



CLAUDIO ALFARO ROJAS  
ENGINEER IN AQUACULTURE  
UNIVERSIDAD DE LOS LAGOS  
OSORNO CHILE  
RUT 9227977-4  
Copiapó.

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claudio.alfaro2 @ gmail.com

CLAUDIO ALFARO, Dynamic environmental consultant, immersed in the world of photography and underwater video, having as one of its characteristics, his joviality, education, good people skills, and innovative skills, self-assured, so in his position.  
He has the gift of management, leadership and ability.

2011 2012  
ATACAMA SEA WATER  
ASSOCIATES CONSULTING ENGINEERS

Engineering, studies, consulting, research and development for aquaculture industry, and mining.

Mr. CLAUDIO ALFARO ROJAS ENGINEER IN AQUACULTURE

GENERAL MANAGER

PROFESSIONAL STAFF

Mr. VEERYO Rojas Gonzalez CIVIL ENGINEER  
Mr. EDUARDO Alvarez Rosas Mining engineer

Mr. Dario Aguirre de la Lastra CIVIL ENGINEER IN GEOGRAPHY

EXPERIENCE THE GREAT MINING COMPANIES.

2009/2010

LGP Civil Works Inc.

Copiapó

1. - Civil Engineering - Mining.
2. - Civil Works
3. - Industrial Assembly

Contract 2 Number 4500463746

"SERVICE ore crushing, HYDRO PLANT, loading and transportation OXIDE HIGH AND LOW LAW"

DIVISION EL SALVADOR

CODELCO CHILE

Title: Management Control Engineer

Resso (Specific Regulation of Occupational Safety and Health)

1. - Policy Occupational Safety and Health.
2. - Process Maps.
- 3.-Hazard Identification Matrix.
4. - Matrix Exposed workers. .
5. - Risk Maps.
6. - Regulatory Framework.
- 7.- Program Risk Prevention.
8. - CPHS.
9. - Training.
- 10.-Procedures.
- 11.-Statistics of the Contract.
- 12.-communication and consultation procedure.

- 13.-standart Operational Control.
- 14.-Emergency Preparedness and Response.
- 15.-Environment.
- 16.-Personal Protective Equipment.
- 17.-Monitoring Specific Action Program (SEAP).
- 18.-Purse.

Binational Pascua Lama Project  
BARRICK GOLD CORPORATION  
Nevada Mining Company (NMC)  
Argentina Chile Veladero Barriales

NEVA O743 Contract 1 CC

"Trench Excavation System Leak Cut Cut - Off Selected aggregates and other".

Title: Technical Office Engineer

#### Functions

- a) Compliance Programs Risk Prevention and Environment Program.
- b) Monthly Programming Development Agreement.
- c) Performance Analysis: Human Resources, Equipment and Heavy Machinery.
- d) Generation of daily reports, work progress and consolidated reporting.
- e) Calculation of operational factors.
- f) Calculations and Structural Analysis Efforts
- g) Fluid Mechanics and Hydraulics.
- h) Hydrology.
- i) Environmental Engineering.

#### Mission

- 1. - To meet the requirements of the client, it is necessary that the material is exploited in a volume of approximately 425,000 m<sup>3</sup>.  
80,000 m<sup>3</sup> of which corresponds to the manufacture of concrete, 85,000 m<sup>3</sup> to be employed for making  
platforms and 260,000 m<sup>3</sup> for other aggregates.
- 2. - This operation is done in previously given sector for making the trench, whose dimensions approximate  
are 200 m. long by 60 m. wide.

3. - In industry platforms, mounted two processing plants, one of which produces aggregates for concrete manufacture.

With production capacity of 120 to 140 m<sup>3</sup> / h., Which has a primary crusher feeding main belt, which delivers the material to a second crusher and also a size selector, which will lead to tape gravel gravel, sand and return. It has a sand washing machine that is fed with water accumulated, and whose element is reduced by only accompany the sand moisture.

2008/2009

EXPERIENCE IN AQUACULTURE INDUSTRY

RESEARCH AND DEVELOPMENT OF HIGH POTENTIAL MARINE SPECIES FOSTER.

Experimental design (R & D) in subtidal benthic community Calderilla Punta Ester.

