

**Construction of a Salmon Hatchery at St. Albans
Newfoundland and Labrador**

Project Registration
pursuant to the Newfoundland and Labrador Environmental Protection Act
and
Project Description
pursuant to Canadian Environmental Assessment Act

Submitted By:
Cold Ocean Salmon Inc.
2 Marine Drive
St. Albans, NL
A0H 2E0

23 September 2009

PREFACE

This document was prepared by Edwards and Associates Ltd., of Marystown, NL, on behalf of Cold Ocean Salmon Inc. (COS) of St. Alban's, NL.

COS a subsidiary of Cooke Aquaculture Inc., has assembled a team of engineering, environmental and legal experts to supply required technical support for the project, which include the following:

Company	Responsibilities
Edwards and Associates Ltd.	Land surveying/acquisitions/permitting, route location and design of effluent & water intake lines, site development plans, environmental management, project management.
Sweeney International Management Corp.	Advisory capacity to the CEAA process and completion of department of Fisheries and aquaculture application for the Aquaculture License.
Steward McKelvey	Legal counsel to COS, dealing with land acquisitions, regulatory approvals and environmental applications.
FracFlow Consulting	Water analysis, well pump tests, engineering consulting, geotechnical analysis
Design Management Group	Geotechnical analysis
Bilund Aquakultureservice ApS	Design of hatchery processes

Site preparation will begin immediately following approval of the environmental regulatory process and receipt of all necessary permits and authorizations. Site preparation and construction is currently scheduled to begin in fall of 2009, with final construction being completed by early summer of 2010.

Cooke Aquaculture Inc. operates one other hatchery in Newfoundland and Labrador and several other salmon hatcheries in Atlantic Canada and the Northeast United States. Cooke Aquaculture Inc. operates with modern techniques and advanced processes, all controlled by an ISO registered (EN45011/ISO Guide 65:1996) Environmental Management system using compliant Standard Operation Procedures manuals.

EXECUTIVE SUMMARY

COS, (the Proponent), submits this document to both the Newfoundland and Labrador Department of Environment and Conservation (Project Registration), pursuant to the Newfoundland and Labrador Environmental Protection Act, and the Canadian Environmental Assessment Agency (Project Description), pursuant to the Canadian Environmental Assessment Act, for the construction of a salmon hatchery.

This Project is subject to both the federal and provincial environmental assessment processes. The submission of this document signifies official environmental registration with the Canadian Environmental Assessment Agency (CEAA) and the Newfoundland Labrador Department of Environment and Conservation (DOEC).

This document will provide a detailed description of the various components associated with the operation of a modern salmon hatchery, which may be summarized as follows:

- Fresh water resources;
- Internal hatchery processes;
- Infrastructure integration;
- Waste management;
- Human Resources.

COS plan to construct a 2900m² hatchery on a 7.2 hectare site, situated at Swanger Cove, St. Alban's, NL. The proposed site is within the municipal planning area for the Town and is currently zoned as "Mixed Development and Rural", which has light industry activities, such as fish hatcheries, as a discretionary use class. Freshwater requirements, estimated at 200 m³ - 400m³ per day (varies with biomass) will be supplied to the facility through a series of three existing wells. The hatchery will be serviced by a newly constructed, one hundred and forty meter access road - seven meters wide, which will connect the hatchery to Shallow Bay Street, which in turn connects to Route 361. Potable water and sewer services will be provided by connection to existing infrastructure, operated by the Town of St. Alban's. Hydro will be provided by connecting to an existing three phase distribution system, located within three hundred meters of the proposed site. Water being discharged from the facility will be treated to remove solids and be released into the waters of Swanger Cove, Head of Bay D'Espoir. Two options are being explored to facilitate the discharge, the first being to discharge the water into a small stream just east of the proposed hatchery and the second being to discharge the water via a three hundred and thirty meter pipeline. This discharge pipe will be trenched into the foreshore to provide ice protection and avoid any issues related to safety of navigation. Solid wastes (sludge) from the facility will be collected in holding tanks and disposed of at an approved waste management site, on an as needed basis.

COS have consulted with all pertinent levels of government while developing the operational plan of this undertaking. The Company plans to hold public awareness meetings in the Town of St. Alban's to discuss the proposed operational plan for the hatchery and potential employment demographics.

COS plan to complete the required regulatory processes, obtain secure title to the Swanger Cove site, complete engineering design for the hatchery and commence construction during the fall of 2009.

It is anticipated that the facility will be fully operational by mid summer of 2010 with an initial production of approximately two and a half million salmon smolts per year, which represents about twenty-five percent of Cooke's smolt production in Atlantic Canada and Northeastern United States.

The St Albans salmon hatchery will provide employment for approximately twelve full-time/part-time employees with a range of skills. Assuming a direct-to-indirect labour ration of 1:2, this would imply that a total employment level of twenty-four jobs may be associated with this undertaking. COS, as is Cook Aquaculture Inc., is an equal opportunity employer with an anticipated fifty percent ratio between male and female employees in the hatchery environment.

Table of Contents		
Section	Description	Page No.
	PREFACE	i
	EXECUTIVE SUMMARY	ii
	TABLE OF CONTENTS	iv
1.0	INTRODUCTION	1
2.0	GENERAL INFORMATION	2
2.1	Proponent Contact Information	2
2.2	Nature of the Undertaking	2
2.3	Purpose / Rationale for the Hatchery	3
2.4	Authorizations required / Approval of Undertaking	4
2.5	Public Consultations	4
3.0	DESCRIPTION OF THE UNDERTAKING	6
3.1	Location	6
3.2	Physical Features	8
3.3	Project Components and Activities	9
3.3.1	Fresh Water Supply	9
3.3.2	Buildings	12
3.3.3	Marine Infrastructure	12
3.3.4	Municipal Infrastructure	13
3.3.4.1	Municipal Water System	13
3.3.4.2	Municipal sewer System	13
3.3.4.3	Municipal Road System	13
3.3.5	Electrical Service	14
3.3.6	Environmental Protection During Construction	14
3.3.7	Waste Management	14
3.3.8	Noise Control	14
3.3.9	Human Resource Information	15
3.3.10	Operations	16
3.3.11	Quality and ECO Standards	17
3.4	Alternatives Considered	18
4.0	MARINE AND TERRESTRIAL BIOLOGICAL ENVIRONMENTS	20
4.1	Marine Fish Habitat	20
4.2	Aquaculture	20
4.3	Pelagics	21
4.4	Ground Fish	22
4.5	Macro Invertebrates	22
4.6	Marine Birds	23
4.7	Marine Mammals	23
4.8	SARA	23
5.0	SOCIO-ECONOMIC ENVIRONMENT	26
5.1	Demography	26

6.0	LAND INFORMATION	28
6.1	Zone Information	28
6.2	Land Ownership	28
6.3	Current and Historic Land Use	28
7.0	CONSULTATIONS	29
8.0	SCHEDULE	30

List of Figures	
Figure 2-1	Hatchery Floor Plan
Figure 3-1	Location Map
Figure 3-2	Regional View
Figure 3-3	Aerial View of St Albans
Figure 3-4	Conceptual Plan
Figure 3-5	Domestic Water Use
Figure 3-6	Quality and Environmental Management System

List of Tables	
Table 3-1	Water Budget
Table 4-1	Species of Concern possibly Found in the Build Area

Lists of Appendices	
Appendix A	Approval / Licensing Listing
Appendix B	Cooke Aquaculture Inc. Information
Appendix C	Aquifer Tests – St Albans
Appendix D	FracFlow Consultants Inc. Technical Memorandum – Aquifer Testing – St. Albans
Appendix E	Hatchery Process
Appendix F	Reference Listing – Marine and Terrestrial Biological Environments
Appendix G	Municipal Zone Information
Appendix H	Land Tenure
Appendix I	Conceptual Plan
Appendix J	Hatchery Floor Plan

1.0 INTRODUCTION

COS (the proponent) plan to construct and operate a modern salmon hatchery in St. Alban's, to supply Atlantic Salmon smolt to its saltwater grow-out operations, located along the south coast of Newfoundland. This project will see the construction of a 2900m² hatchery on a seven decimal two hectare site. It will utilize modern recirculation processes that reduce water use and it will have a maximum capacity to produce approximately three million smolts per year.

Section 2 of this document provides information on the proponent and presents rationale for the undertaking. Regulatory agencies and other stake holders impacted by the proposed undertaking will be identified and ongoing efforts to consult with these groups will be summarized to show the proponent's commitment to co-existing in harmony with other corporate entities, local citizens and with the environment.

A detailed description of the undertaking is presented in Section 3, with focus on such items as site parameters, operational scenarios, water consumption analysis, waste management and quality standards.

Section 4 addresses Marine and Terrestrial Biological Environments associated with the undertaking. It provides a discussion of the various species found in the St. Alban's region and presents any impacts that the proposed undertaking may have on the same.

Section 5 presents a snap shot of the social and economic environment in which the undertaking must exist. Historic and current demographics are elaborated on and any impacts that the hatchery may have on the traditional way of life in the St. Alban's area will be discussed. Public consultations, although not mandatory for an Environment Registration document, are planned to be conducted in the Town of St. Alban's to describe the proposed hatchery project and to address any concerns that the local citizens may have.

Land use issues are discussed in Section 6, with emphasis being placed on zoning, surrounding land uses, land tenure, protected well field areas and access to the proposed site.

Section 7 presents a summary of the consultation process that COS has undertaken to date. It also details a plan to conduct a public consultation in the Town of St. Alban's, in the near future.

The project schedule is presented in Section 8 of the document. It is based on an assumption that approvals will be issued following the 45 day review period available to the Crown. Please note this assumption is made for planning purposes only, and it is not meant to prejudge the environmental review process or to minimize the importance of the same.

