

# KYLE E. MURRAY, Ph.D.

Updated: May 3, 2009

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## ACADEMIC TRAINING

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- Doctor of Philosophy, Geological Engineering, Minor: Computer Science** 2003  
Colorado School of Mines, Golden, CO
- Master of Science, Geological Sciences, Concentration: Hydrogeology** 1997  
Wright State University, Dayton, OH
- Bachelor of Arts, Geography/Environmental Studies** 1995  
Shippensburg University, Shippensburg, PA CUM LAUDE

## SUMMARY OF WORK EXPERIENCE

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*Assistant Professor* 2004 - Present

**Department of Geological Sciences, The University of Texas at San Antonio, San Antonio, TX**

- Prepared research proposals for program development and graduate student support in Hydrology, Geology, Water Resources Engineering, GIS, and Renewable Energy.
- Authored papers on interdisciplinary research that includes combinations of water resources, GIS, remote sensing, energy, civil and geological engineering.
- Developed *Introduction to Earth Systems* (GEO1103), *Engineering Geology* (GEO4023), *Environmental Hydrogeology* (GEO6973), *Geographic Information Systems* (EES5033), *GIS for Water Resources* (EES6523), and *Internet Served GIS* (EES6543) course content.
- Advised undergraduate and graduate students majoring in geology, environmental science, civil engineering, and environmental science and engineering.

*Assistant Director for Undergraduate Research Development* 2006 - Present

**Honors College, The University of Texas at San Antonio, San Antonio, TX**

- Prepared grant proposals for program development and undergraduate student support.
- Taught *Honors Thesis Exploration Seminar* (HON3501).
- Administered Undergraduate Research and Travel Grant funds.
- Coordinated Honors College Undergraduate Research Symposiums.

*Principal Scientist* 2003 - Present

**Murray GeoConsulting, LLC, Lakewood, CO and San Antonio, TX**

- Designed relational geodatabase (ArcGIS) for storing, manipulating, and analyzing statewide petroleum related reserves and infrastructure for enhanced oil recovery (Client: Enhanced Oil Recovery Institute, Wyoming)
- Provided litigation support and expert witness testimony for the impact of urban development on protected tree communities (Client: City of San Antonio).
- Constructed a digital three-dimensional geologic framework model for the Denver Basin Aquifer System to better understand ground-water resource depletion (Client: Denver Museum of Nature and Science).
- Managed the design and implementation of a relational database (Microsoft Access) and relational geodatabase (ArcGIS) for storing, manipulating, and analyzing national-level ground-water data. Developed procedures and customized interface (Visual Basic for Applications, and ArcObjects) for the integration of ArcGIS and ground-water modeling using MODFLOW. (Clients: Kuwait Institute for Scientific Research, OpenWare, Inc., and Geographic Planning Collaborative, Inc.)
- Trained scientists in methods and software required for building multiple digital three-dimensional geologic framework models of the subsurface. (Client: U.S. Geological Survey)

INEEL Project Office)

- Developed and taught customized training course: *Ground-Water Resource Assessment and Management*. (Clients: International Ground Water Modeling Center and Korea Water Resources Corporation)
- Reviewed experimental design for evaporation testing of chemical warfare agents and provided outside perspective on scaling and modeling of environmental data. (Client: Simulation Technologies, Inc.)
- Developed and taught environmental case study for: *Introduction to ArcGIS with an Environmental Focus*. Provided technical review and recommendations for ground-water modeling of physical and chemical site conditions. (Client: RockWare, Inc.)

*Research Associate*

2003 - 2004

**Department of Geology & Geological Engineering, Colorado School of Mines, Golden, CO**

- Taught *Earth Systems Engineering* (SYGN201) ground water module, *Engineering Practices Introductory Course Sequence* (EPICS251), *Ground-Water Engineering* (GEGN 466/467), and *Applications of Geographic Information Systems* (GEGN 475/575).
- Authored multiple proposals to develop new curriculum and support graduate student research in Hydrology, Geology, GeoInformatics, and Geotechnical Engineering.
- Taught *Introduction to ArcGIS*: 3-day short-course for Colorado School of Mines faculty
- Collaborated with a team of hydrologists modeling impacts of coal-bed methane production on ground-water resources in Delta County, Colorado.

*Hydrologist/GIS Specialist*

1999 - 2003

**Earth Surface Processes Team, Geologic Division, U.S. Geological Survey, Denver, CO**

- Constructed three-dimensional geologic framework models for applications in surface-water and ground-water hydrology.
- Developed relational GIS databases, using ArcInfo and ArcView, for storing and manipulating geologic and hydrogeologic spatial data.
- Programmed Arc Macro Language (AML) and C++ computer code for automating import, export, analysis, and plotting of geospatial data.
- Authored scientific papers and proposals for interdisciplinary scientific studies.

*Hydrogeologist*

1997 - 2000

**Harding Lawson Associates, Engineering and Environmental Services, Denver, CO**

- Managed field investigations and monitoring, including: lithologic logging, monitoring well and extraction well installation, well rehabilitation, ground water sampling, soil sampling, soil vapor extraction (SVE) system monitoring, SVE pilot testing, and aquifer testing.
- Developed databases for storage of well completion, lithologic, survey, ground water monitoring, analytical, and soil vapor extraction system performance data.
- Coordinated Visual Basic application for management of SVE data, system performance monitoring, and optimization.

