

José Andrés Araya Obando



PERSONAL DATA:

Date of birth: Sept 22, 1982
Place of birth: Cartago, Costa Rica
Nationality: Costa Rican
Status: Married

WORK ADDRESS:

Tecnológico de Costa Rica. (www.tec.ac.cr)
Construction Engineering School
APDO: 159-7050, Cartago, Costa Rica
PHONE: (506) 2550-2311 / (506) 8881-3159
EMAIL: jbando@tec.ac.cr
ORCID Id: <https://orcid.org/0000-0002-6440-5483>
GOOGLE SCHOLAR: <https://scholar.google.es/citations?hl=es&user=wwqhCbQAAAAJ>
RESEARCH GATE: <https://www.researchgate.net/profile/Jose-A-Araya-Obando>

EDUCATION/ Professional studies:

Doctorate Candidate, Doctor Engineering Program - Tecnológico de Costa Rica [TEC] -(2016-2021). Research: "*Optimizing rapid filter conditions for biological removal of manganese from drinking water*". Financed by TEC. Jointly with the Sanitary Engineering Centre (CIS), Faculty of Sciences, Engineering and Surveying, National University of Rosario, Argentina and the Faculty of Civil Engineering and Geosciences of the Delft University of Technology, Netherlands ([project and publications in progress](#)).

Master of Engineering: Sanitary and Environmental Engineering.

Dec 2012. Escuela de Ingeniería de los Recursos Naturales y del Ambiente, Universidad del Valle (UNIVALLE). Cali, Colombia. (www.univalle.edu.co). Theme: "*Modeling of Residual Chlorine in the distribution network of the La Sirena Water Supply System, Cali, Colombia*" which objective was to contribute to the knowledge of the behavior of residual chlorine in the distribution network of small water supply systems. Financed by Acueducto La Sirena, (CINARA) and the Research and Technology Transfer Station Puerto Mallarino.

Bachelor of Construction Engineering.

Sept 2007 - Licenciatura en Ingeniería en Construcción. Costa Rica Institute of Technology (ITCR). Cartago, Costa Rica.
Sept 2006 – Bachillerato en Ingeniería en Construcción. Costa Rica Institute of Technology (ITCR). Cartago, Costa Rica.

EMPLOYMENT:

Tecnológico de Costa Rica (TEC)
Cartago, Costa Rica. Escuela de Ingeniería en Construcción
Professor/Researcher, Water Resources.

2008 to present

- Coordination of Academic Area "*Water Resources and Environment*" of Construction Engineering School (2011-2015/2019-2021).
- General Management of Laboratory of materials of the Housing and Building Research Centre (*LabCIVCO* - 2014)
- Coordination of the Water Supply Program - Construction Engineering School (2016-2017)
- Coordination of the Accreditation Committee - Construction Engineering School (2016-2017) - Canadian Engineering Accreditation Board (2015-2016).
- Member of Institutional Accreditation Committee – Tecnológico de Costa Rica - Canadian Engineering Accreditation Board (2016)
- Hydraulic Technical Management of the Housing and Building Research Centre (CIVCO-2011-2014).
- Committee member of the Commission for the Legislation and Management of the Reventazón River Basin (COMCURE. 2008)

RESEARCH EXPERIENCE**Research Projects:**

- "Fluoride and arsenic removal by coated pumice", which objective is to develop a low-cost adsorbent material of local origin that can be used for the removal of arsenic and fluoride with or without interferences. Financed by TEC -2020-2021 ([project and publications in progress](#)).
- "Use of chitosan-iron (III) beads for arsenic removal in water for human consumption applied in small communities" (2020), which objective was to develop two low-cost adsorbent for As removal from groundwater. Financed by TEC ([project concluded and publications in progress](#)).
- "Removal of arsenic, iron and manganese from groundwater by co-precipitation", which objective was to develop two low-cost technologies for Mn-Fe and As removal from groundwater by biological and physicochemical means, respectively. Financed by TEC -2017-2019 ([project concluded and publications in progress](#)).
- "Arsenic removal systems in Rural Water Supply and small communities" which objective is to develop a low-cost technology for arsenic removal in Water Supply Systems located in rural areas of Costa Rica. Financed by TEC. - 2014-2016 ([project concluded and publications in progress](#)).
- "Developing Models for Predicting Trihalomethanes in a Distribution Network of a Water Supply System" which objective is to develop a model for predicting the formation of THMs through the study of water quality in the source and distribution system. Financed by TEC. 2015-2016 ([project concluded and publications in progress](#)).
- "Environmental health and rural sanitation in temporary dwellings of coffee farms", which objective is to propose solutions on infrastructure and basic services oriented to improve life quality conditions of the temporal seasonal coffee harvester population in the farms. Financed by the Consejo Nacional de Rectores [National Provosts Council] (www.conare.ac.cr). 2012-2013 ([project concluded](#)).

