marine finfish aquaculture.

### **LICENSING**

With respect to the review of new salmon farm licence applications, 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 branch's 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 and through previous investigations provide licensing authorities with critical information relative to the past or demonstrable performance of the applicant.

The Fisheries and Aquaculture Licensing and Compliance Branch also has the responsibility to:

- monitor, inspect, and report on commercial fisheries (buyers, brokers, vendors and processing facilities), the harvest of wild oysters and marine plants, and the finfish and shellfish aquaculture industries.

As mentioned earlier, 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 MAL inspection staff serve as the lead in conducting all finfish and shellfish inspections, monitoring and audits. The MOE 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.

MOE 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 is 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 9 of this report.

## **COMPLIANCE AND ENFORCEMENT**

### **MAL**

In keeping with the inter-agency Service Agreement, the compliance and enforcement regime for MAL Compliance and Monitoring Unit 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 MOE in conducting investigations on alleged legislative and/or licensing violations; and
- reporting publicly on the compliance status of salmon farm inspections.

### **MOE**

MOE'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 MOE'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.

A number of enhancements to government's inspection and compliance programs were implemented during 2004 and 2005. These included:



- Staff at MAL, MOE and the Canadian Food Inspection Agency, (CFIA) continued to refine and enhance working relationships and communication efforts between agencies.
- Expanded regional contacts through enhanced cross compliance efforts with other agencies, most notably Fisheries and Oceans Canada (DFO) by conducting joint inspections, investigations and broadening communication efforts.
- All MAL Inspectors received enhanced GPS and navigation training.
- A comprehensive electronic data base was created and is now being used to record all inspections and incident reports.
- A new all-weather vessel was added to the fleet in March of 2005 to improve year round access to marine sites.
- Cross agency briefing held with COS and MAL inspection staff.
- In 2005, the Internal Audit Group of the Ministry of Finance selected MAL's compliance and monitoring unit to conduct an audit and review of its inspection program "to assess whether the branch's current resource allocation and volume of inspections sufficiently mitigates the risk of industry non-compliance with the regulatory framework". The report made a number of recommendations, as found at Appendix 12, but generally concluded that inspection resources for finfish aquaculture were adequate. Branch officials have responded to the audit's recommendations by development of an audit workplan and are working to implement all of the identified recommendations.
- In 2006, MAL will formalize a second policy and procedures manual that builds on the foundation of the Fisheries Inspectors Policy and Procedure Manual. The manual was prepared in 2005 and is currently undergoing final legal review. Once approved, this second manual will provide more comprehensive guidelines for compliance and enforcement activities under the *BC Fisheries Act* and *BC Fish Inspection Act* and accompanying regulations. The comprehensive policy document will help establish a consistent approach between ministry inspectors as well as enhance industry's understanding of the ministry's role and expectations with respect to inspection, compliance and enforcement activities. The first Fisheries Inspectors Policy and Procedures Manual (September 25, 2003) can be found at the following link:  
<http://www.al.gov.bc.ca/fisheries/Manuals/index.htm#Inspectors>

## METHODOLOGY

### INSPECTION ACTIVITIES

Inspections can occur at any time during the year. The objective of these inspections is to measure compliance with regulatory requirements of MAL and MOE and licence terms and conditions as set out in the Aquaculture Licence issued by MAL.

Every active salmon aquaculture site will be visited by an Inspector at least 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 5) and compliance report (Appendix 6) 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 may be left on-site with the site manager or hand delivered to the company headquarters. 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 of the results of each inspection. This can be done in writing and/or in person. 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 respond 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 employees, review the farm's operational procedures and practices, 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.

## **KEY COMPONENTS OF THE ON-SITE INSPECTION – MAL 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 operational criteria of the fish farm. Management plan applications undergo extensive reviews and once approved compliance with elements of 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, licensing and any special provisos that may be attached as a condition of licence.

***Escape Reports:*** Escapes must be reported within 24 hours to the Fisheries and Aquaculture 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 high risk activities conducted at the farm site.

***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.

***Therapeutic Use and Records:*** On-site inspections provide an opportunity to ensure that therapeutic 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.

**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 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. The Inspector 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.

## **KEY COMPONENTS OF THE ON-SITE INSPECTION – MOE REGULATORY ISSUES**

**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.

**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 in compliance with section 4.1.6 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.

# **COMPLIANCE RATES FOR 2004 and 2005 – REGULATORY AND LICENSING REQUIREMENTS**

## **PART #1**

### **MAL 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 Fisheries and Aquaculture Licensing and Compliance Branch (FALCB). FALCB 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. FALCB 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. 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.

In 2004 MAL introduced a new administrative procedure 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.



A Total Maximum Production per Production Cycle (TMP) was defined as the cumulative biomass of all fish removed from a site during a production cycle minus initial cumulative biomass of fish moved on site during that cycle. Companies are prohibited from producing more fish (or different species) than identified on the licence unless amended via FALCB approval.

A Maximum Pen Area (MPA) was established for each Aquaculture Licence. Companies were advised that, if circumstances warranted they could increase the number of pens utilized on each site up to the MPA without requesting an amendment to the Management Plan. If the MPA was to be exceeded, approval for an amendment was required from FALCB prior to this occurring.

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

The concept of Intensive Use Areas was introduced. Under this plan pens would be confined to an area within their lease that was designated as the Intensive Use Area (IUA). It was anticipated it would take a period of time to identify the intensive use area for each operating site.

The end result of this new approach meant that cage size, type, number and orientation were no longer as important a variable in determining approved biomass and throughput production levels.

These proposed changes were meant to provide industry some limited flexibility for adjustments of cage infrastructure on site without the requirement to submit and wait for approval of management plan amendments.

In all of this 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.

The 2004 inspection cycle was the first year of this transition as MAL and industry adjusted to this new approach of assessing compliance to the management plan.

Aspects of the management plan that MAL Inspectors reviewed in 2004 included: compliance with maximum pen area, a determination if the net cages were located within an approved intensive use area (where this area had been identified), the species being cultured, the total maximum production or biomass levels, and the licence status and compliance with any special provisos that were attached as a condition of licence.

There were 6 finfish farms inspected where an intensive use area had been identified. At 5 of these farms the net cages were located within an identified intensive use area.

Maximum pen area had been established for 26 farms and 25 of these were in compliance.

Compliance to the approved total maximum production was 68 out of the 77 farms inspected.

All 77 sites were in compliance with approved species on site, current licence and adherence to any special provisos.

In 2005 Inspectors reviewed compliance to total maximum production requirements, approved species on site, the licence status, and any special provisos where applicable.

With respect to the Intensive Use Area, upon further review of this proposed administrative procedure introduced on a trial basis in 2004 it was determined that the concept was unworkable. GIS data regarding pen locations were collected from aquaculturists during the summer of 2004 to establish the dimensions and locations of IUAs for each site. In the fall of 2004, these data were analyzed where they were overlaid against the proposed IUAs on existing tenures. During this exercise, it was determined that although the IUA concept had some merits, it was not feasible because the IUAs overlapped with established buffers in too many instances, causing concern that such overlaps might be perceived as a weakening of the province's commitment to environmental protection. Therefore this concept has been abandoned.

The concept of Maximum Pen Areas was introduced at the same time as the concept of IUAs. Although this concept has not encountered the same degree of difficulty as has that of IUAs, it requires some further work and refinement before it is finalized, particularly in light of efforts by Ministry of Agriculture and Lands to harmonize approaches to minimizing impacts of aquaculture and proposed changes to tenuring being developed by the Integrated Land Management Bureau.

Inspectors will, in 2006, return to assessing compliance to net cage/pen configuration as outlined in the management plan.

A continued improvement in total maximum production was noted in 2005 where 72 of the 75 farms were in compliance with established limits.

All 75 sites were in compliance with approved species on site, current licence and adherence to any special provisos.

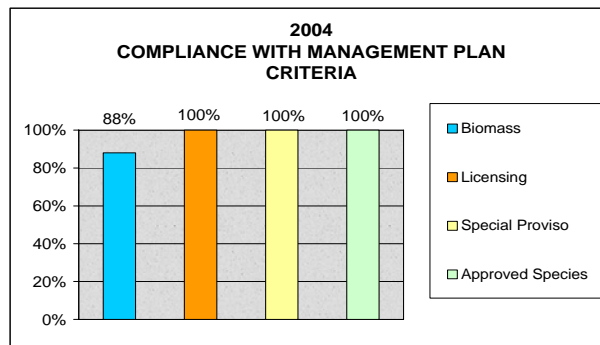
There were no noted areas of significant concern relative to management plans and licensing in 2005.

**PHOTOGRAPH #1**

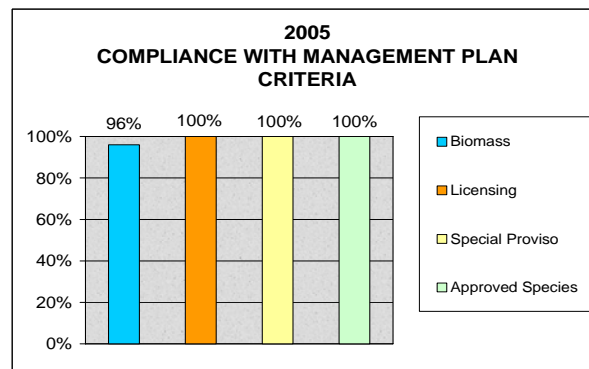


Identifying farm site coordinates with GPS

**GRAPH 4**



**GRAPH 5**



## B. Escape Reports

The Aquaculture Regulation requires that fish escapes or suspected escapes be reported to MAL 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.

In 2004 there were a total of 35 incidents of escapes or suspected escapes reported to the ministry. During subsequent investigations of these events, Inspectors were able to determine that escapes occurred in 21 of the 35 reported incidents. The number of fish reported as escapes to the marine environment by industry was 43,985 pieces. This included 43,969 Atlantic salmon, 5 Chinook and 11 Coho.

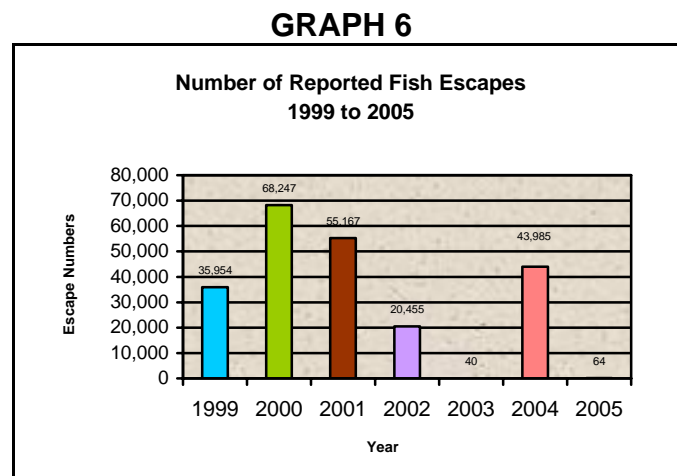
In 2005 there were a total of 35 incidents of escapes or suspected escapes reported to the ministry. Inspectors were able to determine that escapes occurred at 11 of the 35 reported incidents. The number of fish reported as escapes to the marine environment by industry was 64 pieces. This included 21 Atlantic salmon, 2 Chinook and 41 Coho. It should be noted that 14 Atlantic salmon out of the 64 pieces were from 2 incidents at a processing plant rather than an aquaculture facility.

During the course of inspections Inspectors did not find any evidence supporting unreported escapes or suspected escapes.

The following graph illustrates the number of fish that have been reported as escapes into the marine environment from 1999 to 2005.

Additional information can be found on MAL's website at

[http://www.agf.gov.bc.ca/fisheries/escape/escape\\_reports.htm](http://www.agf.gov.bc.ca/fisheries/escape/escape_reports.htm).



### **C. Stock Inventory Reports and Record Keeping**

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 and 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 MAL 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.

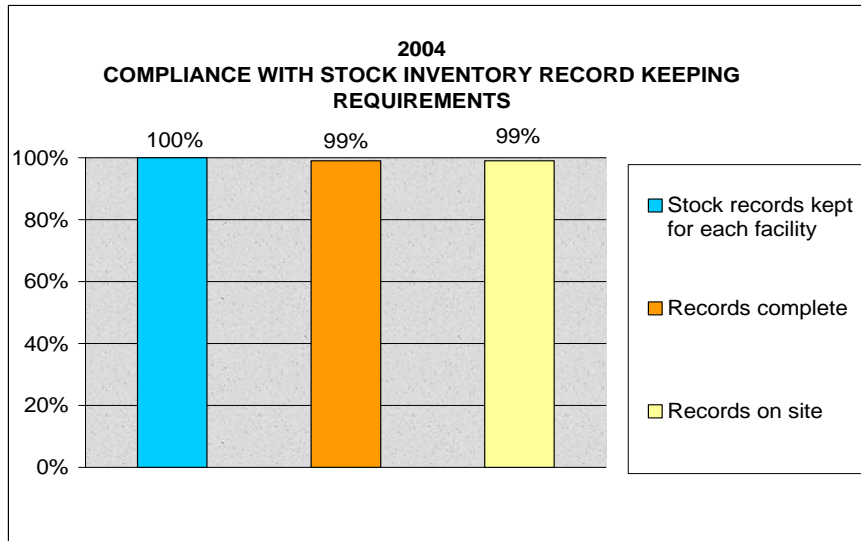
**PHOTOGRAPH #2**



Inspector reviewing records at farm site.

