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WA State Department
of Ecology (SWRO)

2017 Cooke Aquaculture Pacific, LLC

Fish Escape Prevention Plan

Updated January 2017

IDENTIFICATION OF NEW TECHNOLOGIES AND MATERIALS TO MINIMIZE STOCK ESCAPEMENT

The following are examples of new technologies and materials that Cooke Aquaculture Pacific has implemented that reduce the risk of fish escapements.

- Stronger netting materials and designs
- Extra chafe netting around the surface perimeter of nets
- Improved predation barrier netting and designs
- Weight systems that separate fish containment nets from predation barrier nets
- Underwater camera systems to view fish stocks in the pens
- New and improved designs for net pen structures

ROUTINE PROCEDURES AND BEST MANAGEMENT PRACTICES TO MINIMIZE THE RISK OF ESCAPEMENT

This section is broken down into subsections, each of which corresponds to an area that has the potential for accidental fish release. Each subsection contains a discussion of **Best Management Practices (BMP's)** and routine procedures that are currently utilized. Prevention of accidental fish release is a priority and employees will routinely receive instruction and training in these measures. Copies of these Plans are to be posted at the farm sites and are intended for all employees to review.

Moorage System Damage

- On-site personnel are responsible for the visual checking of surface lines, hardware and mooring points. All employees are instructed to be observant and aware of their surroundings and to look for any potential mooring system problems. Any defective components are to be replaced or repaired immediately.
- After any major storm event, or in the event of a pen system being struck by a vessel, surface mooring connections and structural cage components will be inspected and any major damage repaired immediately.
- High-current-end moorings will be visually inspected underwater every three years by divers or by remotely operated underwater cameras.
- Redundancy and over capacity are to be utilized in the moorage system components. Accurate drawings and descriptions of the equipment used, dates of deployment, inspections and other relevant maintenance information will be kept by the Site Managers.

Damage Caused by Floating Debris

- Routine visual inspections for holes in the surface (top 3-5 feet) of netting will be performed by the site personnel on a regular basis. Any breaches or potential chaffing problems (logs, debris) are to be immediately resolved.
- Chafe guards are to be used on the outside surface perimeter of fish containment nets where they could be damaged by floating debris. Predation barrier nets are to be used at the sites to deter marine mammal predation and also further protect the fish containment nets from mechanical damage.
- Divers are instructed to be observant and visually check for holes in the nets during the routine fish mortality collection dives. Routine mortality dives are to be performed at a minimum of three times per week per pen unless the safety of a dive operation is threatened by severe weather. Divers will carry net mending tools with them and are to make immediate repairs if necessary.
- Before use, all nets (new or used) are to be inspected for holes, manufacturing defects or visually weak areas. A net log will be maintained that records the date of manufacture, a description of the net, the location of the net and any other pertinent information on the netting.

Damage Caused by Predation

- Predation barrier nets will be used at the marine sites to protect the fish stocks from marine mammal predation.
- Fish mortalities are to be collected a minimum of three times per week or more frequently if necessary. Frequent removal of fish mortalities can reduce the potential for attracting predators toward the pens.
- Divers are instructed to always observe the netting for any holes or potential problems each and every time they are diving in and around the fish pens. Divers are to carry net needles with them when diving in order to facilitate quick netting repair if needed.
- Pens that have had recent marine mammal predation caused fish mortalities are to be inspected by the dive team for any breaches in the fish containment netting.

Escape Risks During Fish Handling Events

Note: With the change to single stocking production plans at the fish pen sites, fish handling events have been reduced to only the smolt input time at the beginning of the cycle, and at the end of the cycle during harvesting. At both times, the fish are moved through flexible pipes using a vacuum pumping system. The extra surface handling of fish during size grading or inter-site fish transport has been eliminated as a result of this change in production strategy.

Escape Risks During Fish Handling Events (cont.)

