

JEFFREY PAUL WALTERS

Curriculum Vitae

Assistant Professor of Civil Engineering
College of Engineering
George Fox University
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Newberg, OR 97132, USA

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EDUCATIONAL HISTORY

University of Colorado Boulder
Ph.D. in Civil Engineering
Focus: Civil Engineering Systems
August 2015

Dissertation: “Gaining Insight into the Dynamic and Systemic Interaction of Causal Factors Affecting the Sustainability of Rural Water Services in Developing Countries”

University of Colorado Boulder
M.S. in Civil Engineering
Focus: Environmental Engineering | Water Treatment and Engineering in Developing Communities
May 2012

Master’s Report: “Striving Towards Transformative Water, Sanitation and Hygiene (WASH) Programs – Lessons Learned and Potential Steps Forward”

University of Washington
M.S. in Civil Engineering
Focus: Structural Engineering
March 2008

Thesis Title: “The Lateral-Torsional Stability of Slender Microllam Beams with Tension-side Bracing”

University of Washington
B.S. in Civil Engineering
June 2005

EMPLOYMENT HISTORY

George Fox University
Newberg, OR
Assistant Professor

2018 – Present

LINC LLC
Washington, DC (remote)
Systems Training Consultant

2017

University of Colorado Boulder
Boulder, CO (remote)
Technical Expert – USAID SWS

2016 – Present

Universidad Diego Portales Santiago, Chile Assistant Professor	2015 – Present
University of Colorado Boulder Boulder, CO Mortenson Fellow	2013 – 2015
University of Colorado Boulder Boulder, CO NSF-GK12 Teaching Fellow	2012 – 2013
Second Mile Water Inc. Boulder, CO Co-Founder, Director of Overseas Programming	2011 – 2012
Institute of Arctic and Alpine Research Boulder, CO Antarctica Dry-Valleys Field Researcher	2009 – 2011
CH2M HILL Bellingham, WA Associate Structural Engineer	2008 – 2009
University of Washington Seattle, WA Research Assistant/Lab Technician	2006 – 2008

PROFESSIONAL CERTIFICATIONS

Certificate in Engineering for Developing Communities, University of Colorado Boulder, 2012
Fundamentals of Engineering Certificate (EIT), Washington, May, 2005
Eligible for Professional Engineering license

MERIT-BASED AWARDS AND HONORS

Teacher of the Year, Department of Engineering and Science, Universidad Diego Portales, 2017
Barry Richmond Award in System Dynamics Education, isee systems, 2016
Best Paper: Community Engagement Division, American Society for Engineering Education, 2015
Editor's Choice: "Gravity-Fed Water Systems for Developing Communities", Teach Engineering, 2015
Best Poster, Engineering Project Organizations Conference, 2014
Mortenson Center of Engineering for Developing Communities Fellowship, 2013 – 2014
Boulder Sister City Program "Volunteer of the Year", Boulder, Colorado, 2013
National Science Foundation GK-12 Fellowship, University of Colorado Boulder, 2012

