

Andrés Felipe Ardila Jiménez

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Bogotá, Colombia

Professional Profile

Civil Engineer and Master in Civil Engineering focused on Water Resources and Hydro-Informatics from the University of Los Andes, Bogotá, Colombia. Research experience in optimal design of sewage networks and improvement of water distribution systems regarding economic costs. Interest in water resources management as well as hydraulics structures design, operation, and optimization. Knowledge in programming software and hydraulic models for design, optimization, and simulation, using different programming languages. Experience in design, operation, and optimization of water distribution systems, sewer drainage, irrigation networks, and road drainage, as well as in the use of Geographical Information Systems (GIS).

Current Research

During my bachelor studies as well as in my master studies, I focused my research on two different aspects of Hydraulic Engineering: Design of sewer systems and improvement of water distribution networks (WDS).

First, I joined a research team in which I started researching the design of sewer networks to propose a new methodology for the optimal design of this kind of system. This research was developed in the *Universidad de Los Andes*, specifically by Research Center in Water Distribution Systems and Sewage - CIACUA, of which I worked with for four years. At the end of the research, we proposed a methodology that reduces the economic cost of sewer systems significantly, in comparison with the traditional design methodology in Colombia.

At the same time, I developed my master's degree thesis focused on the optimization of energy costs in water distribution systems, proposing changes in the topology and the design of new hydraulic structures. My promotor in both researches was the Professor Juan Saldarriaga (*Universidad de Los Andes*), while the panel of jury of my master's thesis defense was composed by the Professor Javier Martinez-Solano (*Universitat Politècnica de València*) and the Instructor Professor Jessica Bohórquez (*Universidad de los Andes*).

Education and Qualifications

MSc in Civil Engineering with emphasis in Water Resources and Hydro-Informatics.

Universidad de los Andes

Bogotá, Colombia, March 2016

Part-time student, and part-time research and teaching assistant

Relevant Courses: Pipe Hydraulic, Integrated Urban Drainage Systems, Modeling of hydro-systems, Design in Hydraulic Engineer, advanced geomatics, Decisions theory.

Grade Point Average: 4.71/5

Civil Engineer

Universidad de los Andes

Bogotá, Colombia 2014

Grade Point Average: 4.25/5

		Speaking	Writing
Languages:	English	Fluent	Fluent
	French	Fluent	Fluent
	Spanish	Mother Tongue	Mother Tongue

Software's knowledge: Programming languages (MATLAB, Visual Basic)

Hydraulic modeling softwares (SEWERGEMS, WATERGEMS EPANET, EPASWMM, HY-8)

Drawing softwares (AutoCAD, AutoCAD Civil 3D)

Risk Analysis and Decision-making softwares (DPL 8, Hugin)

Geospatial Analysis Tools (ArcGIS, Google Earth)

Microsoft Office (Word, Excel, Power Point, Project, Visio)

Simulation softwares (Crystal Ball)

Statistical modeling softwares (SPSS)

Edition softwares (Photoshop CS)

Projects, Publications and Conference Papers

Ardila, A. (2016) "Optimal change in the topology of water distribution networks to reduce the operational costs due pumping". Guided by Juan Saldarriaga, Associate Professor in Los Andes University. Bogotá, Colombia. Master's degree Thesis.

Ardila, A., Bohórquez, J., Saldarriaga, J. (2016) "Optimal changes in topology of potable water distribution networks to minimize pumping costs". *CCWI 2016 Computing and Control for Water Industry*. Amsterdam, Netherlands.

Ardila A., Saldarriaga, J. (2016) "Optimal changes in topology of potable water distribution networks to minimize pumping costs". *XXVII Latin American Congress of Hydraulics*. Lima, Peru.

Research project: Development of a methodology for the optimal design of sewer networks using hydraulic criteria. Los Andes University. Bogotá, Colombia, 2015.

Ardila A., Duque N., Saldarriaga, J. (2014) "Optimal sizing of sewer networks". *XXVI Latin American Congress of Hydraulics*. Santiago de Chile, Chile.

Ardila, A (2014) "Energetic optimization of high frequency irrigation systems. Optimized designs". Guided by Juan Saldarriaga, Associate Professor in Los Andes University. Bogotá, Colombia. Bachelor's degree Thesis.

Ardila, A., Hernandez, D., Saldarriaga, J. "Energetic optimization of high frequency irrigation systems". *XXVI Latin American Congress of Hydraulics*. Santiago de Chile, Chile.

Work and Research Experience

Water and Sanitation Regulatory Commission - CRA

Specialized professional

December 2017 - December 2019

Focus on the development of public regulation of water supply and sewage services in order to avoid the monopolies and improve the market conditions.

Superintendence of Domiciliary Public Services - SSPD

Civil Engineer - Contractor

August 2017 - December 2017

Develop a diagnosis of drinking water, sewage, and solid waste systems in the rural area of Colombia. Propose a baseline and a surveillance policy for the small-scale providers of these services.

Contelac S.A.S

Design Engineer

March 2017 - August 2017

In charge of the design and hydraulic modeling for the rehabilitation of Tibitoc-CasaBlanca main pipeline and the design of a new express pipeline in Bogotá.

CDM Smith INC.

Civil Engineer

From August 2016 - December 2016

Focus in hydraulic modeling and design of sewer networks at feasibility and detail level. Bring support in activities related with geographical information system (GIS). Proposal of master plans for multiple Bogotá's sewer system units in the project "*Centro Ampliado*".

Cano Jiménez Estudios S.A.

Hydraulic Design Engineer

From December 2015 - August 2016

In charge of design and modeling of road drainage structures, such as box culverts, energy dissipation structures, intake and outlet channels, ditch, gullies, etc., for the 4G "*Transversal del Sisga*" road. Definition of basins and flows, taking into account the appropriate hydrology models

Research Graduated Assistance - Research Center in Water Distribution Systems and Sewage - CIACUA.

Universidad de los Andes

From January 2014 to November 2015

Conduct research in the projects developed by the Research Center in Water Distribution Systems and Sewage - CIACUA, of the Universidad de los Andes, related to the water resources area,

urban drainage and water distribution systems. Carry out the simulation and analysis of different study cases.

Achievements:

- Establishment of a methodology for the optimal design of sewer systems using hydraulic criteria, obtaining important savings compared with the traditional design processes.
- Development of a software capable of design optimal sewer systems in an optimal way, using the proposed methodology.

Research Monitor - Research Center in Water Distribution Systems and Sewage - CIACUA, CIE-AGUA Project.

Universidad de los Andes

From August 2012 to December 2013

Provide support in the research process in the CIE- AGUA project, focused on the design of sewer systems, carried out by the CIACUA. Help with the presentation of results and reports, as well as the modeling of the study cases proposed within the project.

Monitor of Numerical Modeling and Analysis, and Monitor of Algorithms and Programming directed to objects 1

Universidad de los Andes

From August 2011 to August 2012

Support the teacher of the subject in terms of qualification tasks as well as in laboratories. Working 12 hours per week with a group of approximately 30 students, focused to solve doubts and development workshops. Use of programming tools such as Eclipse, Visual Basic and MATLAB.