Curriculum Vitae

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Professional Education

Vordiplom	(1956)	Civil Engineering, Technical University Stuttgart, Germany
Dip.Ing.	(1959)	Civil Engineering, Technical University Munich, Germany
Eng. Hydraulicien	(1960)	Univ. Paul Sabatier, Toulouse, France
Dr.-Ing.	(1963)	Univ. Paul Sabatier, Toulouse, France

Positions/Appointments

2001 - 2011	Academy of Distinguished Teachers, University of Minnesota
1997 - 2011	James L. Record Professor of Civil Engineering, Univ. of Minnesota
1974 - 1995	Associate Director, St. Anthony Falls Hydraulic Laboratory, University of Minnesota (Acting Director, 1989-90)
1977 - 1997	Professor, Department of Civil Engineering, University of Minnesota
1967 - 1977	Assistant Professor and Associate Professor, University of Minnesota
1965 - 1967	Chief Engineer and Lecturer, Institute for Hydraulic Research and Water Resources, Technical University, Berlin, Germany
1963 - 1965	Postdoctoral Fellow, St. Anthony Falls Hydraulic Laboratory
1960 - 1963	Research Eng., Inst. Fluid Mech., Univ. Paul Sabatier, Toulouse

Honors and Awards

National Merit Fellowship (Studienstiftung des Deutschen Volkes), Germany, 1957-60.
Founders Award, Best Paper in *Water Research*, International Water Assoc., 1997.
Hunter Rouse Award, American Society of Civil Engineers, 1998.
Distinguished Graduate and Professional Educator Award, Univ. of Minnesota, 2001.
Finalist, Best Paper Award, 2001, American Fisheries Society.
Britzius Distinguished Engineer of the Year Award, Minn. Fed. Engrg. Societies, 2003.
Dave Ford Water Resources Award, Minnesota, 2003.
Co-advisor, First Place Ph.D. Diss. Award, Univ. Council on Water Resources, 2009
Environmental Leadership Award, Freshwater Society, 2009

Subjects Taught

Fluid Mechanics; Water Resources Engineering; Hydraulic Structures; Lake and Reservoir Hydrodynamics; Hydrology; Analysis and Modeling of Aquatic Environments; Groundwater Flow, Capstone Design.

Graduate Students Advised

Ph.D.: 28 to completion, 3 current
M.S. and M.C.E.: 80 to completion

Selected Articles in Refereed Journals.

1. Cambefort, H., Ch. Gerber, H. G. Stefan, and R. Berthaud, "Dilution des Coulis Newtoniens Injectes dans les Sols Pulverulents," *Le Genie Civil*, June 1965.
2. Stefan, H. G., "Betrachtungen zur Wirkungsweise von Wirbelfallschaechten," *Die Bautechnik*, Heft 7, July 1968.
3. Stefan, H. G. and F. R. Schiebe, "The Measurement of Low Fluid Velocities with the Aid of a Tethered Sphere," *Water Resources Research*, Vol. 6, Dec 1968.
4. Silberman, E. and H. G. Stefan, "Temperatur- und Stroemungsverhaeltnisse bei Abgabe von Kuehlwasser an einen Stausee," *Die Wasserwirtschaft*, Heft 5, May 1969.
5. Stefan, H.G. and J. Meyer, "Seepage Study Using Electrical Analog," *J. Hydraulics Division* ASCE 96(HY2), Feb 1970.
6. Stefan, H.G., "Modeling Spread of Heated Water over a Lake," *J. Power Division* ASCE 96(PO3), June 1970.
7. Stefan, H.G., "Stratification of Flow from Channel into Deep Lake," *J. Hydraulics Division* ASCE 96 (HY7), July 1970.
8. Stefan, H.G., "Dilution of Buoyant Two-Dimensional Surface Discharges," *J. Hydraulics Division* ASCE 98(HY1), Jan 1972.
9. Stefan, H.G. and N. Hayakawa, "Mixing Induced by an Internal Hydraulic Jump," *Water Resources Bulletin*, AWRA 8(3), June 1972.
10. Stefan, H.G., Ho Wing, and Chung-Sang Chu, "Impact of Cooling Water on Lake Temperatures," *J. Power Division* ASCE 97(PO2), Oct 1972.
11. Stefan, H.G. and P. Vaidyaraman, "Jet-Type Model for the 3-D Thermal Plume in a Cross-Current and Under Wind", *Water Resources Research* 8(4), Aug 1972.
12. Christiano, P., J. Seeley, and H.G. Stefan, "Static Windloads on Concave Circular Cable Roofs," *J. Structural Division* ASCE 100(ST8), Aug 1974.
13. Seeley, J., H.G. Stefan, and P. Christiano, "Transient Windloads on Concave Circular Cable Roofs," *J. Structural Division* ASCE 100(ST11), Nov 1974.
14. Stefan, H.G. and D.E. Ford, "Temperature Dynamics of Dimictic Lakes," *J. Hydraulics Division* ASCE 101:(HY1), Jan 1975.
15. Stefan, H.G., T. Skoglund, and R. Megard, "Wind Control of Algae Growth in Eutrophic Lake," *J. Environmental Engineering Div.* ASCE 102:(EE6), Dec 1976.
16. Stefan, H.G. and J.S. Gulliver, "Effluent Mixing Zone in a Shallow River," *J. Environmental Engineering Div.*, ASCE 104(EE2), Apr 1978.
17. Ford, D.E. and H.G. Stefan, "Thermal Predictions Using an Integral Energy Model," *J. Hydraulics Div.* ASCE 106, HY1: 39-55, Jan 1980.
18. Ford, D.E. and H.G. Stefan, "Stratification Variability in Three Lakes Under Identical Meteorological Forcing," *Water Resources Bulletin*, AWRA 16(2):243-247, Apr 1980.
19. Stefan, H.G. and K. Anderson, "Wind-Driven Flow in a Mississippi-River Impoundment," *J. Hydraulics Div.* ASCE 106 (HY9), Sep 1980.
20. Stefan, H.G. and A. Demetracopoulos, "Cells-In-Series Simulation of Riverine Transport," *J. Hydraulics Div.* ASCE 107(HY6): 675-697, June 1981.
21. Stefan, H.G. and M. J. Hanson, "Phosphorus Recycling in Five Shallow Lakes," *J. Environmental Engineering Div.* ASCE 107(EE4):713-730, Aug 1981.

