

**Newhope Fish Farm Inc.  
Construction of a Salmonid Hatchery at Hopeall, Trinity Bay**

**Environmental Assessment Project Registration**

***Submitted to:***

Minister of Environment and Conservation  
P. O Box 8700  
St. John's NF A1B 4J6  
**Attention:** Director of Environmental Assessment

***Submitted By:***

Newhope Fish Farm Inc.  
160 Main Road  
Cavendish, NL  
A0B 1J0

**June 20, 2012**

**NAME OF UNDERTAKING:**

**Newhope Fish Farm Inc. – Salmonid Hatchery**

**PROPONENT:**

(i) Name of Corporate Body: Newhope Fish Farm Inc.

(ii) Address: 160 Main Road  
Cavendish, NL  
A0B 1J0

(iii) Chief Executive Officer:

Name: Mr. Peter Noer  
Official Title: President  
Address: 160 Main Road  
Cavendish, NL  
A0B 1J0  
Telephone No.: (709) 588-2820

(iv) Principal Contact Person for purposes of environmental assessment:

Name: Mr. Peter Noer  
Official Title: President  
Address: 160 Main Road  
Cavendish, NL  
A0B 1J0  
Telephone No.: (709) 588-2820

## **THE UNDERTAKING:**

### **(i) Nature of the Undertaking:**

Development of a new recirculation hatchery for salmonids at a former hatchery site in Hopeall, Trinity Bay. This hatchery is being designed to produce 2.5 million fingerlings/smolt per annum.

### **(ii) Purpose/Rationale/Need for the Undertaking:**

The salmonid farming industry in Newfoundland and Labrador has experienced significant growth in recent years. In 2011, approximately 14,264 tonnes of salmonids were produced in the province, a 10.6% increase from the prior year. Salmonid production consists of both salmon and steelhead trout production, centered in the Bay d'Espoir area.

Although the province has witnessed the recent addition of two new salmon hatcheries, the majority of seed stock (smolt and fingerlings) continue to be imported from outside the province. With projections of continued industry growth in coming years, the need and opportunity exists to produce a greater volume of the required seed stock within the province. This approach would help alleviate some of the negative factors related to out-of-province imports, including:

- Stress on the smolt/fingerlings from long distances in trucking and well-boats, which impacts on their future performance and survival;
- The high costs related to trucking seed stock in from outside the province; and
- The loss of economic value to the province from importing rather than producing the seed stock locally.

Newhope Fish Farm Inc. is seeking to establish a new salmonid hatchery to produce fingerlings/smolt for the local salmonid industry. This land-based facility will produce up to 2.5 million trout fingerlings per annum for supply to the local industry. The benefits of local, in-province production will include reduced transportation time and costs, less stress on the fish, the ability to produce and ship larger fingerlings for sea-water introduction, greater control on biosecurity, greater security in having locally available sources of supply, and economic benefits to the province.

### **(iii) Public Consultations**

In order to inform the general public in the Hopeall to New Harbour area of the proposed plans for the new hatchery, a public information/consultation session was held on February 25, 2011 to present the draft plans and obtain local input. A copy of a letter from the Chairperson of the Hopeall Local Service District and a list of meeting attendees

is attached as Appendix 1. As the project moves forward toward development, Newhope is planning to continue local consultation and the provision of information.

## **DESCRIPTION OF THE UNDERTAKING:**

### **(i) Geographical Location:**

The project location for the new hatchery consists of the former hatchery and fish-out pond site located in Hopeall, Trinity Bay. This site was selected for several reasons, including:

- Its' past utilization and success as a hatchery site for trout;
- Existing infrastructure in terms of on-site wells and existing piped access from nearby ponds;
- Remote location, not in close proximity to any residential, industrial or commercial activities; and
- Proximity to the proponent's other operating business in the Cavendish area.

Maps of the proposed site, including the Crown Land application (#140319) and a preliminary map of the proposed hatchery location are included as Appendix 2. Please note that the Phase 2 proposed cabin and fish out pond have been removed from the Crown Land request and are not included in this EA Assessment (see letter to Crown Lands in Appendix 3).