*Instructor*

1995 - 1997

**Center for Ground Water Management, Wright State University, Dayton, OH**

- Instructed and assisted students in graduate level *Ground Water Hydrology*, *Ground Water Management*, and *Soil and Ground Water Contamination* IRIS® courses.
- Implemented course revisions to include current research in the field of hydrogeology.

## REFEREED PUBLICATIONS

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### Journal Articles

- Murray, K.E., Thomas, S.M., and Bodour, A.A., 2009-in preparation, Classification and review of emerging contaminants in wastewater and drinking water: Environmental Health Perspectives.
- Geza M., McCray J.E. and Murray K.E., 2009-in review, Evaluation of nitrate parameter sensitivity, calibration and impacts of onsite wastewater systems in Turkey Creek Watershed, Colorado. *submitted to: Journal of Contaminant Hydrology*, p. 16.
- Thomas, S.M., Bodour, A.A., Murray, K.E., and Inniss, E.C., 2009-accepted, Sorption behavior of a synthetic antioxidant, polycyclic musk, and an organophosphate insecticide in wastewater sludge. *submitted to: Water Science & Technology*, p. 16.
- Weissling, B.P., Xie, H., and Murray, K.E., 2008, Evaluation of NRCS curve number and MODIS time-series proxies for antecedent moisture condition: *Civil Engineering and Environmental Systems*, v. 24, no. 4, p. 29.
- Murray, K.E., Straud, D.R. and Hammond, W.W., 2007. Characterizing groundwater flow in a faulted karst system using optical brighteners from septic systems as tracers. *Environmental Geology*, 53: 769-776. DOI 10.1007/s00254-007-0689-7.
- Weissling, B.P., Xie, H. and Murray, K.E., 2007. A multitemporal remote sensing approach to parsimonious streamflow modeling in a southcentral Texas watershed, USA. *Hydrology and Earth System Sciences Discussions* 4, 33 pp.
- Murray, K.E., and J.E. McCray. 2005. Development and application of a regional-scale pesticide transport and groundwater vulnerability model. *Environmental and Engineering Geoscience* XI, no. 3: 271-284.
- Schlosser, S. A., J. E. McCray, K. E. Murray and B. Austin. 2002. A subregional-scale method to assess aquifer vulnerability to pesticides. *Ground Water* 40, no. 4: 361-367.

### Book Chapters and Other Publications

- Daniele, L., Pulido-Bosch, A., Vallejos, A., Murray, K.E. and Molina-Sanchez, L., 2007. Relaciones entre la actividad extractiva y el agua subterránea en el humedal de la Cañada de Las Norias (Campo de Dalías, SE España). In: R.F. Rubio (Editor), *Activos ambientales de la minería Española*, Madrid, España, pp. 304-307.
- Turner, K.J., Hudson, M.R., Murray, K.E. and Mott, D.N., 2007. Three-dimensional geologic framework model for a karst aquifer system, Hasty and Western Grove Quadrangles, northern Arkansas, U.S. *Geological Survey Scientific Investigations Report 2007-5095*, Denver, CO, pp. 12.
- Blome, C.D., J.R. Faith, E.W. Collins, D.E. Pedraza, and K.E. Murray. 2004. Geologic map compilation of the Upper Seco Creek area, Medina and Uvalde Counties, south-central Texas, U.S. *Geological Survey Open-File Report 2004-1430*, Denver, CO., pp. 21.
- Colton, R.B., T.R. Brandt, D.W. Moore, and K.E. Murray. 2004. Geologic map of the Boulder--Fort Collins--Greeley area, Colorado, Version 1.1 ed. U.S. Geological Survey Geologic Investigations

Series, GIS Database I-855-G, Denver, CO.

Hudson, M. R. and K. E. Murray. 2004. Geologic map of the Hasty quadrangle, Boone and Newton Counties, Arkansas, Denver, CO, U.S. Geological Survey Scientific Investigations Map, SIM-2847.

Trimble, D.E., M.N. Machette, T.R. Brandt, D.W. Moore, and K.E. Murray. 2004. Geologic map of the greater Denver area, front range urban corridor, Colorado, Version 1.1 ed. U.S. Geological Survey Geologic Investigations Series, GIS Database I-856-H, Denver, CO.

Hudson, M. R. and K. E. Murray, 2003, Geologic map of the Ponca quadrangle, Newton, Boone and Carroll counties, Arkansas, Denver, CO, U.S. Geological Survey Miscellaneous Field Studies, MF-2412.

Brandt, T. R., D. W. Moore and K. E. Murray. 2003. A spatial database of bedding attitudes to accompany geologic map of the Boulder--Fort Collins--Greeley area, Colorado, by Roger B. Colton, U.S. Geological Survey Open-File Report, OFR-03-024, Denver, Colorado.

Brandt, T. R., D. W. Moore and K. E. Murray. 2003. A spatial database of bedding attitudes to accompany geologic map of the greater Denver area, Front Range urban corridor, Colorado, by Donald E. Trimble and Michael N. Machette, Denver, Colorado, U.S. Geological Survey Open-File Report, OFR-03-025.