22. Dhamotharan, S., J.S. Gulliver, and H. G. Stefan, "Unsteady One-Dimensional Settling of Suspended Sediment" *Water Resources Research* 17(4): 1125-1132, Aug 1981.
23. Stefan, H.G., "Heat Loss from Rapid Infiltration Basin in Winter" *J. Environmental Engineering Division* ASCE 108(EE1): 141-158, Feb 1982.
24. Stefan, H.G., S. Dhamotharan, and F. R. Schiebe, "Temperature/Sediment Model for a Shallow Lake" *J. Environmental Engg. Div.* ASCE 108 (EE4): 750-765, Aug 1982.
25. Gulliver, J.S. and H.G. Stefan, "Lake Phytoplankton Model with Destratification" *J. Environmental Engineering Division* ASCE 108(EE5): 864-882, Oct 1982.
26. Stefan, H.G., J. Cardoni, F. Schiebe, and C. Cooper, "Model of Light Penetration in a Turbid Lake" *Water Resources Research* 19(1):109-120, Feb 1983.
27. Demetracopoulos, A. and H. G. Stefan, "Transverse Mixing in Wide and Shallow River: Case Study" *J. Environmental Engineering* ASCE 109(3): 685-699, June 1983.
28. Demetracopoulos, A. and H.G. Stefan, "Model of Mississippi River Pool: Mass Transport" *J. Environmental Engineering* ASCE 109(5): 1006-1019, Oct 1983.
29. Demetracopoulos, A. and H. G. Stefan, "Model of Mississippi River Pool: Dissolved Oxygen" *J. Environmental Engineering* ASCE 109(5): 1020-1034, Oct. 1983.
30. Stefan, H. G. and M. Rodney, "How Wind Can Affect a Sedimentation Basin" *Journal Water Pollution Control Federation* 56(11): 1204-1208, Nov 1984.
31. Akiyama, J. and H.G. Stefan, "Plunging Flow into a Reservoir: Theory" *J. Hydraulic Engineering* ASCE 110(HY4): 484-499, Apr 1984.
32. Gulliver, J.S. and H.G. Stefan, "Stream Productivity Analysis with DORM: I. Development of Computational Model" *Water Research* 18(12): 1569-1576, 1984.
33. Gulliver, J. S. and H. G. Stefan, "Stream Productivity Analysis with DORM: II. Parameter Estimation and Sensitivity" *Water Research* 18(12): 1577-1588, 1984.
34. Gulliver, J.S. and H.G. Stefan, "Stream Productivity Analysis with DORM: III. Productivity of Experimental Stream" *Water Research* 18(12): 1589-1595, 1984.
35. Hanson, M. and H.G. Stefan, "Side Effects of 58 Years of Copper Sulfate Treatment of the Fairmont Lakes" *Water Resources Bulletin* AWRA 20(6): 889-900, Dec 1984.
36. Stefan, H.G. and M. Riley, "Mixing of a Stratified River by Barge Tows" *Water Resources Research* 21(8): 1085-1094, Aug 1985.
37. Akiyama, J. and H.G. Stefan, "Gradually Varied Turbidity Current with Erosion and Deposition" *J. Hydraulic Engineering* ASCE 111(12): 1473-1496, 1985.
38. Gulliver, J. S. and H. G. Stefan, "Wind Function for a Sheltered Stream" *J. Environmental Engineering* ASCE 112(2), Apr 1986.
39. Stefan, H.G., W. Q. Dahlin, T. Winterstein, P. Fournier, "Passive Screen Water Intake Design Studies" *J. Energy Engineering* ASCE 112(2): 115-126, Aug 1986.
40. Ellis, C. and H.G. Stefan, "Low Velocity Measurement in Water" *Water Resources Research* 22(10): 1480-1486, Sept 1986.
41. Ellis, C. and H. G. Stefan, "Hydrogen Bubble/Thymol Blue Low Velocity Water Current Meter" *J. Hydraulic Research* IAHR, 187-196, June 1987.
42. Stefan, H.G., M. Bender, J. Shapiro, and D. Wright, "Hydrodynamic Design of Metalimnetic Lake Aerator" *J. Environmental Engg.* 113(6): 1249-1264, Dec 1987.

43. Akiyama, J. and H.G. Stefan, "Onset of Underflow in a Slightly Diverging Channel" *Journal of Hydraulic Engineering* ASCE 113 97), July 1987.
44. Johnson, T.R., G.J. Farrell, C.R. Ellis, and H.G. Stefan, "Negatively Buoyant Flow in a Diverging Channel. Part 1: Flow Regimes" *J. Hydraulic Engg.* 113(6), June 1987.
45. Johnson, T.R., G.J. Farrell, C.R. Ellis, and H.G. Stefan, "Negatively Buoyant Flow in a Diverging Channel.Part2: Flow Field Descript" *J. Hydraulic Engg.*113(6), June 1987.
46. Akiyama, J. and H. G. Stefan, "Turbidity Current Simulation in a Diverging Channel" *Water Resources Research* 24(4): 579-587, 1988.
47. Farrell, G. and H. G. Stefan, "Two-Layer Analysis of Plunging Flow in a Diverging Channel" *J. Hydraulic Research* 27(1), 1989.
48. Horsch, G. and H. G. Stefan, "Convective Circulation in Littoral Water Due to Surface Cooling" *Limnology and Oceanography* 33(5): 1068-1083, Sep 1988.
49. Riley, M. and H.G. Stefan, "MINLAKE: A Dynamic Lake Water Quality Simulation Model," *Ecological Modeling* 43: 155-182, 1988.
50. Gu, R. and H. G. Stefan, "Analysis of Turbulent Buoyant Jet in Density-Stratified Water" *J. Environmental Engineering* ASCE 114(8), Aug 1988.
51. Gu, R. and H.G. Stefan, "Mixing of Temperature-Stratified Water by Buoyant Jet" *J. Environmental Engineering* ASCE 114(4), Aug 1988.
52. Farrell, G.J. and H.G. Stefan, "Mathematical Modeling of Plunging Reservoir Flows" *Journal of Hydraulic Research* 26(5): 525-537, 1988.
53. Riley, M. J and H.G. Stefan," Development of the Minnesota Lake Water Quality Management Model MINLAKE," Lake and Reservoir Management 4(2): 73-83, 1988.
54. Zic, K. and H.G. Stefan, "Lake Aerator Effect on Temperature Stratification Analyzed by MINLAKE Model" *Lake and Reservoir Management*, Vol. 4, No. 2, 85-90, 1988.
55. Stefan, H.G. and T. R. Johnson, "Negatively Buoyant Flow in a Diverging Channel. Part 3: Onset of Underflow and Flow Regimes" *J. Hydraulic Engg.* 114(4), Apr 1989.
56. Johnson, T. R., C.R. Ellis and H. G. Stefan, "Negatively Buoyant Flow in a Diverging Channel. Part 4: Entrainment and Dilution" *J. Hydraulic Engg.* 114(4), Apr 1989.
57. Stefan, H.G., G. Horsch, and J. Barko, "Model for Estimation of Convective Water Exchange Rates in a Littoral Region of a Shallow Lake During Cooling" *Hydrobiologia* 174(3): 225-234, Apr 1989.
58. Stefan, H. G., "Lake Mixing Dynamics and Water Quality Models" *J. Minnesota Academy of Science* 55(1): 86-94, Oct 1989.
59. Ellis, C. R. and H. G. Stefan, "Oxygen Demand in Ice Covered Lakes as it Pertains to Winter Aeration" *Water Resources Bulletin* AWRA 25(6): 1169-1176, Dec 1989.
60. Thene, J.R., H.G. Stefan and E.I. Daniil, "Low-Head Hydropower Impacts on Stream Dissolved Oxygen" *Water Resources Bulletin* AWRA 25(6): 1189-1198, Dec 1989.
61. Ellis, C. R. and H. G. Stefan, "Hydraulic Design of a Winter Lake Aeration System" *J. Environmental Engineering* ASCE 115(2): 376-393, Mar 1990.