### **(ii) Physical Features:**

The hatchery complex will consist of two primary buildings, a small incubation building with office and workshop (approx. 200 square metres), where eggs will be hatched and brought through first feeding to a size of approximately 5 grams and a 16.2 m x 53.95 m (874 square metres) ongrowing building where the fingerlings will be grown to a commercial size of 60 to 80 grams. In addition, a storage shed will be built for storing feed (50-80 square metres) and two areas will be cleared/leveled for parking and truck turnaround (see preliminary layout in Appendix 2). A drawing of the ongrowing facility is included as Appendix 4.

The hatchery design involves the technology transfer of Danish technology to Newfoundland and Labrador by one of the project proponents, Mr. Christian Jorgensen. Mr. Jorgensen is the largest on-land trout farmer in Denmark and a designer/inventor of recirculating aquaculture systems and hatchery equipment utilized throughout the world. He has provided design services to aquaculture developments in Norway, Sweden, Finland, UK, France, Holland, Spain, Greece, Austria, Japan, Australia, Russia, Poland, Germany, Czech Republic, Uganda, and Zambia. The design of the Newhope hatchery is based on a recently completed operation currently producing fingerlings in Denmark, utilizing 95% recirculation.

The hatchery complex will utilize the existing site infrastructure for providing the necessary water requirements. This infrastructure includes two fresh water wells, which will provide the primary water requirements for the facility, along with existing piping from head water ponds located above the hatchery location, which will be used primarily for backup and emergency water purposes.

Access to the site will utilize the existing dirt road to the site, off of Route 80. This road will be upgraded as required to improve site access. An existing transmission line runs through the site and will be upgraded as and if required.

(iii) Construction:

Site construction activities will commence with completion of all regulatory and funding approvals and are anticipated to take six to eight months. The proponents are seeking to start construction in the Fall of 2012, starting with initial site remediation and clearing of the old hatchery buildings and brush.

The company will ensure that all its employees and contractors are in compliance with applicable environmental regulatory requirements related to the construction and operation of the facility. Newhope is committed to minimizing environmental impact during the construction of the hatchery. As applicable, Environmental Guidelines issued by the Provincial government will be followed. Land clearing around the hatchery site will be controlled so that, where possible, activities will be kept to a minimum.

Potential sources of pollutants arising from the construction of the hatchery will be short term and minimal. Construction activities that will potentially generate sources of pollutants will include any on-site activities preparatory or related to the building, alteration or improvement of the property including, but not limited to the following activities; excavation, infrastructure development, vehicular travel and loading / unloading construction materials.

Construction activities such as land clearing and the operation of heavy equipment can potentially contribute to air pollution. Due to the location of the site, away from other residential, commercial or industrial properties, it is not anticipated that noise will be a concern. Construction activities will be managed to prevent or control sources of pollutants associated with air emissions.

Construction activities such as land clearing can potentially contribute to liquid effluents. Land clearing causes soil erosion which can lead to silt-bearing run-off and sediment pollution. Surface water run-off also has the potential to carry pollutants from the site. If not managed properly, contaminated surface run-off can pollute waterways, groundwater or soil. Construction activities will be managed to prevent and control sources of

pollutants associated with surface run-off, especially with respect to ensuring that the river adjacent to the site is not impacted.

It is important to minimize construction waste leaving the site for landfill disposal. This waste includes building materials such as insulation, steel, concrete, and wood. Construction activities will be managed to prevent or control sources of pollutants associated with solid waste materials.

No potential causes of resource conflicts have been identified for the construction of this hatchery.

(iv) Operation:

As previously outlined, the Newhope hatchery will be a modern recirculation hatchery based on an existing operating design prepared by one of the project proponents, Mr. Christian Jorgensen. This will be a permanent facility, producing a total of 2.5 Million fingerlings a year, in batches, for sale to the local salmonid industry

The production cycle begins in the incubation building. Egg incubation will be done on vertical trays or “Heath Incubators”. This current technology is already in use in many hatcheries and has proven results. The Health Incubators require very little floor space and less water than other technologies. The Egg Room will need to be biosecure and completely independent in terms of systems and control from all other parts of the hatchery.