Bryant, B., R. R. Shroba, A. E. Harding and K. E. Murray. 2002. Geologic map of the Storm King Mountain quadrangle, Garfield County, Colorado (1:24,000). U.S. Geological Survey Miscellaneous Field Studies, MF-2389.

Hudson, M. R., K. E. Murray and D. Pezzutti. 2001. Geologic map of the Jasper quadrangle, Newton and Boone Counties, Arkansas (1:24,000). U.S. Geological Survey Miscellaneous Field Studies, MF-2356.

Scott, R. B., P. E. Carrara, W. C. Hood and K. E. Murray. 2001. Geologic map of the Grand Junction quadrangle, Mesa County, Colorado, (1:24,000). U.S. Geological Survey Miscellaneous Field Studies, MF-2363.

### **Conference Proceedings and Abstracts**

Hudson, M.R., Mott, D.N., Turner, K.J. and Murray, K.E., 2005. Geologic controls on a transition between karst aquifers at Buffalo National River, northern Arkansas. In: E.L. Kuniansky (Editor), U.S. Geological Survey Scientific Investigations Report, SIR 2005-5160. Rapid City, SD, pp. 143.

Murray, K. E. and M. R. Hudson. 2002. Three-dimensional geologic framework modeling for a karst region in the Buffalo National River, Arkansas, In Proceedings of U.S. Geological Survey Karst Interest Group, E. Kuniansky (Editor), Shepherdstown, WV: Water Resources Investigations Report 02-4174. p. 51-58.

### **NON-REFEREED PUBLICATIONS**

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#### **Journal Articles**

Lin, Y.C., and K.E. Murray. 2006. Visual MODFLOW Pro 4.1 – Software Review, Southwest Hydrology 5, no. 6, p. 41.

**Book Chapters and Other Publications**

- Manitou-Alvarez, E.I., Bodour, A.A., and Murray, K.E., 2008, Laboratory-Scale Treatment of Biofilms and Recommendations for Maintenance of Staggs Ranch Wells: San Antonio, TX, UTSA Center for Water Research, 42 p.
- McCray, J.E., Geza, M., Murray, K.E., Poeter, E.P., and Morgan, D., 2008, Modeling of Onsite Wastewater Systems at the Watershed Scale: User Guide for Model Selection, Calibration, and Decision-making Under Uncertainty: Golden, CO, Water Environment Research Foundation, 171 p.
- Murray, K.E., and Yosko, L.S., 2008, Water Supply Potential of Existing Wells, City of Kenedy, Texas: San Antonio, TX, UTSA Center for Water Research, 34 p.
- Murray, K.E., Bush, J.K., Haschenburger, J.K. and French, R.H., 2008. Technical and Field Guide: Management practices for natural waterways, UTSA-CWR, San Antonio, TX. pp. 80.
- Murray, K.E., 2007. Modelado Hidrogeológico Basada en SIG, Curso aplicaciones de los SIG a la Hidrogeología. Universidad de Almería, Almería, Spain, p. 129-167.
- Murray, K.E., 2006. Technical report: County-Scale Geographic Data Summary of Transportation, Social, and Economic Parameters within the Ports-to-Plains Corridor. UTSA-CWR, San Antonio, TX. pp. 5.
- Murray, K.E., and A.R. Dutton. 2006. Technical report: Assessment of Water Supply, Water Demand and Water Resources Planning Needs for the City of Kenedy, TX, UTSA-CWR, San Antonio, TX. pp. 10.
- McCray, J.E., Geza, M., Poeter, E.P., Murray, K.E., Lin, Y.-C., Morgan, D., and Rich, B., 2006, User's guide for watershed scale modeling of decentralized wastewater systems: Second quarterly progress report: Water Environment Research Foundation. pp. 15.
- Murray, K.E., 2006. Water Resources Applications of GIS. Workbook for EES 6973 SP:GIS for Water Resources. Department of Earth and Environmental Science, San Antonio, TX, 90 pp.
- Murray, K.E., K. Brumbelow, and C.L. Linthicum. 2006. Technical report: Audit of San Antonio Water System operations and infrastructure using International Water Association standards, UTSA-CWR and TAMU-TEES, San Antonio, TX. pp. 75.
- Heatwole, K., McCray, J.E., Lowe, K.S., and Murray, K.E., 2005. Technical report: Assessing potential impacts of a new development using onsite wastewater systems, Colorado School of Mines, Golden, CO. pp. 74.
- Murray, K.E. and N.J. Hawkins. 2005. Technical report: Hydrogeologic characterization and screening of alternatives for delivery of higher quality ground water, Center for Water Research, San Antonio, TX. pp. 36.
- Murray, K. E. 2005. HydroGIS tools: MODFLOW input preparation. *International Ground Water Modeling Center Newsletter*, XXIII: 3.
- Murray, K.E. 2005. Technical report: Spatial evaluation of hydrogeologic data to support assessment of on-site wastewater treatment potential. *Report prepared for:* Colorado School of Mines, pp. 13.