62. Stefan, H.G., T. Johnson, H. McConnell, C. Anderson and D. Martenson, "Hydraulic Modelling of Mixing in a Wastewater Dechlorination Basin," *J. Environmental Engineering* ASCE 116(3): 524-541, May 1990.
63. Gu, R. and H. G. Stefan, "Year-round Temperature Simulation of Cold Climate Lakes," *Cold Regions Science and Technology*, Vol. 18, No. 2, 147-160, July 1990.
64. Gu, R. and H. G. Stefan, "Jet Mixing in Lake or Reservoir Stratification Simulations," *Lake and Reservoir Management*, NALMS, 6(2), 165-174, 1990.
65. Ellis, C. R., H. G. Stefan and R. Gu, "Water Temperature Dynamics and Heat Fluxes Under a Lake Ice Cover," *Limnology and Oceanography*, 36(2), 324-335, 1991.
66. Hondzo, M. and H. G. Stefan, "Three Case Studies of Lake Temperature Response to Warmer Climate," *Water Resources Research* 27(8): 1837-1846, Aug 1991.
67. Stefan, H. G. and R. Gu, "Conceptual Design of Hydraulic Destratification Systems for Water Quality Improvement" *Water Resources Bulletin* AWRA 27(6): 1-12, Dec 1991.
68. Zic, K., H. G. Stefan, and C. Ellis, "Laboratory Study of Bubble Plume Lake Destratification," *J. Hydraulic Research* IAHR 30(1): 7-27, 1992.
69. Stefan, H. G. and R. Gu, "Efficiency of Jet Mixing of Temperature-Stratified Water" *J. Environmental Engineering* ASCE 118(EE3), May 1992.
70. Ellis, C. R. and H. G. Stefan, "Field Testing of an Ice-Preserving Winter Lake Aeration System" *Water Resources Bulletin*, AWRA 27(6): 903-914, Dec 1991.
71. Hondzo, M. and H. G. Stefan, "Propagation of uncertainty due to meteorological forcing in lake temp models" *Water Resources Research* 28(10): 2629-2638, Oct 1992.
72. Alavian, V., G. H. Jirka, R. A. Denton, M. C. Johnson, H. G. Stefan, "Density Currents Entering Lakes and Reservoirs" *J. Hydraulic Engg.* 118(11): 1464-1489, Nov 1992.
73. Stefan, H. G. and E. B. Preud'homme. "Stream Temperature Estimation from Air Temperature" *Water Resources Bulletin* AWRA 28(6): 1-19, Dec 1992.
74. Stefan, H. G., M. Hondzo, and X. Fang. "Lake Water Quality Modeling for Projected Future Climate Scenarios," *Jour. of Environmental Quality*, Vol. 22, No. 3, 417-431, July-Sept. 1993.
75. Sinokrot, B. A. and H. G. Stefan. "Stream Temperature Dynamics: Measurements and Modeling," *Water Resources Research*, AGU, 29(7), 2299-2312, 1993.
76. Stefan, H. G. and B. A. Sinokrot. "Projected Global Climate Change Impact on Water Temperature in Five North Central US Streams," Climatic Change, 24:353-381, 1993.
77. Hondzo, M. and H. G. Stefan. "Lake Water Temperature Simulation Model," *Jour. of Hydraulic Engineering*, ASCE, 119(11), 1251-1273, 1993.
78. Stefan, H. G. and X. Fang. "Model Simulations of Dissolved Oxygen Characteristics of Minnesota Lakes: Past and Future," *Environmental Management*, Vol. 18(1), 73-92, 1994.
79. Stefan, H. G. and X. Fang. "Dissolved Oxygen Model for Regional Lake Analysis," *Ecological Modeling*, 71:37-68, 1994.
80. Hondzo, M. and H.G. Stefan. "Riverbed Heat Conduction Prediction," *Water Resources Research*, AGU, Vol. 30, No. 5, 1503-1513, May 1994.

81. Horsch, G., H. G. Stefan, and S. Gavali. "Numerical Simulation of Cooling-Induced Convective Currents on a Littoral Slope," *Numerical Methods in Fluids*, Vol. 19, pp. 105-134, 1994.
82. Nakamura, Y. and H. G. Stefan, "Effect of Flow Velocity on Sediment Oxygen Demand," *Jour. Environmental Engineering*, ASCE, Vol. 120 No. 5, Sept/Oct 1994.
83. Erdmann, J. G., H. G. Stefan, and P. E. Brezonik. "Analysis of Wind- and Ship-Induced Sediment Resuspension in Duluth-Superior Harbor," *Water Resources Bulletin*, Vol. 30, No. 6, Dec. 1994.
84. Stefan, H. G., X. Fang, D. Wright, J.G. Eaton, and J.H. McCormick. "Simulation of Dissolved Oxygen Profiles in Small, Transparent, Dimictic Lake," *Limnology and Oceanography*, 40(1):105-118, Jan. 1995.
85. Stefan, H. G., M. Hondzo, J.G. Eaton, and J.H. McCormick. "Validation of Fish Habitat Model for Lakes," *Ecological Modeling*, 82, 211-224, 1995.
86. Hathaway, C. J. and H. G. Stefan. "Model of Daphnia Populations for Wastewater Stabilization Ponds," *Water Research*, Vol. 29, No. 1, 195-208, 1995.
87. Eaton, J. G., J. H. McCormick, B. E. Goodno, D. G. O'Brien, H. G. Stefan, and M. Hondzo. "A Field Information Based System for Estimating Fish Temperature Requirements," *Fisheries*, Vol. 20, No. 4, 10-18, April 1995.
88. Stefan, H. G., M. Hondzo, J. G. Eaton, and J. H. McCormick. "Predicted Effects of Global Climate Change on Fishes in Minnesota Lakes," in Spec. Publ. of *Fisheries and Aquatic Sciences*, 121, 57-72, 1995.
89. Hondzo, M. and H. G. Stefan. "Long-term Lake Water Quality Predictors," *Water Research*, Vol. 30, No. 12, 2835-2852, 1996.
90. Rasmussen, A. H., M. Hondzo, and H. G. Stefan. "A Test of Several Evaporation Equations for Water Temperature Simulations in Lakes," *Water Resources Bulletin*, AWRA, 31(6) Dec. 1995.
91. Gu, R. and H. G. Stefan. "Stratification Dynamics in Wastewater Stabilization Ponds," *Water Research*, 29(8):1909-1923, Aug. 1995.
92. Fang, X. and H. G. Stefan. "Dynamics of Heat Exchange Between Sediment and Water in a Lake," *Water Resources Research* 36(6):1719-1727, June 1996.
93. Fang, X., C. E. Ellis, and H. G. Stefan. "Simulation and Observation of Ice Formation (Freeze-over) in a Lake," *Cold Regions Science and Technology*, 24:129-145, 1996.
94. Gu, R., F. N. Luck and H. B. Stefan, "Water Quality Stratification in Shallow Wastewater Stabilization Ponds," *Water Resources Bulletin*, AWRA, Vol. 32(4):831-844, Aug. 1996.
95. Hondzo, M. and H.G. Stefan. "Dependence of Water Quality and Fish Habitat on Lake Morphometry and Meteorology," *Jour. Water Resources Planning and Management*, Vol. 122(5):364-373 Sept/Oct. 1996.
96. Stefan, H. G., M. Hondzo, X. Fang. J. G. Eaton, and J. H. McCormick. "Simulated Long-term Temperature and Dissolved Oxygen Characteristics of Lakes in the North-Central United States and Associated Fish Habitat Limits," *Limnology & Oceanography*, 41(5), 1124-1135, 1996.

