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New Mexico Bureau of Geology and Mineral Resources
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Education

Ph.D., Civil Engineering, 2013

Dissertation: Applied Gas Tracing of Permeable Reactive Barriers
Queen's University, Belfast
School of Planning, architecture and Civil Engineering
Belfast, Northern Ireland

M.S., Hydrology, 2004

New Mexico Institute of Mining and Technology
Socorro, New Mexico

B.S., Geology, 2001

New Mexico Institute of Mining and Technology
Socorro, New Mexico

Professional Memberships

Geological Society of America
National Ground water Association
New Mexico Geological Society

Professional Experience

Hydrogeologist, New Mexico Bureau of Geology and Mineral Resources (10/2007 – Present) – Conduct research on New Mexico hydrogeology, outreach, advise students.

Hydrogeologist/Geochemist, Hydrosphere Resource Consultants (11/2006 – 9/2007)

Research Assistant, Queen's University, Belfast, Northern Ireland (09/2004-present)

Hydrological Lab Associate, New Mexico Bureau of Geology and Mineral Resources, Socorro, New Mexico (02/2004-08/2004)

Teaching Assistant for hydrogeochemistry class, NMIMT, Socorro, New Mexico (08/2003-12/2003)

Research Assistant, NMIMT, Socorro, New Mexico (08/2001-08/2003)

Student Intern, New Mexico Bureau of Geology and Mineral Resources, Socorro, New Mexico (06/2001-08/2001)

Lab Technician, Stable Isotope Laboratory, NMIMT, Socorro, New Mexico (06/1999-05/2001)

Field Assistant for hydrology project, NMIMT, Socorro, New Mexico (01/1999 – 05/2001)

Field Assistant for vadose zone hydrology project, NMIMT, Socorro, New Mexico (01/1998 – 10/2000)

Students Advised

Nathan Canaris (BS, 2011), Casey Geirke (MS, 2012), Michelle Bourret (MS, 2015), David Ketchum (MS, 2016), Peter ReVelle (MS, 2017), Fei (Esther) Xu (MS, current), Gabriel Parish (MS, current)

Publications

Gierke, C., **Newton, B.T.**, and Phillips, F.M., 2016, Soil-water dynamics and tree water uptake in the Sacramento Mountains of New Mexico (USA): a stable isotope study: *Hydrogeology Journal*, v. 24, no. 4, p. 805-818, doi:10.1007/s10040-016-1403-1.

Rawling, G.C., and **Newton, B.T.**, 2016, Quantity and location of groundwater recharge in the Sacramento Mountains, south-central New Mexico (USA), and their relation to the adjacent Roswell Artesian Basin: *Hydrogeology Journal*, v. 24, no. 4, p. 757-786, doi:10.1007/s10040-016-1399-6.

Szynkiewicz, A., **Newton, B.T.**, Timmons, S., and Borrok, D.M., 2012, The sources and budget for sulfate in a fractured carbonate aquifer, southern Sacramento Mountains, New Mexico, USA: *Applied Geochemistry*, v. 27, no. 8, p. 1451-1462.

Land, L., and **Newton, B.T.**, 2008, Seasonal and long-term variations in hydraulic head in a karstic aquifer: Roswell Artesian Basin, New Mexico: *Journal of the American Water Resources Association*. v. 44. No. 1, p. 175-191.

Newton, B.T., Kuhn, S., Johnson, P., and Hathaway, D.L., 2002, Investigation of Flow and Seepage Conditions on a Critical Reach of the Rio Grande, New Mexico. AWRA Proceedings for Groundwater/Surface water Interactions Conference, p. 581-586.

Reports and miscellaneous publications

Newton, B.T., and Kelley, S., 2017, Hydrologic Investigation at El Morro National Monument: New Mexico Bureau of Geology: Unpublished report prepared for UNM.

Newton, B.T., Mamer, E., and Timmons, S., 2017, Hydrogeology and Geochemistry of the Animas River Alluvial Aquifer after the Gold King Mine Spill, San Juan County, New Mexico: New Mexico Bureau of Geology, Open-file Report 592, 65 pp.

Newton, B.T., Cadol, D., ReVelle, P., Xu, E., and Phillips, F., 2017, Continued development of the Evapotranspiration and Recharge Model: Focused recharge through ephemeral streams in New Mexico – Year 3: New Mexico Water Resources Research Institute, Technical Progress Report, sub award Q 1845.

Newton, B.T., and Land, L., 2015, Brackish Water Assessment in the Eastern Tularosa Basin, New Mexico: New Mexico Bureau of Geology, Open-file Report 576, 25 p.

Ketchum, D., **Newton, B.T.**, and Phillips, F.P., 2016, High-Resolution Estimation of Groundwater Recharge for the Entire State of New Mexico Using a Soil-Water-Balance Model: NM Water Resources Research Institute, Technical Progress Report Subaward Q 1686 and Subaward Q 01788, 108 p.