- Murray, K.E. 2004. Technical report: Design and Development of a National Groundwater Database Task 4 - Model Integration: Data Extraction and Insertion Technical Memorandum. *Report prepared for:* Kuwait Institute for Scientific Research, pp. 36.
- Thyne, G.D., M. Dodds, K.K. Greaser, J. Miskimins, and K.E. Murray. 2003. Technical report: Hydrologic model for Grand Mesa watershed, Delta County, Colorado. *Report prepared for:* Delta County, CO, pp. 84.
- Murray, K. E. 2003. GIS-based modeling of ground water vulnerability to pesticide contamination in Colorado. *Colorado Ground-Water Association Newsletter* January-February: 6-10.
- Murray, K. E. 2003. Spatial analysis and modeling of water resource issues in Colorado utilizing Geographic Information Systems. Ph.D. thesis, Department of Geology and Geological Engineering, Colorado School of Mines, Golden, CO, pp. 111.
- McCray, J. E., K. E. Murray and S. A. Schlosser. 2003. Technical report: Aquifer vulnerability to agricultural contaminants in Colorado. *Report prepared for:* Colorado Department of Public Health and Environment, pp. 17.
- Murray, K. E. 2002. Validation of a GIS model used to predict the vulnerability of ground water in Colorado to pesticide contamination. *Colorado Ground-Water Association Newsletter* January-February: 7-9.
- Murray, K. E. 2001. Validation of a GIS model used to predict the vulnerability of ground water in Colorado to pesticide contamination. *Colorado Ground-Water Association Newsletter* September-October: 9.
- Murray, K. E. and J. E. McCray. 2001. Technical report: Recommendations for the installation of ground-water quality monitoring wells. *Report prepared for:* Colorado State University Water Center, pp. 17.
- Murray, K. E. and J. E. McCray. 2001. Technical report: Vulnerability assessment of Colorado ground water to agricultural pesticide contamination. *Report prepared for:* Colorado Department of Health and Environment - Water Quality Control Division, pp. 16.
- Murray, K. E. and K. L. Dalton. 1999. Technical memorandum: Recovery well operations testing. *Memorandum prepared for:* Former Unocal Chemicals Distribution Facility, Wichita, KS, pp. 4.
- Murray, K. E. 1997. A comparative study of the inorganic hydrogeochemistry of constructed and natural wetlands. M.S. thesis, Department of Geological Sciences, Wright State University, Dayton, OH, pp. 70.
- Murray, K. E. 1996. Horizontal wells: Environmental innovation. *Wisconsin Groundwater Association Newsletter* 10, no. 4: 10.

### **Conference Proceedings and Abstracts**

- Reyes, B., and K.E. Murray. 2008 Implementation of a Geographical Information System (GIS) for the Enhanced Oil Recovery Institute (EORI), Laramie WY: High Plains GIS, SouthWest Users Group Conference.

- Manitou-Alvarez, E.I., Murray, K.E., and A.A. Bodour. 2008. Laboratory-scale treatment of biofilms grown in situ in drinking water wells, in *Proceedings of National Association of Environmental Professionals*, San Diego, CA, 15 pp.
- Thomas, S.M., Bodour, A.A., and K.E. Murray. 2006. Optimization of an SPE and GC/MS method for analyzing endocrine disrupting compounds in water. American Geophysical Union Fall 2006 Meeting, 87(52), Abstract no. B53C-0367.
- Daniele, L., A. Pulido Bosch, K.E. Murray, and L. Molina. 2006. Estudio de la evolución de un humedal en una región semiárida mediante GIS. El caso del la balsa del sapo (Campo de Dalías, SE España). Meeting of the Geological Society of Spain. Barcelona, España.
- Daniele, L., K.E. Murray, A. Pulido Bosch, L. Molina, and A. Vallejos. 2006. Study of wetland evolution in a semiarid region using GIS. Case of Balsa del Sapo (Campo de Dalías, SE España). Integrated Water Resource Management and Challenges of Sustainable Development, International Congress CM-AIH. Marrakech, p. 147.
- Thomas, S.M. and K.E. Murray. 2006. Evaluation of water treatment methods for endocrine disrupting compounds, American Geophysical Union Joint Meeting, Baltimore, MD, May 22-25, 2006, Abstract no: 581.
- Brumbelow, K., C.L. Linthicum, S. Meyer, K.E. Murray, D. Nichols, G. Shelton, and L. Yosko. 2006. A comprehensive water audit of the San Antonio Water System, World Water and Environmental Resources Congress, Omaha, NE, American Society of Civil Engineers.
- Gayley, A.C. and K.E. Murray. 2006. LNAPL recoverability analysis of JP-4/JP-5 release at Kingsville Naval Air Station, *Ground Water Summit*. National Ground Water Association, San Antonio, TX, p. 21.
- Hawkins, N.J., K.E. Murray, A.A. Bodour. 2006. Water quality parameters and indicator organisms for early detection of biofouling in groundwater production wells, *Ground Water Summit*. National Ground Water Association, San Antonio, TX, p. 148-149.
- Murray, K.E., 2006. GIS-based modeling of groundwater resources in the Denver Basin Aquifer System. In: E.P. Poeter, C. Zheng, M.C. Hill and J. Doherty (Editors), *MODFLOW and More 2006: Managing Ground Water Systems*. International Ground Water Modeling Center, Golden, CO, p. 326-330.
- Murray, K.E., 2006. Visualizing hydraulic capture zones and assessing sustainability of water resources using GIS, *Ground Water Summit*. National Ground Water Association, San Antonio, TX, p. 39.
- Murray, K.E., 2006. Geospatial modeling of groundwater production scenarios using well hydraulics equations. In: D.R. Maidment (Editor), *GIS and Water Resources IV Specialty Conference*. American Water Resources Association, Houston, TX, pp. 6.
- Thomas, S.M., D. Paul, and K.E. Murray. 2005. Oxygen and hydrogen evolution of groundwater in the Edwards and Trinity aquifer system, south-central Texas. *GSA Abstracts With Programs* 37, no. 7. pp. 217.
- Daniele, L., K.E. Murray, and J. Gisbert. 2005. Analisis de recursos hidricos mediante SIG aplicacion al Campo de Dalías: Third Conference of Young Researchers.