2 GENERAL INFORMATION

2.1 Proponent Contact Information

Name of the Corporate Body

Cold Ocean Salmon Inc.
2 Marine Drive
P.O. Box 68
St. Albans, NL A0H 2E0

Chief Executive Officer

Mr. Glenn Cooke
1-506-456-6600
gcooke@cookaqua.com

Principal Contact Persons for EA

Dr. J. A. K. Elliott
VP Technical and Freshwater Operations
COOKE AQUACULTURE Inc.
Tel: (506-755-5284)
Email: jelliott@cookeaqua.com

Mr. Ian Edwards, P. Eng., NLS., CLS
EA Lead
Edwards and Associates Ltd.
232 Ville Marie Drive
Marystown, NL, A0E 2M0
Tel: (709-279-1990)
E-mail: iedwards@edwardsandassociates.ca

2.2 Nature of the Undertaking

The project will involve the construction of a modern re-circulation hatchery for salmon. The hatchery building, 46.50m by 65.10m, will produce 3 million smolt annually; representing 25% of Cooke Aquaculture's production in Canada and the United States of America. Figure 2-1, Hatchery Floor Plan, presents a layout for the proposed hatchery. Appendix J, Floor Plan, presents a larger view of the information displayed in Figure 2-1.

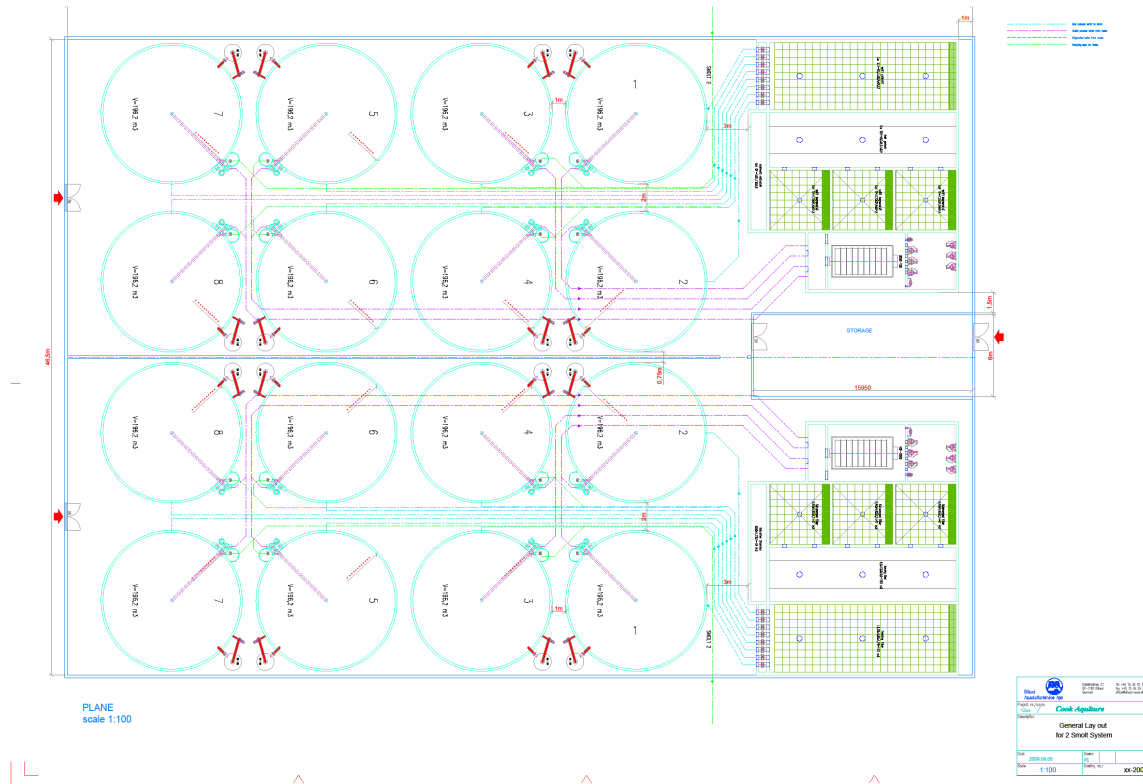


Figure 2-1, Hatchery Floor Plan

2.3 Purpose / Rationale for the Hatchery:

The expanding salmon farming industry in Newfoundland presently uses mostly seed stock (young salmon) imported from outside the province. This approach to supplying a rapidly expanding industry, on the South Coast of Newfoundland, has sufficed to date; however, it carries with it several limiting factors which may hamper or restrict the future potential of the industry along the south cost of Newfoundland. These factors may be summarized as follows:

- Long trucking and well-boat distances induces stress in the juveniles, which has an impact on the survival and performance during grow-out stage in the saltwater cages;
- Long transportation distances carries with it considerable expenses and biomass issues, which result in less than desirable juvenile size for the conditions in Newfoundland.

Proceeding with the undertaking will have the following positive impacts:

- Having juveniles close to the salt water growing sites will enable COS to transfer bigger juveniles to their cage sites in a much shorter and timely fashion;

- Having all juveniles reared in Newfoundland will enable COS to have much better control over bio-security and make permitting and transfer licenses much less of a challenge.

2.4 Authorizations Required / Approval of Undertaking

COS will require authorizations from the Federal, Provincial and Municipal governments in order to proceed with the construction of the salmon hatchery. Following the environmental process, additional permits / licenses will be required before the undertaking can proceed, which will include such things as Department of Environment and Conservation approval of the water and sewer works, municipal development approvals, easements for the various utility and supply lines, etc. Appendix A, Approvals / Licensing Listings, presents a comprehensive listing of anticipated approvals / licenses that the proponent will have to acquire before the project can proceed to the construction stage.

COS recognizes that the construction of a fish hatchery triggers the need for a provincial environmental registration document as regulated by the Newfoundland and Labrador Department of Environment and Conservation. The proposed project, which includes the acquisition of federally administered lands at the Head of D'Espoir and the injection of federal money through ACOA funding also triggers an environmental assessment under the Canadian Environmental Assessment Act.

The proponent's Freshwater Fish Health Management Plan (FWFHMP) has been prepared by the Company's veterinarian in partnership with senior freshwater management staff to cover all aspects of fish health and its management in Freshwater Operations. It is influenced by the requirements of the existing and proposed DFO/CFIA National Aquatic Animal Health Program, all Canadian Provincial aquaculture and Environment Departments requirements, US Federal and State of Maine regulatory requirements, the Seafood Trust Certification and Eco-label program, as well as by other requirements for veterinarians and all who assist them in ensuring high standards of fish health are maintained in the company's freshwater facilities. The proponent is prepared to discuss any aspect of their Fish Health Management Plan with any regulatory authority; however given the proprietary nature of the document it is not being presented as part of this document.

The proposed location of the salmon hatchery, Swanger Cove, St. Alban's, NL, is situated within the planning area boundary of the Town of St. Alban's, and hence any development must abide by municipal regulations and bylaws as established by the town.

2.5 Public Consultations

COS and Cooke Aquaculture Inc. value every opportunity to engage the public in all their undertakings from the establishment of grow out cage locations to the construction of a salmon hatchery. The Company recognizes that such consultations, while perhaps not mandatory, are desirable and that experience has shown that having all

stakeholders, including the general public, consistently informed about Company plans leads to more successful on-going relationships. COS has met with the Town Council of St. Albans on several occasions and has involved them in all meetings with regulatory agencies to date. In addition to this, COS plan to conduct a public meeting in the Town of St. Albans to present their plans in relation to the salmon hatchery. During this meeting the Company will provide an overview of the project, discuss employment requirements, identify areas of concern, such as water consumption, and most importantly receive feedback from the public.

3.0 DESCRIPTION OF THE UNDERTAKING

3.1 Location

COS proposes to construct a salmon hatchery on a 6 hectare parcel of land located at Swanger Cove, in the Community of St. Alban's, NL. Figure 3-1, Location Map, situates the proposed location from a provincial perspective.