97. Stefan, H. G. and X. Fang, "Simulated Climate Change Effects on Ice and Snow Covers of Temperate Zone Lakes," *Cold Regions Science and Technology*, 25, 137-152, 1997.
98. Mackenthun, A. A. and H. G. Stefan. "Effect of Flow Velocity on Sediment Oxygen Demand: Experiments," *Jour. of Environmental Engineering*, Vol. 124(3):222-230, 1997.
99. Ellis, C., J. Champlin, and H. G. Stefan, "Density Current Intrusions in an Ice-covered Urban Lake," *Jour. of the American Water Resources Association*, 33(6), 1997.
100. Fang, X. and H. G. Stefan, "Simulated Climate Change Effects on Dissolved Oxygen Characteristics in Ice-covered Lakes," *Ecological Modelling*, 103:209-229, 1997.
101. Fang, X. and H. G. Stefan, "Temperature Variability in Lake Sediments," *Water Resources Research*, Vol. 34, No. 4, 717-729, April 1998.
102. Mohseni, O. M. and H. G. Stefan, "A Monthly Streamflow Model," *Water Resources Research*, Vol. 34, No. 5, 1287-1298, May 1998.
103. Stefan, H. G., X. Fang, and M. Hondzo, "Simulated Climate Change Effects on Year-Round Water Temperatures in Temperate Zone Lakes," *Climatic Change*, 40:547-576, 1998.
104. Fang, X. and H. G. Stefan, Potential climate warming effects on ice covers of small lakes in the contiguous U.S., *Cold Regions Science and Technology*, 27:119-140, 1998.
105. Pilgrim, J. M., X. Fang, and H. G. Stefan, "Stream Temperature Correlations with Air Temperatures in Minnesota," *Jour. of the American Water Resources Assoc.*, 34(5):1109-1121, Oct. 1998.
106. Hanratty, M. P. and H. G. Stefan, "Simulating Climate Change Effects in a Minnesota Agricultural Watershed," *Jour. Environmental Quality*, 27:1524-1532, Nov/Dec 1998.
107. Henneman, H.E., "Snow and Ice Albedo Measurements Using Two Types of Pyranometers," *Jour. of the American Water Resources Assoc.*, 34(6), Dec. 1998.
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110. Josiam, R. M. and H. G. Stefan, "Effect of Flow Velocity on Sediment Oxygen Demand: Comparison of Theory and Experiments," *Jour. of the American Water Resources Assoc.*, AWRA, 35(2), 433-439, April 1999.
111. Mohseni, O. and H. G. Stefan, "Stream Temperature/Air Temperature Relationship: A Physical Interpretation," *Jour. of Hydrology*, 218:128-141, 1999.
112. Henneman, H. E. and H. G. Stefan, "Albedo Models for Snow and Ice on a Freshwater Lake," *Cold Regions Science and Technology*, 29:31-48, 1999.
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114. Fang, X., H. G. Stefan, and S R. Alam, "Simulation and Validation of Fish Thermal and DO Habitat in North-Central U.S. Lakes Under Different Climate Scenarios," *Ecological Modeling*, 118(3):167-191, 1999.
115. Fang, X. and H. G. Stefan, "Dependence of Dilution of a Plunging, Submerged Discharge Over a Sloping Bottom on Inflow and Bottom Friction," *Jour. of Hydraulic Research*, Vol. 38, No. 1, 15-26, Jan. 2000.
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120. Stefan, H. G., X. Fang, and J. G. Eaton, "Simulated Fish Habitat Changes in North American Lakes in Response to Projected Climate Warming," *Transactions of the* Am*erican Fisheries Society*, 130:459-477, 2001.
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Deutsche Forschungsgemeinschaft; Centre National des Recherches Scientifiques; National Science Foundation, U.S. Environmental Protection Agency; USDA/Agricultural Research Service; NASA; NOAA/ Sea Grant; US Geological Survey/*Office of Water Resources Research and Technology*; U.S. Army Corps of Engineers Waterways Experiment Station, Metropolitan Sewer Board of Greater Chicago; Reliant Energy in Liverpool, NY; Harza Engineering Co., Chicago; DeLeuw, Cather and Associates; Commonwealth Associates; Legislative Citizens Commission on Minnesota Resources; Minnesota Department of Natural Resources; Minnesota Pollution Control Agency; Minnesota Dept of Transportation/Local Road Research Board; Twin Cities Metropolitan Council; Army Corps of Engineers, St. Paul District; Dairyland Power Coop.; Northern States Power Company; Minnesota Utilities Group; Toltz, King, Duvall, Anderson & Associates; Metropolitan Waste Control Commission; City of Hastings, Minnesota; Rieke, Carrol and Mueller; Donohue and Associates; HDR Engineering; Short-Elliott-Hendrickson, Minneapolis; Baysavers Inc.

Applied Research and Engineering Design
Enhancement of hydropower projection by spillway overflow; well-field design; dispersion of grout in porous media; design of boundary layer ventilation system; design of large cooling water intake and discharge facilities for electric power generating plants; water hammer and resonance in branching pipe system; thermal effects of a 2000 MW pump-storage plant; passive water intake screen design; effluent plume mixing in rivers and lakes; grit transport in sewer system; drop structures and stilling basin designs; hydropower project layout design; turbidity remediation in shallow lake; award-winning, side-channel aeration system (SEPA); lake and

reservoir water quality modeling; Glenn Canyon Dam effect on Colorado River; mixing in de-chlorination basins; aeration and jet mixing devices for lakes; climate change effects on water quality and fish habitat in lakes; urban runoff temperature model MINUHET; suspended sediment removal from urban storm water; road salt impacts on urban lake water quality and remediation; TMDL for trout stream.