After hatching the trout will be moved to small, shallow tanks/tank inserts for first feeding, in a separate area of the incubation facility which is also biosecure and independently controlled with respect to temperature, water demand, etc. After feeding is established the fish will be ongrown to a size of approximately 5 grams in the incubation facility before being transferred to the separate ongrowing building.

The ongrowing building, which is shown in Appendix 4, will be based on 95% recirculation. To illustrate the process and type of facility to be utilized, Appendix 5 includes a description of the primary requirements and pictures of a sister facility of the same design currently operating in Denmark. This ongrowing building will be used to produce fingerlings in a 60-80 gram size range, as requested by the local industry.

Product transportation will involve delivery of the fingerlings by truck from the hatchery site to the buyers’ production sites in Bay d’Espoir.

Sources of pollutants during the operation of the hatchery include wastewater, fish feces, dead eggs and fish, food waste, sludge, ammonia, any chemicals used at the facility, and any feed bags used to bring the fish food into the hatchery. Trace amounts of dissolved

reactive phosphorous, nitrate, nitrite, copper, zinc, iron, and hydrogen sulphide are expected to be found at the hatchery during operation.

Hatchery effluent includes wastewater, fish feces, dead eggs and fish, food waste, sludge, ammonia, and any chemicals used at the facility. Solid waste, including food waste, fish feces and dead eggs and fish, would be for the most part removed by filters before waste water leaves the facility. Appendix 5 includes a table outlining the projected wastewater composition through the facility. Newhope is also proposing to construct a settling pond (potentially a reed bed system as utilized elsewhere in the province for wastewater treatment) adjacent to the facility to ensure the wastewater is further treated before being released.

Filtration and disinfection will be as follows: water will go through u/v, drum filter, swirl separator, bio filter, low head oxygenator (LHO) and degasser.

All of the water that enters the hatchery will be treated with UV Sterilization in order to prevent contamination. Oxygenation will be required prior to the water entering the culture tanks and to ensure adequate levels are maintained. Degasification will also be required in order to maintain ideal oxygen levels. This will be done as part of the recirculation treatment system and no additional equipment will be required.

Water treatment and distribution is important in order to maintain optimal water quality for fish culture and to control operating costs. Water treatment for the hatchery will consist of: solids removal, biofiltration, degasification, oxygenation and sterilization.

(v) Occupations:

Construction of the hatchery complex will begin in the Fall of 2012 and will be completed by June 2013. Workers required during construction will include supervisors and laborers for site remediation and clearing, erecting the building and pouring the concrete raceways. There will also be electricians, plumbers, carpenters and finish trades for installing equipment, tanks, and various building systems and finishes. There is a potential need for up to 40 full-time/part-time workers during construction.

The hatchery when fully operational will have the potential to employ a mix of both full-time and part-time employees. These employees will consist of a hatchery manager, assistant manager, fish hatchery machinery technicians, a fish hatchery technician with expertise in recycling flow facilities, an aquaculture farm technician, a bacteriological technician, a microbiological quality control technologist, an accountant/office manager, a security guard and a janitor. Newhope is currently undertaking research activities with the Marine Institute's Centre for Aquaculture and Seafood Development (CASD). The company plans to continue its excellent relationship with this institution through the construction and operations phases for the provision of technical support. Given the

relative proximity of the hatchery site to the Marine Institute, the company will be seeking to attract aquaculture graduates and students to work at the facility.