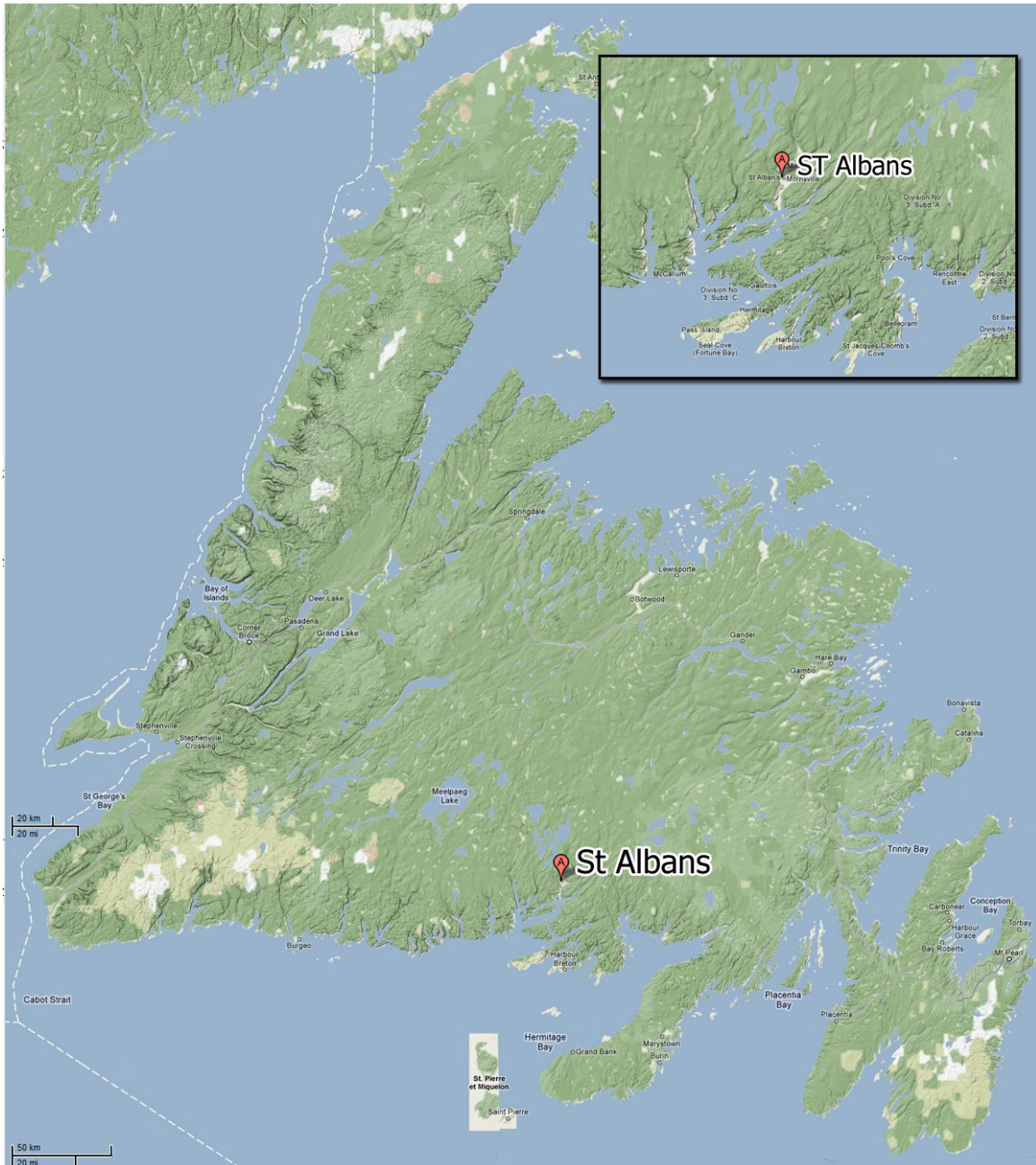


Figure 3-1, Location Map

Figure 3-2, Regional View, presents a regional view of the area involved in the undertaking. Evident on this image is the Town limits and Route 361, which eventually connects to the Trans Canada Highway. Also evident is the Swanger Cove area and a small helicopter landing site, which has been decommissioned.

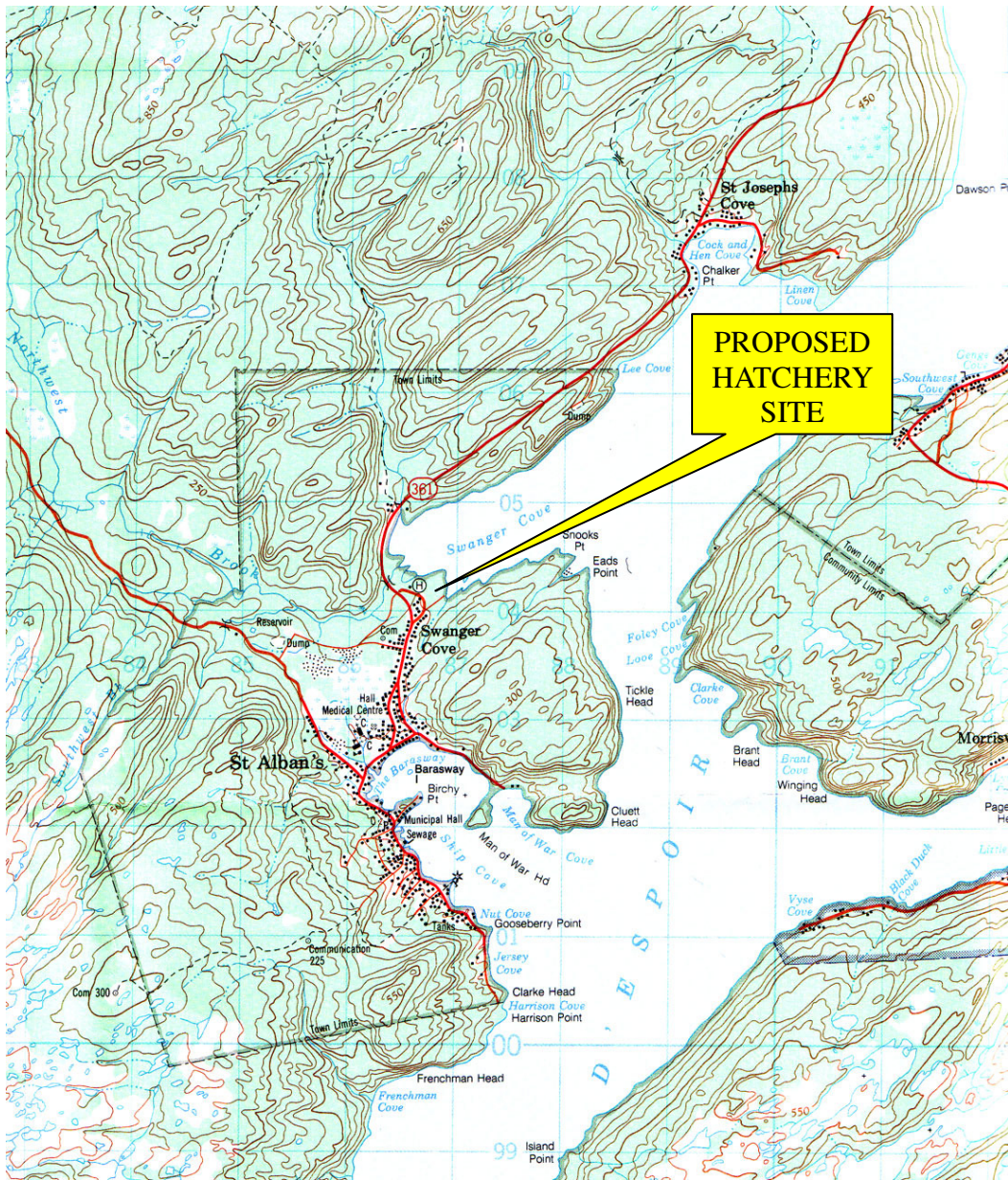


Figure 3-2, Regional Map

Figure 3-3, Local View, presents an aerial view of the Town of St. Alban's and highlights various points of interest, relative to the proposed undertaking.



Figure 3-3, Local View

A review of aerial photography, at the Air Photo and Map Library, Government of Newfoundland and Labrador, indicated that the proposed hatchery site has had no prior occupation and is not thought to contain any historic resources, foundations or wooden structures. The proposed site is partly treed with a mixture of fir trees, height 4-5 meters high and a variety of bushes. The property will be accessed from a town road via a new property access road which will also contain a power corridor and a proposed water and sewer service. It is otherwise separated by open land from town properties and roads.

3.2 Physical Features

The main physical features associated with the undertaking will be the construction of a building, a parking lot, a service area and an access road. Figure 3-4, Conceptual Plan, shows the various components of the proposed undertaking. Appendix I, Conceptual Plan, presents the same information at a much larger viewing scale.

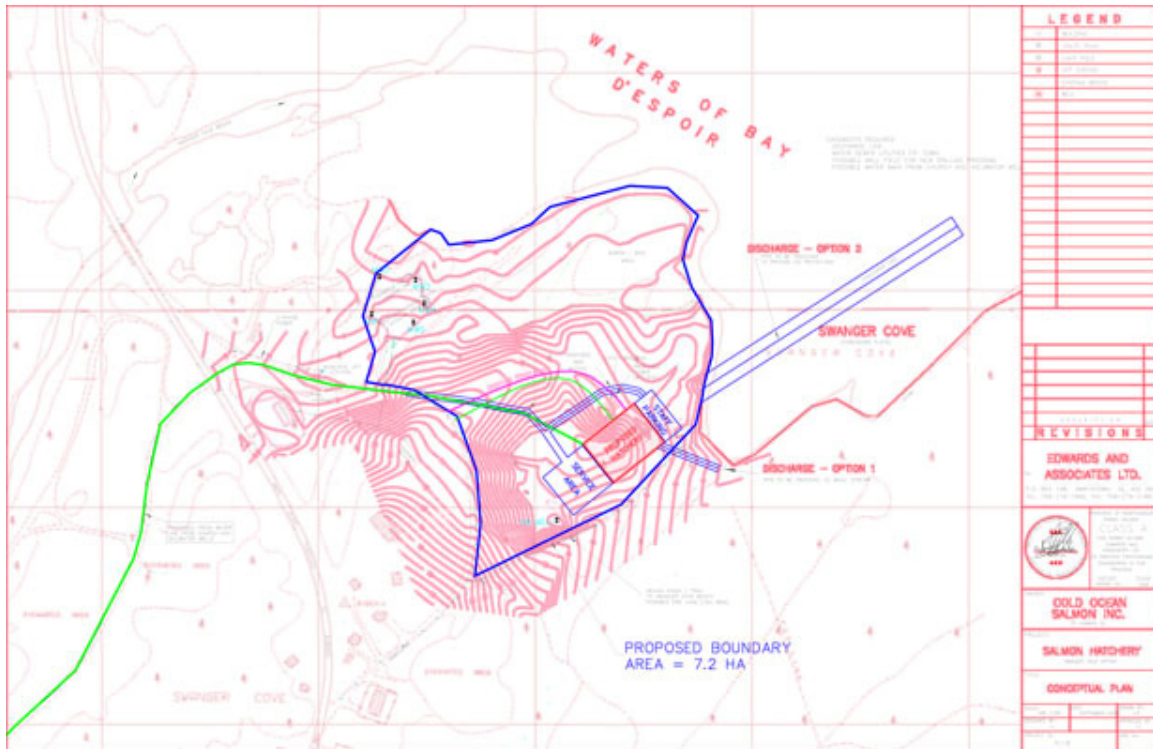


Figure 3-4, Conceptual Plan

Evident from the plan is the notation, “foreshore flats”. The area of the proposed discharge line, Option 2, may be considered as a foreshore, where the tides ebb and flow; however at low tide there is a considerable amount of area exposed. A visual inspection indicated that the area is mostly comprised of sand and mud. Locals sometimes use this area to traverse the shoreline on All Terrain Vehicles, leaving tire prints that dissipate with time. Appendix I, Conceptual Plan, presents a full scale drawing of the above image.