1) Novel model study of cooling water discharge from Northern States Power Company's A.S. King generating plant on Lake St. Croix in 1964.
2) Novel water hammer and resonance study in branching pipe system for Schluchseewerke AG pumpstorage plant in 1966.
3) Testimony on thermal pollution before the Minnesota Pollution Control Agency (1972).
4) Consultant to USEPA on design of the Monticello Ecological Research Station Outdoor experimental stream channels.
5) Consultant to Johnson Division of UOP for the highly successful Passive Water Intake Screen design in 1973.
6) Consultant to Harza Engineering Company for Virginia Power on the 2000 MW Bath County Pump Storage Plant in 1975.
7) Advisor to Minnesota Department of Natural Resources (1981).
8) Member, Governor of Minnesota's Task Force on Alternative Water Supplies (1988).
9) Consultant for the Side Channel Elevated Pool Aeration (SEPA) Project of the Metropolitan Sanitary District of Greater Chicago (1994 Outstanding Civil Engineering Award of ASCE).
10) Consultant for the Kissimmi River Restoration Project of the South Florida Water Management District in 1990.
11) Reviewer for the Intergovernmental Panel on Climate Change (1999)
12) Reviewer for the U.S. Global Change Research Program (1999)
13) Consultant to Northern States Power Company on cooling water conveyance system for the Prairie Island Nuclear power plant
14) Consultant to Northwest Hydraulic Consultants, Edmonton, Canada on cooling lake design in northern climates in 1980.
15) Analysis of a lake aeration system for coldwater fish habitat in Holland Lake for the Minn. Department of Natural Resources in 2000.
16) Study of Road Salt Effects on Twin Cities Water Resources for Local Road Research Board, 2006-2008.
17) Studies and recommendations for suspended sediment removal from urban storm water in standard sumps.
18) Assessment of thermal impacts on trout streams from urban landscapes for Minnesota Pollution control Agency (2005-2010).
19) Study of cold-water fish refuge lakes for the Minnesota DNR in 2008-2010.
20) Consultant to Minnesota Utilities Group; Cherne Industrial Inc.; Barr Engineering Company; Jacus Associates; Northern States Power Company; Argonne National Laboratory; Minnesota Department of Natural Resources, Swanson Environmental, Inc.; Environmental Laboratory of the Waterways Experiment Station, Vicksburg, MS; Wood, Grover & Associates; USDA

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181. Erickson, T. and H.G. Stefan, “Groundwater Recharge from a Changing Landscape”, St. Anthony Falls Laboratory Report 490, May 2007, 109 pp.
182. Perez, A.L.S., D.A. Jaster, F. Porte-Agel and H.G. Stefan, Wind Velocity profile and Shear Stresses downwind from a Canopy: Experiments in a Wind Tunnel”, St. Anthony Falls Laboratory Project Report 492, May 2007, 80 pp.
183. Jaster, D.A., Perez, A.L.S., F. Porte-Agel and H.G. Stefan, “Wind velocity profiles and shear stresses on a lake downwind from a canopy: Interpretation of three experiments in a wind tunnel”, St. Anthony Falls Laboratory Project Report 493, May 2007, 58 pp.
184. Jaster, D.A., Perez, A.L.S., F. Porte-Agel and H.G. Stefan, “Wind field transition downwind from a canopy: Interpretation of three experiments in a wind tunnel”, St. Anthony Falls Laboratory Project Report 496, June 2007.
185. Janke, B, W. R. Herb, O. Mohseni and H. G. Stefan, “Application of a Runoff Temperature Model (MINUHET) to a Residential Development in Plymouth, MN”. St. Anthony Falls Laboratory Project Report 497, May 2007, 34 pp.
186. Herb, W.R., O. Mohseni and H.G. Stefan, “A Model for Mitigation of Surface Runoff Temperatures by a Wetland Basin and a Wetland Complex”, St. Anthony Falls Laboratory Project Report 496, June 2007, 33 pp.
187. Dadaser-Celik, F. and H.G. Stefan, “Lake level response to climate in Minnesota”, St. Anthony Falls Laboratory Project Report 502, Nov. 2007, 75 pp.
188. Sander, A., E. Novotny, O. Mohseni and H. Stefan, “Inventory of Road Salt Use in the Minneapolis/St. Paul Metropolitan Area”, St. Anthony Falls Laboratory Report 503, Dec. 2007, 38 pp.
189. Novotny, E., D. Murphy and H.G.Stefan, ”Road Salt Effects on the Water Quality of Lakes in the Twin Cities Metropolitan Area”, St. Anthony Falls Laboratory Project Report 505, Dec. 2007, 48 pp.
190. Qian, Qin., V.R. Voller and H.G. Stefan, "Solute Exchange Induced by Underflow and Periodic Hyporheic Flow in a Stream Gravel Bed: Numerical Solution of the 2-D Advection/Dispersion Equation and Derivation of 1-D Dispersion Coefficient" *University of Minnesota Supercomputing Institute Research Report UMSI 2008/4*, Feb. 2008.
191. Dadaser-Celik, F. and H.G. Stefan, “Lake evaporation response to climate in Minnesota”, St. Anthony Falls Laboratory Project Report 506, March 2008.
192. Qian, Qin., V.R. Voller and H.G. Stefan, "Solute Exchange Induced by Progressive Periodic Flow in a Lake Bed: Numerical Solution of the 2-D Advection/Dispersion Equation and Derivation of 1-D Dispersion

Coefficient" *University of Minnesota Supercomputing Institute Research Report UMSI 2008/1*, Feb 2008.