(vi) Project-Related Documents:

- Crown Land Application # 140319

### **APPROVAL OF THE UNDERTAKING:**

Below is a list of approvals that may be required for the undertaking:

#### *Department of Environment and Conservation*

Environment – Ground Water Division	Permit to Extract Water
Environmental – Assessment Division	Release of Undertaking
Environmental - Water Resource Division	Alterations to Body of Water
Environmental - Water Resource Division	Installation of Culverts, Water Crossings etc.
Environmental - Water Resource Division	Water Use Authorization
Environmental – Pollution Prevention Division	Certificate of Approval for Industrial Facility or Processing Work may be required
Environmental – Pollution Prevention Division	Environmental Protection Plan - Construction
Crown Land Division	Crown land approval

#### *Department of Fisheries and Aquaculture*

Fisheries and Aquaculture	Aquaculture Permit
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#### *Department of Natural Resources*

Forestry Resources	Cutting and Burning Permit
Mines and Energy	Quarry permit – required by site works contractor to import fill material, if needed

#### *Department of Government Services*

Government Services	Certificate of approval for storage of gasoline and related products.
Government Services	Storage Tank Application
Government Services	Compliance national Fire Code; national Building Code; Life Safety Codes
Government Services	Building Accessibility
Government Services	Waste Management Plan



**SCHEDULE:**

The following provides the proposed development schedule for the hatchery, subject to obtaining required regulatory and funding approvals:

- August/September 2012                      Site Clearing and Remediation
- September 2012 – May 2013              Construction of hatchery buildings
- April-June 2013                              Equipment installation
- June 2013                                        Commissioning and start of operations

**FUNDING:**

To assist the company with the construction of the hatchery complex, in addition to a sizeable equity investment from the project proponents, Newhope will be seeking support from relevant provincial and federal agencies and programs. These will include applications to the Government of Newfoundland and Labrador's Aquaculture Capital Equity Investment Program, to the Atlantic Canada Opportunities Agency, to the DFO's ACRDP, etc. At present, Newhope is completing research trials on new strains of trout for Canada through the Marine Institute with support from the Canadian Centre for Fisheries Innovation and the National Research Council.

**Appendix 1**  
**Local Information Session**

July 25, 2011

Mr. Peter Noer  
New-Hope Fish Farms  
NL, Canada

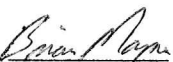
Mr. Noer,

Thank you for your informative presentation to our community regarding your plan to restore and expand the fish farm site in Hopeall.

After careful consideration, the community approves of this plan provided that this development has no adverse effects on the environment, adjacent land users and local residents.

Also, the Hopeall LSD should be informed regularly of any ongoing development and of any changes to current plans.

Again, thank you and we look forward to working with you.



Brian Mayne  
Chairperson  
Hopeall Local Service District

## New-Hope Fish Farm Presentation

	Date	Name (Please Print)	Signature	Telephone #
1	Feb 25/11	Terry Norman	Terry Norman	582-4502
2	"	Lee-Anne Norman	L. Norman	" "
3	"	Hilda Higdon	H. Higdon	582-3062
4	"	Veronica Madsen	V. Madsen	582-3901
5	"	Karsten Madsen	Karsten Madsen	"
6		David McLeod	D. McLeod	582-2770
7		Shirley McLeod	S. McLeod	582-2770
8		Joan Pitcher	Jean Pitcher	582-2806
9		MARG CROCKEE	M. Crockee	582-2283
10		Don Creeker	Don Creeker	" "
11		SARAH JACKSON	Sarah Jackson	582-3347
12		Miriam Gillbert	Miriam Gilbert	582-2861
13		Elizabeth Harvum	Elizabeth Harvum	582-2516
14		Theima Christian	T. Christian	582-3933
15		Denny Christian	D. Christian	582-3933
16		Mildred Pitcher	Mildred Pitcher	582-3078
17		Roy Pitcher	Roy Pitcher	582-3078
18		Linda Williams	Linda Williams	582-2938
19		Jackie Cumby	Jackie Cumby	582-2570
20		Flourno Wrenn	F. Wrenn	582-3390
21		Brian Mayne	Brian Mayne	582-3927
22		Wif Vincent	W. Vincent	582-3390
23		Bruce Mayne	Bruce Mayne	582-3417
24		Fred Pitcher	Fred Pitcher	582-4550
25		STEWART GILBERT	Stewart Gilbert	582-2266
26		Mona Gilbert	Mona Gilbert	582-2266
27		Barb Baker	Barb Baker	582-1141
28		Peter Noer	Peter Noer	588-2750
29		Geat Nomsik	G. Nomsik	588-2992

## **Appendix 2 Site Maps**

## NOTE TO USERS

The information on this map was compiled from land surveys registered in the Crown Lands Registry.