Newton, B.T., Mamer, E., ReVelle, P., and Garduno, H., 2015, Sacramento Watershed Study – The Effects of Tree Thinning on the Local Hydrologic System: New Mexico Bureau of Geology, Open-file Report 582, 25 p.

Kludt, T., Love, D., Allen, B., and **Newton, T.**, 2015, Landforms of the central Jornada del Muerto: Influencing the Path of El Camino Real de Tierra Adentro, New Mexico Bureau of Geology, Open-file Report 575, 23 p.

Kludt, T., Love, D., **Newton, T.**, and Mamer, E., 2015, Crossing the Jornada del Muerto: Hydrological and Geomorphological Controls on Traveling El Camino Real Historic Trail: New Mexico Bureau of Geology, Open-file Report 574.

Newton, B.T., Kludt, T., Love, D., and Mamer, E., 2015, Hydrogeology of central Jornada del Muerto: Implications for travel along El Camino Real de Tierra Adentro, Sierra and Dona Ana Counties, New Mexico: New Mexico Bureau of Geology, Open-file Report 573, 55 p.

Ketchum, D., **Newton, B.T.**, and Phillips, F.P., 2015, Statewide Water Assessment: Recharge Data Compilation and Recharge Area Identification for the State of New Mexico: NM Water Resources Research Institute, Technical Progress Report Sub award Q 1686.

Newton, B.T., and Allen, B., 2014, Hydrologic Investigation at White Sands National Monument: NM Bureau of Geology, Open-file Report 559.

Mamer, E.A., **Newton, B.T.**, Koning, D.J., Timmons, S.S., Kelley, S.A., 2014, Northeastern Tularosa Basin Regional hydrogeology Study, New Mexico: NM Bureau of Geology. Open-file Report 562.

Land, L., Felix, B., and **Newton, B.T.**, 2014, Regional water table map of the northeastern Tularosa Basin region, Otero and Lincoln counties, New Mexico: NM Bureau of Geology, Open-file Report 561.

Newton, B.T., Rawling, G.C., Timmons, S.S., Land, L.L., Johnson, P.S., Kludt, T.J., and Timmons, J.M., 2012, Sacramento Mountains Hydrogeology Study: Final Technical Report: NM Bureau of Geology Open-file Report 543.

Newton, B.T., Gierke, C., Garduno, H., Canaris, N, and Kludt, T., 2012, Sacramento Mountains Watershed Study: Can we increase our water resources by thinning trees in the mountains?, Preliminary Report: NM Bureau of Geology, http://geoinfo.nmt.edu/resources/water/projects/brochures/2012_Watershed_Brochure.pdf

Newton, B.T., Timmons, S., Rawling, G., Partey, F., Kludt, T., Land, L., Timmons, M., and Walsh, P., 2009. Sacramento Mountain hydrogeology study. NM Bureau of Geology, Open-file Report 518.

Papers presented at professional meetings

Newton, B.T., Mamer, E., and Timmons, S., 2017, Geochemical Characterization of Shallow Groundwater near the Animas River, New Mexico: WRRI 2nd Annual Conference on Environmental Conditions of the Animas and San Juan Watersheds with Emphasis on Gold King Mine and Other Mine Waste Issues, Farmington New Mexico, June 20-22.

Newton, B.T., and Rawlings, 2016, Hydrogeology of the Sacramento Mountains in Southeastern New Mexico: How Karst Creates and Oasis in the Desert: Geological Society of America Abstracts with Programs, v. 48, no. 7, doi: 10.1130/abs/2016AM-287355.

Xu, E., and **Newton, B.T.**, 2016, Modeling Focused Recharge through Ephemeral Streams in New Mexico: Presented at NM Water Resources Research Institute 61st New Mexico Water Conference, Silver City, New Mexico, 5-7 October.