- Daniele, L., K.E. Murray, A. Pulido-Bosch, A. Vallejos, and L. Molina-Sanchez. 2005. GIS and geostatistic applied to complex coastal aquifers. Case of Campo de Dalias (SE, Spain), In: V European Congress on Regional Geoscientific Cartography and Information Systems, Barcelona, Spain.
- Murray, K.E. 2005. Critical production rates and quantities of recoverable water resources in the Denver basin aquifer system. *Ground Water Summit*. National Ground Water Association, San Antonio, TX, pp. 134-135.
- Daniele, L., K.E. Murray, A. Pulido-Bosch, A. Vallejos, and L. Molina-Sanchez. 2005. Study of wetland in a semiarid region using GIS. Case of Balsa del Sapo (Campo de Dalias, SE Spain), In: International Congress on Integrated Water Resources Management and Challenges of the Sustainable Development, Marrakech, International Association of Hydrogeologists.
- Murray, K.E. 2004. Geologic framework modeling for constraining a hydrologic model of the Denver Basin Aquifer System. *GSA Abstracts With Programs* 36, no. 5: 104.
- Vanderbeek, G.A., E.P. Poeter and K.E. Murray. 2003. Estimating recharge and storage coefficient in a fractured rock aquifer using MODFLOW. In *Proceedings of MODFLOW and More 2003 Understanding through Modeling*, E.P. Poeter, C. Zheng, M.C. Hill and J. Doherty (Editors), International Ground-Water Modeling Center, Golden, CO, p. 510-514.
- Murray, K.E., E.P. Poeter and J.E. McCray. 2003. Estimating spatially variable ground-water recharge rates using GIS. In *Proceedings of MODFLOW and More 2003 Understanding through Modeling*, E.P. Poeter, C. Zheng, M.C. Hill and J. Doherty (Editors), International Ground-Water Modeling Center, Golden, CO, p. 475-479.
- Vanderbeek, G. A., E. P. Poeter, K. E. Murray, G. D. Thyne and J. E. McCray. 2003. Estimating recharge and storage coefficient in a fractured rock aquifer. *GSA Abstracts With Programs* 35, no. 5: 33.
- Murray, K. E. and M. R. Hudson. 2002. Three-dimensional geologic framework modeling in the Buffalo National River, Arkansas. *GSA Abstracts With Programs* 34, no. 6: p. 120.
- Murray, K. E. and J. E. McCray. 2002. Statistical evaluation of uncertainty in small-scale GIS-based soil property databases. *GSA Abstracts With Programs* 34, no. 4: 38.
- Murray, K. E., S. A. Schlosser and J. E. McCray. 2001. GIS comparison of methods for predicting pesticide contamination potential of ground water in Colorado. *GSA Abstracts With Programs* 33, no. 5: A-17.
- Schlosser, S. A., K. E. Murray and J. E. McCray. 2001. Selection and field test of a pesticide vulnerability assessment method for Colorado. *GSA Abstracts With Programs* 33, no. 5: A-52.
- Murray, K. E. 2001. Geographic information systems based approach for the assessment of ground water vulnerability to pesticide contamination, In *Proceedings of Colorado School of Mines Research Fair Competition*, eds. CSM-GSA, 22.
- Murray, K. E., S. A. Schlosser, J. E. McCray and B. Austin. 2000. Geographic information systems analysis of ground water vulnerability to pesticide contamination. *GSA Abstracts With Programs* 32, no. 7: A-374.
- Brandt, T. R. and K. E. Murray. 2000. Digital geologic map of the Fort Collins, Boulder, and Denver

area, Colorado. In *Proceedings of GIS in the Rockies Conference 2000*, Denver, CO: GITA.

Murray, K. E., J. E. McCray, R. M. Waskom and B. Austin. 2000. Sensitivity of ground water resources to agricultural contamination in the San Luis Valley, Colorado. *GSA Abstracts With Programs* 32, no. 5: A-34.

Murray, K. E. and S. Cheng. 1997. A comparative study of the inorganic hydrogeochemistry of constructed and natural wetlands. *GSA Abstracts With Programs* 29, no. 4: 63.

## **PAPER PRESENTATIONS**

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March 28, 2008 Waco, TX: Baylor University Department of Geology Colloquium – Oral Presentation titled *Hydrogeologic Characterization and GIS Analysis of the Oakville/Jasper Aquifer*.

May 22, 2006 Golden, CO: International Ground Water Modeling Center MODFLOW and More 2006 Conference – Oral Presentation titled *GIS-based Modeling of Groundwater Resources in the Denver Basin Aquifer System*.