193. Taylor, C.A. and H.G. Stefan, "Shallow groundwater temperature response to urbanization and climate change: Analysis of vertical heat convection from the ground surface", St. Anthony Falls Laboratory Project Report 504, May. 2008, 59 pp.
194. Erickson, T. and H.G. Stefan, "Baseflow Analysis for the Upper Vermillion River, Dakota County, Minnesota", St. Anthony Falls Laboratory Project Report 507, June 2008, 69 pp.
195. Novotny, E.V., A. Sander, O. Mohseni and H.G. Stefan, "A salt (NaCl) Balance for the Twin Cities Metropolitan Area Environment" St. Anthony Falls Laboratory Project Report 513, July 2008, 28 pp.
196. Sander, A., E.V. Novotny, O. Mohseni and H.G. Stefan, "Road salt and groundwater in Minnesota", St. Anthony Falls Laboratory Report 509, August 2008.
197. Dadaser-Celik, F. and H.G. Stefan, "Stream flow response to climate in Minnesota", St. Anthony Falls Laboratory Project Report 510, February 2009, 120 pp.
198. Herb, W. and H.G. Stefan, "Analysis of stream flow data from the Vermillion River, Dakota and Scott Counties, Minnesota", St. Anthony Falls Laboratory Project Report 514, June. 2008, 37 pp.
199. Marasteanu, M.O., R. Velasquez, W. R. Herb, J.Tweet, M.Turos, M. Watson and H.G. Stefan, "Determination of Optimum Time for the Application of Surface Treatments to Asphalt Concrete Pavements", *University of Minnesota Center for Transportation Studies Research Report Mn/DOT 2008 – 16, June 2008.*
200. Herb, W. and H.G. Stefan, "A flow and temperature model for the Vermillion River, Part I: Model development and base flow conditions", St. Anthony Falls Laboratory Project Report 517, Aug. 2008, 42 p.
201. Stefan, H.G., E.V. Novotny, A. Sander and O. Mohseni, "Study of Environmental Effects of Road De-Icing Salt on Water Quality in the Twin Cities Metropolitan Area, Minnesota. Research Report MN/RC 2008-42, Local Road Research Board, Minnesota Department of Transportation, September 2008, 76 pp.
202. Herb, W.R. and H.G. Stefan, "Analysis of Flow Data from Miller Creek, Duluth, MN", St. Anthony Falls Laboratory Report 522, Nov 2008, 22 pp.
203. Janke, B., W.R. Herb, O. Mohseni, H. G. Stefan, "Estimation of groundwater input to the Vermillion River from Observations of Stream Flow and Stream Temperature", St. Anthony Falls Laboratory Project Report 523, Dec. 2008, 55 pp.
204. Erickson, T. and H.G. Stefan, "Groundwater Recharge in a Coldwater Stream Watershed during Urbanization", St. Anthony Falls Laboratory Report 524, Jan. 2009, 75 pp.
205. Herb, W. and H.G. Stefan, "A flow and temperature model for the Vermillion River, Part II: Response to surface runoff inputs", St. Anthony Falls Laboratory Project Report 525, Dec. 2008, 89 pp.
206. Herb, W., B, Janke, O, Mohseni and H.G. Stefan, "MINUHET (Minnesota Urban Heat Export Tool) : A software tool for the analysis of stream thermal loading by storm water runoff ", St. Anthony Falls Laboratory Project Report 526, Dec. 2008, 75 pp.
207. Herb, W. and H. Stefan, "Analysis of Stream temperature Data from Miller Creek, Duluth, MN", St. Anthony Falls Laboratory Project Report 529, March 2009, 57 pp.
208. Taylor, C.A. and H. G. Stefan, "Heating of shallow groundwater flow by conduction from a paved surface: Requirements for coldwater stream protection", St. Anthony Falls Laboratory Project Report 531, May 2009, 33
209. Xing, F., S. S. Alam, P. Jacobson, D. Pereira, and H. G. Stefan, "Characteristics of Minnesota's Cisco Lakes", St. Anthony Falls Laboratory Project Report 532, April 2009, 31 pp.
210. Herb, W.R., T. O. Erickson and H.G. Stefan, "Stream Temperature Modeling of Miller Creek, Duluth, Minnesota", St, Anthony Falls Laboratory Project Report 535, October 2009, 68pp.
211. Erickson, T.O., W.R. Herb and H.G. Stefan, "Streamflow Modeling of Miller Creek", January 2010, St, Anthony Falls Laboratory Project Report 536, 57 pp.
212. Janke, B., O, Mohseni, W. R. Herb and H.G. Stefan, "Heating of Rainfall Runoff on Residential and Commercial Roofs", St, Anthony Falls Laboratory Project Report 533, Jan 2010, 62pp.
213. Herb, W., B, Janke, O, Mohseni and H.G. Stefan, "MINUHET (Minnesota Urban Heat Export Tool): A software tool for the analysis of stream thermal loading by storm water runoff – USER MANUAL", St. Anthony Falls Laboratory Project Report 530, rev. Jan 2010, 60 pp.
214. Weiss, M., W.R. Herb and H. G. Stefan, "Storm water Detention Pond Water Temperature and Salinity Data Collection", St. Anthony Falls Laboratory Report 537, May 2010, 61 pp.
215. Howard, A., O. Mohseni, J. Gulliver, and H.G. Stefan, "Assessment and Recommendations for the

Operation of Standard Sumps as Best Management Practice for Stormwater Treatment (Volume 1)" St. Anthony Falls Laboratory Project Report 540, June 2010, 88 pp.

216. Stefan, H.G. and W.R. Herb, "Trout Stream Thermal Impact Assessment Study: Project Summary", St. Anthony Falls Laboratory Project Report 541, July 2010, 15 pp.
217. Vandegrift, T.R. and H.G. Stefan, "Annual Stream Flow and Climate Changes in Minnesota's River Basins", St. Anthony Falls Laboratory Project Report 543, Aug. 2010, 42 pp.
218. Xing, F., S. S. Alam, P. Jacobson, D. Pereira, and H. G. Stefan, "Simulations of water quality in cisco Lakes in Minnesota", St. Anthony Falls Laboratory Project Report 544, August 2010, 299 pp.
219. Xing, F., S. S. Alam, P. Jacobson, D. Pereira, and H. G. Stefan, "Simulations of cisco fish habitat in Minnesota lakes under future climate scenarios", St. Anthony Falls Laboratory Project Report 547, December 2010, 256 pp.
220. Herb, W. and H.G. Stefan, Characterization of Stream Temperature and Heat Loading for Miller Creek, Duluth, Minnesota", St. Anthony Falls Laboratory Project Report 552, April 2011, 52pp.

Invited Lectures

1. **Heated Water Discharge into Impoundments,** Tech. Univ., Braunschweig, Germany (Jan 1970).
2. **Three-Dimensional Surface Plumes,** Washington State Univ., Pullman, Washington (Oct 1971).
3. **Evaluations of Water Temperature Fields Resulting from Heated Discharges,** First World Congress on Water Resources, AWRA, Chicago (Oct 1973).
4. **Analysis of Heat Discharge into Lakes or Rivers,** Univ. of Waterloo, Canada (1974).
5. **Density Effects on Dispersion in Porous Media Flow,** University of Hannover, Germany (1974).
6. **Selective Tasks and Solution Methods in Water Resources Engineering and Management,** Univ. of Bochum, Germany (1975).
7. **Mixed Layer Dynamics,** Intern. Joint Commission, Great Lakes Research Advisory Board, Workshop on the Dynamics of Stratification, Windsor, Ontario, Canada (1976).
8. **Wind Effects on Lake Hydrodynamic Processes,** Limnological Research Center, Univ. of Minnesota (Feb 1976).
9. **Prediction of Post-Construction Turbidity of Lake Chicot, Arkansas,** Intern. Symp. on the Environmental Effects of Hydraulic Engineering Works, Intern. Assoc. Hydr. Research, TVA and Oak Ridge National Lab. (Sept 1978).
10. **Measurements and Model Simulation of Stratification Dynamics of Lake Chicot, Arkansas,** USDA South. Plains Water Quality Laboratory, Durant Oklahoma (1979).
11. **Suspended Sediment Mixing and Settling in Reservoirs**, First Intern. Symp. on River Sedimentation, Chinese Soc. Hydraul. Eng. and UNESCO, Beijing, China (March 1980).
12. **Stratification and Water Quality Prediction in Shallow Lakes and Reservoirs,** Second Intern. Symposium on Stratified Flows, International Assoc. Hydraulic Research and Norwegian Inst. of Technology, Trondheim, Norway (June 1980).
13. **Evaluation of Alternative Dredging Depths to Minimize Internal Nutrient Recycling in Several Shallow Lakes,** International Symposium for Inland Waters and Lake Restoration, USEPA and OECD, Portland, Maine (September 1980).
14. American Soc. of Civil Engineers, Water Forum, Panel Member, San Francisco (1981).
15. **Intern. Course on Cooling Water Intakes and Discharges,** U.N. Development Progr. and Central Water and Power Research Station, Poona, India (July 18 - August 7, 1981).