Since the Registry does not contain information on all land ownership within the Province, the information depicted cannot be considered complete.

The boundary lines shown are intended to be used as an index to land titles issued by the Crown. The accuracy of the plot is not sufficient for measurement purposes and does not guarantee title.

Users finding any errors or omissions on this map sheet are asked to contact the Crown Titles Mapping Section, Howley Building Higgins Line, St. John's Newfoundland.

Users finding error or omissions can contact the Crown Titles Mapping Section by telephone at 729-0061. Some titles may not be plotted due to Crown Lands volumes missing from the Crown Lands registry or not plotted due to insufficient survey information.

The User hereby indemnifies and saves harmless the Minister, his officers, employees and agents from and against all claims, demands, liabilities, actions or cause of actions alleging any loss, injury, damages and matter (including claims or demands for any violation of copyright or intellectual property) arising out of any missing or incomplete Crown Land titles, and the Minister, his or her officers, employees and agents shall not be liable for any loss of profits or contracts or any other loss of any kind as a result.

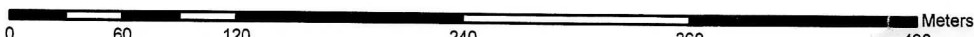
**For inquiries please contact a Regional Lands Office.**  
Corner Brook - 637-2387  
Gander - 256-1400  
Goose Bay - 896-2488  
St. John's - 729-2654  
Clareville - 466-4074



**Scale 1:4,000**

Compiled on Feb 08, 2012

**Crown Lands Division**



Newfoundland Power Inc.  
Title # 3282

**PETER NOER**  
**APPLICATION # 140319**

Application #  
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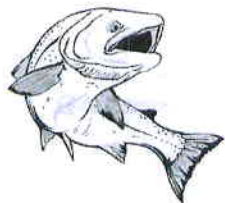
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**Appendix 3**  
**Letter to Crown Lands**



**New Hope Fish Farm Inc.**  
**160 Main Road**  
**Cavendish, NL**  
**A0B 1J0**



June 7, 2012

Mr. Gary Myler  
Lands Management Officer  
Lands Branch, Eastern Regional Lands Office  
Department of Environment and Conservation  
Government of Newfoundland and Labrador  
Howley Building, Higgins Line, Box 8700  
St. John's, NL  
A1B 4J6  
Fax: (709) 729-0726

Dear Mr. Myler:

**RE: Application No: 140319**

Viking Furs Inc. is writing to request a change to its Crown Lands request, with respect to the proposed site development activities. After due consideration, the company is planning to focus solely on the hatchery and fish farming activities identified for this site. The Phase 2 cabins and "put and take pond" will no longer be part of this proposed development.

Discussions have been held with the two groups from which letters were received, i.e. the Water Resources Management Division of the Department of Environment and Conservation and the Department of Tourism, Culture and Recreation, to inform them of these changes. In addition, an Environmental Assessment submission for the fish hatchery is being planned for next week and this will also clarify the focus on fish farming related activities.