Extension Projects in charge:

- "Design and implementation of Water Loss Control Program in the Municipal Water Distribution Network of San Rafael de Oreamundo". Financed by the Municipality of San Rafael de Oreamundo, Cartago, 2016-2017 - Water Supply Program.
- "Design and implementation of Water Loss Control Program in the Municipal Water Distribution Network of Unión". Financed by the Municipality of Unión, Cartago, 2016-2017 - Water Supply Program.
- "Dynamic characterization of inflows in the Municipal Water Distribution Network of Paraíso". Financed by the Municipality of Paraíso, Cartago, 2017 - Water Supply Program.
- "Criteria and technical recommendations of selection in Flow measurement equipment in the Municipal Water Distribution Network of Paraíso". Financed by the Municipality of Paraíso, Cartago, 2017 - Water Supply Program.
- "Design of a Municipal Rate Structure Methodology for Water Supply Services". Financed by the Municipality of Oreamundo, Cartago, 2017 - Water Supply Program.

TEACHING EXPERIENCE:

- Lectures on "Applied Hydraulics" for Construction Engineering School (2008,2011-2015,2020).
- Lectures on "Water Distribution Modeling" for Continuing Education Program, Construction Engineering School (2015).
- Lectures on "Workshop on Highway Engineering Project (I)" for Master of Highway Engineering Program, Construction Engineering School (2015).

RESEARCH AND PROFESSIONAL INTERESTS

- Drinking water.
- Modeling hydraulics and water quality in distribution systems.
- Developing new technologies for water treatment.
- Arsenic, fluoride, iron and manganese removal.
- Biological removal.
- Multi-Stage-Filtration (MSF)

PRESENTATIONS AND PAPERS

Araya, J.A.; Rietveld, L.; Quesada, A.; Caballero, A.; Pacini, V.; Romero, L.G. (2021) "Start-up of bench-scale biofilters for manganese removal under tropical conditions: A comparative study using virgin pumice, silica sand, and anthracite filter media". In: Environmental Science: Water Research & Technology, DOI: 10.1039/D1EW00093D.

Romero, L.G.; Lazo, A.; Araya, J.A.; Gómez, L.; Fernández, R. (2021) "Arsenic removal by iron coagulation/floculation and double filtration". In: 8th International Congress on Arsenic in the Environment (As2021). 7-10 jun, 2021, Wageningen, the Netherlands.

Calderón, I.; Rietveld, L.; Araya, J.A.; Quesada, A.; Caballero, A.; Romero, L.G. (2020) "Autochthonous tropical groundwater bacteria involved in manganese (II) oxidation and removal". In: Environmental Science: Water Research & Technology, 6, 3132-3141. DOI: 10.1039/D0EW00704H