May 9, 2006 Houston, TX: American Water Resources Association GIS and Water Resources IV Specialty Conference – Oral Presentation titled *Geospatial Modeling of Groundwater Production Scenarios Using Well Hydraulics Equations*.

April 24, 2006 San Antonio, TX: National Ground Water Association Meeting – Oral Presentation titled *Visualizing Hydraulic Capture Zones and Assessing Sustainability of Water Resources using GIS*.

November 30, 2005 Almería, España: Research Exchange – Oral Presentation titled *Hydrogeology and Related Research at the University of Texas at San Antonio*.

April 19, 2005 San Antonio, TX: National Ground-Water Association Meeting – Oral Presentation titled *Critical Production Rates and Quantities of Recoverable Water Resources in the Denver Basin Aquifer System*.

April 8, 2005 Austin, TX: UT-Austin Hydrogeology Brown Bag Seminar Series – Oral Presentation titled *A Spatial Volumetrics Approach to Understanding Critical Production Rates and Recoverable Quantities of Ground Water*.

November 7, 2004 Denver, CO: Geological Society of America National Meeting – Oral Presentation titled *Geologic Framework Modeling for Constraining a Hydrologic Model of the Denver Basin Aquifer System*.

## **CREATIVE ACTIVITIES**

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Developed slug test laboratory and evaluated groundwater-flow and contaminant particle-flow modeling laboratory for: *Hydrogeology Laboratory Manual* (Lee, Fetter, and McCray, 2002)

## **SIGNIFICANT PROFESSIONAL SERVICE**

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### **UTSA Student Organizations**

Faculty Advisor: Earth, Environmental Science and Engineering (EASE) Student Organization  
(Founded Fall 2005 – Present)

Invited Speaker: University of Texas at San Antonio: American Society of Civil Engineers Meeting – Oral Presentation titled *Overview of the Capabilities and Engineering Applications of GIS* (March 23, 2005)

#### **UTSA Doctoral Program in Environmental Science and Engineering**

Invited Speaker: Environmental Seminar Series (October 3, 2008)  
Invited Speaker: Environmental Seminar Series (February 2008)  
Member: Doctoral Studies Committee (Spring 2006 – Spring 2008)  
Member: Environmental Seminar Revision Committee (Spring 2006)  
Invited Speaker: Environmental Seminar Series (October 2004, October 3, 2008)

#### **UTSA Department of Geological Sciences**

Invited Speaker: Biology Seminary – at Trinity University, San Antonio, TX (Spring 2009)  
Invited Speaker: President's Peace Commission, Alternative Energy Panel – at St. Mary's University, San Antonio, TX (Spring 2009)  
Member: Policy Committee (Fall 2007 – present)  
Member: McNutt Scholarship Committee (Spring 2007 – present)  
Co-Advisor: GIS Certification Program (Spring 2006 – Present)  
Invited Speaker: GIS Day – at UTSA (November 14, 2006)  
Invited Speaker: Texas Bahia Karst Workshop – at UTSA (July 24, 2006)  
Invited Speaker: MORE Science Program – at UTSA (March 7, 2006)  
Member: Search Committee for Faculty hire in Environmental Spatial Analysis (2005)

#### **UTSA Center for Water Research**

Member: Master of Science Scholarship Committee (Fall 2005 – Present)

#### **UTSA College of Sciences**

Member: Budget Committee (Fall 2008 – Present)  
Member: Scholarship Committee (Spring 2006 – Present)  
Member: Intellectual Property Advisory Committee (Fall 2004 – Spring 2008)

#### **UTSA Honors College**

Member: Faculty Research Award Program Review Committee (Fall 2007)  
Member: Study Abroad Scholarship Committee (Fall 2006 – Present)  
Member: Research Area Strategic Planning Committee (Fall 2006 – Present)  
Member: Special Opportunities Fund Selection Committee (Spring 2007 – Present)

#### **UTSA University Level**

Campus Representative: Geological Society of America (Fall 2004 – Present)  
Invited Speaker: Ground Water Institute for Teachers Program, Englewood, CO; presentation given on Ground-water modeling and Geographic Information Systems (July 13-14, 2004)

#### **Professional Community**

Member: American Society of Civil Engineers-Environmental and Water Resources Institute (ASCE-EWRI) Watershed Modeling, Onsite Systems Task Committee (2007 - present)

Technical Reviewer:

*Water Resources Management (Aug 2008), American Society of Agricultural and Biological Engineers (Dec 2007), Applied Geochemistry (Jan 2007), Environmental and Engineering GeoScience (2005), Journal of Contaminant Hydrology, Journal of Environmental Geology, Journal of Environmental Management, Journal of Environmental Quality, Journal of*

*Hydrologic Engineering, Ground Water, Ground Water Monitoring and Remediation, Soil Science Society of America Journal, Journal of Soil and Sediment Contamination (2004), International Journal of Environment and Pollution (October 2005), University of California-Davis DNAR leaflet, and Proceedings of First Interagency Conference on Research in the Watersheds*

Proposal Reviewer: National Institute of Health Loan Repayment Program (April 2009), Southwest Consortium for Environmental Research & Policy (January 2006, January 2007), American Chemical Society (April 2006), National Institutes for Water Resources (Jan 2008, April 2007)

Invited Participant: Environmental Systems Research Institute (ESRI) ArcHydro Groundwater Data Model Workshop, Redlands, CA (December 2006).