IRES-NSF Fellowship, Iquitos Peru, 2010 – 2011

Valle Scandinavian Scholarship, University of Washington, 2006

PUBLICATIONS

Refereed archival journal publications

1. **Walters, J.P.**, Kaminsky, J., and Gottschamer, L. (2018). “A Systems Analysis of Factors Influencing Household Solar PV Adoption in Santiago, Chile”. *Sustainability*, 10(1257). DOI: 10.3390/su10041257
2. **Walters, J.P.**, Kaminsky, J., and Huerpe, C. (2018). “Factors Influencing Household Solar Adoption in Santiago, Chile.” *Journal of Construction Engineering and Management*, 144(6): 05018004
3. Gasparro, K.E., and **Walters, J.P.** (2017). “Revealing Causal Pathways to Sustainable Water Service Delivery using fsQCA.” *Journal of Water Sanitation and Hygiene for Development*. DOI: 10.2166/washdev.2017.053.
4. Pugel, K., and **Walters, J.P.** (2017). “Embedding Systems Thinking into EWB Project Planning and Development: Merits of a Group Model Building Approach.” *Journal of Humanitarian Engineering*, 5(2): 8-20.
5. **Walters, J.P.**, Neely, K., and Pozo, K. (2017). “Working with complexity: A participatory systems-based process for planning and evaluating rural water, sanitation and hygiene services.” *Journal of Water Sanitation and Hygiene for Development*, 7(3): 426-435. DOI: 10.2166/washdev.2017.009.
6. **Walters, J.P.**, Greiner, B., O’Morrow, E., and Amadei, B. (2017). “Promoting sustainable Engineers Without Borders projects: Using group model building to improve student team understanding of project complexity.” *International Journal of Engineering Education*, 33(1): 247-260.
7. **Walters, J.P.** (2016). “Exploring the use of social network analysis to inform exit strategies for rural water and sanitation NGOs.” *Engineering Project Organization Journal*, 6(2): 92-103. Spotlight Issue: Best Papers of EPOC 2016. DOI: 10.1080/21573727.2016.1241243.
8. **Walters, J.P.**, Archer, D.W., Sassenrath, G.F., Hendrickson, J.R, Hanson, J.D., Holloran, J.M., Vadas, P., and Alarcon, V.J. (2016). “Exploring agricultural production systems and their fundamental components with system dynamics modelling.” *Ecological Modelling*, 333: 51-65. DOI: 10.1016/j.ecolmodel.2016.04.015.
9. Neely, K, and **Walters, J.P.** (2016). “Using causal loop diagramming to explore the drivers of sustained functionality of rural water services in Timor-Leste.” *Sustainability*, 8(1), 57. DOI: 10.3390/su8010057.
10. **Walters, J.P.**, and Chinowsky, P. (2016). “Planning Rural Water Services in Nicaragua: A Systems-based Analysis of Impact Factors Using Graphical Modeling.” *Journal of Environmental Science & Policy*, 57: 93-100. DOI:10.1016/j.envsci.2015.12.006.
11. **Walters, J.P.**, and Javernick-Will, A.N. (2015). “Management of Rural Water Services in Nicaragua: A Systemic Network Approach to Evaluating Stakeholder Alignment.” *International Journal of Sustainable Development & World Ecology*, 22(4): 358-367. DOI: 10.1080/13504509.2015.1053999.
12. **Walters, J.P.**, and Javernick-Will, A.N. (2015). “Long-term Functionality of Rural Water Services in Developing Countries: A System Dynamics Approach to Understanding the Dynamic Interaction of Factors.” *Environmental Science & Technology*, 49(8): 5035-5043. DOI: 10.1021/es505975h.

Fully refereed conference publications

1. Pugel, K., Javernick-Will, A., **Walters, J.P.**, Linden, K. “Factor and Actor Networks: Alignment of Collective Action Groups for Water Sustainability in Ethiopia.” Engineering Project Organization Conference. Brijuni, Croatia, June 2018.
2. Kaminsky, J., and **Walters, J.P.** “Risk Attitudes & Global Infrastructure Technology Choice.” *Construction Research Congress*. San Juan, Puerto Rico, May 2016
3. **Walters, J.P.**, and Litchfield, K. “The Benefits of Group Model Building using System Dynamics for Engineers Without Borders Students.” *American Society for Engineering Education Annual Conference*. Seattle, Washington, June 2015.
4. **Walters, J.P.**, and Javernick-Will, A. “Gaining Insight into Long-term Functionality of Rural Water Services in Developing Countries: The Dynamic Interaction of Causal Factors.” *Engineering Project Organization Conference*. Winter Park, Colorado, July 2014.

Published curricular activities

1. **Walters, J.P.**, Zarske, M., and Yowell, J. (2014). “Gravity-Fed Water Systems for Developing Communities.” *Teach Engineering*. Integrated Teaching and Learning Program under National Science Foundation GK-12 grant no. DGE 0338326.