AUTHORS: CLAUDIO ALFARO

Experience 1

Parenting rockfish in artificial shelters (benthic cages).

Experience2

Octopus fattening artificial caves north at different depths.

Species. Family Cheilodactylus Cheilodactylidae variegatus (Bilagallo or Pintacha) mimus Octopus

Species (Gould, 1852; North Octopus)

Family Pinguipes Pinguipedidae chilensis (log)

Humeralis Paralabrax Family Serranidae (grouper Spanish)

Otaria flavescens (fur seal, common predator of the experiment) Anthothoe chilensis Which covers a bed mussels in covers by gastropod Crepidula.

2007

Environmental Advisor

Implementation and maintenance of Clean Production Agreements (APL) in Networking Workshops in the salmon industry.

Traceability and monitoring Copper paint stick cooking culture nets and propagation of impacted areas in the marine environment.

Digital underwater video inspections Hi - 8  
Principal: Marine Harvest Chile SA

Floating pontoon production control and operations of Marine Harvest Chile SA Piper airplane flight over Isla Melinka  
Occupancy: 15 people

Duncan Center  
Fattening *Salmo salar* (Atlantic salmon)  
Puerto Swans  
Aysén  
Region XI

Center hydrodynamic resistance anti gravity background wolves network cables Inspection data transmission operations control center.  
Red Fishbowl A 42 m. deep. A 40 m. deep.

Determination of fouling or biofouling levels in fish farming networks through Digital Underwater Photography and Video.

2006

Developing Plans Surveillance and Environmental Monitoring (PVA).  
Sampling benthic  
Quantification of CH<sub>4</sub> (methane)  
Redox potential (redox)  
Availability aerobic conditions (O<sub>2</sub> ppm dissolved.)

Inspections digital underwater video (format Hi - 8)  
Principal: Camanchaca S.A.  
Esturio of Reloncaví  
Region X

Structural balance of the network system. -

Centro Centro Rio Chilco Marimeli Farellones of Punta Center Church

Inspections and underwater video antipredadores networks.

Principal: Ventisqueros S.A.

Module 20 Balsas HDPE circular cages of 40 m. Module Diameter + 30 floating cages of 30 mx 30 m. Galvanized Steel.

Geometry differential fouling level Troubleshooting and entry points predators

Linguar Center Malomacum Center Otaria flavescens (sea lion).

EVALUATION OF NAVAL ENGINEERING WORKS.

Filming underwater support structure 12 Balsas - HDPE circular cages of 30 m. in diameter.

Principal: Haug Aqua Chile SA (Subsidiary of Haug Aqua Norway)

Anchor Engineering Advanced Calculus

Images simulator and dynamic loads on submerged structures finite elements,

Mariculture Chiloe.

Exposed Centre

CAT ISLAND

Punta Lobos.

Queilen Commune,

Chiloé.

Technical Inspections at Hull and Propulsion System Motovelero "Captain Haase".

Management: Paul Ortuzar Aldunate

Puerto Varas

Region X

## ENVIRONMENTAL CONSULTANT ENGINEER

Review and Development of Environmental Documents, Statements (EIS) and environmental impact studies (EIA)

SEIA electronic monitoring.

Preliminary Site Characterization (CPS).

Environmental Report Generation (INFA)

Video transect and georeferencing.

Study of organic matter.

Analysis of benthic macrofauna.

Characterization of hard bottom communities and soft bottoms.

Evaluation of commercial interest communities.

Bioindicator species taxonomic classification.

Substrate studies, assays where sediment grain size is determined qualitatively and quantitatively distributions

sedimentary fractions according to Wentworth scale.

Abundance Biodiversity Predator-Prey Interactions Behavior

Benthic macrofauna Sampling Sampling Sampling soft bottom Hard Bottom

Puerto Montt Calderilla Metri huenquillahue

Client: JP & JM

Aquaculture Engineers and Associates

Puerto Montt.

AUDIT SERVICE PROVIDERS Maritimes.

EVALUATION ANTIPREDADORES Network Systems (Otaria flavencens, fur seal)

PRINCIPAL: Fjord Sea Food Chile SA

Chiloe Achao X Region

Fund anti wolves network to 45 m. of prof. Onchorynchus mykiss in intensive farming

2005

FILM AND EVALUATION OF SUBMERGED OPERATING SYSTEMS.