- Araya, A; Quesada, A; Pacini, V; Romero, L.G (2020). "Effects of filter media on the ripening of bench-scale biofilters for manganese removal". Proceeding, American Water Works Association International Symposium on Biological Treatment, Feb 12–13, 2020, Atlanta, USA.
- Sánchez, M; Araya, A; Lazo, A; Bonilla, J; and Romero, L.G. (2019). "Riverbank filtration in a narrow river valley of the Barranca river, Costa Rica". Proceeding, International Symposium on Managed Aquifer Recharge, May 20-24, Madrid, Spain.
- Araya, A.; Jones, M.; Romero, L.G. (2019). "Trihalomethane prediction modelling in water distribution systems: calculation of the mean residence time". Tecnología en Marcha 32(1): 167-178. DOI: <https://doi.org/10.8845/tm.v32.i1.4126>.
- González, R; Calleja, A; Valverde, J; Araya, A; and Romero, L.G (2019). "Modelling Study of Arsenate Removal by Iron (Hydr)oxide Coated Pumice Stone". In 11th Eastern European Young Water Professionals Conference by International Water Association, Oct 1-5, Prague, Czech Republic. Published in: Water for All - Water for Nature, Reliable Water Supply, Wastewater Treatment and Reuse, Copyright © University of Chemistry and Technology, Prague, 2019. ISBN: 978-80-7592-054-6.
- Araya, A., Sánchez L.D. (2018) "Residual chlorine behavior in a distribution network of a small water supply system". Journal of Water, Sanitation and Hygiene for Development (2018) 8 (2): 349-358.
- Jiménez, J; Quesada, S; Araya, A; Romero, L.G. (2018). "Conventional Treatment for NOM Removal in a Tropical Country: Jorco River, Costa Rica, Case Study". Proceeding, 2nd Disinfection & Disinfection By-Products Conference, May 14-18, Beijing, China.
- Araya, A; Valverde, J; Calleja, C; González, R; Todd, S; Mayorga, A and Romero, L.G. (2018). Chapter17 "Remoción de arsénico del agua mediante piedra pómez recubierta con hidróxido de hierro". In: Desafíos en la gestión integral del agua: Ahorro uso eficiente y microcontaminantes, Editors: Universidad del Valle, Cali Colombia. ISBN: 978-958-65-897-2.
- Araya, A.; Quesada, A; Romero, L.G. (2018) "Identification of manganese oxidizing bacteria from groundwater in Costa Rica". In: VII Encuentro de Investigación y Extensión, Centro de Transferencia Tecnológica y Educación Continua (CTEC)-Dirección Proyectos, Tecnológico de Costa Rica, Dec. 7, San Carlos, Costa Rica.
- Araya, A.; Araya, R. Fernández, R; Calleja, C; Valverde, J; Romero, L.G (2017). "Exploring the potential use of ferric chloride followed by double filtration for arsenic removal in Costa Rica". In 2017 American Water Works Association International Symposium on Inorganics in Detroit, MI, March 21- 22, 2017, USA.
- Calleja, C; Valverde, J; Araya, A; González, R; and Romero, L.G (2017). "Iron hydroxide coated pumice stone for arsenic removal in Costa Rica" Proceeding, 7th International Congress of Energy and Environment Engineering and Management (CIIEM7), July 19-21, Canary Islands, Spain.
- Araya, A.; Valverde, J.; Rojas, P.; Romero, L.G. (2016) "As removal from drinking water by coagulation-flocculation process". In: III Encuentro Bienal de Investigación y Posgrado 2016, Dirección General de Investigación Sistemas de Estudios de Posgrado. Oct 7, Guatemala.
- Acuña, A.; Araya, A.; Romero, L.G. (2016) "Potential natural low-cost adsorbents for the removal of arsenic in drinking water in Costa Rica". Tecnología en Marcha 29(3): 23-34. DOI: [10.18845/tm.v29i6.2899](https://doi.org/10.18845/tm.v29i6.2899)
- Rojas-Chaves, P., Vargas-Benavides, M., Araya-Obando, A., Valverde-Cerdas, J., & Romero-Esquivel, L. (2015). "Study of arsenic removal in drinking water at household level using solar oxidation and coagulation-flocculation techniques". Tecnología en Marcha, 28(4), pág. 54-65. doi: <http://dx.doi.org/10.18845/tm.v28i4.2443> .
- Araya, A., Valverde J., Sánchez L.D. (2014). "pH conditioning using limestone with upflow gravel filters". In The 5th International Slow Sand and Alternative Biological Filtration Conference, Japón. Published in "Progress in Slow Sand and Alternative Biofiltration Processes. Further Developments and Applications" ISBN: 978-1-780-40637-4.
- Romero, L.G., Valverde, J., Rojas, J. P., Vargas, M.J. & Araya, A. (2014). "Exploring low-cost arsenic removal in Costa Rica". Published in "One Century of the Discovery of Arsenicosis in Latin America (1914-2014) - As2014: Proceedings of the 5th International Congress on Arsenic in the Environment", May 11-16, 2014, Buenos Aires, Argentina. Editor(es): Marta I. Litter, Hugo B. Nicolli, Martín Meichtry, Natalia Quici, Jochen Bundschuh and Prosun Bhattacharya. Taylor and Francis Group, London, 921p. ISBN: 978-1-138-00141-1
- Araya, A., Rojas, P; Valverde, J.; Romero, L.G. (2014) "Diseño de un prototipo de uso doméstico para la remoción de arsénico en agua potable, basado en coagulación/floculación con cloruro de hierro (III)". In: Foro Nacional y Feria de Tecnología de Agua Potable y Saneamiento Integral. Nov 26-28, Managua, Nicaragua.
- Araya, A., Loría, R., Pino, M. y Viquez, D. (2013). "Environmental health and rural sanitation in temporary dwellings of coffee farms". Published in: "Memorias del VII Congreso de la Red Latinoamericana de Ciencias Ambientales. Biología" San Carlos, Costa Rica. ISBN: 978-9968-641-26-5.