There are no anticipated negative impacts on wild life associated with this project.

3.3 Project Components and Activities

The construction of the hatchery building and installation of equipment will take approximately six to eight months to complete and will commence immediately following project approval. The following subsections will identify major components of the undertaking and comment on environmental impacts of the same.

3.3.1 Fresh Water Supply

The supply of fresh water to the hatchery is the most critical component of the undertaking, as without an adequate supply of quality water, the hatchery will not be a

reality. The St. Alban's aquifer will be required to sustain the town, complete with the existing fish plant, a new Department of Fisheries and Aquaculture Scientific Center and the proposed hatchery.

The proponent proposes to supply the hatchery with freshwater from two existing wells, Church Well (CW - Figure 3-3) and Sea Farm Well (DFA- Figure 3-3). A third well near the hatchery (SW – Figure 3-3) will be used to deliver a mixture of salt and fresh water to the hatchery using a dual pump system with in-well mixing. All water mains will be 150mm HDPL pipe.

Initial reaction to the use of the above referenced wells raised an aquifer overuse concern, both with the municipal council and with the Department of Environment and Conservation. Appendix C, Aquifer Test – St. Alban's, presents the results of a proponent funded study, which indicates that the St. Alban's aquifer has sufficient capacity to provide fresh water to all stakeholders using the aquifer. The study was completed by FracFlow Consultants Inc. in the late summer of 2009 and concluded that:

“... the additional water needed to service the proposed fish hatchery exists in the overburden even with the Town water demands or usage. However, the proposed fish hatchery proposes to draw its water from the bed rock aquifer and part of its this water will be obtained by leakage through and from the overburden aquifer.”

Fracflow Consultants Inc. also indicated that the Town's current usage is much higher, up to 1000 m³/day, than what would be expected and have attributed this excessive use to leakages in the existing infrastructure. Appendix D, FracFlow Consultants Inc. Technical Memorandum, presents a report of the aquifer analyses conducted by FracFlow to show that the St. Alban's aquifer can indeed support the proposed salmon hatchery.

Table 3-1, Water Budget, presents a summary of current and expected water usages in the Town of St. Alban's.

Table 3-1, Water Budget	
Water Availability (overburden aquifer) ¹	2160 m ³ /day ¹
Water Availability (bedrock aquifer) – estimate only ²	350 m ³ /day ²
Estimated Total Water Available	2510 m ³ /day
Town usage (fish plant included) ² ****	1500 m ³ /day
DFA Research Facility Usage (estimate only)	4 m ³ /day
Proposed Hatchery Usage ³ (based on water exchange per kg of feed)	400 m ³ /day
Estimated Surplus of Water	606 m³/day

¹ Morrison Beatty and associates Ltd., 1990

² FracFlow Consultants Presentation, Dept Environment and Conservation, August, 2009

³ Cook Aquaculture Inc. Presentation, department of Environment and Conservation, August, 2009

**** 1500 m³/day is based on an average consumption taken from a side by FracFlow Consultants Inc, presented to Department of Environment and Conservation, August, 2009. Given a maximum fish plant usage of 606 m³/day⁴ - leaves 900 m³/day for domestic consumption, which equates to 750 liters/day/person, with population of 1200. Natural Resources Canada estimates that the daily per capita water consumption for municipal sectors to be 638 liters per person per day⁵, which provides credibility to the estimate of 750 liters per person per day for St. Alban's.

It should also be noted that the Department of Environment and Conservation, Government of Newfoundland and Labrador, provides design parameters for daily sewerage flows to be 450 liters per person per day. Assuming that 10 percent of the water usage is for human consumption - yields a total water per capita demand to be in the order of 500 liters per person per day. Figure 3-5, Domestic Water Use⁶, presents a summary of domestic water usage as determined by Natural Resources Canada, which supports the 10% approximation.

The Town of St. Alban's and the Town Engineer, Mr. Tom Kendall, P. Eng. have indicated that the town's water system is plagued with leaks, which result in thousands of cubic meters of water being wasted each year. If these problems were to be rectified, it is estimated that an additional 1000 m³/day may become available from the St. Alban's aquifer.

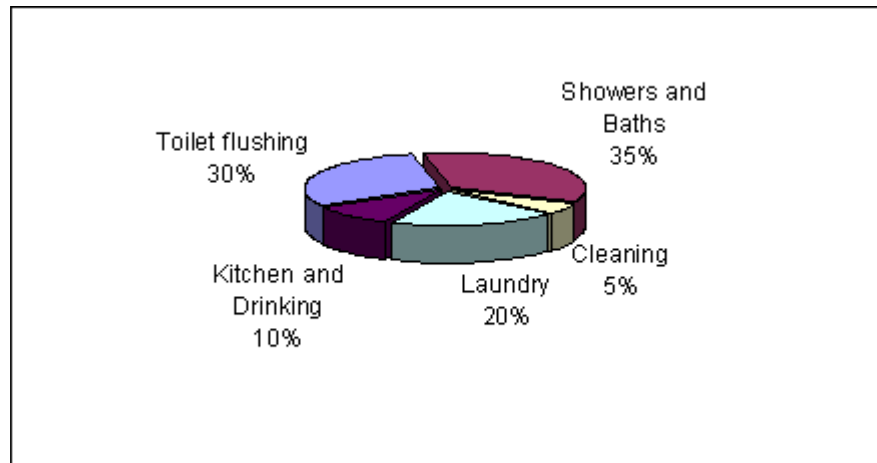


Figure 3-5, Domestic Water Use

Water quantity and water quality are the two most important parameters associated with fish hatcheries. FracFlow Consultants Inc. collected several water samples from the various wells located in the St. Alban's area. These samples were analyzed by an independent laboratory and showed a water chemistry suitable for fish production.

⁴ Water Flow records obtained by FracFlow Consultants Inc from Fish plant at St. Alban's

⁵ <http://atlas.nrcan.gc.ca/site/english/maps/freshwater/consumption/domestic/1>

⁶ Ibid

Appendix D, FracFlow Consultants Inc. Technical Memorandum, presents the results of these water analysis. This analysis is further supported by the fact that the proponent has operated a Salmon Incubator facility in the Town for many years and it relied on water pumped from the aquifer in question.

3.3.2 Buildings

COS. proposes to construct one prefabricated steel building with a footprint of 2900 square meters at the Swanger Cove Location. The building will be approximately 9 meters high at its peak with an external steel skin of colour to blend in with natural surroundings. The top of the hatchery will be visible from Route 361, leading into St. Alban's, however it will not be visible from the populated areas of the community. The closest domestic property is located approximately 150 meters to the west of the proposed hatchery, and will be buffered by natural tree growth, having a thickness of 50 meters.

The hatchery will be supported by several utility buildings to house such items as emergency generators, etc. Appendix I, Conceptual Plan, presents a graphical layout of the building infrastructure being proposed for this undertaking.

During construction, the proponent proposes to erect a temporary construction building and a lay down area at the decommissioned helicopter landing pad. This building will be serviced by temporary power and occupy approximately 250 square meters. Once construction is completed, this facility will be taken apart and removed from the site.

3.3.3 Marine Infrastructure

There is very little marine infrastructure associated with the undertaking. The discharge will consist of fresh water that has gone through a series of filtrations systems to remove any solids etc. from the same. Anticipated volume of discharge water will be in the order of 400 m³ per day. Appendix E, Hatchery Process, presents a more detailed description of the screening process for the discharge system. It should be noted that the discharge water is essentially the same as being used to grow the juvenile salmon, and hence will be very good quality.

The proponent proposes two options to discharge waste water from the hatchery:

- Terminating the discharge in a suitable location (small stream just west of the hatchery) somewhere at or near the high water mark of Swanger Cove, and let the water run out over the foreshore flats, similar to a small brook.
- Or install a discharge line in the waters of Swanger Cove. The line will be 300mm in diameter and will extend for a distance of approximately 350 meters. To avoid ice interaction, the proponent proposes to trench this line into the foreshore flats and extend the same to provide 3 meters of water cover at low tide.

The preferred option would be to terminate the discharge line along the high water line, thereby eliminating any construction in the fore shore flats and also eliminating any interference with navigation.

3.3.4 Municipal Infrastructure

3.3.4.1 Municipal Water System

The proponent proposes to supply potable water and fire fighting support to the hatchery via a 200mm PVC line, off the municipal distribution system already installed in Shallow Bay Road, located just west of the proposed site. A 200mm gate valve will be installed just off the connection point on Shallow Bay Road, thereby minimizing disruptions to the town system during installation. The new water service will be 180 meters long and be installed to standards of the Municipal Water Sewer and Roads Specifications, as published by the Department of Municipal Affairs, Government of Newfoundland and Labrador.

3.3.4.2 Municipal Sewer System

The proponent proposes to connect hatchery sewerage system to the town's collection system. The proponent will install a lift station near the hatchery building and pump the sewer through a 100mm force-main to a new manhole installed in the existing sewer collection system along Shallow Bay Road. The sewer will then flow by gravity through the town's collection system to a municipal lift station located just northwest of the proposed site. The new force-main will be approximately 180 meters long and it will be installed to the standards of the Municipal Water Sewer and Roads Specifications, as published by the Department of Municipal Affairs, Government of Newfoundland and Labrador.