PRINCIPAL: Holding & Trading SA

Puerto Aguirre

Region XI

Vicho Center

Team Viking Pro Dry Suit 3 + Full Face Scuba Divator assisted surface (surface Neumofatómetro + communication).

Inspections fishbowls networks and network geometry antipredadores.

PRINCIPAL: Aqua Chile SA

Red lopera to max. voltage.

Raúl Marín Balmaceda Onchorhynchus mykiss

Region XI Melinka

Guaitecas Archipelago.

Region XI

2004

Underwater Video Inspection to 24 circular cages. HDPE 30 m. Diameter Approx

PRINCIPAL: Stolt Sea Farms Chile (Branch Stolt Sea Farms Norway).

Abel Engorda Center Islet

Overflight

Rio Black Hornopirén

Region X

Crew: Pilot Santiago Vidal (Servimar SA. Puerto Montt)

Copilot Sean Morton (Aqua Card sa Toronto, Canada)

Copilot Claudio Alfaro (Juan Pablo Valdivieso y Asociados SA Puerto Montt)

2003

Design and Engineering anchoring ship R / R Magallanes for the Port of Chaitén.

Fleet NAVIMAG (SHIPPING MAGELLAN S.A)



Puerto Montt

2003

Juan Pablo Valdivieso and Associates.

Specialized Adjusters  
Aquaculture Risk Division.

Puerto Montt.

Inspection metal cage deformation and collapse Post - temporary ponds - structures cages  
Refloating  
Chiloé Puchilco  
Marine Harvest Chile SA

2003 -2001

Morgan & Fuenzalida Enterprises Inc.

Galvanizing plant and Maestranza.  
Nominal Capacity 9 ton / hr.,  
Zinc Melting Point 450 ° C.  
A123 ASTM (American Society for Testing and Materials)  
Industrial Park subdivision

Puerto Varas

2001

Title: Civil Works Supervisor and Naval.

Manager Risk Prevention and Maestranza galvanizing plant.

Implementation SIGES.

Quality Systems (ISO 9000), Environment (ISO 14000), Occupational Safety and Health.

General Manager Andrew Puschel Kalher  
Industrial Engineer

2003 2002

Cargo Commercial Technical Manager.

Projects in construction, installation, sales and after-sales and Naval Civil Works.  
Structural Projects galvanizing.

Clients: Marine Harvest Chile S.A  
Aguas Claras SA  
Aqua Chile SA

General Management Harmin Geissbulher  
Civil Engineer in Mines.

Galvanized Steel Cage Construction and Industrial Assembly Cage Polyethylene HDPE High Density  
Projects naval Balsa mounting cages (Termo and Piping Electrofusion).  
2000

Refloating winery Warehouse metal structure 25 m. x 10 m.  
Sunk in Canal Dalcáhué to 35 m. Depth

Quiquel Center,  
Aguas Claras SA  
Region X

Principal: Juan Pablo Valdivieso and Associates  
Specialized Adjusters  
Aquaculture Risk.

Cia de Seguros: Chilean Consolidated General Insurance SA

Initial inspection and turnaround: Subsea Services  
Pacific Ocean S.A.  
General Manager: Jorge Erdlansen Strange (Norway)  
Industrial Engineer

Commercial Diving Contractor, DGTMM.  
(15 Years experience in Offshore Diving ENAP - Strait of Magellan)

Commercial Technical Manager: Claudio Alfaro

Filming at 35 m in Chiloé Dalcahue Channel

Benthic dredging Inspection and solid organic waste (food fish),  
Sampling gas production CH<sub>4</sub> (methane) and anaerobic conditions.

Oxxean Maritime Enterprises SA.

Oxxean Industrial Port,  
Oxxean yacht marina.

Anchor Engineering, Computing + Memory Specifications.

Professional Diving, Full face + digital underwater photography and video.

Installing and Naval Artifacts Centers for Salmon Industry.

Puerto Montt.

Title: Operations Engineer

Hdpe Cage Mooring Chain 12 ton. Anchor bolt Hil-ti to Consolidated Rock. Installing Houseboats  
Meeting Room and Living Control - Room  
Towing and installation of floating cages

1999 1996

Camanchaca Fishing Company Inc.  
Hatchery Advisory Sp *Argopecten purpuratus* (North Oyster).