Méndez, M., Araya, J.A., Sánchez, L.D. (2013). "Automated parameter optimization of a water distribution system". Journal of Hydroinformatics. Vol 15.1. Pp 71-85.

Araya, A. (2013). "Riesgo microbiológico en sistemas de abastecimiento de agua para consumo humano" [Microbiological risk in drinking water supply systems]. Revista Ingeniería en Construcción. Vol 1.1. Pp. 12-18.

Araya, A. (2010) "El rol de la investigación de las universidades latinoamericanas en la Gestión Integrada del Recurso Hídrico" [The role of research in Latin American Universities in Integrated Water Resource Management], Revista EIDENAR, Publindex, Colciencias 1(9): 45-54.

SUPERVISION OF UNDERGRADUATE FINAL PROJECT

- Rodríguez, D. (2021) "Diseño del proceso constructivo del vertedor de excedencias ubicado en el sitio de presa del embalse Río Piedras del Proyecto de Abastecimiento de Agua para la Cuenca Media del río Tempisque y Comunidades Costeras (PAACUME) utilizando modelación BIM" [*Design construction process of spillway located in the dam site of the Río Piedras reservoir, Water Supply Project for the Middle Basin of the Tempisque River and Coastal Communities (PAACUME) using Building Information Modeling (BIM)*]. Bachelor of Construction Engineering (project in progress).
- Artola, A.; Roldán, E. (2020-2021) "Diseño del plan de ejecución BIM para la construcción del sitio de presa y casa de máquinas en el embalse Río Piedras - Proyecto de Abastecimiento de Agua para la Cuenca Media del río Tempisque y Comunidades Costeras (PAACUME)" [*Design of the BIM execution plan for the construction of the dam site and powerhouse in the Río Piedras reservoir, Water Supply Project for the Middle Basin of the Tempisque River and Coastal Communities (PAACUME)*] Bachelor of Construction Engineering.
- Vásquez, M.F. (2019) "Evaluación y predicción del medio granular durante el retrolavado en filtros rápidos" [*Prediction expansión of granular media in rapid filters during backwash*]. Bachelor of Environmental Engineering.
- Jones, M. (2019) "Evaluation of the potential for bank filtration along the Barranca river in Puntarenas, Costa Rica". Bachelor of Construction Engineering.
- Pérez, L. (2016) "Evaluación de la capacidad hidráulica y demanda de agua en el acueducto de San Francisco de León Cortés, San José, Costa Rica" [*Evaluation of the hydraulic capacity and water demand for a small water supply system located in San Francisco de León Cortés, San José, Costa Rica*]. Bachelor of Environmental Engineering.
- Cordero, F. (2016) "Diseño modelo de cálculo tarifario para el acueducto Municipal de Paraíso, Cartago, Costa Rica" [*Tariff design for a municipal water supply system located in Paraíso, Cartago, Costa Rica.*] Bachelor of Construction Engineering.
- Angulo, P. (2014) "Evaluación de los indicadores de desempeño volumétrico en sistemas de abastecimiento de agua" [*Evaluation of water performances indicators for Water Distribution Systems*]. Bachelor of Construction Engineering.
- Gómez, L. (2014). "Estudio del efecto del almacenamiento sobre la calidad de agua en un tanque de distribución" [*Study of the effect of storage on the quality of water in a distribution tank*]. Bachelor of Environmental Engineering.
- Zamora, R. (2014). "Evaluación de los métodos para el cálculo de caudales máximos probables instantáneos en edificaciones" [*Evaluation of methods for the estimation of probable maximum instantaneous flow rates in buildings*]. Bachelor of Construction Engineering.
- Quirós, M. (2013). "Diagnóstico de la demanda y de la infraestructura en el acueducto rural de Guatuso, San Isidro de El Guarco" [*Diagnosis of demand and infrastructure of a small water supply system located in Guatuso, San Isidro de El Guarco*]. Bachelor of Construction Engineering.
- Solís, G., (2012) "Acondicionamiento del medio filtrante para regulación del pH utilizando agregado calcáreo en un Filtro Grueso Ascendente en Capas (FGAC) del sistema de potabilización del acueducto de Santa Cecilia de San Marcos de Tarrazú" [*Conditioning of filter media for pH adjustment using limestone aggregate in upflow gravel filter at the water treatment system of the Santa Cecilia de San Marcos de Tarrazú aqueduct*]. Bachelor of Construction Engineering.
- Álvarez, E., (2012). "Evaluación de la eficiencia de la gestión técnica de la red de distribución de un acueducto con base a los indicadores de desempeño para servicios de abastecimiento de agua" [*Evaluation of the efficiency of the technical management of the distribution network of a water supply system on performance indicators for water supply services*]. Bachelor of Construction Engineering.