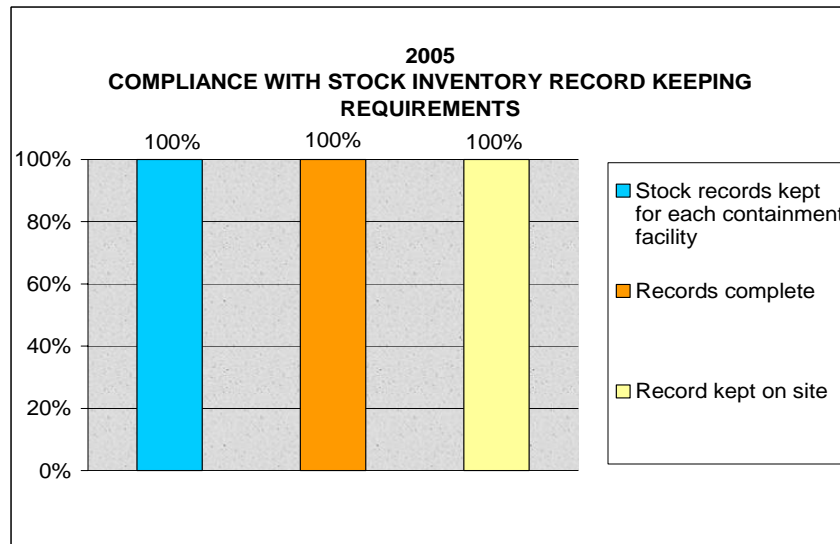
In 2004, operators at all 77 sites were maintaining stock inventory records. At 1 farm these records were not complete as the operator failed to accurately record number and cause of mortality and at 1 other site the required records were not available.

**GRAPH 7**



In 2005, operators at all 75 sites were in compliance with the inventory record keeping requirements.

**GRAPH 8**



## **D. Containment Nets, Inspection, Maintenance and Record Keeping**

During the 2004 inspection cycle at the 77 operating sites, there were approximately 1000 deployed net pens (containing fish) that were inspected.

During the 2005 inspection cycle at the 75 operating sites, there were approximately 830 deployed net pens (containing fish) that were inspected.

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.

Reviewing the record keeping requirements is an important component of on-site inspections. Records are not only important 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.

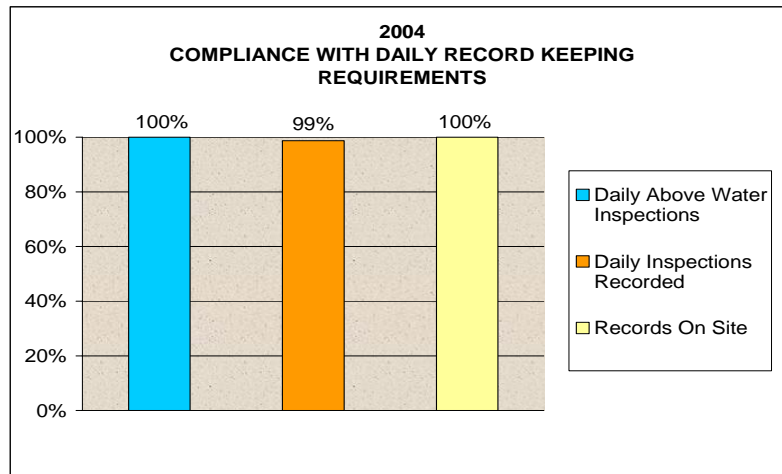
There are a number of key inspection and record keeping requirements specified in the Aquaculture Regulation. This section examines the compliance with requirements to conduct and maintain information on a number of these inspection activities. These include daily above-water inspections, any inspections occurring after a high risk activity, requirements for net marking and description, containment net out-of-water servicing records, details of underwater inspections, and records of any general net inspections and repairs.

### ***Daily-Above Water Inspections:***

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 and these logs are required to be kept on site and produced at the demand of the Inspector.

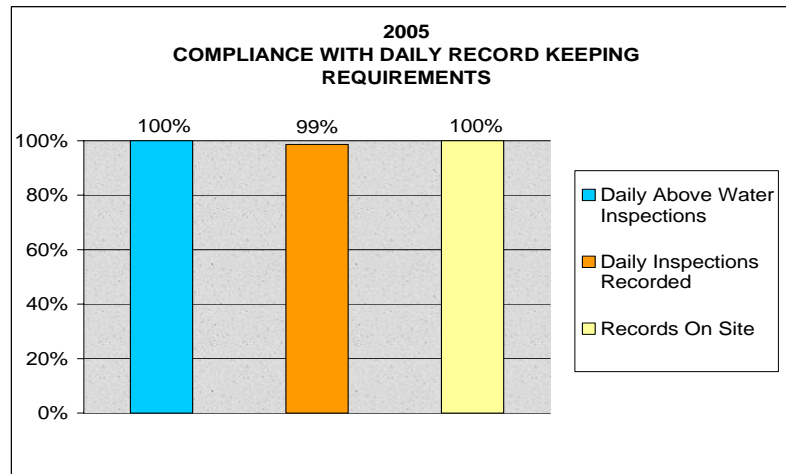
In 2004, findings indicate that daily above-water checks were being conducted at all 77 sites. At 1 site the operator had advised they conducted the daily inspections but failed to properly document this activity on a daily basis.

**GRAPH 9**



In 2005, findings indicate that daily above-water checks were being conducted at all 75 sites. At 1 site, this activity was not properly documented on a daily basis.

**GRAPH 10**



***Net Marking, Repair and Maintenance Records:***

The Aquaculture Regulation requires that specific information be collected and maintained for each containment net on site. To effectively document and maintain this net history, the regulation also 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. There were no deficiencies noted in either year with respect to the proper tagging of containment nets.



### PHOTOGRAPH #3



Tag on net cage used for identification.

In the event of an incident, net records are a key component of the investigation. This information is required to be kept on site with the deployed containment net and must be provided to the Inspector upon request.

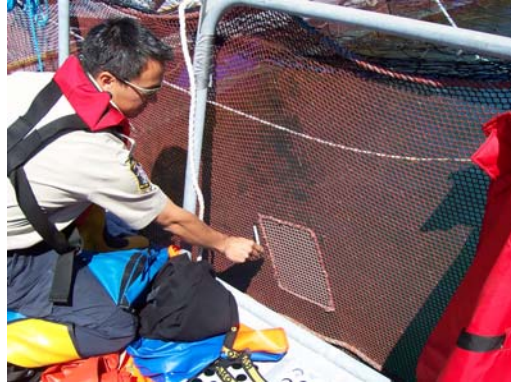
Net records include specific details such as: net inventory number, dimensions, mesh size, the accumulated time in the water since the most recent out-of-water inspection, a description and the dates of each underwater inspection performed since the most recent complete out-of-water servicing and inspection,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

In 2004, Inspectors found that out of the 77 operational sites inspected, 2 operators failed to demonstrate that they had documentation available for each net deployed on site. Records were available in all cases but 2, and the required elements had been documented as required.

In 2005, Inspectors found that out of the 75 operational sites inspected, 2 operators failed to demonstrate that they had documentation available for each net deployed on site. Records were available in all cases.

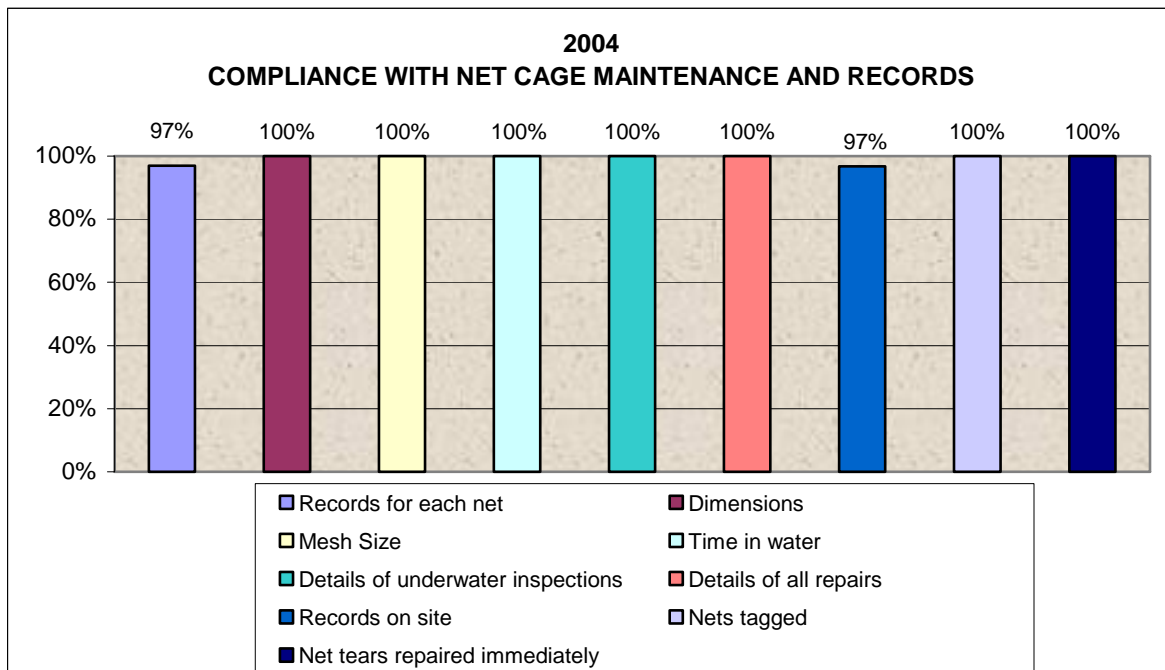
All net damage found during regular above-water or underwater inspections of nets that are in use must be immediately repaired. This includes both the containment net as well as the jump net portion. Any temporary net repairs should be replaced with more permanent repairs as soon as possible. In 2004, there were no deficiencies noted with respect to this requirement at the 77 sites inspected. In 2005, there was 1 deficiency noted at a site with respect to this requirement.

**PHOTOGRAPH #4**

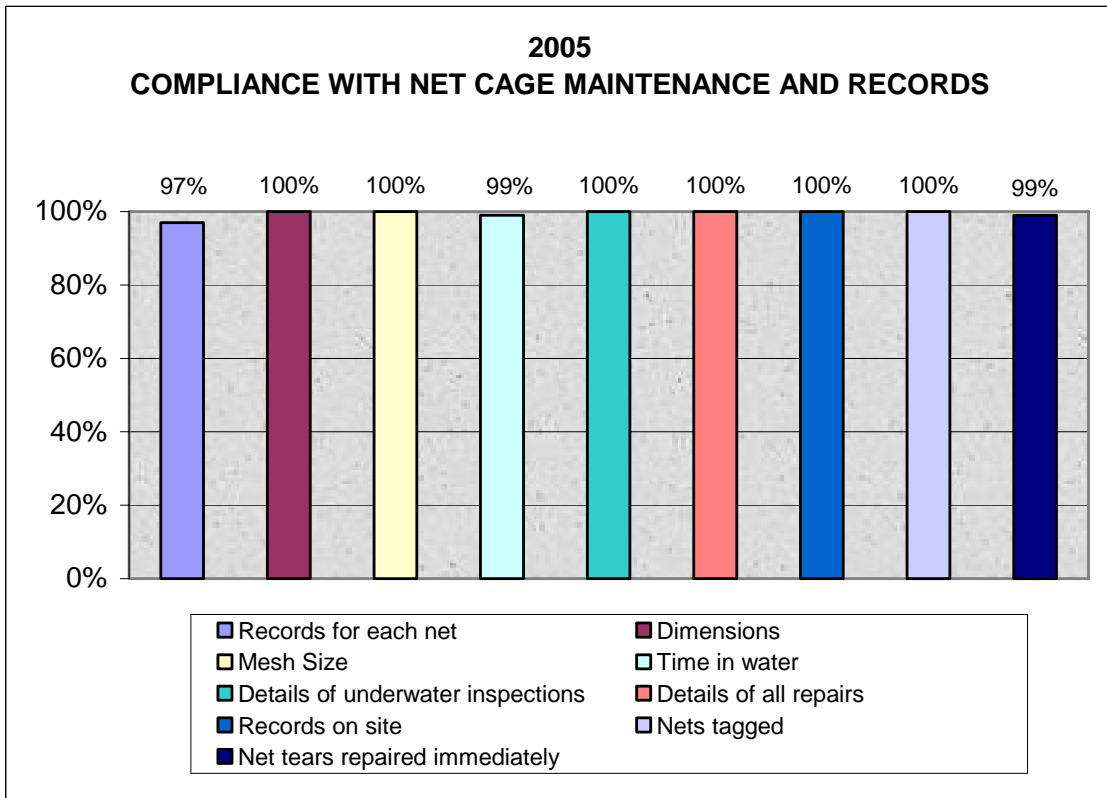


Net repairs completed on the jump net portion of a containment net.

**GRAPH 11**



GRAPH 12



***Out-of-Water Servicing:***

There are no requirements or timeframes for when containment nets must be strength tested and serviced. The frequency of the out-of-water servicing 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 any containment net, in addition to reviewing service records, he 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 inspection and servicing.

The out-of-water servicing includes a complete inspection of the entire net cage. Any damage must be repaired as needed, the net cage must be strength tested in accordance with the protocol, a record of this testing must be completed and the record must be signed by the person completing the test. A record of this out-of-water servicing and testing must accompany the net to the farm site and be presented upon request to the Inspector.

An important component of the out-of-water servicing is the net breaking strength. Appendix 2 of the Aquaculture Regulation, Sections 14 and 15 describe the minimum breaking strength requirement that various size containment nets must meet. The Aquaculture Regulation is provided as Appendix 4 of this report.

To develop consistency with respect to determining net breaking strengths a standardized mesh strength testing procedure has been developed and must be followed when conducting these tests. Appendix 3 describes this procedure and an electronic copy can be found at the following link:

[http://www.agf.gov.bc.ca/fisheries/comp/Final\\_net\\_testing\\_protocol.pdf](http://www.agf.gov.bc.ca/fisheries/comp/Final_net_testing_protocol.pdf).