A review of Table 3, Daily Sewage Flows, for Various Types of Commercial Establishments, as published by Government Services Center, Government of Newfoundland and Labrador, shows that for factory use (8 hour shift) one can expect that 115 liters per person per day. The proponent expects that the hatchery will employ 12 people, at most (2 shifts), thus the anticipated sewage flow would be in the order of 0.8 liters per minute, a relatively low increase in demand on the Town's sewer system.

3.3.4.3 Municipal Road System

The proponent proposes to access the new hatchery site from Shallow Bay Road, a municipal street owned by the Town of St. Alban's. The new gravel access road will be approximately 170 meters long and have a driving surface of 6.7 meters. The new access road will be paved once construction activities are completed, thereby eliminating any environmental concerns in relation to dust control.

In addition to the main access road, the proponent will construct a service road leading to the employee parking area, located just east of the hatchery building. The service road will be 5 meters wide and extend for a distance of 100 meters. The surface will be paved once construction is completed.

The proponent will also construct a truck turn around area and an employee parking area adjacent to the new hatchery building. These paved surfaces will be graded to take rain water etc, away from the building.

The new roads and parking areas will be installed to standards of the Municipal Water Sewer and Roads Specifications, as published by the Department of Municipal Affairs, Government of Newfoundland and Labrador.

3.3.5 Electrical Services

The proponent proposes to connect to the existing power distribution system installed in the Town of St. Alban's, Newfoundland Hydro. To do this the proponent will run a 3 phase line from the new hatchery building to an existing 3 phase service, located approximately 350 meters northwest of the proposed hatchery site. The new pole line will run along the outer limit of the proposed access road, thereby providing structures for street lighting etc. There will be emergency back-up power on site.

3.3.6 Environmental Protection During Construction

The proponent is proud of its environmental record in relation to aquaculture activities. This sense of environmental stewardship will be maintained throughout the construction of the new salmon hatchery at St. Alban's. The proponent is committed to minimizing their environmental footprint in the following ways:

- all work will be completed in the dry; that is, no heavy equipment will be permitted to operate in any streams or brook crossings;
- inlets and outlets of all culverts will receive erosion control such as rip-rap sodded protection or concrete head walls.
- Any hydro poles installed on the site will meet all environmental regulations in relation to wood preservatives, location in wet areas, etc.
- Silt fences will be erected along the downward slope of the construction area to prevent silt infiltration to local brooks, streams or into Swanger Cove.
- The clearing area around the new hatchery site will be controlled to minimize the footprint for the new facility. Care will be exercised to ensure that activities near any wetlands or bog areas are kept to a minimum.

3.3.7 Waste Management

The proponent has a comprehensive waste management plan which reduces the type, volume and disposition of waste and effluents. The plan is audited annually and changed as required to meet targets set for reducing all waste streams where possible. It has a contingency section for unexpected high mortalities and all waste operations are recorded. Materials and supplies are delivered in biodegradable or recyclable packaging wherever possible..

All solids and fish feces will be removed from re-circulated process water by a mechanical filter and discharged as sludge to underground collection tank(s). The collected waste will be removed by vacuum tanker and disposed of by licensed contractors at approved facilities. The proponent anticipates an average daily dry waste generation of 100kg/day which equates to 36.5 metric tonnes of waste per year.

3.3.8 Noise Control

During normal operations the proposed hatchery will produce very little noise. To ensure

neighboring properties are not negatively impacted the proponent will maintain a 50 m wide tree buffer around the hatchery. The access road will be paved and speed limits will be posted at 20 Km/hr to ensure that traffic noise is kept to a minimum. In addition to this the proponent will undertake to ensure that where possible, deliveries to or from the hatchery will take place during regular business hours, thereby reducing the impact that any noise may have on area residents.

3.3.9 Human Resource Information

The proponent anticipates that the proposed hatchery operation will create up to 12 full-time / part-time jobs in the St. Albans area. A wide range of skill sets will be required for the operation of the hatchery and whereas experienced and trained staff are preferred any and all training will be carried out on the job wherever required and previous experience or training will not be a prerequisite. It is anticipated that the majority if not all staff will be recruited from the local area.

There will also be a need for trucking services to move the juvenile salmon from the hatchery site to well boats that will transport them to the grow out cages.

During construction there will be a need for various contractor personnel for supply of excavating services, road building, concrete services, building construction, pipe fitting, carpentry services, electrical services, survey services etc.

COS is an equal opportunity employer. The following excerpt has been taken from the employee handbook, issued to all employees of COS.

Unlawful Discrimination is prohibited

Cooke Aquaculture is an equal opportunity Employer and makes employment decisions on the basis of merit.

In accordance with applicable law, Cooke Aquaculture prohibits discrimination based on race, color, religion, national origin, ancestry, place of origin, age, physical disability, mental disability, marital status, sexual orientation or sex or any other consideration protected by provincial laws. All such discrimination is unlawful.

We are committed to equal opportunity employment, which applies to all persons involved in the operations of Cooke Aquaculture and prohibits unlawful discrimination by any employee, including manager's supervisors and co-workers.

To comply with applicable laws ensuring equal employment opportunities to qualified individuals with disabilities, Cooke Aquaculture will make reasonable accommodations for the known physical or mental limitations

of an otherwise qualified individual with a disability who is an applicant or an employee unless undue hardship would result.

If you require an accommodation in order to perform the essential functions of your job, you should contact your manager/supervisor and request such an accommodation. You should specify what accommodation you need to perform your job. If the accommodation is reasonable and will not impose an undue hardship, Cooke Aquaculture will make the accommodation if possible. We may also propose an alternative accommodation(s).

Employer Reporting Procedures

If you believe you have been subjected to any form of unlawful discrimination, or if you are aware of an incident of discrimination involving another employee, please provide a written or verbal report to your manager/supervisor or any other manager/supervisor or the Human Resources Department. The report should be specific and should include the names of the individuals involved and the names of any witnesses.

Protection Against Retaliation

Applicable law also prohibits retaliation against you by another employee or by Cooke Aquaculture for reporting, filing, testifying, assisting or participating in any manner in any investigation, proceeding or hearing conducted by Cooke Aquaculture or a provincial enforcement agency.

Complete editions of the employee hand book can be made available on request.

3.3.10 Operations

The salmon aquaculture industry along the south of Newfoundland has been growing due to several factors:

- Increase in salmon prices
- Rationalization and consolidation of the industry in NB and NS
- Limited ability to expand production in NB and NS
- Proven profitability of NL farms
- Involvement by large credible companies
- Improved perception regarding aquaculture potential on south coast of Newfoundland
- Government promotion and incentive programs
- Support from local communities and requests for additional investment

In 2006 there were about 4.5 million salmon smolt placed in sea cages in Newfoundland. It is anticipated this number will grow however, the hatchery production in Newfoundland in 2006 was about 1.3 million salmon smolts with the

remainder coming from Atlantic Canada and northeastern United States.

Appendix E, Hatchery Process, presents a draft description of the proposed hatchery process as supplied by Billund Aquakultur Services ApS, process consultants for the undertaking. The document has been translated from Danish to English and hence may contain syntax issues, that the reader should take into consideration.

The proposed hatchery employs modern recirculation technology, which reduces the amount of make-up water required, by as much as 99.2%, to keep the system operational. Water entering the fish tanks goes through a mechanical filter (60um mesh size), through a three stage biological filtering process, through a UV disinfection system, through a trickling filter system and finally through an oxygenation cone. In addition to these processes, “brownish colour” water runs through an ozone treatment process and is reintroduced back into the beginning stage of the recirculation scheme.

Water passing through the proposed recirculation process will also be monitored for ph and temperature levels. It is expected that a ph base will be added via a lime dosing unit. Temperature will be influenced by surrounding temperatures, make-up water requirements, system insulation and energy used in the system. When necessary, incoming water will be passed through a heat exchanger with outgoing water, where 50% of the heat from the outgoing water is captured.

Throughout the recirculation process, byproducts such a fish wastes, uneaten food and dead fish are collected through a pumping system and held in storage tanks for disposal at an approved waste management site. The proponent will arrange for pumping trucks as required and anticipates an average daily waste generation of 100kg/day which equates to 36.5 metric tonnes of waste per year.

Product transportation involves the delivery of fry during the months of June and September (approximately 1 truck load per day) and the delivery of juvenile fish to the local wharf in June and September (approximately 3 loads per day). Section 3.3.7, Noise Control, address how the proponent will manage noise associated with the hatchery operations.