- Ketchum, D.G., **Newton, B.T.**, and Phillips, F., 2015, High-Resolution Statewide Modeling of Groundwater Recharge in New Mexico: Presented at 2015 New Mexico Geological Society Spring Meeting, Socorro, New Mexico, 24 April.
- ReVelle, P.M., Hendrickx, J.M.H., and **Newton, B.T.**, 2015, Quantifying the Effects of Thinning Vegetation on Evapotranspiration in a Mountainous Watershed through Remote Sensing : Presented at 2015 New Mexico Geological Society Spring Meeting, Socorro, New Mexico, 24 April.
- Ketchum, D.G., Hendrickx, J., **Newton, B.T.**, and Phillips, F.M., 2015, High Resolution Groundwater Recharge Modeling in New Mexico: NM Water Resources Research Institute 60th Annual New Mexico Water Conference, Taos, NM, 7-9 October.
- Bourret, S.M., **Newton, B.T.**, and Person, M.A., 2014, Hydrologic Modeling of the White Sands Dune Field, New Mexico: Presented at 2014 New Mexico Geological Society Spring Meeting, Socorro, New Mexico, 11 April.
- Mamer, E.A., **Newton, B.T.**, Timmons, S.S., Koning, D.J., and Land, L.A., 2014, Recharging the Tularosa Basin. New Mexico: Presented at 2014 New Mexico Geological Society Spring Meeting, Socorro, New Mexico, 11 April.
- Newton, B.T.**, Kludt, R., Mamer, E., and Love, D., 2014,. Hydrogeologic Controls on Early Travel through the Jornada del Muerto, New Mexico: Presented at 2014 New Mexico Geological Society Spring Meeting, Socorro, New Mexico, 11 April.
- Bourret, S.M., and **Newton, B.T.**, 2014, Multi-scale Hydrologic Modeling of the White Sands Dune Field, New Mexico. Abstract H41H-01 presented at 2014 Fall Meeting, AGU, San Francisco, Calif., 15-19 December.
- Bourret, S.M., **Newton, B.T.**, Person, M., 2013. Hydrologic modeling of the White Sands Dune Field, New Mexico. Abstract H11H-1233 presented at 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 December.
- Newton, B.T.**, 2012, Stable Isotopic Composition of Waters in the Sacramento Mountains, New Mexico: Implications for Groundwater Recharge Mechanisms: Paper No. 13-3, presented at 2012 GSA Rocky Mountain Section 64th Annual Meeting, Albuquerque, New Mexico, 9-11 May.
- Timmons, S.S., Johnson, P.S., **Newton, B.T.**, Rawling, Geof, Land, L.A., Timmons, J.M., and Kludt, T., 2012. The Aquifer Mapping Program Approach in the Southern Sacramento Mountains, New Mexico: Paper No. 3-2, presented at 2012 GSA Rocky Mountain Section 64th Annual Meeting, Albuquerque, New Mexico, 9-11 May.
- Gierke, C., and **Newton, B.T.**, 2012. Soil Water Dynamics in the Sacramento Mountains of New Mexico and Implications to Groundwater Recharge: Paper No. 13-1, presented at 2012 GSA Rocky Mountain Section 64th Annual Meeting, Albuquerque, New Mexico, 9-11 May.

Szynkiewicz, A., **Newton, B.T.**, Timmons, S.S., and Borrok, D.M., 2012. The Sources and Budget for Dissolved Sulfate in a Carbonate Aquifer in the Southern Sacramento Mountains, New Mexico: Paper No. 13-2, presented at 2012 GSA Rocky Mountain Section 64th Annual Meeting, Albuquerque, New Mexico, 9-11 May.

Gierke, C., **Newton, B.T.**, 2012. How Trees Interact with their Hydrologic Environment: A Stable Isotope Study: Presented at the 2012 New Mexico Geological Society Spring Meeting, Socorro, NM, 12 April 2012.

Gierke, C., and **Newton, B.T.**, 2012. How Trees Interact with their Hydrologic Environment: A Stable Isotope Study: Poster No. H11D-1203, presented at 2012 AGU Fall Meeting, San Francisco, California, 3-7 December.

Newton, B.T., Allen, B.D., Land, L.A., Bustos, D., and Kludt, T., 2011, Hydrologic Investigation at White Sands National Monument: Presented at the 2011 New Mexico Geological Society Spring Meeting, Socorro, NM, 15 April.

Canaris, N., Kludt, T., and **Newton, B.T.**, 2011, Canopy Interception Loss for a Mixed Coniferous Forest in Southern New Mexico Prior to Tree Thinning Treatment: Presented at the 2011 New Mexico Geological Society Spring Meeting, Socorro, NM, 15 April.

Gierke, C., and **Newton, B.T.**, 2011. A new method of tree xylem water extraction for isotopic analysis: Abstract H33E-1365 presented at 2011 Fall Meeting, AGU, San Francisco, California, 5-9 December.

Gierke, C., and **Newton, B.T.**, 2011, A new method of tree xylem water extraction for isotopic analysis for tracking tree water sources in the Sacramento Mountains, New Mexico: Abstract 187-16 presented at 2011 GSA Annual Meeting, Minneapolis, 9-12 October.

Newton, B.T., Rawling, G., Timmons, S., and Kludt, T., 2010, The stable isotopic compositions of natural waters in the southern Sacramento Mountains, NM: Implications for climatic and hydrologic controls on groundwater recharge: Presented at 2010 New Mexico Geological Society Spring Meeting. Socorro, NM, 16 April.