Seed production and microalgae in a controlled environment.

Treatment and monitoring of water quality parameters

1. - Ph
- 2.-chlorine concentration.
- 3.-Turbidity.
- 4.-Total Suspended Solids (TSS).
- 5.-Total Dissolved Solids (TDS).
- 6.-conductivity,  $\text{NH}_4$ ,  $\text{NH}_3$ ,  $\text{NH}_2$ ,
- 7.-Hardness
- 8.-Dissolved oxygen (O.D)
- 9.-CO<sub>2</sub>
- 10.-Temperature.
11. - Using sand filtration equipment, activated carbon, decanters, foam fractionators, cartridge type filters, UV sterilizers Biolight
- 12.-Use of electric pumps, compressors, blowers (Blowers). Using teams of water quality measurement instruments and Hanna Hatch.

1996 1995

MARINE FARM SA

Argopecten purpuratus Sp REENGINEERING HATCHERY

- 1) hydraulic calculation.
- 2) Sizing of pumps for fresh water and sea.
- 3) Design and installation of systems adduction seawater.
- 4) Design and installation of filtration systems + Ultra Violet (UV).
- 5) Redesign and Assembly Microalgae Laboratory.

Caleta Errázuriz

SANTA MARIA

ANTOFAGASTA

1994 1993

*Argopecten purpuratus* Sp

Design, installation and operation of seawater Hatchery without UV  
Caleta Chañarillo

English Bay

Gustavo Boher & Bruce Trench - Claudio Larco Alfaro & Kid.

Design Design Investment assembly and operation

OBJECTIVES:

POTENTIAL mass cultivation of microalgae.

EASY OPERATION

CELL SIZE APPROPRIATE

DIGESTIBILITY CELL

NUTRITIONAL VALUE OF THE SPECIES

Substrate free swimming larvae larval settlement cultivation of microalgae

*Isocrysis Galvana*

*Nannochloris atomus*

*Chaetoceros gracilis*

AUDITS AND PROFESSIONAL DIVING

Audit Refloating 200 submarine and Long-lines (200 m long), Pearl-nets and flashlights Sunken  
between 30-45 m.

Determination of levels of Fouling, Briozoos / hydrozoans + + *Ciona intestinalis* macroalgae for  
use as biofertilizer for agricultural use.

Contract: International Marine Cultivation

English Bay.

Group Diving (Scuba & Hookah)

Mr. Larco Kid Ing. Aquaculture (University of Leeds) sport diver Contract

Alfaro Claudio Ing Aquaculture (University of Lagos) Underwater Cameraman

Bruce Trench Marine Technician (Pontifical Catholic University Talcahuano) Sport Diver Contract

Erick Foster Marine Biologist (University of Hawaii) Scientific Diver

DEEP SEA FISHING EXPERIENCE E ICHTHYOLOGY

Fisheries Research *oxirhynchus Isurus* (Mako shark or mako) in English Bay offshore. Capture

Xiphias gladius (swordfish)

FISHING GEAR surface longline MAKO FOR CAPTURE AND TILE.

FISHING GEAR WITH fluorescent lights gill nets for catching swordfish.

SANTIAGO 1992-1991

Professor of the School of Aquaculture Technology and Engineering (E) in Fisheries.

Zipter

Providence

1990 - 1989

South Frio Fishing Company Inc.

Salmon Division

Puerto Chacabuco

Region XI.

Head of Centre Engorda

1988

Marine Harvest Chile SA - UNILEVER CHILE.

Marine Harvest Scotland Branch

Lago Llanquihue

Corners Bay

X Region.

Assistant Center Salmo salar smolt production; Atlantic Salmon. -

Consultations and referrals

a) Diether Reuck

General Management

Atlantis Chile SA

Puerto Montt

Tel: 065 263644

Mob. 988886321

e-mail: [ivsreuck@gmail.com](mailto:ivsreuck@gmail.com)

b) Harmin Geissbuhler  
Plant Manager Galvanizadora  
Morgan & Fuenzalida Enterprises Inc.  
Puerto Varas

c) Alejandro Herrera Malden  
General Management

Mauricio Vivar  
Engineering Management  
Haug Aqua Chile S.A  
Tel: 065 279930  
Puerto Montt

d) Robert Lyon Brand.  
Zonal Manager  
Kemifar S.A.  
Puerto Montt  
Mob.098740873

e) Hans Steffens.  
Zonal Management

Jeanette Opitz Niklitschek  
Public Relacionadora

Juan Pablo Valdivieso and Associates  
Puerto Montt  
Tel: 065313366

f) Alejandro Kunsmann Montalva.  
Naval Construction Engineer  
Puerto Montt  
Tel: 065312421

g) Alvaro Poblete Smith  
Industrial Engineer  
Operations Manager  
Aguas Claras SA  
Puerto Montt