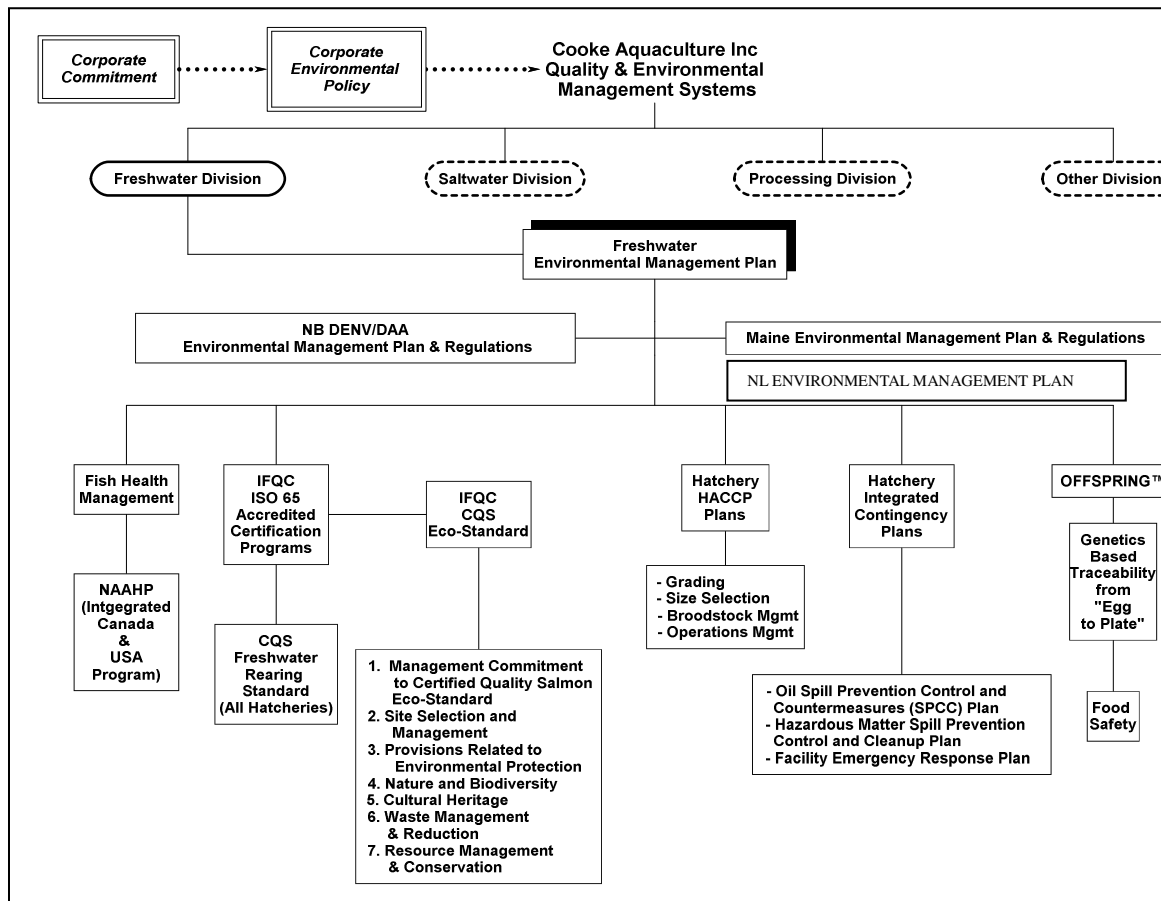
Discharged water will be released into Swanger Cove, as discussed in Section 3.2.3, Marine Infrastructure.

3.3.11 Quality and ECO Standards

The proponent's Freshwater Environmental Management Plan has nine component manuals and is registered by GLOBAL TRUST CQS-Eco Standard to EN45011/ISO Guide 65:1996. This management plan and standards meet or exceed regulatory requirements. The plan is depicted in Figure 3-6, Quality and Environmental management System.

The proponent's Standard Operating Procedures are based on Eco-Standard principles and cover workplace health and safety, environmental management, fish health management, documented systems operation; staff training, equipment maintenance and calibration, chemicals and medicines storage, hygiene and disinfection, bio-security, and good husbandry practices.

Additional information on the quality and environmental standards employed by COS and Cooke Aquaculture Inc. is presented in Appendix B, Cooke Aquaculture Inc.



Information.

Figure 3-6, Quality and Environmental management System.

3.4 Alternatives Considered

COS has been working towards the construction of a modern salmon hatchery along the south coast of Newfoundland for nearly 2 years. During that time the Company investigated two other sites, the first of which being located at Terrenceville, NL and the

other being located at Cormier Avenue, St. Alban's. The remainder of this section will provide information related to these sites and explain why the sites were eventually turned down.

Terrenceville, NL

Terrenceville, NL is located at the head of Fortune Bay and is within 30-40 km of the grow out gages located near the St. Alban's area. There is an ample supply of land available and the location offered an existing wharf, that could be used exclusively by COS to transport juvenile fish to grow out areas.

COS conducted two different drilling programs in the Town, one in 2007 and the other in 2008, both of which did not provide sufficient evidence that there was an ample supply of fresh water available. Given this uncertainty and the need to move forward with the hatchery project, COS decided to focus its energy on St. Alban's, an area where they knew there was sufficient supply of fresh water.

Cormier Avenue Site, St Alban's, NL

The Cormier Avenue site would have used the same water supply as that now being proposed for the Swanger Cove Site; however, the site did carry with it several concerns, which are summarized below:

- The proposed site was located within a protected well field area of the town, and hence carried with it many restrictive regulations;
- The proposed site was in close proximity to developed areas in the Town, both residential and commercial, and hence there existed potential for conflicting uses;
- Development of the proposed site would involve the removal of approximately 500,000 m³ of bog, and hence the environmental footprint would be more significant;
- The site was in close proximity to the planned Department of Fisheries and Aquaculture research center, a situation that could test biosecurity protocols.

COS developed conceptual plans for each of these sites, information that can be made available should the need arise.

4.0 MARINE AND TERRESTRIAL BIOLOGICAL ENVIRONMENTS

4.1 Marine Fish Habitat

From observing the area and from local populations the area of St. Alban's and Swanger cove are shallow intertidal areas with a disturbed bottom. These areas were once in a runoff zone utilized by previous operations from flooding, creation of a dam, and previous logging operations. The bottom is essentially the remains of these two operations. But this is more so the fact in St. Alban's Harbour. Swanger Cove has a river (Swanger Brook) running into it, that may cause a localized estuary effect where many species of vegetation (both aquatic and land based) and animals thrive. Most estuaries are a natural birthing ground for many species since eel grass is predominant in these areas, many fish prefer to lay eggs in this type of habitat (Benaka 1999). Around the wharfs however in St. Alban's harbor the common sculpin (*Myoxocephalus* spp.), and cunners (*Tautoglabrus adspersus*) are quite common suggesting the man made habitat is suitable.

4.2 Aquaculture

Sites in Proximity

Aquaculture in Newfoundland and Labrador is focused on the development of four key species including Atlantic salmon (*Salmo salar*), rainbow trout (*Oncorhynchus mykiss*), Atlantic cod (*Gadus morhua*), and blue mussels (*Mytilus edulis*). Through years of development the aquaculture industry in Newfoundland has grown substantially, in 2006 the industry employed 370 individuals, and produced 10,500 tonnes of exportable product with a value of \$52.3 million dollars (DFA 2009).

In the St. Alban's area (APPENDIX C) there is a lot of activity with regards to aquaculture. There are 6 sites that are relatively in close proximity with the outflow of the proposed hatchery (Appendix C). From this figure the sites are on the outer portions St. Alban's harbour and may be exposed to anything that is contained within water exiting the facility.

Possible Disease Transfer

The proximity to other sites then leads to the possible transfer of pathogens. The hatchery may amplify natural pathogens (trichodina, IPN, and furunculosis) (Personal Conversation, Daryl Whelan 2009), due to the high numbers of animals being contained, with subsequent release into the environment. Transfer may act in the opposite direction also. There are processing facilities and plans for a Department of Fisheries and Aquaculture animal health diagnostics facility. Diseases that may be brought into these facilities through wild fish through culture could lead to outbreaks or amplification of natural pathogens increasing the possibility for transfer into and out of the hatchery.

Within most types of facilities that raise organisms on land there are biosecurity measures in place to deter the growth and spread of pathogens. Foot dips, hand wash stations, and disinfection of personnel and equipment are all common practices that are implemented to keep the animals healthy. The proposed hatchery will implement protocols to negate these possible impacts.

4.3 Pelagics

Atlantic Herring

The Atlantic herring has a geographical range from western Greenland to the far northwest Atlantic. These herring like other pelagic species are a schooling fish, even more so before spawning. Along the Canadian Atlantic herring spawn during the months of April to October but there are two main spawning events in May and September. At the time of these events the herring are demersal and deposit their eggs on stable bottom substrates in less than 25 meters of water (Hart 2002 ⁽¹⁾). Atlantic herring during times of predation like to prey upon forms of planktonic and meroplanktonic organisms including pteropods, fish eggs, and copepodids (Hart 2002 ⁽¹⁾). Like many of the pelagic species around Newfoundland the herring are also an important keystone species in the ecosystem, supplying higher trophic levels with the nutrients they need (Beverton 2006).

Herring Fishery

The herring fishery occurs from January to April in Newfoundland waters at depths of 10 to 40 meters. Gillnets are commonly used in the area but not in the harbor due to the shallow depths. From DFO and Statistics Canada documents, pelagic species are not a commercially valuable, with only \$18,000 (all pelagic species) landed in Hermitage but minimal values at other ports (DFO 2009). Most fisherman retain their catch of herring for bait.

Atlantic Mackerel

Atlantic mackerel range from Northern Carolina to Newfoundland covering much of the northwest Atlantic. Mackerel are found in inshore waters during summer months and offshore during the fall and winter (Hart 2002 ⁽¹⁾). Like herring, mackerel feed on planktonic organisms of vary size and species. However, unlike herring, mackerel use gill rakers in filter feeding, sifting the water for smaller plankton (Hart 2002 ⁽¹⁾). Mackerel are a key species for predation by cod, larger fish (tuna, sharks, swordfish), as well as marine mammals (Beverton 2006).

Mackerel Fishery

The mackerel fishery is conducted from May to September but generally goes on without a quotas. The use gillnets, hand-lines (jiggers), and seines depends on the person, region, and time of year. Again like herring, mackerel are mostly used as a bait fish and are part of the total lands of less than \$20,000 for this portion of Fortune Bay (DFO 2009).