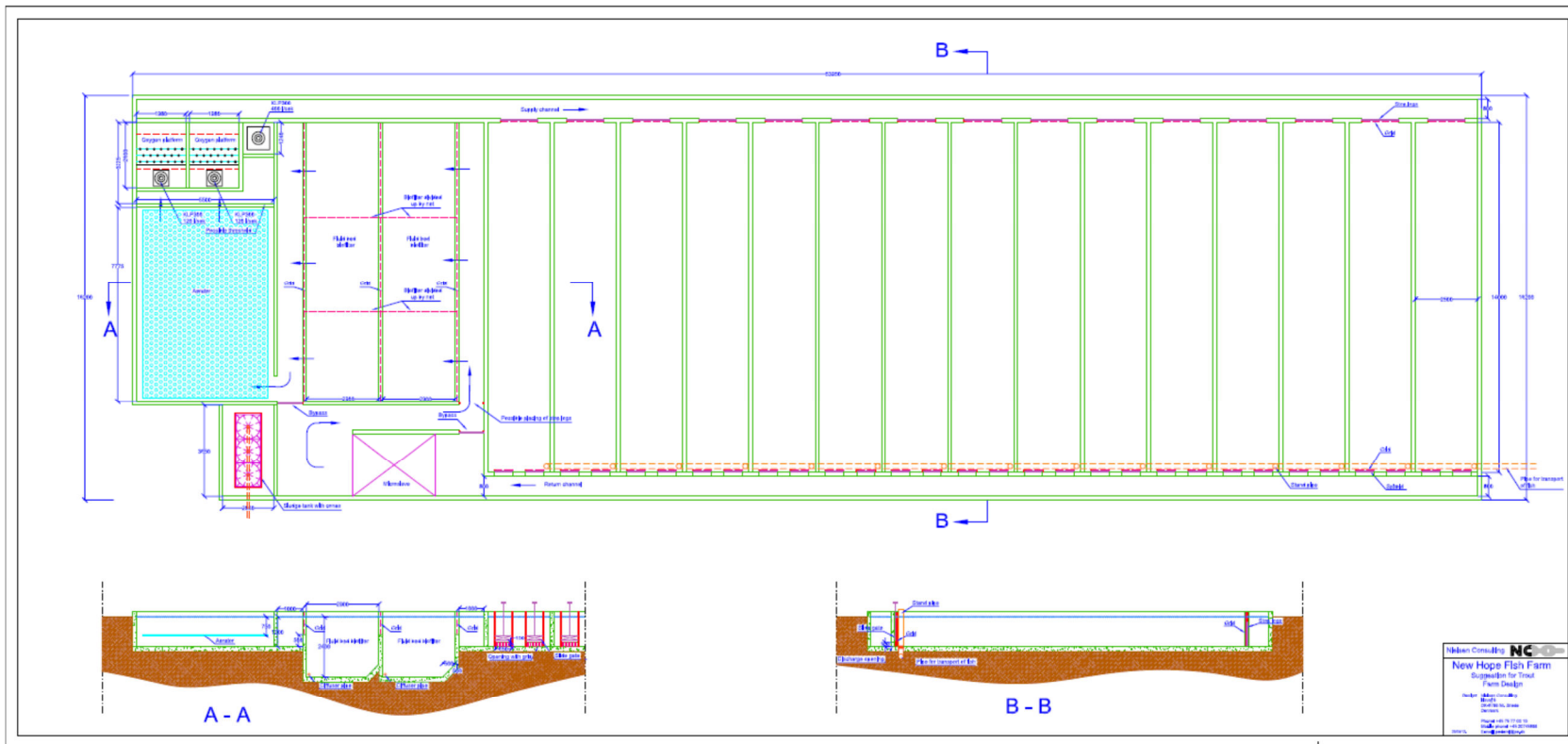
Thank you for your attention to this matter.

Regards,

Peter Noer  
Viking Furs Inc.