Conference Session Chair: for Ground Water Recharge Session at the International Ground Water Modeling Center hosted MODFLOW and More 2003: Understanding Through Modeling Conference, Golden, CO (May 2003).

### **Community**

Invited Speaker: Linear Creekway Parks Advisory Board – San Antonio, TX (November 28, 2006)

Participant: Basura Bash – Cleanup of San Pedro Creek with EESE and Air & Waste Management Association (2006)

Member: Lower Guadalupe Water Supply Project Citizen's Forum (2005)

### **HONORS, AWARDS, AND OTHER SPECIAL RECOGNITION**

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Murray, K.E. 2003. *Star Award*, Awarded by: Earth Surface Processes Team, U.S. Geological Survey, Denver, CO. For: Recognition for contributions to three-dimensional geologic modeling efforts for the Edwards aquifer cooperative project.

Murray, K.E. 2003. *Harold Hickey Research Fellowship*, Awarded by: Department of Geology and Geological Engineering, Colorado School of Mines, Golden, CO. For: Dissertation research.

Murray, K.E. 2002. *Star Award*, Awarded by: Earth Surface Processes Team, U.S. Geological Survey, Denver, CO. For: Recognition for contributions to the Edwards aquifer cooperative project, Earth Surface Processes Team, U.S. Geological Survey, Denver, CO.

Murray, K. E. 2001. *Harlan Erker Memorial Scholarship*, Awarded by: Colorado Ground Water Association. For: Verification of a GIS model used to predict the vulnerability of ground water in Colorado to pesticide contamination.

Murray, K. E. 2000. *Internship* awarded by: Sussman Foundation, CO. For: Development of a GIS-based environmental management information system.

Murray, K.E. 1997. *Outstanding Student Presentation*, Awarded by: Geological Society of America, North-Central Section Meeting, Madison, WI, May 2, 1997.

### **FUNDED GRANTS AND PATENTS**

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#### **Research Grants**

Zhou, W., Murray, K.E., Boak, J., Benson, D., McCray, J.E., Geza, M., Mattson, E., and Palmer, C. 2008.

- GIS- and web-based water resource geospatial infrastructure for oil shale development. (\$1,145,741). *UTSA funded by sub-contract from CSM* (\$223,281 project performance period October 1, 2008 – September 30, 2011).
- Bodour, A.A., and K.E. Murray. 2007. Biofouling evaluation and maintenance plan for Staggs Ranch wells. *Proposal funded by: BexarMet Water District, San Antonio, TX* (\$45,000 project performance period June 1, 2007 – May 31, 2008).
- Murray, K.E. 2007. Water supply potential of existing wells: City of Kenedy, TX. *Proposal funded by: City of Kenedy, TX* (\$25,860 project performance period June 1, 2007 – May 31, 2008).
- Murray, K.E. 2006. County-scale geographic data summary of transportation, social, and economic parameters within the Ports-to-Plains corridor. *Proposal funded by: Texas Tech University – Center for Public Service* (\$1,200 project performance period September 1, 2006 – December 31, 2006).
- Murray, K.E., and A.R. Dutton. 2006. Assessment of water supply, water demand and water resources planning needs for the City of Kenedy. *Proposal funded by: City of Kenedy, TX* (\$2,000 project performance period September 1, 2006 – December 31, 2006).
- McCray, J.M., E.P. Poeter, K.E. Murray, D. Morgan, and B. Rich. 2006. Development of a user-friendly guidance document for the selection and application of watershed modeling tools for simulating impacts of onsite-wastewater pollutants at the watershed scale. (\$280,000). *UTSA funded by sub-contract from CSM* (\$44,187 project performance period April 1, 2006 – September 30, 2008).
- Higgins, J.D., P.M. Santi, and K.E. Murray. 2006. Geologic hazard analysis, data management, and modeling along transportation corridors. (\$121,000). *UTSA funded by sub-contract from CSM for Rockfall Data Management System* (\$16,038 project performance period March 1, 2006 – February 28, 2008).
- Murray, K.E., J.K. Bush, R.H. French, and J.K. Haschenburger. 2006. Management practices for natural waterways. *Proposal funded by: City of San Antonio, TX* (\$50,000 project performance period April 1, 2006 – March 31, 2007).
- Murray, K.E., K. Brumbelow, and C.L. Linthicum. 2005. Audit of San Antonio Water System operations and infrastructure using International Water Association standards. *Proposal funded by: San Antonio Water System (SAWS)* (\$50,000 project performance period March 15, 2005 – March 14, 2006).
- Murray, K.E., and N. Hawkins. 2005. Hydrogeologic characterization and screening of alternatives for delivery of higher quality groundwater. *Proposal funded by: Private landowner in South-Central Texas* (\$1,824 project performance period June 1, 2005 – October 1, 2005).
- Murray, K.E. 2004. Three-dimensional modeling and visualization of the stratigraphic architecture of the Denver Basin Aquifer System. *Funded as a sub-contract from Denver Museum of Nature & Science*. (\$7,000 project performance period January 1, 2005 – December 31, 2006).
- Thyne, G.D., J.E. McCray, K.E. Murray, A.A. Bodour, and K. Nicoll. 2004. Research vision for hydrologic science. *Proposal funded by: Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI)* (\$6,400 project performance period June 1, 2004 – December 31, 2004).
- Kuntz, M. A., K. E. Murray, S. R. Anderson and J. P. Rousseau. 2002. Three-dimensional hydrogeologic framework modeling in support of the long-term stewardship strategic plan for the INEEL. *Proposal*