American Eel

The American eel, *Anguilla rostrata*, is a catadromous fish found on the eastern coast of North America. The eel lives in fresh water and only leaves this habitat to enter the Atlantic Ocean for spawning. It takes 9 to 10 weeks for the eggs to hatch. After hatching, young eels move toward North America and enter freshwater systems to mature. The female can lay up to 4 million buoyant eggs a year, but dies after egg-laying (Hart 2002 ⁽¹⁾). The eel is found around the Atlantic coast including Chesapeake Bay and the Hudson River. It prefers to hunt at night, and during the day it hides in mud, sand or

gravel very close to shore, roughly 5 to 6 feet under (Bruce 1982). American eel have a multitude of life stages: leptocephali, glass eel, yellow eel, and silver eel. Leptocephali metamorphose into glass eel as they migrate toward land and freshwater bodies (Bruce 1982). Glass eels develop into a pigmented stage as they move into brackish or freshwater. Usually by age two, small, pigmented eels make the transition into the yellow eel stage. Yellow eel inhabit fresh, brackish, and saltwater habitats where they feed primarily on invertebrates and smaller fishes. Sexual maturity can occur any time between 100 and 200 years of age (Bruce 1982). When yellow eel start to sexually mature, they begin a downstream migration toward the Sargasso Sea spawning grounds (Bruce 1982). During this migration yellow eel metamorphose into the adult silver eel phase, undergoing several physiological changes. Adult silver eel are believed to spawn in the Sargasso Sea during winter and early spring (Bruce 1982).

4.4 Groundfish

Atlantic Cod

The Atlantic cod, *Gadus morhua*, is a well-known [demersal food fish](#). In the western [Atlantic Ocean cod](#) has a distribution north of [Cape Hatteras, North Carolina](#), and round both coasts of [Greenland](#); in the eastern Atlantic it is found from the [Bay of Biscay](#) north to the [Arctic Ocean](#), including the [Baltic Sea](#), the [North Sea](#), areas around [Iceland](#) and the [Barents Sea](#) (Omnes 2002). It can grow to two metres (6 1/2 feet) in length and weigh up to 96 kilos. It can live for 25 years and sexual maturity is generally attained between ages 2 to 4, but can be as late as 8 years in the northeast Arctic (Hart 2002 (2)). Colouring is brown to green with spots on the [dorsal](#) side, shading to silver ventrally (Hart 2002 (2)). A lateral line is clearly visible. Its [habitat](#) ranges from the shoreline down to the [continental shelf](#).

Cod Fishery

Several cod stocks collapsed in the 1990s (declined by >95% of maximum historical [biomass](#)) and have failed to recover even with the stoppage of the large scale fishing. There is still a somewhat profitable fishery for Atlantic cod in some areas. From landings data there is in excess of \$500,000 landed per year on average over the last few years in Bay D'Espoir and surrounding area (DFO 2009). Gill nets are the primary gear for fishing cod. There is also a "food" fishery for cod in certain years. This allows a small quota (5 per person, 15 per boat) but is a not marketable.

4.5 Macro Invertebrates

American Lobster

The American lobster, *Homarus americanus*, is a species of lobster found off the Atlantic coast of North America. It thrives in cold and shallow waters where there are many rocks and other places to hide from predators (Cobb 1976). As a predator it is nocturnal and a solitary animal. As prey it likes to feed upon small fish, other crustaceans, and mollusks. It virtually feeds upon anything on the sea bed. The natural range of the American lobster is from Labrador as far south as North Carolina but are more known for their distribution around the Canadian maritimes and Maine. In this geographic range they generally grow up to 60 cm in length and 4 kg in mass but have been rarely seen at 1m length and up to 20 kg (Cobb 1976). Being a benthic invertebrate they are naturally

preyed upon by large cod, haddock, flounder and other lobsters. American lobsters molt two to three times per year while juvenile, but only once a year or less often when fully mature, which is about four to seven years old. When a lobster nears its next shedding period, it will start to grow a new shell underneath the current one, and the outer shell will become very hard and darken (Hughes 1962). The line that runs along the back of the lobster's carapace will begin to split, and the two halves of the shell will fall away. Claws and tail will be pulled out from the old outer shell, as the inner shell is very malleable (Hughes 1962). The old shell is often eaten for calcium recovery and the leftovers are sometimes buried. Females usually mate right after molting, but mating in between molts, known as intermolt mating, can occur. Larger females can store sperm for several batches of eggs from a single coupling (Hughes 1962). All females store the sperm to fertilize eggs later, not at the time of copulation (Hughes 1962).

Lobster Fishery

Fisheries for the American lobster occur during the spring with traditional wooden traps and new age wire traps. The traps are generally baited to assist in catching the lobsters. These traps are generally set inshore in relatively shallow water depending on the fisher person. With the usual high price for lobster and its high demand the lobster fishery is historically over the past few years to have had high returns. From landings data in previous years the value landed can exceed \$500,000 per port (DFO 2009). After the fall of the cod fishery in 1992 lobster has become a key fishery in the sustenance of rural Newfoundland.

4.6 Marine Birds

Marine birds in the area of St. Alban's and Swanger Cove are the species that have been sighted around most of coastal Newfoundland. These species include the common seagull, greater black back, arctic turns, and harlequin ducks.

4.7 Marine Mammals

From distribution patterns and through local ecological knowledge there are no marine mammals regularly in the area. They have been sightings of some species of whale, dolphin, and seal in the greater Bay D'Espoir area but none directly in the area of St. Alban's Harbour or Swanger Cove.

4.8 SARA

The Canadian Wildlife Service (CWS) has an important role in the protection of species of concern and was instrumental in the Species at Risk Act (SARA) which came into effect in 2003. SARA acts to prevent the extinction of species and the destruction of their vital habitat while assisting the species in recovery. The CWS is also a founding member of the [Committee on the Status of Endangered Wildlife in Canada](#) (COSEWIC), which assesses the status of species at risk in Canada (SARA 2009⁽¹⁾). From COSWEIC standards a SARA list of species was developed. With this list the Canadian Wildlife Service acts with a national program, Recovery of Nationally Endangered Wildlife (RENEW). This program brings together all groups that have an interest in the species in question. The initiatives that they take part include captive breeding and release programs, monitoring of human influence and access to the animals natural habitat, and

any human activity that may have an effect on the species of concern.

Within the St. Alban's area like most areas around the globe there are species of concern. Even one of these species are endangered. There are four species in total around the St. Alban's area that would be of concern; the harlequin duck, red crossbill percna, monarch butterfly, and the boreal felt lichen. These species were determined to be found in the area through the use of SARAs online data and mapping system (SARA 2009 ⁽¹⁾). Summary of the species as they have given are presented in the table below.

COSEWIC ID	Name	Scientific Name	Taxon	COSEWIC Status	SARA Status
22	Harlequin Duck	<i>Histrionicus histrionicus</i>	Birds	SC	SC
814	Red Crossbill Percna	<i>Loxia curvirostra percna</i>	Birds	E	E
294	Monarch Butterfly	<i>Danaus plexippus</i>	Lepidoptera	SC	SC
134	Boreal Felt Lichen	<i>Erioderma pedicellatum</i>	Lichens	SC	SC

Table 4-1 Species of Concern Possibly Found in the Build Area

Boreal Felt Lichen

The boreal felt lichen, *Erioderma pedicellatum* is a [lichen](#) that has a very narrow distribution, with the largest remaining habitat in [Newfoundland, Canada](#). This lichen, an amphi-Atlantic species, that was prevalent in Norway and Sweden and Atlantic Canada during the past (SARA 2009 ⁽²⁾). It has disappeared from both Norway and Sweden and most areas of [Maritime Provinces](#) of [Atlantic Canada](#). The remaining habitat in Newfoundland is crucial to the global survival of this species. As an [epiphytic](#) lichen, the *Erioderma pedicellatum* is a foliose, or leafy lichen that appear white-fringed appearance when viewed from a distance due to its gray upper surface and white underside where the edges curl upward. It grows on trunks and branches of trees in moist mature forests, where its preferred host in Newfoundland is the [balsam fir](#). An area on the [Avalon Peninsula](#) called Lockyer's Waters is one of Newfoundland's most prolific rare lichen habitat (SARA 2009 ⁽²⁾).

Red Crossbill Percna

The Red Crossbill, *percna* subspecies (*Loxia curvirostra percna*), is endemic to eastern Canada and is associated with conifer forests on the island of Newfoundland, with evidence of infrequent irruptions off the island (SARA 2009 ⁽⁵⁾). This subspecies is currently listed as endangered under the *Species at Risk Act* of Canada, as well as the Newfoundland and Labrador *Endangered Species Act* (SARA 2009 ⁽⁵⁾). Although the *percna* was once considered common in Newfoundland, steep population declines have been documented since the mid-1900s (SARA 2009 ⁽⁵⁾). The last documented *percna* nest in Newfoundland was reported in 1977. However, sightings of a number of red crossbills in Whitbourne, Newfoundland and Labrador, along with a photograph of a juvenile red crossbill being fed by an adult in June 2005 at the same location, indicate that red crossbills, probably including the *percna* subspecies, still nest successfully in

Newfoundland Numbers of *percna* in Newfoundland are currently estimated at 500–1500 individuals (SARA 2009 ⁽⁵⁾). The Red Crossbill, *percna* subspecies, has a restricted distribution, which, combined with its apparent low numbers, makes it potentially very vulnerable to localized as well as broad-scale threats (SARA 2009 ⁽⁵⁾).

Harlequin Duck

The Harlequin Duck (*Histrionicus histrionicus*) is a small sea duck. The male has a slate blue body accented with white and black markings and chestnut flanks (SARA 2009 ⁽³⁾). Females are a dull brown with three white spots on the sides of their heads. Harlequins breed on turbulent, upland rivers and streams and winter along rugged coastlines. In spring they congregate at river mouths and estuaries, waiting for the rivers to thaw (SARA 2009 ⁽³⁾). Except when breeding, Harlequins are gregarious, feeding, molting and wintering on traditional grounds in flocks. The eastern population of the Harlequin Duck breeds in northern Québec, Labrador, Newfoundland's Great Northern Peninsula, southeastern Newfoundland, and the eastern tip of the Gaspé Peninsula (SARA 2009 ⁽³⁾). In all likelihood Harlequin Ducks are also breeding on Baffin Island, Nunavut and the northern extremes of New Brunswick. Harlequins winter along the rugged coasts of southern Newfoundland, the Atlantic Coast of Nova Scotia, in the Bay of Fundy off New Brunswick, the Gulf of Maine to as far south as the mouth of the Chesapeake Bay (SARA 2009 ⁽³⁾).