**Appendix 4**  
**Ongrowing Facility Layout**

## Description of rearing unit for trout, based on parallel connected raceways



Overview layout

**Appendix 5**  
**Facility Operations and Pictures**

## Specification

<p><b>Dimensions:</b> 53,95 m in length and 16,20 m in width for a system with 15 raceways with the dimension of 14 x 2,5 x 1,2 – 1,35 m the total production volume can be calculated to app. 669 m<sup>3</sup></p>
<p><b>Water use:</b> Depending on the water quality and the management it is possible to run the lay out with a use of fresh water from app. 1 l/s up to app. 20 l/s.</p>
<p>The fresh water are added to the system in front of the microsiew</p>
<p><b>Biological filters:</b> are constructed as moving bed filters with a total volume of app. 180 m<sup>3</sup>, and 92 m<sup>3</sup> of biomedica, the media has app. 730 m<sup>2</sup> of surface for every m<sup>3</sup> of media. With a consumption rate of 0,4 g of NH<sub>3</sub>+NH<sub>4</sub>-N/day at 12 degree and a waste of app. 40 kg of ammonia/tons feed the capacity in the biological filter can be calculated to 672 kg/feed /day</p>
<p>Corresponding to an annual use of feed of 244 ton, with a feed conversion rate assumed to be app. 0,9 the possible annual production can be calculated to 270 ton of fish a production that big will require extremely good management and planning.</p>
<p>A more realistic annual production will be around 222 ton of fish , corresponding with an annual use of feed of 200 ton</p>
<p>The production and the used amount of feed is correlated to water temperature an size of the fish.</p>
<p><b>Degassing:</b> is dimensioned to balance the partial pressure at a feed use of up to 750 kg of feed/day</p>
<p><b>Oxygen:</b> The two injector platforms are dimensioned to add up 250 kg of pure oxygen/day.</p>

### Energy consuming equipment:

<b>Equipment name</b>	<b>Purpose</b>	<b>Capacity</b>	<b>Energy consumption</b>
Primary pump	Primary pump	400 l/s lifting height 0,3 m	2,6 KW
2 Pumps for injector platforms	Adding pure oxygen to the water with up to 170 % of natural saturation in 640 l/s	120 l/s each lifting height 0,70 m	2 X 1,6 KW total 3,2 KW
1 Microsiew	Removal of particles and parasites	Capacity 500 l/s 40 µm clothing	4,5 KW
Capsel blower	Moving and oxidization of the moving bed filter	Capacity 780 m <sup>3</sup> air/hour, at 2,5 m depth.	6,9 KW
2 Ventur blowers	For degassing	Capacity 3.000 m <sup>3</sup> air/hour, at 0,8 m depth.	11 KW

Total maximum energy consumption	28,2 KW
Energy consumption seen as KW/kg produced fish. The calculation is done by a daily use of feed of 548 kg, with a FCR of 0,9 the production will be 609 kg fish a day	1,1 KW/kg fish produced

*Experience shows that the energy consumption will be lower under normal conditions and that an energy consumption of less than 1 kw/kg produced fish is realistic.*

Composition of waste water:

Parameters	Waste contribution (kg/kg of fish produced)	Discharged amounts (kg/kg of fish produced)
NH <sub>3</sub> +NH <sub>4</sub> -N	38	< 20 <sup>(1)</sup>
Total Nitrogen	56	< 27 <sup>(1)</sup>
Total Phosphorus	4,9	< 1,4 <sup>(1)</sup>
BOD	97	< 14 <sup>(1)</sup>

*The discharged amount can be reduced further by establishing a constructed wetland for the outlet water. By doing that, it will be possible to decrease the discharged amount further.*



*1300 m<sup>2</sup> Building for the breeding facility*



*The rearing unit with the aeration area and injector platforms in the foreground*



*One of the two injector platforms for adding liquid oxygen to the water*





*The system seen from the south end of the building, with the biological filter in the foreground*



*The moving bed bio filter, see table for specifications*



*Degassing area*



*Capsel and Ventur blowers for aeration and degassing capacity up to 1.500 m<sup>3</sup>/hour each*