16. **Cooling Water Discharges from Power Generating Plants and Effects on Aquatic Organisms,** Minneapolis Chapter of the Audubon Society, Minneapolis (Jan 1981).
17. **Analysis of Cooling Water Discharges,** Univ. of Wisconsin, Department of Civil and Environmental Engineering, Madison (1982).
18. **Environmental Hydraulics and Transport and Water Quality Models of Rivers, Lakes, Reservoirs and Coastal Waters,** Quinghua University and Ministry of Education (3-week course), Peking, China (Sep/Oct 1983).
19. **Stratification Processes in Lakes and Their Computer Simulation,** Inst. Geography, Academia Sinica, Nanjing, China, Oct. 11, 1983.
20. **Mixing Zone and Reservoir Water Quality Models,** Yangtze River Basin Commission (1-week course), Wuhan, China, (October 1983).
21. **Suspended Sediment, Water Temp. Water Quality Models of Rivers and Reservoirs,** Yellow River Basin Commission (1-week course), Zhengzhou, China, (Nov 1983).
22. **Cooling Water Flow and Water Temperature Simulation in Rivers, Reservoirs and Ponds,** Water Conservancy and Electric Power Research Institute, Ministry of Water Resources (1-week course) Peking, China, (Nov 1983).
23. **Water: China's Most Necessary Resource?** Third Workshop on Understanding China, China Center and College of Liberal Arts, University of Minnesota (Jan 1984).
24. **Water Resources and Industrial Development in China,** Rotary Club, East Minneapolis (Jan 1984).
25. **Effluent Mixing Zone Analysis,** University of Illinois, Department of Civil Engineering, Urbana-Champaign (March 1984).
26. **Water Resources Engineering Problems and Projects in China,** American Water Resources Association, Minn. Section, Minneapolis (Feb 1985).
27. **Water Resources Engineering in China,** Univ. of Ohio, Department of Civil Engineering, Athens, Ohio (1984).
28. **Application of a Water Quality Model to a Turbid Lake Problem**. Limnology Seminar, Univ. of Minn. (Jan 1985).
29. **Water Quality Models,** American Institute of Hydrology, St. Paul, MN (May 1985).
30. **The MINLAKE Water Quality Simulation Program,** Society for Computer Simulation Conference, Norfolk, Virginia (March 1986).
31. **Prediction of Turbidity Currents in Reservoirs and Coastal Regions,** Third International Symposium on River Sedimentation, Jackson, Mississippi (April 1986).
32. Virginia Polytechnic Institute (March 1988).
33. **Surface Water Models (Modeler's Perspective)**, Intern. Symp. Water Quality Modeling of Agricultural Non-Point Sources, Utah State Univ., Logan, Utah (June 19-23, 1988).
34. **Engineering Aspects of Water Resources Management,** Freshwater Society, Minnetonka, MN (Jan 1990).
35. **An Engineering Hydraulics Program,** American Meteorological Society, Minneapolis, MN (Feb 1990).
36. **Models for Aquatic Environments**, U.N. Development Program and University of Sao Paulo, Fundacao Centro Tecnologico de Hidraulica (2-week course) Sao Paulo, Brasil (March 1990).

37. **Forecasting Lake Water Quality, Fishery Resources,** First Natl. Conf. Climate Change and Water Resources Mgmt, USEPA/USGS/NOAA, Albuquerque, NM (Nov 1991).
38. **Modeling the Water Quality of Lakes,** ARS/USDA Beltsville Symposium XVII (May 1992).
39. **Water Quality Model Development,** U.N. Development Program and Central Water and Power Research Station (2-week course) Pune, India, (June 16-30, 1992).
40. **A Methodology to Estimate Projected Climate Change Effects on Water Temperatures, Dissolved Oxygen, and Fish Resources in Lakes and Steams.** International Conference on Hydroscience and Engineering, Washington, D.C. (June 1993).
41. **Simulated Long-term Temperatures and DO Concentrations in Minnesota Lakes: Past and Projected Climate Scenarios,** ASLO/NABS Symp. on Freshwater Ecosystems and Climate Change in North America: A Regional Approach, Leesburg, VA (Oct. 1994).
42. **Alteration of Water Availability, Water Quality and Fish Habitat in Cold Regions by Climate Change,** USEPA/NCERQA Seminar on Regional Hydrologic Vulnerability to Climate Change, San Francisco (Dec. 13, 1996).
43. **Projected Climate Change Effects on Minnesota's Lakes and Streams,** Conf. on Global Climate Change, H. H. Humphrey Inst. of Public Affairs, St. Paul (Dec 1996).
44. **Stream and Lake Temperature Dynamics,** Hunter Rouse Lecture, Annual Water Resources Engineering Division Meeting, Am. Soc. of Civil Eng., Memphis (Aug 1998).
45. **Simulated Climate Change Impacts on Fish Habitat in Lakes of the Temperate Zone**, Am. Fisheries Society 128th Annual Meeting, Concord, NH (Aug 1998).
46. **Climate Effects on Stream and Lake Temperatures**, Keynote Address, Annual Water Resources Conf., American Society of Civil Engineers, St. Paul, MN (October 26, 1998)
47. **Global Warming: Potential Effects on Lakes and Streams**, Public Lecture, Univ. of Minnesota, Inst. Of Technology, Minneapolis, MN (April 2000).
48. **The Evolution of Water Resources Engineering**, Minneapolis Engineers Club, Minneapolis, MN (April 2000).
49. **Climate Change Effects on Aquatic Systems**, Masons Club, Minneapolis (May 2000).
50. **Potential Climate Warming Effects on Streams and Lakes in Minnesota,** Minnesota Pollution Control Agency, St. Paul, MN (Feb.1, 2001).
51. **Projected Climate Change Effects on Minnesota's Lakes and Streams**, Rivers Council of Minnesota and Minnesota Lake Association, Brainerd, MN (May 3, 2001).
52. **The Impact of Changing Climate on the Land of 10,000 Lakes.** Minnesota Lakes and Rivers Conference, St. Cloud, MN (April 18, 2002).
53. **Some Potential Impacts of Climate Change on Water Quality**, **Water Resources and Fish Habitat in Minnesota**, Minn. Air, Water and Waste Conf., St. Paul (Feb 2003).
54. **Projected Impacts of Climate Change on Water Resources in Minnesota**, MPCA Climate Change Symposium, Minneapolis, MN (May 2003).
55. **The Effects of Global Climate Change and Eutrophication on Fish Habitats**. Basin Alliance for the Lower Mississippi in Minnesota, Rochester, MN (Aug 2006).
56. **Climate Change Effects on Aquatic Systems**, Kiwanis Club, Edina, MN (Nov 2006).