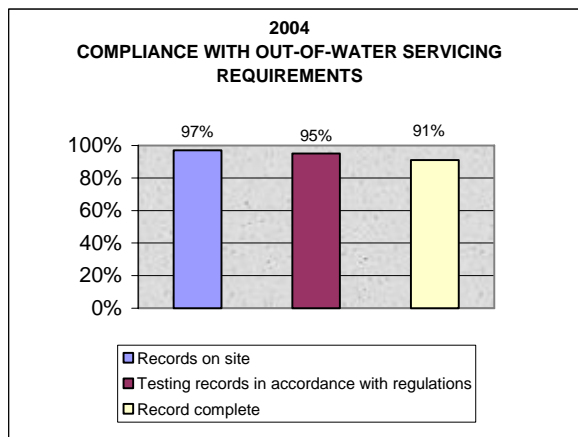
Any nets that do not meet the net breaking strength requirements are inadequate and they cannot be re-deployed as containment nets. These nets should either be disposed of or relegated to other purposes.

Out-of-water servicing records may not be required if the net has been newly manufactured and is being used for the first time or if the net has yet to undergo an out-of-water service.

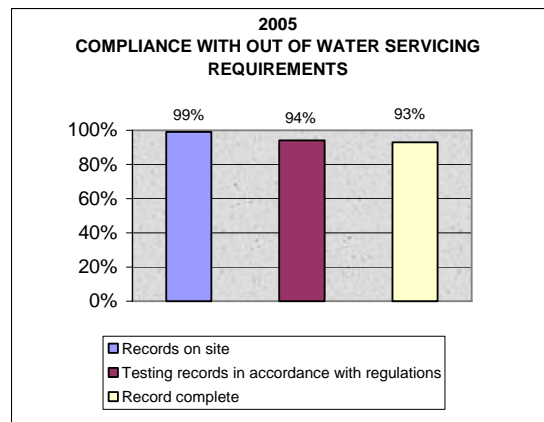
In 2004, there were 66 out of 77 operating sites where out-of-water servicing records would have been required. At 64 sites these records were available as required. At 61 of 64 sites the record of testing was in accordance with the established net testing protocol and there were 58 sites in compliance with the remaining record keeping requirements.

In 2005, there were 73 operating sites where out-of-water servicing records would have been required. At 72 sites these records were available as required, at 68 of those 72 sites the record of testing was in accordance with the established net testing protocol. Of those 72 sites, 67 sites had complete records.

**GRAPH 13**



**GRAPH 14**



## ***Underwater Inspections and Record Keeping***

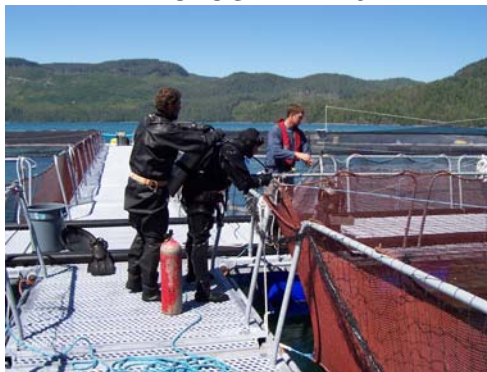
There are a number of required underwater dive inspections that are specified in the Aquaculture Regulation. Currently these inspections must be carried out by divers but the regulations also provide the opportunity for flexibility in the event that an alternative suitable method is proposed. Before any proposed method can be used it must be reviewed and approved by MAL.

In 2004, divers were the only approved method for conducting underwater inspections. Three sites out of 77 were not in compliance with this requirement. In March 2005, after careful review by MAL an alternative method of net inspections was approved by the Manager of Aquaculture. Net inspections could now be done manually from the surface by following procedures outlined by the Manager of Aquaculture.

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.

The Aquaculture Regulation requires that routine underwater inspections of containment nets must be completed every 60 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 # 5**

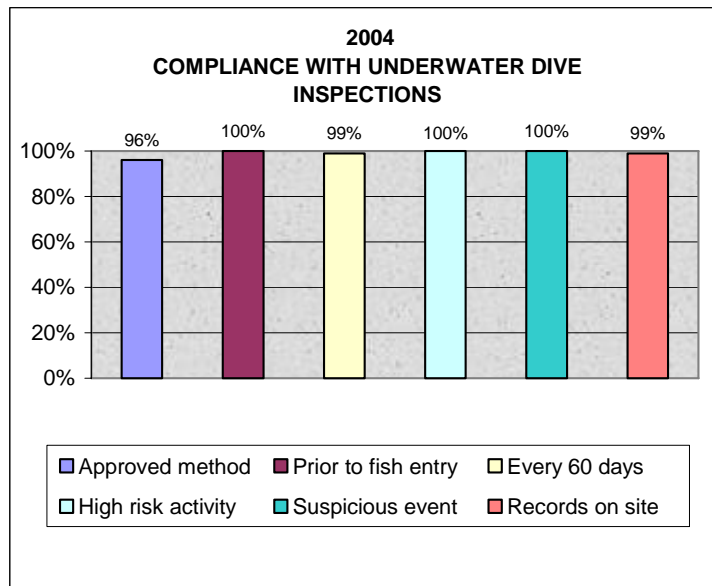


Company divers preparing for a net cage inspection and mort recovery.

In all but 1 case, in 2004 underwater inspections were being conducted on the containment nets every 60 days as well as after high risk activities. Records of these activities were available on site in 76 of 77 cases.

The following graph illustrates the compliance rates with the underwater dive inspections and record keeping requirements.

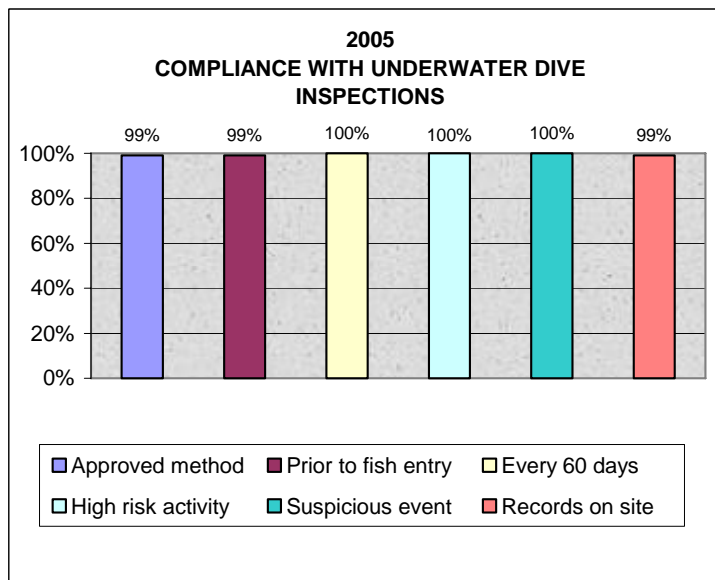
**GRAPH 15**



In 2005, 74 of 75 sites were conducting underwater inspections using an approved method. At 1 site of 75, the underwater inspection prior to entry of fish was not conducted using an approved method.

Records of these activities were available onsite in 74 of 75 cases.

**GRAPH 16**



## **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 or Plans (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.

The purpose of the BMP requirement under the Aquaculture Regulation is for the companies to identify operational risks and to develop procedures that recognize these risks in an effort to prevent or minimize 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 identifies 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.

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.

In 2004, 76 of 77 farms inspected had developed a BMP plan and all of these had the BMP available on site. Five of these sites were deficient in some aspect of their BMP. This included 2 sites that had not identified operational procedures for net cage changes, 1 site for towing active structures and for the management of predation and 2 sites for mort recovery.

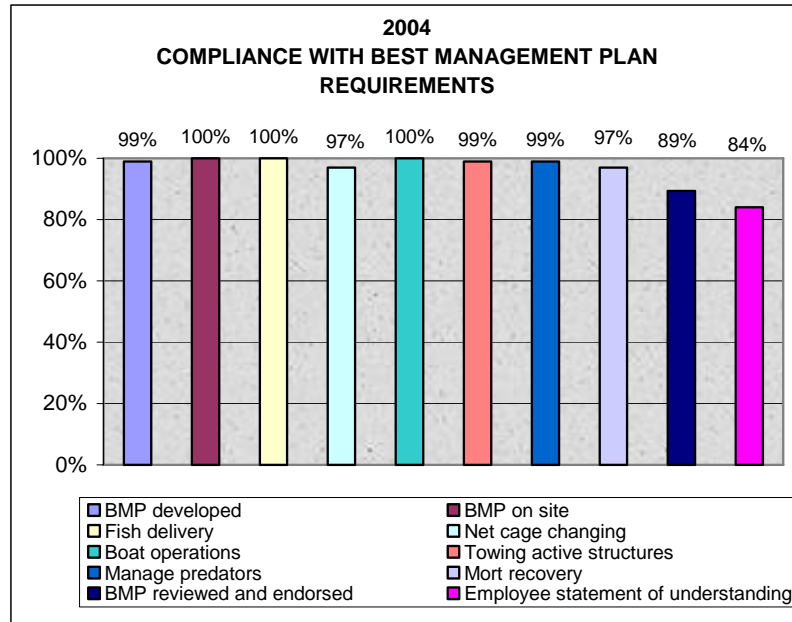
In addition, 8 BMPs did not have a signed-off statement indicating the BMP had been reviewed and endorsed and 12 BMPs did not include a statement that individuals responsible for implementing the plan understood and had received training.



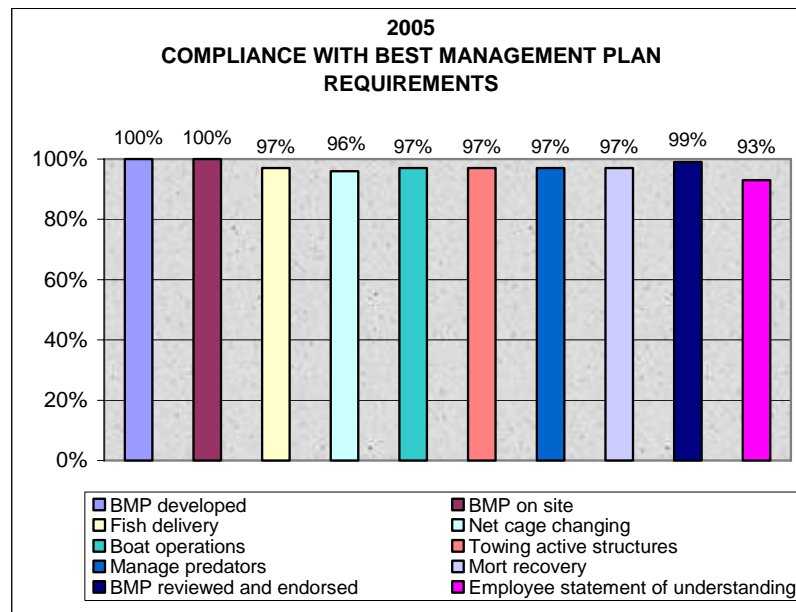
In 2005, all 75 farms inspected had developed BMP plans and all had the BMP available on site. Two sites had not identified operational procedures for finfish delivery, 3 for net cage changes, 2 for boat operations and maintenance, 2 for towing active structures, 2 for the management of predation and 2 sites for mort recovery.

Further deficiencies included 1 BMP that did not have a signed off statement indicating the BMP had been reviewed and endorsed and 5 BMPs that did not include a statement that individuals responsible for implementing the plan understood and had received training.

**GRAPH 17**



**GRAPH 18**





## 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 must be well understood by all staff.

In 2004, 76 of the 77 facilities inspected had developed an escape response plan. Of the 76 sites with escape response plans 75 had the plans posted on site, 71 plans had step-by-step procedures identified for preventing escapes and 76 plans identified procedures to report escapes. In all cases but 1 where plans were present, staff could accurately identify the location and content of the plans.

In 2005, all facilities inspected had developed an escape response plan. The plans were posted on site, had step-by-step procedures identified for preventing escapes and procedures to report escapes. In all cases staff could accurately identify the location and content of the plans.

**PHOTOGRAPH #6**

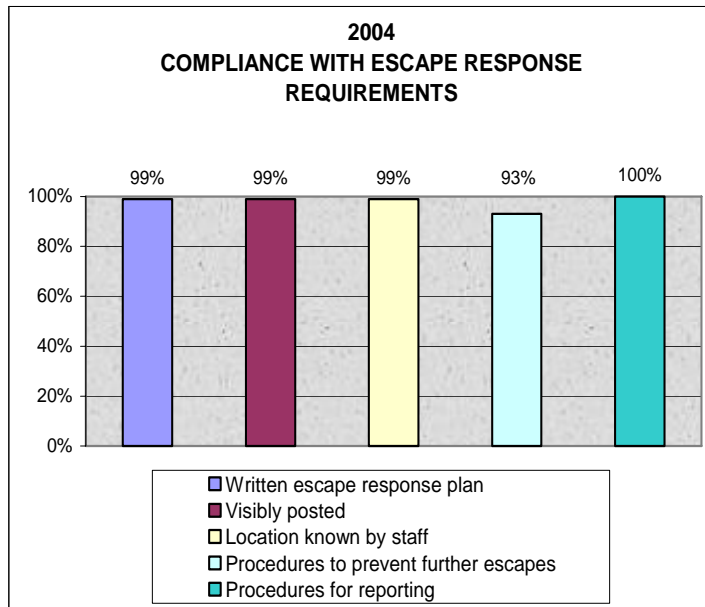


Escape recovery kit containing dedicated seine net and equipment to be used in the event of an escape. In the event of an incident this net and equipment is generally deployed inside a damaged containment net in an effort to prevent further loss of fish.