Timmons, S.S., **Newton, B.T.**, and Partey, F.K., 2010, Water chemistry trends from wells and springs in the southern Sacramento Mountains, New Mexico: Presented at 2010 New Mexico Geological Society Spring Meeting, Socorro, NM, 16 April.

Newton, B.T., Fernald, A., Garduno, H., and Kludt, T., 2010, The Sacramento Mountains watershed study: Pre-treatment analyses and considerations: Presented at 2010 New Mexico Geological Society Spring Meeting, Socorro, NM, 16 April.

- Zeigler, K.E., **Newton, B.T.**, and Timmons, S., 2010, Effects of lateral and vertical heterogeneity in the Yeso Formation on the regional hydrogeology in the Sacramento Mountains, NM: Presented at 2010 New Mexico Geological Society Spring Meeting, Socorro, NM, 16 April.
- Land, L., Polyak, V., and **Newton, B.T.**, 2010, The Snowy River Formation in Fort Stanton Cave, NM: New results from radiometric dating and hydrologic observations of the world's longest speleothem. Presented at 2010 New Mexico Geological Society Spring Meeting, Socorro, NM, 16 April.
- Garduno, H., Fernald, A., Shukla, M., **Newton, B.T.**, and Vanleeuwen, D., 2010, Plot-scale soil water flux and runoff in a mixed conifer forest in the Sacramento Mountains, NM: Presented at 2010 New Mexico Geological Society Spring Meeting, Socorro, NM, 16 April.
- Newton, B.T.**, Elliot, T., and Kalin, R., 2005, Bulk –Partitioning Tracer Tests to Assess the Effects of Hydrogen Evolution on Flow and Transport Characteristics in Zero-Valent Iron Columns: Presented at British Geophysical Association New Horizons Post-Graduate Research Conference, Galway, Ireland.
- Land, L.A., and **Newton, B.T.** 2004, Seasonal and Long-Term Variations in Hydraulic Head in a Regional Karst Aquifer: Roswell Artesian Basin, New Mexico: Presented at 2004 Geological Society of America Annual Meeting, Denver, Colorado.
- Newton, B.T.**, Bowman, R., Phillips, F., and Johnson, P., 2004, Investigation on the Presence and Origin of High Chloride Waters in the Shallow Hydrologic System in the Socorro Basin, New Mexico: Presented at 2004 New Mexico Geological Society Spring Meeting, Socorro, New Mexico.
- Newton, Brad T.**, Wilcox, Laura J., and Bowman, Robert S. 2003, Evaluation of Groundwater/Surface water Interactions along a Critical Reach of the Middle Rio Grande, New Mexico: Presented at 2003 New Mexico Geological Society Spring Meeting, Socorro, New Mexico.
- Newton, Brad T.**, Kuhn, S., Johnson, P., and Hathaway, D.L. 2002, Investigation of Flow and Seepage Conditions on a Critical Reach of the Rio Grande, New Mexico: Presented at American Water Resource Association Specialty Conference, Keystone, Colorado.
- Newton, T.**, Wilcox, L., and Bowman, R. 2002, Evaluation of Groundwater/Surface Water Interactions in the Middle Rio Grande (San Acacia - Elephant Butte Reservoir): Presented at SAHRA Conference. Tucson, Arizona.
- Phillips, F., Small, E., Kurc, S., Lechler, B., **Newton, T.**, Rosenau, N., Thomas, T., and Walvoord, M. 2002, Assessing the Spatial Variability of Soil-Water Parameters and Ecohydrological Relations : "The Great Vadose Zone Experiment": Presented at SAHRA Conference. Tucson, Arizona.

Newton, B.T., Campbell, A., Turin, H.J., Phillips, F.M., and Plummer, M. 2001. A Stable Isotopic Investigation of Cave Pools in Carlsbad Caverns National Park, New Mexico: Presented at Geological Society of America Southwest Regional Meeting, Albuquerque, New Mexico.

Papers Reviewed

Singh, C., Kumar, A., Kumar, P., Shashtri, S., Kumar, A., and Mukherjee, 2017, Determining genetic origin of groundwater through geochemical processes in desertic aquifers of India: Groundwater for Sustainable Development. (not published)

Sun, H., Kasahara, T., Otsuki, K., Tateishi, M., Saito, T., and Onda, Y., 2017: Effects of Thinning on Flow Peaks in a Forested Headwater Catchment in Western Japan: *Water*. v. 9, no. 6, article 446, doi:10.3390/w9060446.

Mamer, E., Rinehart, A.J., Broadheak, R.F., Kludt, T., Felix, B., and Pokorny, C., 2017, A Method for Estimating Groundwater Storage Change in Variably, Confined Aquifers in New Mexico, and Estimates for Groundwater Storage Change in the New Mexico Southern High Plains Aquifer – Part 1: WRRRI, Technical Completion Report, 56 pp.