OTHER SCHOLARLY ACTIVITY

Invited lectures and seminars

1. Universidad Diego Portales. Seminar. “Provision of Sustainable Water, Sanitation and Hygiene Services through Strengthening Local Systems.” May 19, 2017.
2. Washington State University. School of Design & Construction Distinguished Guest Lecture Series. “Systems-thinking within the Water-Energy-Food-Climate Nexus.” February 22, 2017.
3. University of Colorado Boulder. Guest Lecture, CVEN4834, “WASH System Complexity: MICMAC Analysis of WASH Services.” January 25, 2017.
4. Universidad Diego Portales. Jornada: Resiliencia y sustentabilidad de recursos hídricos. “Proyectos de Agua Potable: Identificación de factores y su influencia en la sustentabilidad de sistemas de APR en Chile.” October 14, 2016.
5. Anacortes High School. Guest lecture, Environmental Science Class. “Sustainable Rural Water Services in Developing Countries: A Complex Issue.” February 2016.
6. University of Colorado Boulder. Engineering in Developing Communities Seminar Series. “The Impacts of Mental Models on Decision Making in WASH Programming.” February 2016.
7. Colorado School of Mines. Humanitarian Engineering Guest Lecture Series. “Management of Rural Water Services in Nicaragua – Highlighting Key Differences Between Stakeholder Strategies.” Colorado School of Mines Humanitarian Engineering Program. February 2015
8. Posner Center for International Development. Sustainability Series. Denver, Colorado. “The Present and Future of Humanitarian Engineering: What can the present and future of humanitarian engineering education in the U.S. tell us about how to best structure partnerships between NGOs and engineers.” November 2014.
9. University of Colorado Boulder. First Annual Global Development and Education Symposium. “Learning from Our Mistakes: Appreciating Complexity in Global Development.” First Annual Global Development and Education Symposium. October 2014
10. El Porvenir. Ciudad Darío Team Meeting. Ciudad Darío, Nicaragua. “Factores que afectan el funcionamiento al largo plazo de proyectos de agua.” May 2014

11. Colorado School of Mines. Humanitarian Engineering Guest Lecture Series. “Seeing the Forest for the Trees: A System Dynamics Based Methodology for Sustainable Rural Water Services in Developing Countries.” March 2014
12. Presentation to Community Members of Pasmata. Jalapa, Nueva Segovia, Nicaragua. “Plan de Gestión del Proyecto de Agua en Pasmata.” Presentation to Community members of Pasmata, Nicaragua. November 2014
13. Second Mile Water Inc. Co-Founder presentation. Denver, Colorado. “Fundraiser at the Spire – Second Mile Water Strategic Plan.” October 2012
14. University of Colorado, Denver. Presentation for GIS students. “Social Entrepreneur Q&A.” April 2012
15. Boulder Valley Rotary. Co-Founder presentation for Second Mile Water. “Rotary Friday Action Committee Presentation – Second Mile Water.” March 2012.
16. Second Mile Water Inc. Louisville, Colorado. “Launch pad Fundraiser – Second Mile Water.” February 2012.
17. Anacortes Lutheran Church. Guest Presentation. “Going the Second Mile.” February 2012.
18. Presentation to Community Members of Pasmata. Jalapa, Nueva Segovia, Nicaragua. “Alcance de Trabajo en el Proyecto de Agua en Pasmata.” November 2011
19. Anacortes High School. Guest Lecture. “Climate Research in the Dry Valleys.” November 2011
20. UNAP University, Iquitos, Peru. Guest Lecture. “Investigación del Uso de Baños Ecológicos en Rural Amazonas.” July 2010.

Conference Presentations

1. Gasparro, K., and **Walters, J.P.** “Evaluating Causal Pathways to Sustainable WASH Infrastructure in Developing Countries.” Colorado WASH Symposium. Boulder, Colorado, March 2016
2. **Walters, J.P.** “Informing change pathways: the utility of systems thinking in the planning of sustainable Engineers Without Borders projects.” *International System Dynamics Conference*. Delft, Netherlands, July 2016.
3. **Walters, J.P.** “Exploring the use of social network analysis to inform exit strategy recommendations for rural water and sanitation NGOs.” *Engineering Project Organizations*. Seattle, Washington, June 2016.
4. **Walters, J.P.**, and Litchfield, K. “The Benefits of Group Model Building using System Dynamics for Engineers Without Borders Students.” *American Society for Engineering Education Annual Conference*. Seattle, Washington, June 2015
5. **Walters, J.P.**, and Javernick-Will, A. “Gaining Insight into Long-term Functionality of Rural Water Services in Developing Countries: The Dynamic Interaction of Causal Factors.” *Engineering Project Organization Conference*. Winter Park, Colorado, July 2014.