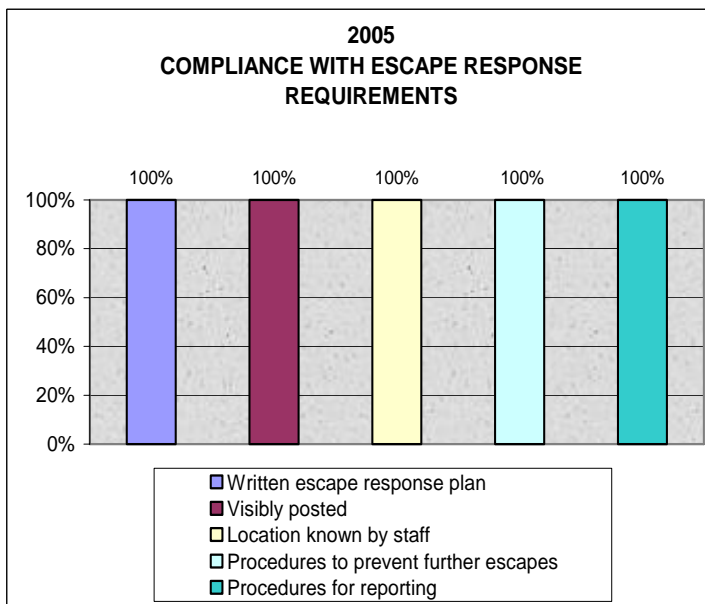
Another aspect of the escape response plan is for the operator to have arrangements with federal and local government authorities to obtain without delay the approvals necessary to attempt a recapture effort. This is a requirement of Section 40 of the Aquaculture Regulation. To facilitate industry meeting 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.

The following graphs illustrate compliance to the escape response requirements.

**GRAPH 19**



**GRAPH 20**



## **G. Therapeutics - Use and Record Keeping**

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:

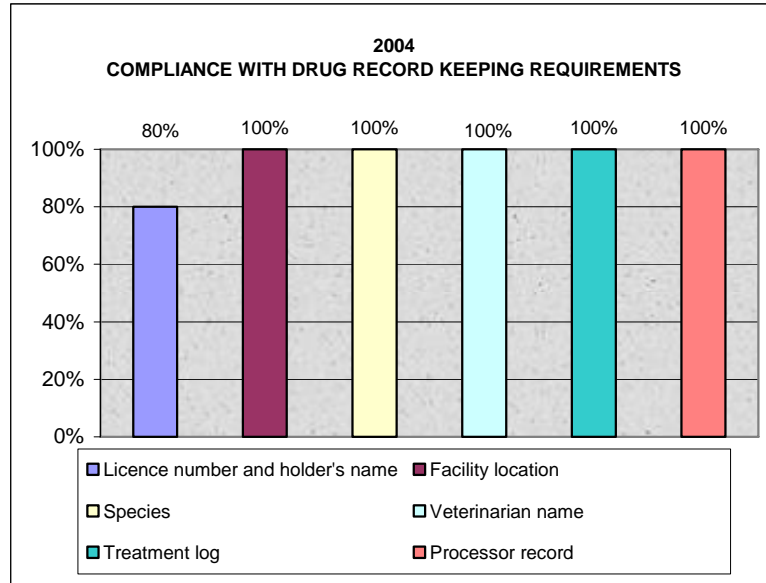
- the aquaculture licence number and name of the holder;
- the location of the facility;
- the species of finfish being cultured;
- the name of the veterinarian;
- the name of the therapeutics administered;
- how the therapeutics were administered;
- the treatment schedule including the date treatment 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, where fish have been treated and verifies compliance with the withdrawal periods. There were no deficiencies noted with respect to this requirement.

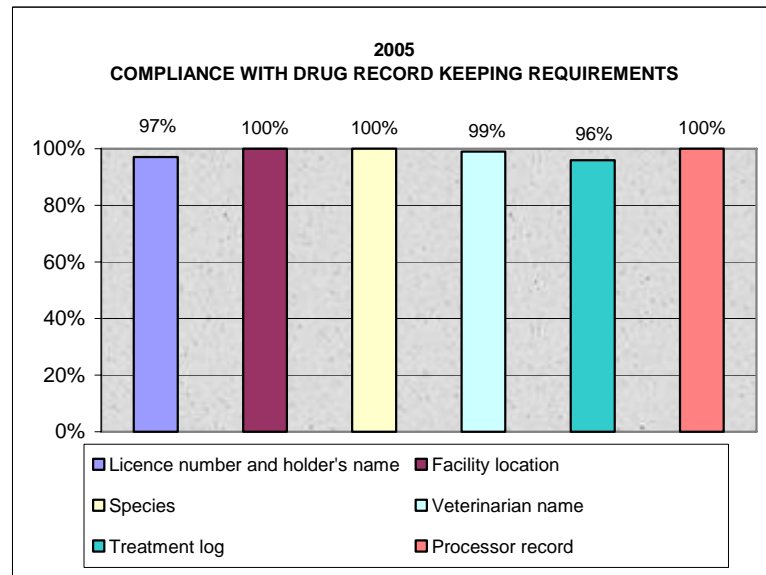
In 2004, inspections revealed that operators at all applicable sites were accurately maintaining the detailed logs of treatment schedules and the drugs used. However, at 13 sites the aquaculture licence number and holder's name requirements on these forms were missing.

In 2005, inspections revealed that although all sites were maintaining a detailed log of treatment schedules and drugs used, three operators were noted for some inaccuracies. At 2 sites the aquaculture licence number and holder's name requirements on these forms were missing and at 1 site the prescribing veterinarian was not identified in the drug records.

**GRAPH 21**



**GRAPH 22**



## 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 # 7**



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 in some cases 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.

In 2004 and 2005, above-water inspections did not identify any irregularities in the cage supporting system at any of the operating sites.

An additional condition of licence was added in 2004 that requires operators of fish farms to have an inspection by a qualified anchoring specialist completed for any system installed since November 1, 2001 at a newly licensed site and/or for any facility alterations or additions approved after May 1, 2004.

For installation of systems at new facilities, this inspection must be completed prior to the introduction of fish. For sites which are altered or added to, the inspection must be completed prior to utilization of newly installed infrastructure. The inspection should confirm that the design, equipment used and installation of the facility is consistent with the anchoring system layout diagrams attached to the approved management plan and the specifications in Appendix 2 of the Aquaculture Regulation. Proof of this inspection must be retained by the company and must be made available upon request by a Fisheries Inspector.

In 2004, inspections were conducted at 15 sites to verify compliance to this requirement. Operators at 11 of these sites had completed paperwork to verify that the required inspections had been completed. In 2005, inspections were conducted at 7 sites to verify compliance to this requirement; all operators were able to verify that the required inspections had been completed.

***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.

In 2004, Inspectors found that out of 77 sites, 74 were in compliance with this requirement. 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. In 2005, Inspectors found that 73 sites out of 75 were in compliance with this requirement.

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. In 2004, jump nets were in place and the proper height at all farms inspected. In 2005, there were 2 deficiencies noted.

**PHOTOGRAPH # 8**



Net cage properly tied off at the water line.

### ***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 subject to becoming snagged as well as more susceptible to tears or damage from predators. In 2004 and 2005, no deficiencies were noted at any of the sites inspected.

### ***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. There were no deficiencies noted with respect to this requirement during either inspection cycle.



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.

In 2004, 39 out of the 77 sites inspected stored containment nets on site. In all cases these nets were in compliance with requirements and stored in manner to minimize deterioration. In 2005, 27 operators out of the 75 sites inspected stored their containment nets on site. In one case the storage of these nets was not in compliance with the requirements to store in a manner to minimize deterioration.

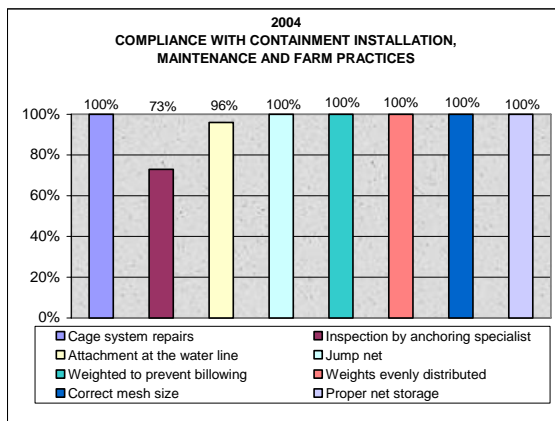
**PHOTOGRAPH # 9**



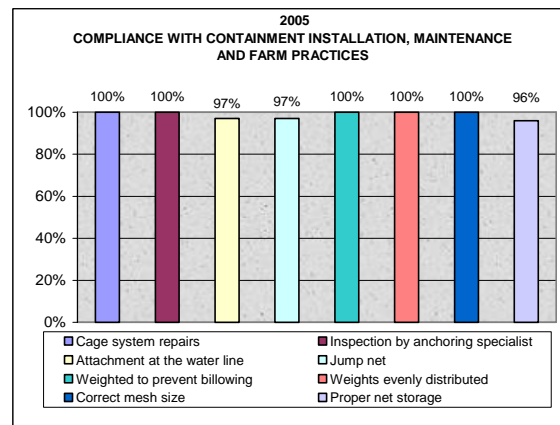
Net properly bagged and protected from UV.

The following graphs illustrate compliance rates to the various requirements for net cage installation, configuration, storage and inspections as described in the above sections.

**GRAPH 23**



**GRAPH 24**





## I. 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.

In 2004, only 1 of the 77 sites inspected was not able to identify designated docking area(s). Of the 76 sites with designated docking all were located in an area to prevent net damage. Operators at 65 of the 76 sites had erected signs directing boat traffic to these designated areas.

In 2005, operators at all sites inspected were able to identify designated docking areas with designated docking located in an area to prevent net damage. Operators at 74 of the 75 sites had erected signs directing boat traffic to these designated areas.

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

Vessels were considered moored appropriately at all farm sites where Inspectors observed vessels present.

**PHOTOGRAPH # 10**



Properly designated and signed vessel docking area.

## **J. 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.

In 2004, activities were occurring at 18 sites where the use of catch nets would have been required. All sites were in compliance. In 2005, activities were occurring at 10 sites where the use of catch nets would have been required. Again, all sites were in compliance.

**PHOTOGRAPH # 11**



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.

In 2004, at 17 farm sites fish handling activities occurred where spotters would have been required. In all 17 cases operators were in compliance.

In 2005, at 9 farm sites fish handling activities occurred where spotters would have been required. In all 9 cases operators were in compliance.

### ***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.

In 2004, at 14 sites Inspectors determined that a pattern of predator attacks was sufficient to require that the operator implement measures to prevent containment structure damage. All operators had implemented such controls.

In 2005, at 17 sites Inspectors determined that a pattern of predator attacks was sufficient to require that the operator implement measures to prevent containment structure damage; such controls had been implemented at all these sites.

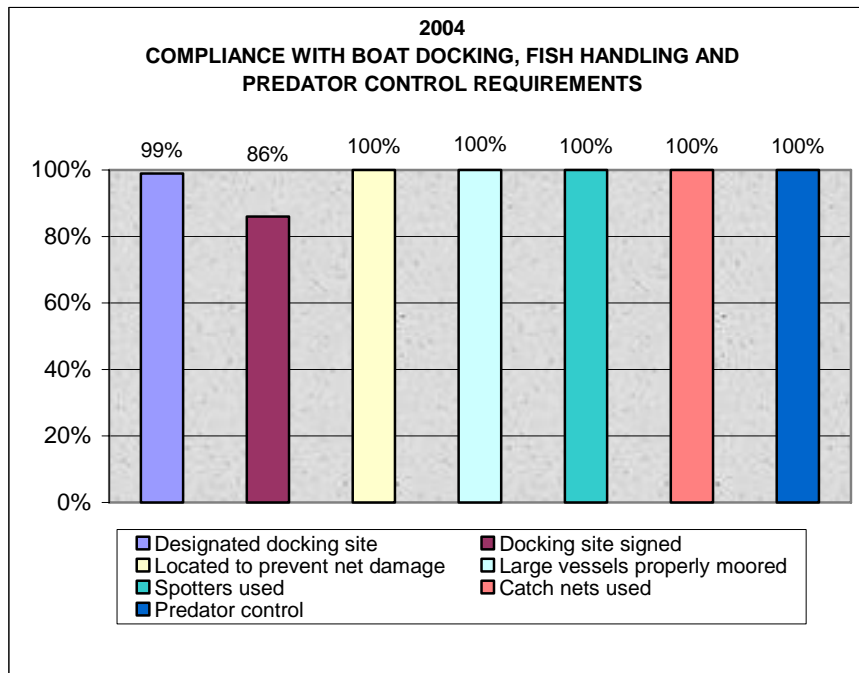
**PHOTOGRAPH # 12**



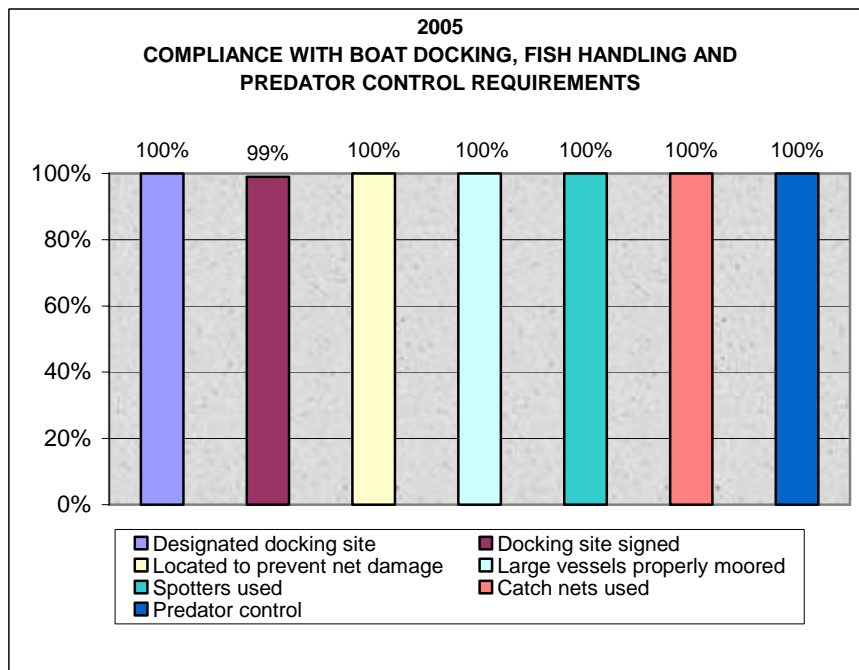
Bird netting used for predator control.