- Communicate the daily plans to all personnel involved in the process before beginning.
- Farm staff is to ensure that the predation barrier netting and the fish containment netting are pulled tight to the weighting system in the transport vessel docking area and ensure they are not drawn into the propeller of the docking vessel.
- Clear communication with the transport vessel captain in advance of the harvest or smolt transfer is important to ensuring the vessel docks safely and in the designated area. The Site Manager or other qualified staff are responsible for talking with the vessel captain about expected tidal currents, weather forecasts, and designated docking areas at the farm to facilitate the safe mooring of the transfer vessel.
- Delay or cancel fish transfer if adverse environmental conditions such as extreme tidal exchanges or adverse weather conditions are forecasted. Employee safety and the safety of the fish stocks are more important than sticking to a schedule.
- Large vessels are to be tied securely to the net pen system walkways and mooring points. The vessel captain has the ultimate responsibility for berthing and exiting the farm safely.
- When pumping smolts off the transport vessel, the discharge side of hose is to be securely tied to the pen system with the discharge end well inside of the receiving net pen.
- Hoses, pipes and chutes are to be secured tightly before the live fish are transported through them. Potential escapement areas are to be protected using jump nets or other barriers where there is any potential for fish to fall out or jump out.
- Inspect the fish pump hoses and other equipment before commencing to ensure their integrity and soundness. Do not begin pumping until all the equipment is secured and both the vessel personnel and farm site personnel agree they are ready.
- Personnel will be on hand at all times during the process to observe the event, ensure the safe transfer of fish and respond to problems immediately.
- After the transfer is completed, farm employees are to be observant that the transport vessel exits from the docking area without damaging the fish containment nets, walkways or mooring points.
- After transfer is complete, properly secure the area and fish containment netting. Jump panels and down haul lines are to be re-secured. Mooring points that may have been moved are to be re-secured as soon as possible.

PROCEDURES TO MINIMIZE ESCAPEMENTS WHEN REARING VESSELS, PENS OR CAGES ARE MOVED, REPAIRED OR MANIPULATED

Note: Fish pens are not moved when they contain fish. With the single stock production strategy, the need for fish transports between marine sites has been eliminated. Major repair and maintenance of the fish pen structures is scheduled around routine fallowing periods between the single stocking generations.

PROCEDURES FOR ROUTINELY TRACKING THE NUMBER OF FISH

- During the marine rearing phase, the fish in each pen are to be observed from the surface by site personnel on a daily basis while they are being fed. Any unusual changes in visual surface behavior or the daily feeding response is to be reported to the Site Manager.
- Fish mortalities are routinely removed from each pen by the dive team members. Mortality numbers are kept for each individual pen and that information is input into the fish inventory system. Fish mortality numbers are subtracted from the total fish pen starting population.
- During the saltwater growth phase a fish pen can be re-inventoried if needed. Several methods of physically counting the fish can be utilized in re-counting a pen. Electronic scan counters and hand counters are the two primary methods that may be used.

FISH ESCAPE REPORTING AND RESPONSE PLAN

Emergency Contact List for a Significant Fish Escape

In the event of a Significant Fish Escape the following contact list will be used to notify key personnel and the appropriate agencies. A Significant Fish Escape is an accidental release of 1,500 or more fish of 1 kg. and larger average weight, or 3,000 or more fish with an average weight equal to or less than 1 kg., in a single incident.

Agency/Title	Contact Name	Phone #
CAP General Manager:	Innes Weir	206-402-2247
CAP Fish Health Manager:	Armin Ramirez	360-298-4891
CAP Permit Coordinator:	Kevin Bright	360-391-2409
Washington Dept. of Fish & Wildlife:	Main Office	360-902-2200
WA Dept. of Fish and Wildlife Contact:	Brian Missildine	360-902-2676
WA Dept. of Fish and Wildlife Contact:	Kenneth Warheit	360-999-7889
Washington Dept. of Ecology:	Biniam Zelelow	425-649-7127
Dept. of Ecology NW Region:	24 Hour Line	425-649-7000
Dept. of Ecology SW Region:	24 Hour Line	360-407-6300
Washington Dept. of Health	Main Office	360-753-5992
WDNR Aquaculture Coordinator:	Sean Carlson	360-301-0422
National Marine Fisheries Service:	Main Office	206-553-0633
Northwest Indian Fisheries Commission:	Bruce Stewart	360-438-1180

EMERGENCY PROCEDURES FOR DETERMINING AND REPORTING A SIGNIFICANT FISH RELEASE

Investigation

- Management will investigate and determine whether a Significant Fish Release has occurred based on one or more of the following factors: (1) observations of fish behavior in the net-pen; (2) observations of fish stocks outside the containment net; (3) daily feed intake; (4) review of fish inventory information; (5) observations of a large breach in the containment net by the dive team; or (6) an unusually high presence of seals or sea lions around the facility.
- If a pen is suspected of having a breach in net integrity, a dive team is to be deployed immediately to inspect the pen for holes and make any repairs if necessary. If this conflicts with the safety of the dive team because of hazardous weather or tidal conditions, the safety of the dive team is given priority and the dive inspection carried out as soon as conditions allow.
- Fish will be monitored closely from the surface using underwater video and/or surface observations for signs that a significant fish release has occurred. The following sections cover the emergency response and reporting procedures in the case of a significant escapement.