FUNDED SCHOLARLY WORK

Start Year	Project Title	Funder	Role	Amount (USD)
2018	KEEN Mini-Grant Integrated e-Module deployment: “Applying Systems Thinking to Solve Complex Problems”	University of Newhaven	PI	\$2,000
2017	COALAR: Disaster Resilience Education Capacity Building in Latin America	Council on Australia Latin America Relations	Sub awardee	\$33,000

2017	Course for UDP Students at University of Colorado Boulder: “Construction and Management of Sustainable, Resilient, and Equitable Civil Infrastructure in the United States”	US Department of State	Co-PI	\$30,660
2016	“Promoting sustainable Engineers Without Borders projects: Using group model building to improve student team understanding of project complexity”	Universidad Diego Portales (UDP)	PI	\$7,680
2016	“Factors Influencing Household Solar Adoption in Santiago, Chile”	UDP	PI	\$1,814
2015	“Exploring the use of social network analysis to inform exit strategies for rural water and sanitation NGOs”	UCB Beverly Sears Foundation	PI	\$1,000
2014	2015 UCB WASH Symposium	UCB Engineering Excellence Fund	PI	\$9,350
			Total	\$85,504

STUDENT ADVISING

Student Name	Level of Supervision	Thesis	Completed (Year)
Nicolas Valcourt ^d	Co-advisor	University of Colorado Boulder-USAID SWS Project: in progress	
Liesbet Olaerts ^d	Co-advisor	University of Colorado Boulder-USAID SWS Project: in progress	
Kimberly Pugel ^d	Co-advisor	University of Colorado Boulder-USAID SWS Project: in progress	
Tamara ^e	Advisor	“Scenario Study of Stakeholder Groups Connected with the Alto Maipo Hydroelectric Project”	2018
Sebastián Millar ^e	Advisor	“Design and Economic Feasibility Study for a Potable Water System in Faja 16.000 North”	2018
Sebastián Cañas ^e	Advisor	“Design of a Potable Water System for Malaguin Albaricoque y Conay, Transito Valley, III Region of Chile”	2018
Cesár Charme ^e	Advisor	Potable Water Supply by Desalinization for Hierro Viejo, Pedegua and Manuel Montt, Petorca Province, V Region of Chile	2018
Kelechi Odoemena ^f	Co-advisor	“A Holistic Analysis of Livestock Productivity in Nigeria: An Application of System Dynamics Model”: in progress	2018
Francisco Barrera ^e	Advisor	“The Technical and Economic Feasibility of Transporting Potable Water from Southern to Northern Chile”	2017
Kate Gasparro ^c	Co-advisor	“Evaluating Causal Pathways to Sustainable WASH Infrastructure in Developing Countries”	2017
Monica Carty ^a	Co-advisor	“The Role of Training Programs in the Sustainability of Potable Water Projects”	2014

<p>^aUndergrad, Columbia University, Civil Engineering, USA ^bGrad (doctoral), Pontificia Universidad Católica de Chile, Construction Engineering Management, Chile ^cGrad (masters), Stanford University, Global Projects Center, USA ^dGrad (doctoral), University of Colorado Boulder, Civil Engineering, USA ^eUndergrad, Universidad Diego Portales, Civil Engineering, USA ^fGrad (doctoral), University of Ibadan, Agricultural Economics, Oyo State, Nigeria</p>

RESEARCH ACTIVITIES

Subject	Contributions	Dates (start- finish)
Exploring the complex sources of stakeholder alignment and conflict for the Alto Maipo hydroelectric project: A MACTOR approach	8/20/2017 – Ongoing	
Developing a system dynamics model to simulate key drivers and dynamics influencing future trends in live-stock production in Nigeria	7/1/2017 – Ongoing	
USAID SWS Consortium: Systems-mapping and systems-learning for water, sanitation, and hygiene programs in Ethiopia, Kenya, Uganda, and Cambodia	10/1/2016 – Ongoing	
Identifying the systemic interaction of factors that influence diffusion of household solar photovoltaic (PV) technology in Santiago, Chile	MICMAC analysis revealed the interaction between factors influencing short- and long-term household solar PV adoption in Santiago, Chile	10/16/2016 – 3/15/2018
Identifying important factors, and their dynamic interaction, for rural water service sustainability in Chile	Delphi study identified and prioritized motivational and prohibiting factors influencing solar PV adoption in Santiago, Chile	9/15/2015 – 10/14/2017
Investigated the causal pathways to WASH project success in the case of external partner engagement using fsQCA	fsQCA outputs revealed key areas for external support and management of well projects in developing communities	8/15/2016-2/1/2017
Development of a participatory systems-based planning tool (PS-PEP) for sustainable WASH services	Developed and demonstrated the use and utility of PS-PEP for rural water service management in Jalapa, Nicaragua with group of community water committee members	3/1/2016-10/15/2016
Assessing the utility of group model building using system dynamics for the planning of sustainable community development projects by Engineers Without Borders (EWB) student teams	Showed the educational benefits of group model building workshops as a tool to enable EWB student teams to think in systems about their international projects	3/1/2015-11/15/2017
Identifying the drivers for sustainable agricultural production systems in the US	Constructed and simulated a system dynamics model to assess the social, environmental and economic drivers on sustainable agricultural production systems	8/15/2015-3/15/2016
Using social network analysis as a means to inform water and sanitation organization exit strategies	Demonstrated the analysis of stakeholder communication networks as a way for water and sanitation NGOs to plan their exit strategies	4/15/2015-3/15/2016