- Rodríguez, C., (2012). "Plan de mejoramiento del alcantarillado sanitario en la Sede Central del Instituto Tecnológico de Costa Rica" [Sewage System Improvement Plan for the Costa Rica Institute of Technology Main Campus]. Bachelor of Construction Engineering.
- Solís, C., (2012). "Diseño de documentación técnica dentro del marco del Sistema de Gestión de Calidad del LabCIVCO para ensayos de micromedidores" [Technical documentation design within the frame of LabCIVCO Quality Management System for micrometer tests]. Bachelor of Construction Engineering.

PROFESSIONAL DEVELOPMENT COURSES

- (2019) – Curso "Instrumentos para la evaluación alternativa de los aprendizajes". Centro de Desarrollo Académico, Instituto Tecnológico de Costa Rica. 30 hour workshop, Cartago, Costa Rica.
- (2017) – Curso "Análisis Estadístico en R" [Statistical Analysis using R]. Programa de capacitación Interna, Departamento de Recursos Humanos, Instituto Tecnológico de Costa Rica. 20-hour workshop, Cartago, Costa Rica.
- (2016)- Curso "Elementos de Estadística Descriptiva e Inferencial" [Elements of Descriptive and Inferential Statistics]. Programa de capacitación Interna, Departamento de Recursos Humanos, Instituto Tecnológico de Costa Rica. 20-hour workshop, Cartago, Costa Rica.
- (2016)-Curso "Introducción al artículo científico Modelo IMRD" [Introduction to Scientific Article- IRMD Model]. Programa de capacitación Interna, Departamento de Recursos Humanos, Tecnológico de Costa Rica. 20-hour workshop, Cartago, Costa Rica.
- (2016)-Taller "La propiedad Intelectual en la Investigación y Búsqueda en el Estado de la Técnica". Programa de capacitación Interna, Departamento de Recursos Humanos, Tecnológico de Costa Rica. 8-hour workshop, Cartago, Costa Rica.
- (2016)-Curso "Conceptos básicos de la Norma INTE-ISO/IEC 17025:2005". Ente Costarricense de Acreditación, ECA y Programa de Capacitación Interna, Departamento de Recursos Humanos, Tecnológico de Costa Rica. 8-hour workshop. May 11, Cartago, Costa Rica.
- (2016)-Curso "Sistema de Sensores Remotos" [Remote Sensing Systems]. Unidad de Vinculación Forestal, Escuela de Ingeniería Forestal, Tecnológico de Costa Rica. 36-hour workshop, Cartago, Costa Rica.
- (2015)-Curso "Evaluación de los Aprendizajes". Centro de Desarrollo Académico, Tecnológico de Costa Rica. 60-hour workshop, Cartago, Costa Rica.
- (2015)- "Sistemas de Información Geográfica Avanzado con QUANTUM-GIS" [Geographic information Systems (Advanced) with QUANTUM-GIS]. Unidad de Vinculación Forestal, Escuela de Ingeniería Forestal, Instituto Tecnológico de Costa Rica. 36-hour workshop, Cartago, Costa Rica.
- (2015)- "Sistemas de Información Geográfica Básico con QUANTUM-GIS" [Geographic information Systems (Basic) with QUANTUM-GIS]. Unidad de Vinculación Forestal, Escuela de Ingeniería Forestal, Instituto Tecnológico de Costa Rica. 36-hour workshop, Cartago, Costa Rica.
- (2015)- "Sistema de Posicionamiento Global (GPS) con QUANTUM-GIS" [Global Positioning System with QUANTUM-GIS]. Unidad de Vinculación Forestal, Escuela de Ingeniería Forestal, Instituto Tecnológico de Costa Rica. 16-hour workshop, Cartago, Costa Rica.
- (2013)- "Metrología aplicada para métodos de ensayo desarrollados bajo la norma inte-ISO/IEC 17025:2005. Requisitos generales para la competencia de laboratorios de ensayos y calibración" [Metrology applied to test methods developed under the INTE-ISO / IEC 17025: 2005. General requirements for the competence of testing and calibration laboratories]. Sistema de Gestión de Calidad del LabCIVCO. 24-hour workshop, Cartago, Costa Rica.
- (2013)- "Taller de redacción de artículos científicos" [Scientific article writing workshop]. Programa de capacitación Interna, Departamento de Recursos Humanos, Instituto Tecnológico de Costa Rica. 20-hour workshop, Cartago, Costa Rica.
- (2013)- "Diseño de Experimentos" [Experiment Design]. Programa de capacitación Interna, Departamento de Recursos Humanos, Instituto Tecnológico de Costa Rica. 24-hour workshop, Cartago, Costa Rica.
- (2013)- "Técnicas Estadísticas No Paramétricas" [Non-parametric statistical techniques]. Programa de capacitación Interna, Departamento de Recursos Humanos, Instituto Tecnológico de Costa Rica. 24-hour workshop, Cartago, Costa Rica.
- (2013)-LEED 101: "Green Building basics & LEED". The U.S. Green Building Council (USGBC). San José- Costa Rica. 4-hour workshop, San José, Costa Rica.