Monarch Butterfly

The Monarch Butterfly (*Danaus plexippus*) has a wingspan that ranges from 8.9 to 10.2 cm (3½–4 in.) with the upper side of the [wings](#) a tawny-orange, black veins and margins, with two series of small white spots. The fore wings also have a few orange spots near the tip. The underside is similar but the tip of the forewing and hindwing are yellow-brown instead of tawny-orange and the white spots are larger. The males unlike females have a black patch of sex-scales on the hindwings, and the black veins on its wing are narrower than the female's. Monarchs are especially noted for their lengthy annual migration (SARA 2009 ⁽¹⁾). In North America they make massive southward migrations starting in August until the first frost. A northward migration takes place in the spring. The length of these journeys exceeds the normal lifespan of most monarchs, which is less than two months for butterflies born in early summer. The last generation of the summer enters into a non-reproductive phase known as [diapause](#) and may live seven months or more. During diapause, butterflies fly to one of many overwintering sites. The generation that overwinters generally does not reproduce until it leaves the overwintering site sometime in February and March. It is thought that the overwinter population of those east of the Rockies may reach as far north as [Texas](#) and [Oklahoma](#) during the spring migration. It is the second, third and fourth generations that return to their northern locations in the United States and [Canada](#) in the spring (SARA 2009 ⁽¹⁾).

5.0 SOCIO-ECONOMIC ENVIRONMENT

5.1 Demography

The following article is an edited version of one that was found in the Encyclopedia of Newfoundland for St. Alban's.

St. Alban's is the major service centre for the Bay d'Espoir area. Formerly known as Ship Cove, the community's name was changed in about 1915 at the suggestion of parish priest Father Stanislaus St. Croix *qv*, to avoid confusion with numerous other Ship Coves and facilitate the operation of a post office. The present name of the community honours an English martyr and was chosen to reflect the fact that St. Alban's is one of few predominantly Roman Catholic communities in Newfoundland where the majority are of English (rather than Irish or French) origin.

In the 1830s Newman and Co. of Gaultois had winter crews there, while Nicolle and Co. of Jersey Harbour had crews at Swanger's Cove (just to the north of Ship Cove and since 1971 a part of the municipality of St. Alban's). In the mid-1800s the area was being frequented in winter by a number of fishing families from communities at the mouth of the Bay, and a few eventually settled. Tradition has it that the Collier and Hoskins families settled in 1851, followed by the Organ family in 1853. Ship Cove first appears in the *Census* in 1869, with a population of 39. It was described in 1872 as a community of 45 souls, It is said that the name Ship Cove originated with the practice of American banking vessels mooring offshore in order to purchase bait, for the cove is quite shallow.

In the 1880s and 1890s other families settled, many from Great Jervais *qv*, a predominantly Catholic community at the mouth of the Bay. These included Crants (at Swanger's Cove), Farrells, Howses, McDonalds, Morrisises and Willcotts. There were 117 people in 1884 and the next year the first Roman Catholic school/chapel was built. By 1901 there were 202 people -- enough to warrant the opening of a branch store of Thomas Garland Ltd. of Gaultois and the building of a new Roman Catholic church (St. Ignatius, begun in 1902). The community also received its first resident priest, while in 1911 Father St. Croix began 35 years of service to the parish. The population doubled between 1901 and 1921 (pop. 437), and again between 1921 and 1945 (pop. 860).

To a great extent this increase in population was based on a thriving logging industry. The first sizable sawmill in the area was begun at Milltown in 1895, while from about 1920 there was also some pulpwood cutting. Proposals to establish a deep water paper port and/or a pulp mill at nearby Roti Bay did not materialize. After 1937 pulpwood cutting by contractors increased and in 1943 Bowater's established a major pulpwood operation above Conne River, drawing much of its work force from St. Alban's. Families continued to move into the town from the outer reaches of the Bay, and by 1956 there were 1368 people. The community suffered a blow when Bowater's shut down its pulpwood operation in 1958, but in 1964 construction began on the Bay d'Espoir hydro-electric project. With continuing resettlement and an influx of construction workers there were more than 2000 inhabitants by the mid-1960s. Construction of the Bay d'Espoir highway and roads to Hermitage, Harbour Breton and St. Jacques-Coomb's Cove provided additional employment in the late 1960s and early 1970s, while solidifying the town's

status as a regional centre.

Since the end of the construction boom, St. Alban's has experienced periods of high unemployment -- alleviated by further hydro construction in 1975-77 and 1981-82. Many of the younger people left the area, while others have traveled to work at other construction sites. In 1994 the major local employers were service industries, sawmills and Newfoundland Hydro. St. Alban's has also begun to emerge as the service centre for a growing aquaculture industry (at Roti Bay and elsewhere), while some residents have continued to fish the largely depopulated outer Bay d' Espoir from a base at St. Alban's.⁷

The current population in the Town is 1207. The Town has recently developed several residential subdivisions, completed a new municipal plan, and will now host an aquaculture research center, operated by Department of Fisheries and Aquaculture, and a modern salmon hatchery, operated by COS.

Unemployment levels in the Town are low, which can be attributed to aquaculture activities, a local fish plant, inshore fishery, Newfoundland Hydro and a growing local service sector. It is anticipated that this trend will continue into the future, as more new developments take place in the Town.

Further information about St. Alban's can be found at the [Community Accounts](#) pages maintained by the provincial government and through the [Coast of Bays](#) economic zone pages.

⁷ John Dollimont (1968), Edward Wix (1836), *Census (1869-1991)*, *DA (Dec. 1978)*, *JHA (1872)*, *McAlpine's Newfoundland Directory (1894)*, *Report of the South Coast Commission 1957 (1957)*, *Sailing Directions Newfoundland 1931 (1931)*, Archives (A-7-1/J), Newfoundland Historical Society (St. Alban's).

6.0 LAND INFORMATION

6.1 Zone Information

The proposed undertaking is situated within the Planning Area Boundary of the Town of St. Alban's, and hence it is subject to development regulations as prepared by the Town and signed off by the Minister of Municipal Affairs. Appendix G, Zone Information, presents a portion of the Land Use Map and associated land use classifications.

The Swanger Cove site is mainly zoned "mixed development", however the areas along the shore fall into a "rural" designation. A review of the land use tables for these two zones indicates that General Industry (Mixed Development) and Light Industry (Rural) are Discretionary Uses of the land. This implies that the Town of St. Alban's will be required to give public notice of the intended use and provide sufficient time to hear comments on the same, before it can issue a development permit.

Discussion with Town officials has indicated that they do not expect any opposition to the planned hatchery and that they will move as quickly as possible to move this process forward.

6.2 Land Ownership

The proposed development is completely encompassed by a track of land that is currently under the administrative control of Her Majesty in Right of Canada (Transport Canada) as per an Executive Order of Council, Government of Newfoundland, dated September 22, 1967. Appendix H, Land Tenure, presents a copy of the Order of Council along with a sketch showing the lands impacted by the same.

COS is currently in negotiations with Her Majesty in Right of Canada (Transport Canada) to acquire leasehold interest to the portion of land required for the construction of the salmon hatchery and related works. The area in question is clearly presented in Appendix I, Conceptual Plan, which shows the various components of the proposed undertaking.

6.3 Current and Historic Land Use

Field investigations have shown that the track of land required for the proposed hatchery is currently not being used for any other purposes.

A review of Appendix I, Conceptual Plan, shows evidence of a trail leading to Swanger Cove, which crosses over the section of land required for the discharge pipe (Discharge Option 1). Field observations show that this trail is used very infrequently and that in any event the Swanger Cove could easily be accessed by other trails in the area.

A review of aerial photography for the St. Alban's area indicates that the parcel of land required for this undertaking has always been unoccupied. Evidence of a helicopter landing area does exist, however that landing area has been decommissioned and an environmental cleanup has been completed by Transport Canada.

7.0 CONSULTATIONS

COS operates with full disclosure of any plans that may impact the public or the communities in which they operate. To date representatives from COS have conducted the following consultations for the salmon hatchery:

- Meetings with the Town Council of Terrenceville;
- Meetings with Schooner Regional Development Corporation;
- Several meetings with the Town Council of St Albans;
- Meetings with the Coast of Bays Development Corporation;
- Meetings / presentations with Provincial and Federal Officials that may be involved in the hatchery process, Howley Building, St John's NL;
- Meetings / presentation to the Department of Environment and Conservation, Town representatives at the Departments board room.

COS plan to conduct a public Town Hall session in the Town of St. Albans to go over the plans they have for the hatchery, to discuss employment options and to identify any concerns that the community may.

8.0 SCHEDULE

COS proposes to complete construction of the building envelope before December 31, 2009. Presented below is a tentative schedule for the undertaking.

Project Schedule - Salmon Hatchery – St Albans, NL			
Task	Description	Start Date	End Date
1	Site Selection at St. Albans	June 2009	June 2009
2	Conceptual Plan	July 2009	Sept 2009
3	Land Acquisition	August 2009	October 2009
4	Geotechnical Analysis	Sept 2009	Sept 2009
5	Building Design	July 2009	Sept 2009
6	Regulatory Approvals	July 2009	Oct 2009
7	Construction	Oct 2009	April 2010
8	Process Installation	Jan 2010	May 2010
9	Commissioning	May 2010	May 2010
10	Operations	June 2010	