The following graphs indicate compliance with boat docking requirements, use of spotters and predator control.

**GRAPH 25**



**GRAPH 26**



# **COMPLIANCE RATES FOR 2004 and 2005 – REGULATORY AND LICENSING REQUIREMENTS**

## **PART #2**

### **MOE REQUIREMENTS**

#### **A. Best Management Practices Plan**

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 finfish farm. As well, the FAWCR requires that the facility has applied to and is registered by MOE.

The objectives of the BMP 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; and
- 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 determine if key points within these elements are included.

In 2004, at 76 of 77 sites inspected company officials were able to verify that a BMP had been developed and was available for inspection. Inspectors were able to determine the following:

- At 68 sites the BMP contained a statement of endorsement by the holder.
- At 65 sites the BMP had been reviewed by staff at the facility.
- At 76 sites the BMP contained a fish kill contingency plan. Each fish kill contingency plan required the operator to identify specific elements. Compliance to this is as follows:
  - 68 plans identified fish kill thresholds
  - 71 plans had contact phone numbers
  - 74 plans identified disposal logistics for a total loss of fish
- At 74 sites the BMP identified means to reduce continual reduction of discharge or potential discharge of wastes and pollutants.
- At 65 sites the BMP addressed feed spillage.
- At 70 sites the BMP identified objectives for improvement in feed conversion ratios for feed fed to finfish.
- At all 76 sites the BMP identified measures to prevent access of wildlife to feed and containment structures.
- At 64 sites the BMP listed harmful materials.

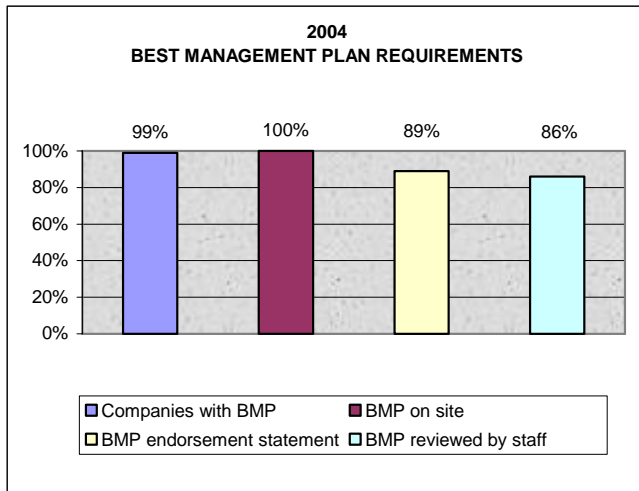
In 2005, at 74 of 75 sites inspected company officials were able to verify that a BMP had been developed and was available for inspection.

Inspectors were able to determine the following:

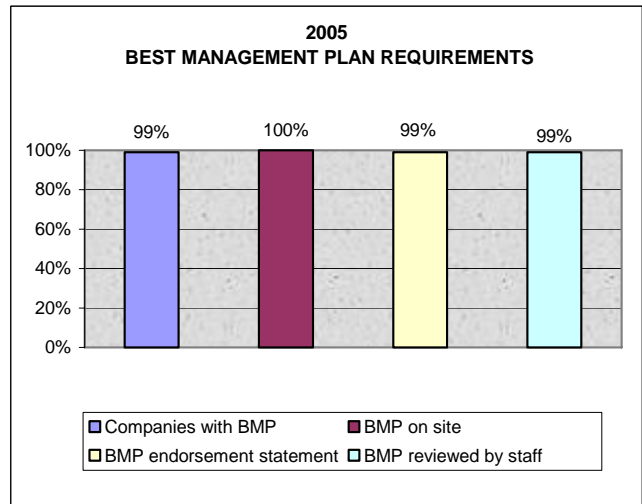
- At 73 sites the BMP contained a statement of endorsement by the holder.
- At 73 sites the BMP had been reviewed by staff at the facility.
- At 73 sites the BMP contained a fish kill contingency plan. Each fish kill contingency plan required the operator to identify specific elements. Compliance to this is as follows:
  - 72 plans identified fish kill thresholds
  - 72 plans had contact phone numbers
  - 72 plans identified disposal logistics for a total loss of fish
- At 72 sites the BMP identified means to reduce continual reduction of discharge or potential discharge of wastes and pollutants.
- At 73 sites the BMP addressed feed spillage.
- At 73 sites the BMP identified objectives for improvement in feed conversion ratios for feed fed to finfish.
- At 73 sites the BMP identified measures to prevent access of wildlife to feed and containment structures.
- At 73 sites the BMP listed harmful materials.

The following series of graphs illustrate the conformity levels to the various components of the BMP requirements for 2004 and 2005.

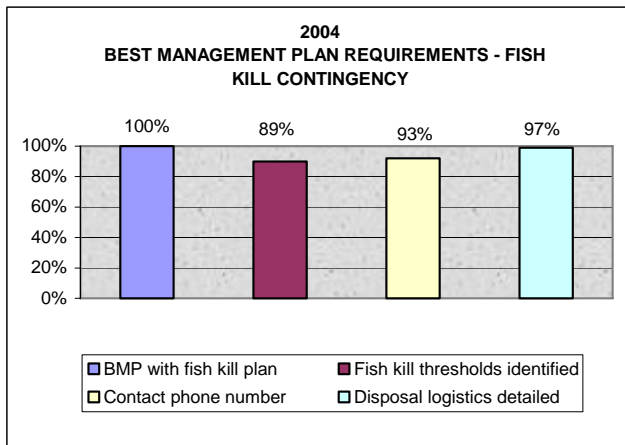
**GRAPH 27**



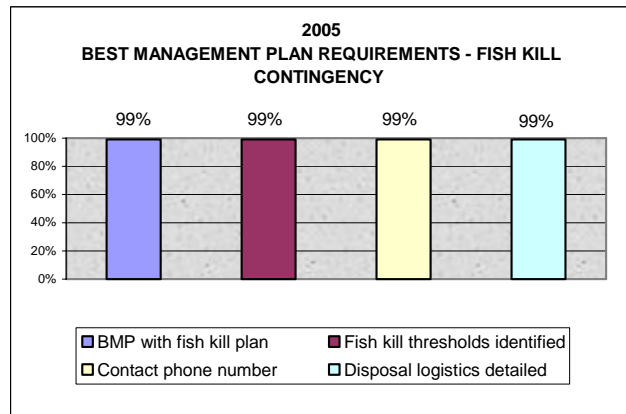
**GRAPH 28**



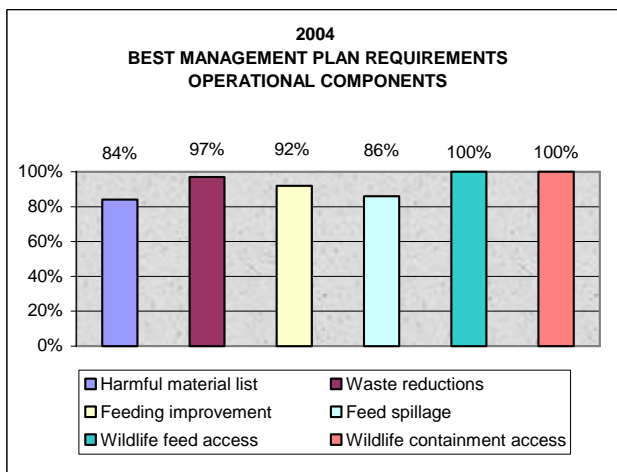
**GRAPH 29**



**GRAPH 30**



**GRAPH 31**



**GRAPH 32**





## **B. 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.

In 2004, there were no deficiencies reported at the 77 sites inspected with respect to disposal of blood water. Approximately 55 percent of site operators utilized a live haul system and the remaining 45 percent conducted a stun and bleed operation during harvest.

In 2005, there were no deficiencies reported at the 75 sites inspected with respect to disposal of blood water. Approximately 52 percent of site operators utilized a live haul system and the remaining 48 percent conducted a stun and bleed operation during harvest.

## **C. 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:***

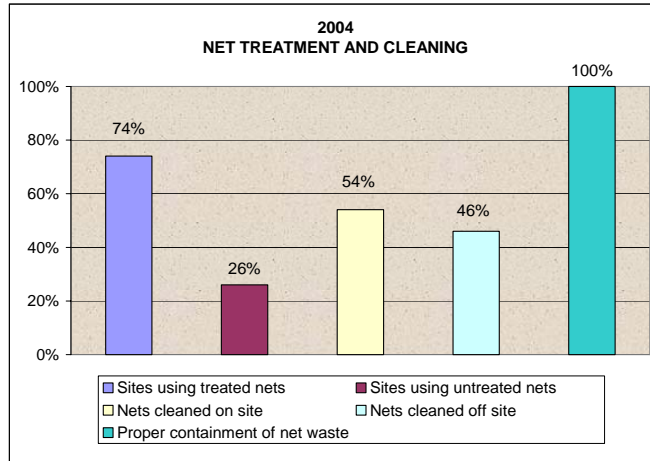
The frequency of net cleaning is largely dependent on the degree and condition of antifoulant treatment as well as the environmental conditions at the grow-out site where the nets are deployed.

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.

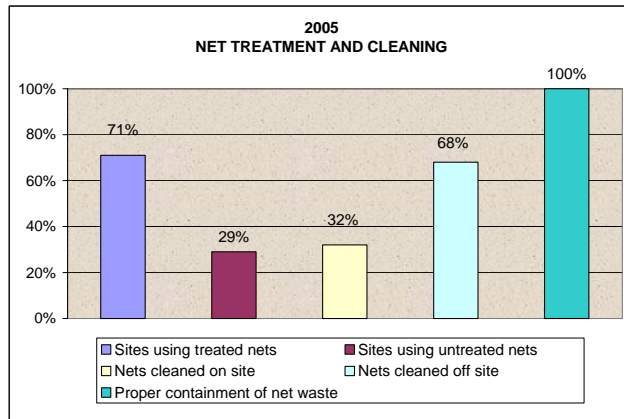
The waste water and debris generated through the net cleaning process if completed on site may have a negative impact on oxygen levels in the marine environment and the benthic community.

Net cleaning is conducted both on and off site with the resulting waste discharged on land or into the marine environment. There were no deficiencies noted.

### GRAPH 33



### GRAPH 34



### PHOTOGRAPH # 13



On-site net cleaning drum system.

## D. 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 # 14



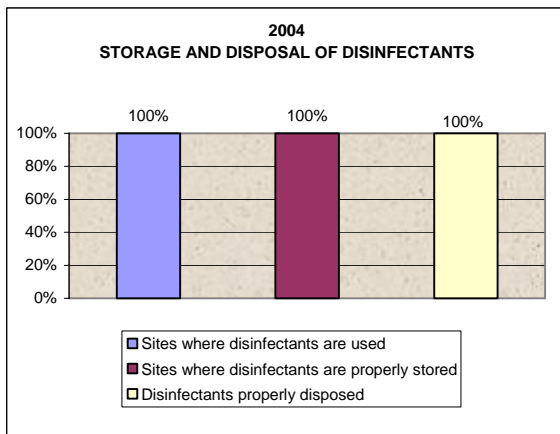
Footbath with disinfectant.

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 *Environmental Management Act*.

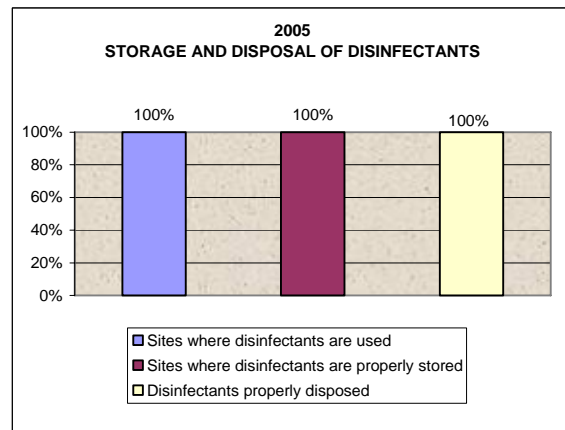
Disinfectants were in use at all farm sites inspected and were properly disposed of during each inspection cycle.

At the majority of these sites used disinfectants were disposed of directly into the mort containers.

GRAPH 35



GRAPH 36



## **E. Mort Disposal**

Fish mortalities, or morts, are fish that have died prior to harvest due to any 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 by divers on a regular basis.

Morts are generally stored on site in sealed containers some distance from the grow-out operation and remain there until final collection for disposal. Collection times vary from daily to every two months as required, and in some cases morts are removed immediately (no onsite storage).

At all farms inspected, the morts collected were delivered to disposal companies off site. There was 1 issue identified in 2005 with mort containment and disposal requirements.