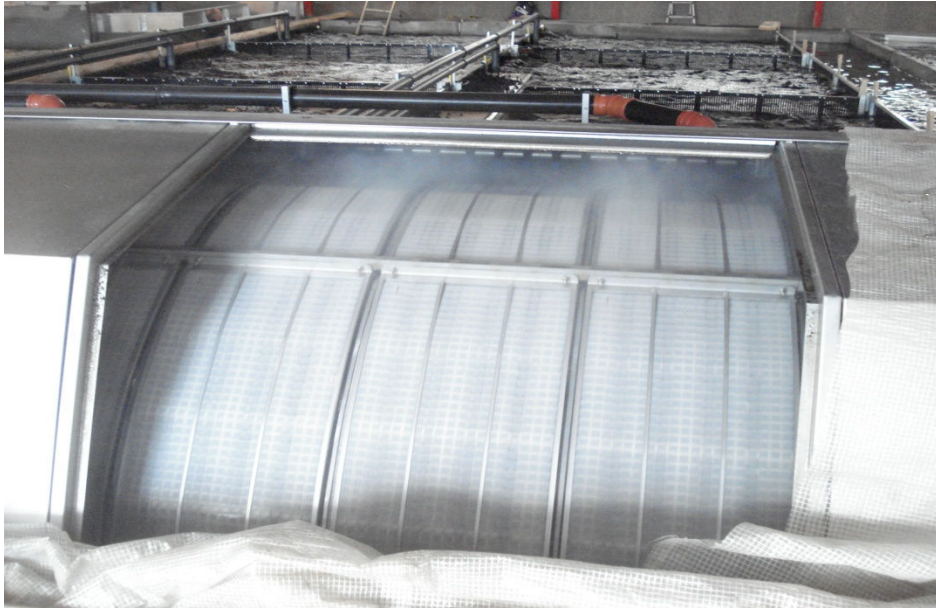


*Main board, and backup generator, the total energy consumption is between 20 – 30 kWh*

*Corresponding to energy consumption is around 1kW/kg produced fish*



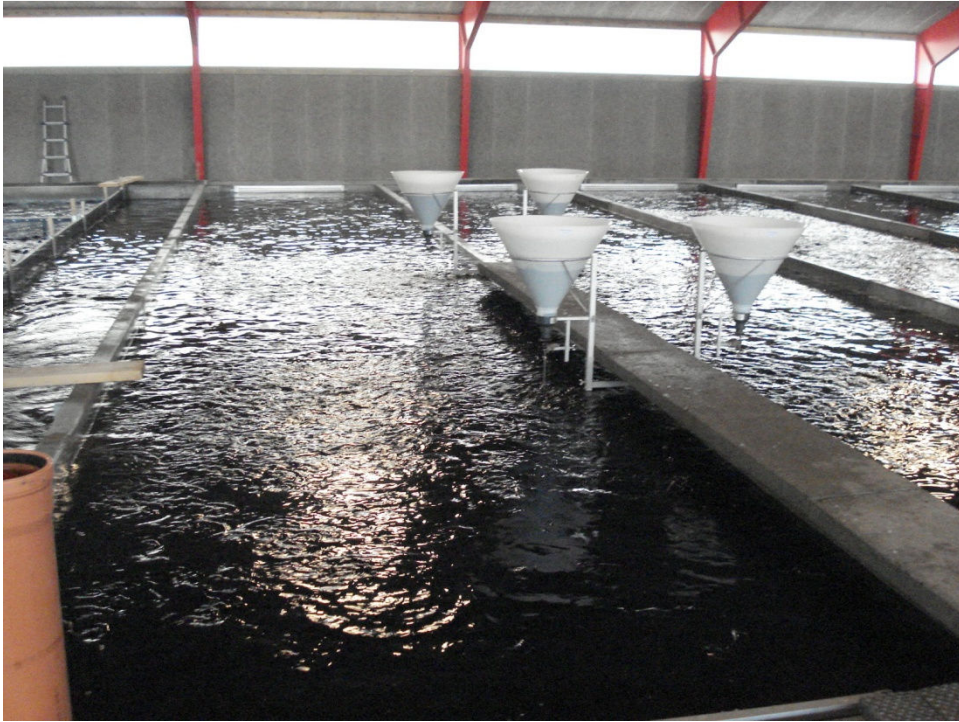
*Hydrotech microscreen with 40  $\mu$  screen*



*Closing on the microsiew 40  $\mu$ m*



*Sludge treatment for sludge water from microsiew*



*Raceway with 3,5 t of fish*



*Degassing with Ventur blowers and pipe system*