- (2011)- "*Taller de elaboración del currículum de la Carrera de Ingeniería en Construcción por Competencias*" [*Curriculum development workshop for Construction Engineering by Competences*]. Centro de Desarrollo Académico, Instituto Tecnológico de Costa Rica. 51-hour workshop, Cartago, Costa Rica.
- (2011)- "*Producción Más Limpia y Sistemas de Gestión Ambiental*" [*Cleaner Production and Environmental Management Systems*]. Programa de Excelencia Ambiental y Laboral para CAFTA-DR, Agencia de los Estados Unidos para el Desarrollo Internacional (USAID). 24-hour workshop, Cartago, Costa Rica.
- (2011)- "*Simulación Hidrológica con HEC-HMS*" [*Hydrological Simulation with HEC-HMS*]. Escuela de Ingeniería Agrícola, Instituto Tecnológico de Costa Rica. 15-hour workshop, Cartago, Costa Rica.
- (2008)- "*Formulación de Proyectos de Investigación y Extensión*" [*Research and Extension Project Formulation*]. Dirección de Proyectos, Vicerrectoría de Investigación y Extensión, Instituto Tecnológico de Costa Rica. 24-hour workshop, Cartago, Costa Rica.
- (2008)- "*Planeación, Diseño y Enfoque Social en Proyectos de Pequeñas Comunidades*" [*Planning, Design and Social Approach for Small-Community Projects*]. Instituto Costarricense de Acueductos y Alcantarillados, Organización Panamericana de la Salud y Consejo Nacional de Rectores. 40-hour workshop, San Carlos, Costa Rica.
- (2008)- "*Diseño Redes Alcantarillado utilizando tubería rígida y flexible*" [*Sewer network design using rigid and flexible pipe*]. Instituto Costarricense del Cemento y del Concreto (ICCYC). 24-hour workshop, San José, Costa Rica.
- (2007)- "*Taller sobre Proyectos de Aprendizaje y Tratamiento de Agua de Fuentes Superficiales en Acueductos rurales y Municipios Pequeños*" [*Workshops on learning projects and treatment of water from superficial sources in rural and small water supply systems*]. Instituto Costarricense de Acueductos y Alcantarillados y Organización Panamericana de la Salud. 24-hour workshop, San José, Costa Rica.

CERTIFICATES OF RECOGNITION

- (2012) Recognition for the project *Environmental Health and Basic Rural Sanitation Coffee Farms Temporary Dwellings* as one of the best rated projects by the VIE - Ronda 2012, Category FEES/Extension.
- (2013) Acknowledgement for being a member of the young researchers group of the Costa Rica Institute of Technology. Project Management, Research and Extension Vice-Rector

MEMBERSHIP OF PROFESSIONAL ASSOCIATIONS/ENTITIES

- American Water Works Association, (Denver, CO 80235 USA) - *Member Number 03305297*
- Colegio Federado de Ingenieros y Arquitectos (CFIA, Costa Rica) [Federated Association of Engineers and Architects]

LANGUAGES SKILLS

English Level: B1 (Common European Framework of Reference for Languages).

- (2014-2015) English Now Integrated Skills Program, Centro Cultural Costarricense Norteamericano. 140-hours, Cartago, Costa Rica.

Spanish: mother tongue.