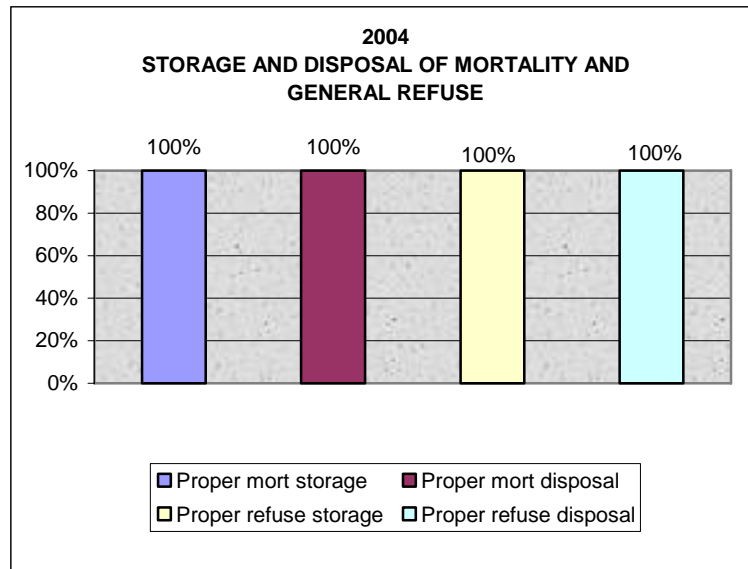
## F. Refuse Disposal

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

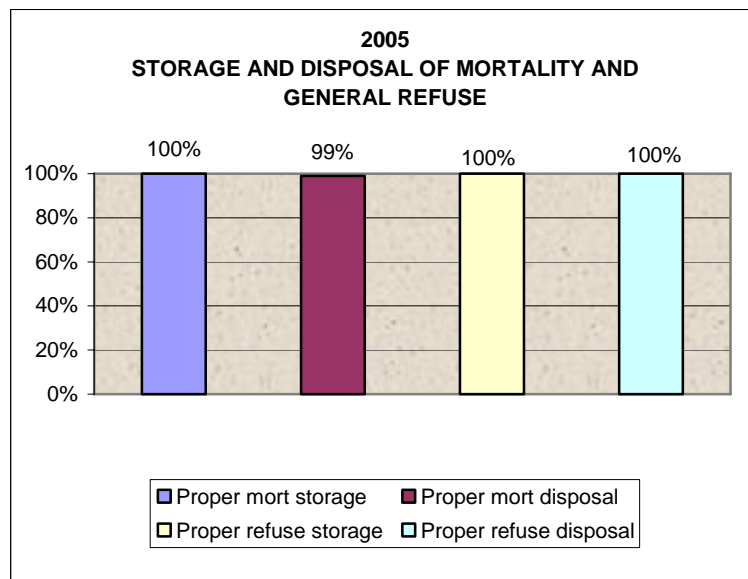
There were no issues identified with refuse storage or disposal requirements at the farms inspected during either inspection cycle.

The following graphs illustrate requirements to storage and disposal of farm mortality and refuse.

**GRAPH 37**



**GRAPH 38**

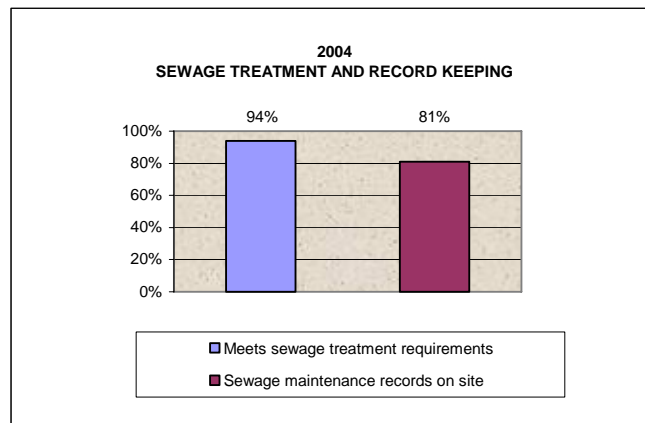


## G. Sewage Treatment, Disposal and Record Keeping

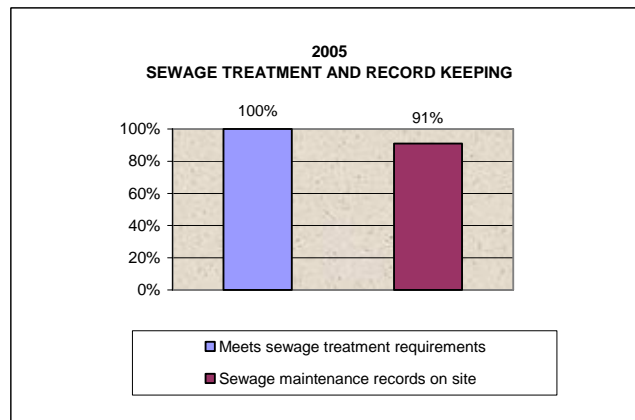
The majority of fish farms have living quarters on site, and collect, treat and discharge sewage at or near the farm location. Untreated sewage elevates biochemical oxygen demand which may negatively impact the environment and fish. This waste also contains solids that may be deposited on the ocean floor.

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) and the location of the sewage discharge point must be at a depth of no less than 15 metres below the water surface. All construction, operation and maintenance of sewage treatment and disposal must be maintained. In 2004, Inspectors found that 72 of the 77 sites inspected were in compliance with the treatment requirements. There were 15 sites where sewage maintenance records were not on site. In 2005, Inspectors found that all sites met the treatment requirements, but there were 7 sites where sewage maintenance records were not on site.

**GRAPH 39**



**GRAPH 40**



## H. Water Licensing

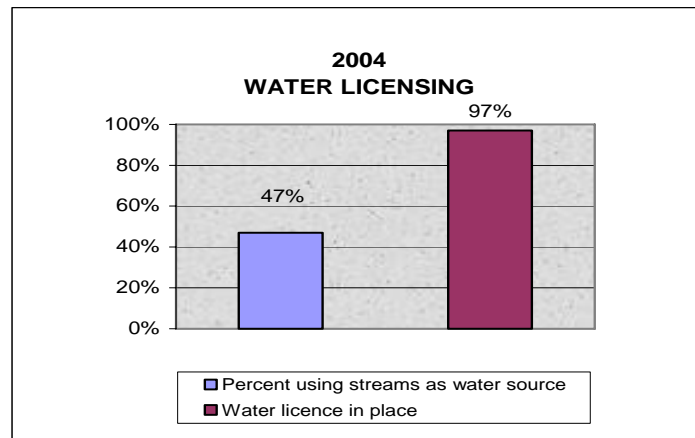
Fish farms that use freshwater from a lake, river or stream are required to hold an authorization issued pursuant to the *Water Act*.

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.

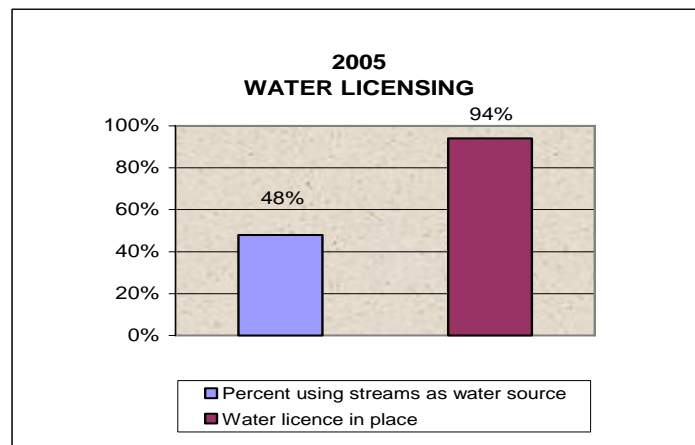
In 2004, there were 36 sites that either used stream water exclusively for their domestic water supply or relied upon a combination of stream water and other sources. Operators at 35 of these sites were in compliance with water licensing requirements.

In 2005, there were 36 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 34 of these sites were in compliance with water licensing requirements.

**GRAPH 41**



**GRAPH 42**





## **I. 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*.

No issues were noted at the inspected sites during either inspection cycle.

## J. Fuel Product Use, Storage and Containment

PHOTOGRAPH # 15



Diesel fuel with 110% containment

PHOTOGRAPH # 16



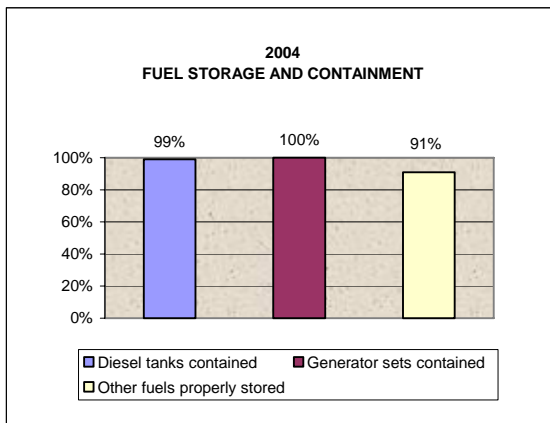
Fuels properly contained.

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.

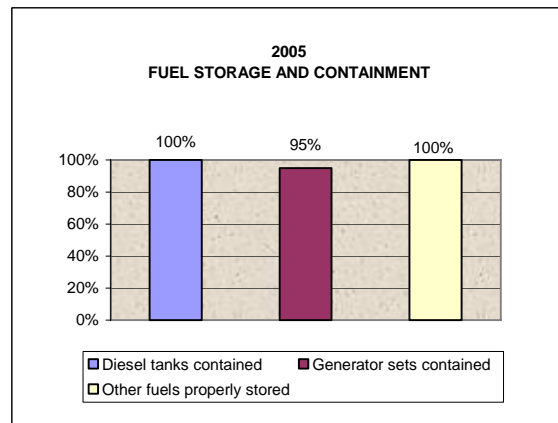
In 2004, operators at 76 of the 77 sites had taken measures to ensure that proper secondary containment systems had been installed around diesel storage containers and 77 sites had containments around generators to meet the 110% requirement. In 7 cases deficiencies were noted with respect to containment and storage of other fuels.

In 2005, operators at 75 of the 75 sites had taken measures to ensure that proper secondary containment systems had been installed around diesel storage containers and 71 of the 75 sites had containment systems around generators to meet the 110% requirement. All sites were in compliance with the storage of other fuels.

GRAPH 43



GRAPH 44



## K. 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, companies have developed spill contingency plans and have adequate equipment that would assist in managing any accidental spill.

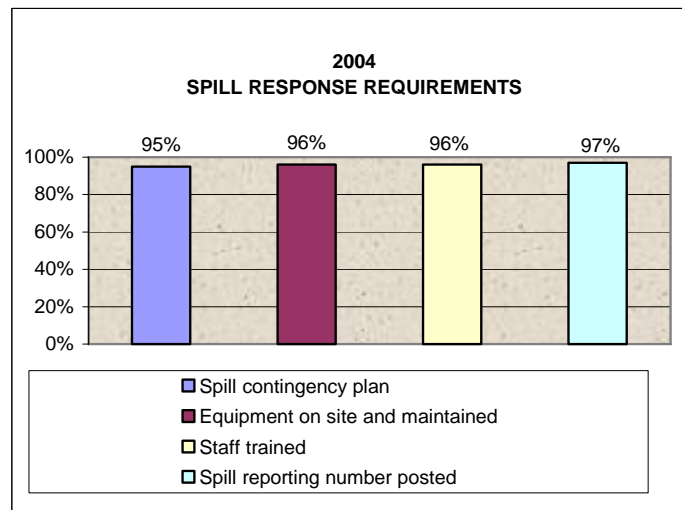
PHOTOGRAPH # 17



On-site spill kit and cleanup equipment.

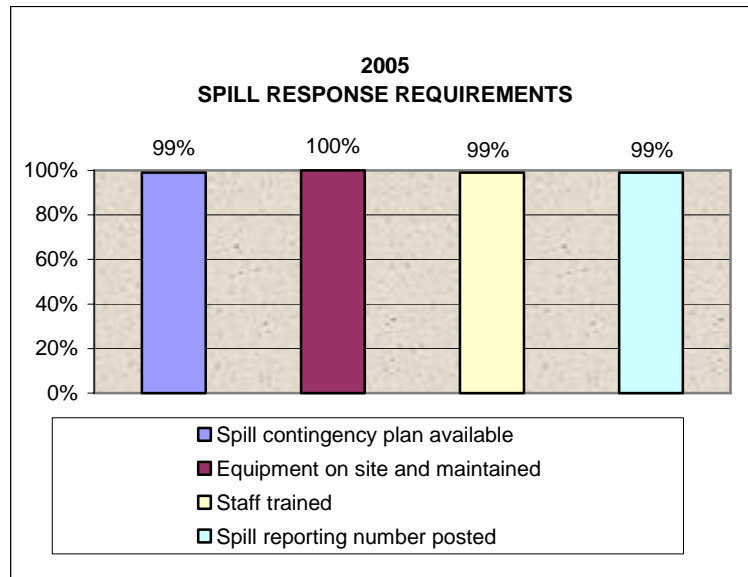
In 2004, operators at 73 of 77 sites had a spill contingency plan available. At 74 sites equipment was on hand and maintained to support this plan and staff at all 74 sites were properly trained in its use. A spill reporting number was posted at 75 sites.

GRAPH 45



In 2005, operators at all sites had spill contingency equipment on hand and maintained. At 1 site the plan was not available, nor the spill number posted. Staff at all sites but 1 were trained in implementation of the plan.