Identifying impact factors for sustainable rural water services in Terrabona and Darío Nicaragua	Developed a systems-based methodology to empirically build and assess factor networks using graphical modeling	5/15/2014-3/15/2016
Assessing stakeholder alignment and action of rural water service management in Nicaragua	Developed a systems-based methodology to infer stakeholder alignment and action based on their value networks	5/15/2014-4/15/2015
Identifying dynamics of factors on rural water service sustainability in developing countries using expert opinion	Developed theory on key factors and their systemic and dynamic interaction	2/1/2013-3/15/2015

DOCUMENTATION OF TEACHING EFFECTIVENESS

Courses Taught^a & Student Evaluations of Instructor (out of 6)

Course	Title	Sem.	Credit Hrs	Enrollment	Motivation	Availability	Respect	Overall
COC2100 Section 1	Statics	Spring 2018	3	48	5.83	5.58	6.00	5.67
COC2100 Section 2	Statics	Spring 2018	3	40	5.85	5.52	6.00	5.63
COC2100 Section 2	Statics	Fall 2017	3	55	5.47	5.53	5.97	5.39
COC2100 Section 1	Statics	Fall 2017	3	52	5.44	5.61	5.91	5.43
CVEN4834	Sust. Rural Water Infr. ^c	Summer 2017	3	9	5.89	5.67	6.00	5.89
COC2100 Section 2	Statics	Spring 2017	3	40	5.79	5.79	6.00	5.57
COC2100 Section 1	Statics	Spring 2017	3	44	5.55	5.61	5.95	5.31
COC2100	Statics	Fall 2016	3	45	5.57	5.75	6.00	5.57
COC2310	Civil Infr. Systems	Fall 2016	3	9	5.71	5.83	5.83	5.60
COC2100	Statics	Spring 2016	3	47	5.60	5.42	6.00	5.52
COC2310	Civil Infr. Systems	Spring 2016	3	18	5.54	5.62	6.00	5.66
COC2100 Section 1	Statics	Fall 2015	3	46	5.49	5.49	6.00	5.48
COC2100 Section 2	Statics	Fall 2015	3	54	5.44	5.51	5.87	5.50
CVEN5454	Civil Infr. Systems ^b	Fall 2014	3	32	5.46	5.58	5.79	5.42

^aCourses were taught at University Diego Portales (UDP), Santiago, Chile, unless otherwise indicated

^bGraduate course taught at the University of Colorado, Boulder (CU-Boulder)

^cUndergraduate Maymester “Global Seminar” for CU-Boulder and UDP engineering students taught at UDP

SERVICE

Departmental Service

Research, Development and Innovation Chair, Universidad Diego Portales, 2016-2017

Industry Outreach Chair, Universidad Diego Portales, 2015-2016

Journal & Book Reviewer

Ecological Modelling
Water South Africa (Water SA)
Waterline
Science of the Total Environment (STOTEN)
Journal of Construction Engineering & Management
Sustainability

Professional society and other service

Professional Water Project Consultant, Water & Sanitation Rotarian Action Group (WASRAG), 2016 – present
Weekly After School System Dynamics Workshops: “Modeling Complex Problems”, Chilean High School Students, Universidad Diego Portales, November 9 to November 30, 2016
Membership Chair, Engineering Project Organization Society (EPOS), 2016 – present
Technical advisor, Friendship City Projects, El Trapiche, Nicaragua, Gravity-fed water project, 2014 – 2015
Project Mentor, Colorado School of Mines EWB Chapter, Los Gomez Project, 2013
Boulder Valley Rotary Member, 2012 – 2014
Summer STEM classes for monolingual Spanish speaking families, Longmont, Colorado, Summer 2013