H) Manuel Castillo Salinas  
Metallurgical Engineer  
Risk prevention expert Category B  
Mob: 84495646

I) Pumpin Francisco  
Mob: 63007623  
Montt Law Firm and Associates  
Copiapó

1990 1989  
DEGREE THESIS  
Benchmarking cultivation of three anadromous salmonids SPECIES IN SOUTHERN CHILE.  
Project of Science and Technology Fund (FONDECYT N ° 89/255)

UNIVERSITY OF LAGOS  
OSORNO

Sponsorship: Mr. Juan Carlos Uribe Barichivich (Dr. In Aquaculture,)  
Ms. Maria Victoria Road course (Dr. in Biochemistry University of Chile)  
Mr. Max Fischer (Chemical Engineer).  
Mr. Diether Konow Hott (Physical Chemical Oceanographer)

PRACTICE 1988  
EXPERIMENTAL RUPANCO LAKE FISH FARMING.  
UNIVERSITY OF LAGOS  
CULTURE tschawytscha Oncorhynchus (Walbaum, 1792) CHINOOK SALMON IN PHASE freshwater.  
.

FONDECYT Project No. 1890255  
Sponsorship: Mr. Juan Carlos Uribe Barichivich (Dr. In Aquaculture,)  
Ms. Maria Victoria Road course (Dr. in Biochemistry University of Chile)

1985 initial practice  
Integrated farming, eco-sustainable AQUACULTURE.



Sponsorship: Mr. Alejandro Buschmann (Ph.D. in Biological Sciences and Ph.D. in Ecology at the Pontifical Catholic University of Chile)

Director, Center for Research - Mar

UNIVERSITY OF LAGOS  
Puerto Montt

Experimental Center of Aquaculture and Marine Sciences  
University of Lagos.  
Metri  
Puerto Montt.

2010 Monitor Risk Prevention for the extractive mining industry. -  
Technological University  
INACAP  
Copiapó

#### ADDITIONAL INFORMATION

Date of birth February 17, 1964  
CATHOLIC HIGH SCHOOL secondary education ATACAMA  
COPIAPO  
Graduation Year: 1981  
Marital status Married  
Children age 21 UNO (Audiology Student Universidad Austral de Chile)

Class B drivers license valid

SOFTWARE  
USER LEVEL KNOWLEDGE Windows platform.  
POWER POINT - Primavera Project Planner

NATIVE LANGUAGE SPANISH  
ENGLISH WRITING: EAST; SPOKEN: EAST; TRANSLATION: HIGH; TECHNICAL HIGH.

Net income TBD

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# U N I V E R S I D A D   D E   L O S   L A G O S



## CONSTANCIA

Se deja constancia que don **CLAUDIO EDGARDO ALFARO ROJAS, RUT N° 9.227.977-4**, Ingeniero de (E) en Acuicultura, en el año 1989 participó como Alumno Tesista en el Proyecto Fondecyt N° 89/255 titulado "EVALUACION COMPARATIVA DEL CULTIVO DE TRES ESPECIES DE SALMONIDEOS ANADROMOS EN EL SUR DE CHILE", con una duración de 2 años.

Quién suscribe fue Director e Investigador del mencionado Proyecto.

Se extiende la presente constancia para los fines que el Sr. ALFARO, estime conveniente.



*Juan Carlos Uribe Barichivich*

**JUAN CARLOS URIBE BARICHIVICH**  
Director  
Departamento de Acuicultura y Rec. Acuáticos  
Jefe Programa de Producción en Salmonídeos  
Universidad de Los Lagos- Osorno  
Fono-Fax (64) 237681 Fono 205278

OSORNO, 17 de Marzo de 1999.