**GRAPH 46**



## 2004 and 2005 COMPLIANCE NUMBERS – SITES IN COMPLIANCE

### MAL REQUIREMENTS

Table 1 provides a detailed summary of issues examined and the number of sites found in compliance during the 2004 and 2005 inspection cycle. Appendix 8 provides a comprehensive report of the deficiencies noted for each company during these inspection cycles.

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:**

<b>MAL Compliance Issue Assessed On Site</b>	<b>Sites in Compliance 2004</b>	<b>Sites in Compliance 2005</b>
<b>Management Plan Compliance to Aquaculture Licence:</b> <ul style="list-style-type: none"> <li>• Approved species on site</li> <li>• Licence is current</li> <li>• Biomass (TMP) requirements</li> <li>• Maximum pen area</li> <li>• Intensive use area</li> <li>• Special provisos</li> </ul>	<p>77 of 77</p> <p>77 of 77</p> <p>68 of 77</p> <p>25 of 26</p> <p>5 of 6</p> <p>77 of 77</p>	<p>75 of 75</p> <p>75 of 75</p> <p>72 of 75</p> <p>N/A</p> <p>N/A</p> <p>75 of 75</p>
<b>Inventory Records:</b> <ul style="list-style-type: none"> <li>• Stock records kept for each finfish facility</li> <li>• Records are complete</li> <li>• Records on site</li> </ul>	<p>77 of 77</p> <p>76 of 77</p> <p>76 of 77</p>	<p>75 of 75</p> <p>75 of 75</p> <p>75 of 75</p>
<b>Containment Nets, Inspection Maintenance and Record Keeping:</b> <p><i>Daily Record keeping</i></p> <ul style="list-style-type: none"> <li>• Daily visual inspections completed</li> <li>• Daily inspections recorded</li> <li>• Daily inspection records kept on site</li> </ul> <p><i>Net Marking, Repair and Maintenance Records</i></p> <ul style="list-style-type: none"> <li>• Net cage records kept for each cage</li> <li>• Net cage records kept that include inventory control number, dimensions, mesh size, records of accumulated time in the water, description and date of each underwater inspection, description, dates and reasons for all repairs</li> <li>• Net records kept on site</li> <li>• Net tears repaired immediately</li> </ul>	<p>77 of 77</p> <p>76 of 77</p> <p>77 of 77</p> <p>75 of 77</p> <p>77 of 77</p> <p>75 of 77</p> <p>77 of 77</p>	<p>75 of 75</p> <p>74 of 75</p> <p>75 of 75</p> <p>73 of 75</p> <p>75 of 75</p> <p>75 of 75</p> <p>74 of 75</p>

MAL Compliance Issue Assessed On Site	Sites in Compliance 2004	Sites in Compliance 2005
<ul style="list-style-type: none"> <li>• Nets properly tagged</li> </ul> <p><i>Out-of-Water Servicing</i></p> <ul style="list-style-type: none"> <li>• Recent out of water servicing records on site</li> <li>• Record of testing in accordance with requirements</li> <li>• Records complete</li> </ul> <p><i>Underwater Inspections and record Keeping</i></p> <ul style="list-style-type: none"> <li>• Underwater inspections by approved method</li> <li>• Underwater inspections conducted prior to fish entry</li> <li>• Underwater inspections every 60 days</li> <li>• Underwater inspections after high risk</li> <li>• Underwater inspections after unusual event</li> <li>• Records kept on site</li> </ul>	<p>77 of 77</p> <p>64 of 66</p> <p>61 of 64</p> <p>58 of 64</p> <p>74 of 77</p> <p>77 of 77</p> <p>76 of 77</p> <p>77 of 77</p> <p>77 of 77</p> <p>77 of 77</p> <p>76 of 77</p>	<p>75 of 75</p> <p>72 of 73</p> <p>68 of 72</p> <p>67 of 72</p> <p>74 of 75</p> <p>74 of 75</p> <p>75 of 75</p> <p>75 of 75</p> <p>75 of 75</p> <p>75 of 75</p> <p>74 of 75</p>
<p><b>Best Management Practices (BMP)</b></p> <ul style="list-style-type: none"> <li>• Companies that have developed a BMP</li> <li>• Those with BMPs on site</li> <li>• BMP has a statement review and endorsed</li> <li>• BMP has a statement that the responsible individuals have been trained and understand the plan</li> </ul> <p><i>BMP's reviewed complete in all the following aspects</i></p> <ul style="list-style-type: none"> <li>• Finfish delivery</li> <li>• Net cage and bag changing</li> <li>• Boat operations and maintenance</li> <li>• Towing active structures</li> <li>• Predation management</li> <li>• Mort recovery</li> </ul>	<p>76 of 77</p> <p>76 of 76</p> <p>68 of 76</p> <p>64 of 76</p> <p>76 of 76</p> <p>74 of 76</p> <p>76 of 76</p> <p>75 of 76</p> <p>75 of 76</p> <p>74 of 76</p>	<p>75 of 75</p> <p>75 of 75</p> <p>74 of 75</p> <p>70 of 75</p> <p>73 of 75</p> <p>72 of 75</p> <p>73 of 75</p> <p>73 of 75</p> <p>73 of 75</p> <p>73 of 75</p>
<p><b>Escape Response:</b></p> <ul style="list-style-type: none"> <li>• Written escape response plan</li> <li>• Escape plan posted in a visible location</li> <li>• Is the location of the plan know by all staff</li> <li>• Includes procedures to prevent further escapes</li> <li>• Identifies procedures to report escapes</li> <li>• Arrangements in place for recapture permits *</li> </ul>	<p>76 of 77</p> <p>75 of 76</p> <p>75 of 76</p> <p>71 of 76</p> <p>76 of 76</p>	<p>75 of 75</p> <p>75 of 75</p> <p>75 of 75</p> <p>75 of 75</p> <p>75 of 75</p>
<p><b>Therapeutic Use and Records:</b></p> <p><i>Drug administrative records are kept that include</i></p> <ul style="list-style-type: none"> <li>• Aquaculture licence number and holders name</li> <li>• Location of the facility</li> <li>• Species of fish</li> <li>• Veterinarian's name</li> <li>• Log that names the drugs, specifies treatment schedule, date of last treatment and name and signature of person responsible for the treatment</li> </ul>	<p>51 of 64</p> <p>64 of 64</p> <p>64 of 64</p> <p>64 of 64</p> <p>64 of 64</p>	<p>70 of 72</p> <p>72 of 72</p> <p>72 of 72</p> <p>71 of 72</p> <p>69 of 72</p>

MAL Compliance Issue Assessed On Site	Sites in Compliance 2004	Sites in Compliance 2005
<b>Containment Installation Maintenance and Farm Practices</b> <ul style="list-style-type: none"> <li>• Cage system repaired immediately</li> <li>• Inspection by anchoring specialist where it is a newly installed or altered system</li> <li>• Water line rope primary attachment point</li> <li>• Jump net extends at least 1 meter</li> <li>• Sufficient weight or pressure for taut net</li> <li>• Net cage weights distributed sufficient points</li> <li>• Net mesh small enough to contain smallest fish</li> <li>• Proper storage of nets</li> </ul>	77 of 77 11 of 15  74 of 77 77 of 77 77 of 77 77 of 77 77 of 77 39 of 39	75 of 75 7 of 7  73 of 75 73 of 75 75 of 75 75 of 75 75 of 75 26 of 27
<b>Boat Docking:</b> <ul style="list-style-type: none"> <li>• Designated area to dock boats</li> <li>• Signs posted to direct boats to designated docking area</li> <li>• Dock sites designed to prevent net damage</li> <li>• Large vessel properly moored</li> </ul>	76 of 77 65 of 76  76 of 76 32 of 32	75 of 75 74 of 75  75 of 75 21 of 21
<b>Fish Handling:</b> <ul style="list-style-type: none"> <li>• Use of spotters</li> <li>• Use of catch nets</li> </ul>	17 of 17 18 of 18	9 of 9 10 of 10
<b>Predator Control:</b> <ul style="list-style-type: none"> <li>• Implemented measures to address any increase in predator attacks</li> </ul>	14 of 14	17 of 17

\*Permits are recapture permits for Atlantic Salmon only and are issued by Fisheries and Oceans Canada. They are not site specific and are issued to individual companies. Part of the assessment to determine compliance to section 40 of the Aquaculture Regulation is verifying that a permit is in place. In 2004 six companies had these permits and in 2005 --- companies had permits.

## **MOE REQUIREMENTS**

Table 2 provides a detailed summary of issues examined and the number of sites found in compliance during the 2004 and 2005 inspection cycle. Appendix 8 provides a comprehensive report of the deficiencies noted for each company during these inspection cycles.

**TABLE #2:**

<b>MOE Compliance Issue Assessed On Site</b>	<b>Sites in Compliance 2004</b>	<b>Sites in Compliance 2005</b>
<b>Best Management Practices (BMP)</b> <ul style="list-style-type: none"> <li>• Companies that have developed a BMP</li> <li>• Those with BMPs on site</li> <li>• BMP with a statement it has been endorsed by the holder</li> <li>• BMP has been reviewed by staff at the facility</li> <li>• BMP contains a list of harmful materials</li> <li>• BMP with a fish kill contingency plan</li> </ul> <p><b><i>Fish kill plan contains the following elements</i></b></p> <ul style="list-style-type: none"> <li>• Fish kill thresholds</li> <li>• Contact phone number</li> <li>• Disposal logistics for a total loss of fish</li> </ul> <p><b><i>BMP identifies how the operation meets the following objectives</i></b></p> <ul style="list-style-type: none"> <li>• Reduction of number and quality of wastes</li> <li>• Improvement in feed conversion ratio</li> <li>• Prevention of spillage of feed</li> <li>• Prevention of access of wildlife to feed</li> <li>• Prevention of access of wildlife to containment structures</li> </ul>	<p>76 of 77</p> <p>76 of 76</p> <p>68 of 76</p> <p>65 of 76</p> <p>64 of 76</p> <p>76 of 76</p> <p>68 of 76</p> <p>71 of 76</p> <p>74 of 76</p> <p>74 of 76</p> <p>70 of 76</p> <p>65 of 76</p> <p>76 of 76</p> <p>76 of 76</p>	<p>74 of 75</p> <p>74 of 74</p> <p>73 of 74</p> <p>73 of 74</p> <p>73 of 74</p> <p>73 of 74</p> <p>72 of 73</p> <p>72 of 73</p> <p>72 of 73</p> <p>72 of 74</p> <p>73 of 74</p> <p>73 of 74</p> <p>73 of 74</p> <p>73 of 74</p>
<b>Blood Water Disposal:</b> <ul style="list-style-type: none"> <li>• Blood water properly disposed</li> </ul>	77 of 77	75 of 75
<b>Net Cleaning and Waste Disposal:</b> <ul style="list-style-type: none"> <li>• Proper containment of waste generated from net cleaning</li> </ul>	77 of 77	75 of 75
<b>Disinfectant Use and Disposal:</b> <ul style="list-style-type: none"> <li>• Proper storage of disinfectants</li> <li>• Proper disposal of disinfectants</li> </ul>	77 of 77 77 of 77	75 of 75 75 of 75
<b>Mort Storage and Disposal:</b> <ul style="list-style-type: none"> <li>• Morts properly stored</li> <li>• Morts properly disposed</li> </ul>	77 of 77 77 of 77	72 of 72 74 of 75
<b>Refuse Storage and Disposal:</b> <ul style="list-style-type: none"> <li>• Refuse properly stored on site</li> <li>• Refuse properly disposed</li> </ul>	67 of 67 77 of 77	72 of 72 75 of 75



MOE Compliance Issue Assessed On Site	Sites in Compliance 2004	Sites in Compliance 2005
<b>Sewage Treatment and Disposal:</b> <ul style="list-style-type: none"> <li>• Sewage facilities on site meet the requirements</li> <li>• Sewage maintenance records on site</li> </ul>	72 of 77 62 of 77	75 of 75 68 of 75
<b>Water Use and Licensing:</b> <ul style="list-style-type: none"> <li>• Water licence in place</li> </ul>	35 of 36	34 of 36
<b>Wildlife Predator Trapping:</b> <ul style="list-style-type: none"> <li>• Number of sites where predators were trapped</li> </ul>	3 of 77	2 of 75
<b>Fuel Product Use, Storage and Containment:</b> <ul style="list-style-type: none"> <li>• Diesel tanks protected with 110% containment</li> <li>• Generator sets protected with 110% containment</li> <li>• Proper storage of fuels</li> </ul>	76 of 77 77 of 77 70 of 77	75 of 75 71 of 75 75 of 75
<b>Environmental Management:</b> <ul style="list-style-type: none"> <li>• Spill equipment stored on site and maintained</li> <li>• Spill contingency plan available</li> <li>• Staff trained in implementation of the plan</li> <li>• Spill number posted</li> </ul>	74 of 77 73 of 77 74 of 77 75 of 77	75 of 75 74 of 75 73 of 74 74 of 75

**TABLE #3: Number of Sites Inspected – MAL & MOE Requirements**

<b>Company</b>	<b>2004</b>	<b>2005</b>
1331735 Ontario Ltd. (Connors Bros, Heritage)	12	11
Creative Salmon Company Ltd.	3	4
Grieg Seafood BC Ltd.	2	5
Mainstream Canada Ltd. (EWOS)	9	8
Nutreco Canada Ltd. (Marine Harvest)	10	11
Omega Pacific Seafarms Inc.	1	1
Pan Fish Canada Ltd.	11	9
S.K.M. Enterprises Ltd.	1	1
Saltstream Engineering Ltd. (62235 BC Ltd.)	1	1
Stolt Sea Farm Inc.	15	16
Target Marine Products Ltd. (Hardy Sea Farms)	8	8
Totem Seafarm Inc.	1	1
Yellow Island Aquaculture (1994) Ltd.	1	1
<b>Totals</b>	<b>75</b>	<b>77</b>

## **OTHER COMPLIANCE AND ENFORCEMENT ACTIVITIES**

### **PRE-INSPECTIONS FOR NEW APPLICATIONS**

When the licensing authority approves a new licence application, a condition of licence prior to any introduction of fish is a satisfactory pre-start up inspection by a MAL 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 included.