*funded by:* U.S. Department of Energy. (\$125,000 project performance period January 1, 2003 – December 31, 2003)

Murray, K. E. 2001. Transport-based approach for the assessment of ground water vulnerability to pesticide contamination: Validation and spatial modeling. *Proposal funded by:* Geological Society of America. (\$1,500 project performance period June 1, 2001 – August 31, 2001)

## **THESES AND DISSERTATIONS SUPERVISED**

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### **Supervising Professor**

Muhlestein, K.N., 2010-anticipated, Characterization of karst meteorological venting patterns using thermal remote sensing. Ph.D. Thesis in Environmental Science and Engineering, University of Texas at San Antonio.

Manitou-Alvarez, E.I. 2008. Laboratory-scale treatment and microbial profiling of biofilms grown in water supply wells. M.S. Thesis in Environmental Science. University of Texas at San Antonio, 94 pp.

Yosko, L.S. 2008. Hydrogeologic characterization and water supply assessment of gulf coast aquifer in the City of Kenedy, TX. M.S. Thesis in Environmental Science. University of Texas at San Antonio, 90 pp.

Lutz, T.L., 2007. Hydrologic and hydraulic analysis in the Guadalupe River basin using GIS technology. M.S. Thesis, University of Texas at San Antonio, 52 pp.

Thomas, S.M., 2007. Fate of emerging contaminants in a wastewater treatment plant. Ph.D. Thesis in Environmental Science and Engineering, University of Texas at San Antonio. 100 pp.

Juckett, M.R., 2006. Deliquescence relative humidities of salts and natural dusts present in the proposed underground repository at Yucca Mountain, Nevada. M.S. Thesis, University of Texas at San Antonio, 52 pp.

### **Advisory Committee Member**

Conales, H., 2011-anticipated. Ph.D. Thesis in Environmental Science and Engineering, University of Texas at San Antonio.

Joseph, J., 2010-anticipated, A bayesian approach for improving confidence intervals and accuracies of hydrologic models. Ph.D. Thesis in Environmental Science and Engineering, University of Texas at San Antonio.

Ritsema, D. 2010-anticipated. Engineering design for bioretention in the Edwards aquifer region. Ph.D. Thesis in Environmental Science and Engineering, University of Texas at San Antonio.

Lupton, D. 2009-anticipated. M.S. Thesis in Geology, University of Texas at San Antonio.

Brito, E.E. 2008. "In order to stay competitive:" The impact of what happened when Levi Strauss & Co. left San Antonio. B.A. Honors Thesis in Business Administration in Management-International Business, University of Texas at San Antonio, 40 pp.

- Lindsey, J.M., 2008, A study of microlending: Impacts and implications. B.A. Honors Thesis in Communications, University of Texas at San Antonio, 35 pp.
- Wang, X. 2008. Applications of remote sensing and GIS in surface hydrology: snow cover, soil moisture, and precipitation. Ph.D. Thesis in Environmental Science and Engineering, University of Texas at San Antonio, 220 pp.
- Weissling, B.P., 2008, Watershed streamflow estimation utilizing remote sensing time-series proxies for landscape moisture state and radar precipitation. Ph.D. Thesis in Environmental Science and Engineering, University of Texas at San Antonio, 177 p.
- Danial, E. 2007. Mutations in OGG1, a gene involved in the repair of oxidative DNA damage, in kidney tumors from patients with Tuberous Sclerosis. B.S. Honors Thesis in Biology, University of Texas at San Antonio, 33 pp.
- Daniele, L. 2007. Aplicación de sistemas de información geográfica al estudio de acuíferos complejos. caso del Campo de Dalías. Ph.D. Thesis in Hydrogeology, Universidad de Almería, Almería, España. 219 pp.
- Hawkins, N.J. 2007. Culturing and characterization of microorganisms in groundwater well biofilms using water chemistry and 16S ribosomal DNA sequencing. M.S. Thesis in Environmental Science. University of Texas at San Antonio, 76 pp.
- Symank, L. 2007. Variable density modeling of the hydrogeologic evolution of the convergence zone between freshwater and saline basinal groundwaters, Wilcox Group, central Texas, Gulf of Mexico coastal plain, USA. M.S. Thesis in Geology. University of Texas at San Antonio, 73 pp.
- Taylor, B.S. 2007. Water purity perceptions in Brownsville: An ethnographic study of water purity in an American border town. B.A. Honors Thesis in Anthropology, University of Texas at San Antonio. 40 pp.
- Idwan, S. 2005. Algorithms for discrete geometric and graph theoretic pursuit problems. Ph.D. Thesis in Mathematics and Computer Science. Colorado School of Mines, 104 pp.
- Straud, D.R. 2005. Application and assessment of optical brighteners for detecting septic system impacts on surface and subsurface waters for a portion of the Edwards aquifer recharge zone. M.S. Thesis in Geology, University of Texas at San Antonio, 61 pp.