Emergency Reporting Procedures

A positive determination that a significant fish release has occurred will initiate the emergency reporting and recovery procedures. An Accidental Fish Release Report will be submitted to the Washington Departments of Fish and Wildlife and the Washington Department of Ecology within 24 hours in the format below. If there has been a recent use of medicated feed on the escaped fish population, the Washington Department of Health is also to be notified immediately.

Accidental Fish Release Report Information

Fish Release Report Date: _____	Age Class of Fish: _____
Location of Escape: _____	Disease History: _____
Date of Release: _____	Medicated Feed History: _____
Number of Fish: _____	Species of Fish: _____
Avg. Weight of Fish: _____	Cause of Release: _____
Employee Name: _____	Employee Position: _____

PROCEDURES FOR DETERMINING MEDICATED FEED USAGE IN ESCAPED FISH

- Each site maintains a fish inventory system with a complete feeding history for each pen of fish. Any medicated feed treatment and date of use can be quickly reviewed through this system. In the event of a Significant Fish Release, management will review the feeding records and report the medicated feed history in the Accidental Fish Release Report.

EMERGENCY PROCEDURES TO MINIMIZE FISH RELEASES

- All farm site areas have a dive team of employees able to quickly respond and correct problems that may have caused containment net damage. The use of the dive team to make an emergency repair of a breach in the fish containment net is given top priority over other farm tasks.
- If an escapement event can be minimized without the use of divers, employees are instructed to immediately attempt any and all such measures to minimize any further losses of fish stocks. Examples of emergency repairs that can be made from the surface are (a) pulling the net wall up and out of the water if the hole is near the surface; (b) laying a piece of spare netting, or seine net over the area to block the hole; (c) changing the shape of the fish pen to block fish from the area where the hole is located and (d) feeding the fish to keep them in the center of the pen and away from the net walls until the hole can be repaired.

PROCEDURES FOR RECOVERY OF ESCAPED FISH

Recapture Procedures

- The site's first priority shall be to determine and correct the cause of the fish release through repair and closure of the breach, securing of net pens, and other appropriate response actions.
- Upon determining that a significant release has occurred, management will contact Washington Department of Fish and Wildlife (WDFW) regarding the feasibility and approval of possible recovery measures in the area of the escapement.
- Recovery efforts are dependent upon approval by WDFW. Authorization by WDFW must be obtained before commencing any recapture efforts.
- Upon receiving authorization from WDFW, the company will commence recovery of fish through one or more of the following actions: (1) use of company skiffs and seine nets; (2) contacting the Northwest Indians Fishery Commission to advise Tribal fishermen of the potential recovery process; and/or (3) contacting and engaging the services of commercial fishing boat operators to advise them of the recovery process.
- Within five working days of terminating any fish escape recovery actions, the company will submit the Fish Recovery Response Report to WDFW and WDOE.

Fish Recovery Response Report

For each Significant Fish Release where fish recovery actions have been taken, the company shall submit a Fish Recovery Response Report that describes the recovery efforts and their effectiveness. The Report shall be submitted within five working days after termination of recovery efforts to WDFW and WDOE.

Fish Recovery Response Report Form

Fish Release Report Number: _____

Inclusive Dates of Attempted Recovery: _____

Date of Submission of Report: _____

Type of Recovery Efforts Made by Farm Personnel, Contractors and Others: _____

Description of Recovery Gear Used: _____

Area(s) of Attempted Catch: _____

Total Catch of Escaped Fish: _____

Incidental Catch of other Fish (Species and Numbers): _____

Employee Name: _____ Position: _____

Accidental Fish Release Report Form

Fish Release Report Number: _____

Date of Release: _____

Date of Submission to Agency: _____

Location of Release: _____

Number of Fish Escaped: _____

Species of Fish: _____ Year Class of Fish: _____

Avg. Weight of Fish: _____

Disease History: _____

Medicated Feed History (type and date of last treatment): _____

Cause of Release: _____

Employee Name: _____ Position: _____