Licences for net cage operations also have the following special proviso appended. MAL Inspectors verify that these inspections have been undertaken as required.

- An inspection by a qualified anchoring specialist\* must be completed for systems installed since November 1, 2001 on newly licensed sites and/or for any facility alterations or additions approved after May 1, 2004.
- For installation of systems at new facilities, the inspection must be completed prior to the introduction of fish. For sites that are altered or added to, inspections must be completed prior to the utilization of newly installed infrastructure. This inspection should confirm that the design, equipment used and installation of the facility is consistent with the anchoring system layout diagram attached to the approved management plan, and the specifications in Appendix 2 of the Aquaculture Regulation. Proof of this inspection must be retained by the company and must be made available upon request by a Fisheries Inspector.

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\* A "qualified anchoring specialist" is an individual employed by or contracted by an aquaculture company who possesses the knowledge, expertise and experience necessary to complete the task and who has submitted a C.V. that has been approved by biological staff in MAL.

## **DIVE AUDIT PROGRAM**

In previous years the ministry has conducted dive audits at randomly selected fish farms to assess underwater farm features ensuring the operator is in compliance with regulatory requirements.

Dive audits are generally unannounced and consist of an experienced dive team along with a MAL Inspector who coordinates the inspection activity of the dive team.

Divers concentrate on collecting information on the condition of net pens, net pen repairs, design and installation of the anchoring system, net weight design and installation, condition of lines and associated hardware along with any other significant below-water features. The duration of the dives varies according to underwater visibility, size, depth and condition of the net cages. In some cases a complete day can be spent viewing a 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 MAL Fisheries Inspector on the surface who is linked through a video and voice communication system. This ability to communicate with the divers allows the Inspector to direct the activities. This enhances the inspection efforts as well as providing the Inspector the opportunity to view the video at a later date to review compliance components to ensure the operator is properly managing the underwater maintenance of the containment nets, anchoring systems and other supporting infrastructure.

The dive audits that were scheduled for the 2004 inspection cycle were completed late in October 2003 at six randomly selected sites. The results of these audits were not published in the 2003 inspection report but are now provided in the combined 2004 and 2005 report.

In 2005 a decision was made to temporarily discontinue the dive audit program due to fiscal restraints and resources.

In response to stakeholder and First Nation suggestions and MAL's continued efforts to employ strong monitoring practices for the industry, the ministry has recently committed additional funds to the inspection and compliance program for the purpose of conducting comprehensive dive audits. The random dive audit program will be renewed starting in 2006, and the results of these dive audits will be provided for in the next inspection report.

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

**TABLE #4**

Company Name	MAL REF #	General Area	Site Name	Date Audited
Omega Salmon Group Ltd., Pan Fish Canada Ltd. (name changed in late 2004 or early 2005)	831	North Vancouver Island	Shelter Passage	October 23, 2003
Stolt Sea Farm Inc.	1618	North Vancouver Island	Humphrey Rock	October 23, 2003
Stolt Sea Farm Inc.	143	North Vancouver Island	Larson Island	October 24, 2005
Target Marine Products Ltd.	746	Sechelt Inlet	Farm #13	October 28, 2003
Ewos Aquaculture Ltd. (Mainstream Canada Ltd.)	543	Clayoquot Sound	Mussel Rock	November 12, 2003
Creative Salmon Company Ltd.	244	Clayoquot Sound	Eagle Bay	November 13, 2003

Some of the more common issues identified during these dive audits are listed below.

- 1) Net tension was an issue in some cases. Excessive billowing can be a concern as it creates more potential for net snagging and subsequent tearing.
- 2) Tie-off points were identified as possible issues where the tail end of the knot may not have been adequately secured.
- 3) Some unused anchor weights and lines were left in the water that may contribute to net snagging or entanglement.
- 4) Excessive build-up of debris that can potentially come into contact and damage the containment nets.
- 5) Predator nets that may not be effective due to the number and/or size of holes. In some cases the predator net and/or shark guards were deemed likely ineffective due to the weighting system used as there may not be sufficient clearance between the containment and predator nets.
- 6) At some sites company officials were asked to review the quality of on-site net repairs.
- 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.

- 8) There was one situation where an operator was asked to review the attachment points to ensure the waterline rope on the net cage was the primary point of attachment and that net loading was properly distributed.
- 9) In some cases net cages contained mortalities that had not been removed.

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

**PHOTOGRAPH # 18**

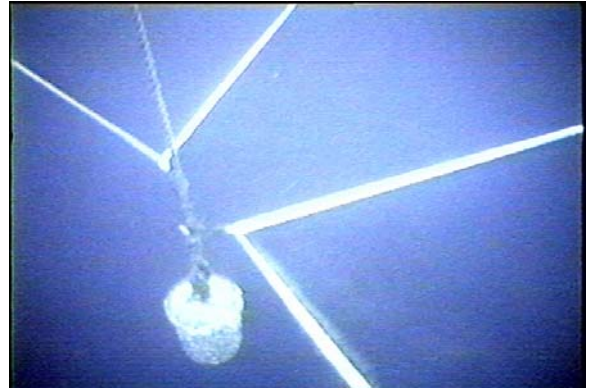


Dive contractor preparing for dive audit.

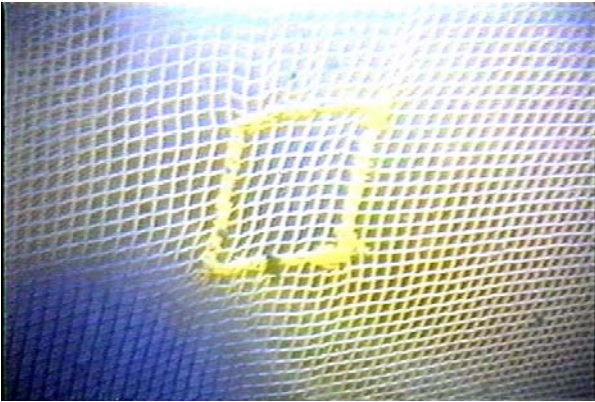
## DIVE AUDIT PHOTOGRAPHS



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.

## **ENVIRONMENTAL AUDITING**

During 2004, MOE conducted chemical and biological sampling of bottom sediments at selected farm sites. Where chemical standards are exceeded, biological samples for marine benthic organisms are collected for compliance purposes. Results of the chemical and biological sampling will be published as individual Data Reports for each calendar year starting from 2000 and which are available on DVD diskette by contacting the MOE Nanaimo Office at (250) 751-3100.

The following farm sites were audited for compliance with environmental standards in 2004 and 2005 respectively:

**TABLE # 5A - 2004**

<b>Company</b>	<b>MAL REF#</b>	<b>ILMB Tenure #</b>	<b>Farm Site</b>	<b>General Area</b>
Pan Fish Canada Ltd.	1136	1406628	Shaw Point	Johnstone Strait
Connors Bros Ltd. (Heritage)	728	1404179	Sir Edmund Bay	Broughton Archipelago
Nutreco Canada Inc. (Marine Harvest)	112	1404284	Centre Cove	Kyuquot Sound
Creative Salmon Company Ltd.	233	1401621	Indian Bay	Clayoquot Sound
Stolt Sea Farm Inc.	465	1404381	Swanson Island	Broughton Archipelago
Stolt Sea Farm Inc.	467	1404380	Midsummer Island	Broughton Archipelago

**TABLE # 5B - 2005**

<b>Company</b>	<b>MAL REF#</b>	<b>ILMB Tenure #</b>	<b>Farm Site</b>	<b>General Area</b>
Pan Fish Canada Ltd.	1136	1406628	Shaw Point	Johnstone Strait
S.K.M. Enterprises Ltd.	871	1405542	Barnes Bay	Campbell River
Nutreco Canada Inc. (Marine Harvest)	112	1404284	Centre Cove	Kyuquot Sound
Nutreco Canada Inc. (Marine Harvest)	467	1404380	Midsummer Island	Broughton Archipelago
Nutreco Canada Inc. (Marine Harvest)	1626	2407932	Church House	Campbell River
Nutreco Canada Inc. (Marine Harvest)	733	1406292	Cyrus Rocks	Campbell River
Mainstream Canada Ltd.	136	1403929	Cliff Bay	Broughton Archipelago
Mainstream Canada Ltd.	819	1405181	Cecil Island	Broughton Archipelago
Mainstream Canada Ltd.	520	1403980	Bedwell	Clayoquot Sound
Mainstream Canada Ltd.	227	1403647	Bawden	Clayoquot Sound
Mainstream Canada Ltd.	1144	1406650	Burdwood	Campbell River



## **Summary of Recent Results:**

In 2004, all farm sites with one exception were properly registered under the FAWCR. In 2005, all farm sites had registered.

Farms must undertake, and submit to MOE for review results of their environmental monitoring programs, the requirements of which are specified under the FAWCR. In 2004, 100% of farms were in compliance with making the required submissions, and in 2005, 97% (1 farm not reporting) had submitted the required scientific monitoring information to MOE for evaluation.

## **INVESTIGATIONS**

Under provincial legislation, MAL Inspectors or MOE 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. reported 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 MOE, 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 proceedings.

## Investigations:

The ministry uses case files to record and track inspection activities. Case files are initiated for every inspection that is completed regardless if there is a compliance issue or not. Case files are also used to track investigations, complaints or any non-compliance issues that have been identified during inspections or otherwise brought to the ministry's attention.

In 2004, a total of 77 active farms sites were inspected. A total of 175 case files pertaining to finfish aquaculture inspections and investigations (including escape incidents) were opened by MAL. Eleven of these case files were referred to MOE for investigation and follow up.

The Conservation Officer Service in the Ministry of Environment conducted 7 investigations as a result of these referrals. Five of the investigations resulted in charges being laid (4 for fish escapes and 1 for introduction of waste into the environment). There were 21 occurrences involving actual fish escapes, of which 5 were deemed significant enough to warrant charges - 4 resulted in formal charges and 1 resulted in the issuance of a ticket. Two of the cases resulted in guilty pleas; the other 3 files are presently before the courts. The remaining 2 investigations related to the introduction of waste to the environment resulted in warnings.

In 2005, there were 75 active finfish farms inspected. A total of 177 case files pertaining to finfish aquaculture inspections and investigations (including escape incidents) were opened by MAL. Two of these were referred to MOE for investigation and follow up.

The Conservation Officer Service in Ministry of Environment had two incidents referred from MAL for investigation. One investigation involved the introduction of waste; the other related to the unlicensed use of water. The investigation into the introduction of waste resulted in a warning. The issue associated with the unauthorized use of water is being addressed administratively. There were 11 occurrences involving actual fish escapes, none of the reported escape incidents were considered significant enough to warrant formal referral to, or investigations by the Conservation Officer Service.

## Status of investigations:

The following table shows companies that have been convicted or received a warning ticket for non-compliance in 2004 or 2005. It does not include any open investigations being presently conducted by MAL or MOE compliance and enforcement staff. Most non-compliance issues are dealt with by providing written warnings in the form of a site inspection compliance report left at the farm site at the time of inspection or by way of a letter to the company with a list of deficiencies noted. Those warnings to specific companies can be viewed in Appendix 8.

**TABLE #6**

Licence Holder	Act or Regulation	Date	Action	Fine
Connors Bros. Ltd. (Heritage)	Environmental Management Act Section 6 – Introduction of Business Waste	2004-02-11	Violation Ticket	\$575
Stolt Sea Farm Inc.	Fisheries Act - Section 25 (2) – Failure to comply with a condition of licence	2004-08-19	Warning Ticket	
Target Marine Products Ltd.	Fisheries Aquaculture Regulation - Section 4 (1) (a) – Failure to report escape within 24 hours	2004-08-25	Violation Ticket	\$173
Pan Fish Canada Ltd.	Environmental Management Act - Section 6 – Introduction of Business Waste into Marine Environment	2005-02-16	Court	\$10,001
Stolt Sea Farms Inc.	Fisheries Aquaculture Regulation - Section 3 (2) – Failure to take reasonable precautions to prevent an escape	2005-02-23	Court	\$500

Note: Court dates shown in the above table represent the date that Court assessed the penalties, not the time of the violation.

## **CONCLUSION**

During the 2004 inspection cycle, agencies found generally high levels of compliance. In particular notable improvements were found with respect to MOE requirements.

During the 2005 inspection cycle, the level of compliance continued to increase with all inspection points found to be in the 91 to 100 percent range.

The majority of finfish farm operators are in the process of, or have implemented, necessary corrective actions identified during inspections.

In summary, many of the non-compliance issues identified during 2004 and 2005 inspections were correctable. In conjunction with some agency changes such as continued enhancements to the compliance and enforcement regime and continued communication with industry, it is anticipated compliance levels will continue to improve into the 2006 inspection cycle.

Provincial government agencies are committed to ensuring the aquaculture industry meets our regulatory objectives in an environmentally sustainable and socially acceptable manner. The inspection cycle for 2006 has recently commenced and identified compliance issues will be monitored as necessary.

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<sup>i</sup> Due to government restructuring ministry, names have changed. References in this report to the Ministry of Agriculture and Land or MAL, was formally the Ministry of Agriculture, Food and Fisheries or MAFF. The Ministry of Environment, or MOE, was formally the Ministry of Water, Land and Air Protection or MWLAP, and the Ministry of Sustainable Resource Management, MSRM no longer exists.