57. **Global Warming and the Vermillion River.** Minnesota Pollution Control Agency (MPCA) Leadership Training, St. Paul, MN (Sep 2006).
58. **Projected Effects of Climate Change on Water Quality and Fish Habitats in Minnesota**, Dept. of Natural Resources, St. Paul, MN (Jan 2007).
59. **Minnesota Evidence for Climate Change**, Minnesota Trout Association (MTA) and Trout Unlimited (TU), Rochester, MN (Mar 2007).
60. **Climate and Land Use Impacts on Water Temperatures and Stream Fisheries**, Upper Miss. River Conserv. Comm. (UMRCC/DNR), Prairie Island, MN (Mar 2007).
61. **Deterministic Lake Water Quality Models,** Minnesota Department of Natural Resources, St. Paul, MN (Apr 2007).
62. **Salty Lakes in Minnesota?** Sixth Ann. Intern. Road Salt Symposium, Freshwater Soc., St. Cloud, MN (April 2007).
63. **Effects of Climate Change on Selected Water Resources Parameters.** Water Resources Science Seminar, UofM, St. Paul (Sep 2007).
64. **Climate Change Monitoring in Water.** Interagency Water Monitoring Group, St. Paul, MN. (Nov 7, 2007).
65. **Effects of De-icing Salt on Water Quality in the Twin Cities Metropolitan Area.** Eighth Ann. Int. Road Salt Symp., Freshwater Soc., Minneapolis, MN, Feb 3, 2009
66. **Road Salt – Where does it go in Winter?** St. Paul Engineers Club, Ramsey County Government Center, St. Paul, MN, 10 March 2009.
67. **Projected and Observed Climate Change Effects on Minnesota Lakes and Rivers.** Minnesota Water, Lakes and Rivers Conference, Rochester, MN, May 7-9, 2009.
68. **Water Quality in the Twin Cities Metropolitan Area: Effects of Road De-Icing Salt.** 20th Annual Transportation Research Conference, Center for Transportation Studies, UofM, Bloomington, MN, May 19-20, 2009.
69. **Road Salt Effects on Water Resources of the Twin Cities.** Water Resources Seminar, UofM, St. Paul, MN, Oct. 9, 2009.
70. **Environmental Effects of De-icing Salt on Water Quality in Minnesota.** 14th Annual Pavement Conference, Minn. Dept. of Transportation, St. Paul, MN. February 11, 2010.
71. **Effects of Climate Warming on Minnesota's Water Resources.** ASCE Student Seminar, UofM Minneapolis, 8 April 2010.
72. **Thermal behavior of streams and lakes in cold climates and associated effects on other water quality parameters and ecological functions e.g. fish habitat.** Keynote address (declined). 14th International Workshop on Physical Processes in Natural Waters (PPNW) University of Iceland, Reykjavik, June 28 - July 1, 2010.
73. **Projected Temperature Responses in Minnesota Streams, Lakes, and Ground Water to Climate Variability,** Seminar, Dept. of Soil, Water and Climate, UofM, 27 October 2010, St. Paul, MN.
74. **Road salt effects on water quality,** Natonal Center for Earth surface Dynamics (NCED)
SIP seminar, February 9, 2011, Minneapolis, MN.

Manuscript Reviews

Die Wasserwirtschaft, VDI-Zeitschrift, Journal of Hydraulic Engineering, Journal of Environmental Engineering, Journal of Energy Engineering, Journal of Water Resources Planning and Management (American Society of Civil Engineers), *Water Resources Research* (American Geophysical Union), *Journal of Fluid Mechanics* (Cambridge University), *Journal of Heat Transfer* (American Society of Mechanical Engineers), Argonne National Laboratory, *Applied Mechanics Reviews, Limnology and Oceanography* (ASLO), *Water Resources Bulletin/Journal of the American Water Resources Association*, Office of Technology Assessment (U.S. Congress), *Canadian Journal of Fisheries and Aquatic Sciences, Journal of Freshwater Ecology*, National Research Council (Washington, D.C.), Office of Research and Technology (U.S. Congress), *Journal of Environmental Quality*, *International Journal of Hydrology* (IAHS), *Journal of Hydrological Processes* (Elsevier), *Canadian Journal of Civil Engineering, Aquatic Sciences (*EAWAG/ETH*), Journal of Marine Systems, Science (*AAAS*), Environmental Management, Climatic Change, Advances in Environmental Research, Transactions of the American Fisheries Society, Reports of the Intergovernmental Panel on Climate Change (*IPCC*), Remote Sensing of the Environment, Ecological Applications* (Ecological Society of America), *Biogeochemistry* (Kluwer Academic Publishers), *Ecological Modeling* (Elsevier), *Water Research* (International Water Association), *Environmental Science and Technology* (American Chemical Society), *Journal of Policy Analysis and Management* (Elsevier); *Advances in Water Resources* (Elsevier); *Journal of Climate; Water Research on Wetlands.*

Research Proposal Reviews

National Science Foundation, Environmental Protection Agency, NOAA, Sea Grant Program, Corps of Engineers, USGS, Water Resources Research Center. Swiss National Science Foundation, Israeli National Science Foundation.

Service in University Governance

1. University Senate, Elected Member, (1985-1988, 2003-2006).
2. All-University Committee to Establish Graduate Minor Degree Program in Water Resources, Chair (1987/88).
3. Steering Committee for Initiation of University of Minnesota Sea Grant Program (1977).
4. *Water Resources Research* Center Advisory Board (1985/87) and Graduate School Advisory Committee on Water Resources (1988/90).
5. University Bookstore Committee (1986/87).
6. University Strategic Planning Committee on Water (1993/94).
7. University Board of Review on Residency (1995-2010)
8. Minnesota Supercomputing Institute, Fellowship Selection Comm. (2006, 2007)
9. University Academy of Distinguished Teacher (2001-present).
10. Institute of Technology/Promotion and Tenure Committee (1992-95, 2003-2004, 2006).
13. Chair of 6 and Member of 15 Faculty Search Committees.

14. Civil and Mineral Engineering Department, Executive Committee (1985/86).
15. Civil Engineering Department, Planning Committee (1988/89, 1998/2001, 2004).
16. Anderson Award Committee (1984 - 1995, Chair).
17. Straub Award Committee (1992 – 1996 Member; 2003-2008 Chair)
18. Chair Capstone Design Committee (2002 – 2010)
19. Digital Technology Center Associate Fellow (2005 – 2011).

Professional Society Memberships

American Society of Civil Engineers (ASCE) (life member)
American Geophysical Union (AGU)
American Water Resources Association(AWRA) (past member)
International Water Resources Association (IWRA)
International Assoc. of Hydro-Environment Engineering and Research (IAHR)
International Society for Limnology (SIL)
Indian Society of Hydraulic Engineering (life member)
Chinese Society of Hydraulic Engineering (past member)

Professional Society Service (Selective)

American Geophysical Union, Water Quality Committee (1974-78, Member; 1978-80, Chair; 1980-82, Member; 1984-86, Member).
American National Standards Institute (ANSI) - Working Group for Standard ANS 18.52, Analysis of Thermal Discharges (1975-80, Member).
American Society of Civil Engineers, Hydraulics Division, Committee for Research (1976-80, Member; 1978-79, Chair).
International Water Resources Association, Committee for International Cooperation (1976-78).
American Society of Civil Engineers, Hydraulics Division Task Committee for Man-Made Impoundments (1978-80, Chair).
American Society of Civil Engineers, Hydraulics Division Metrification Advisory Panel (1975-78).
American Society of Civil Engineers, Hydraulics Division Task Committee on State-of-The-Art Papers on Hydrologic Transport and Dispersion (1980-82).
American Geophysical Union, Symposium on Lake Water Quality and Quantity Management, San Francisco, California (December 1977, Chair).
American Society of Civil Engineers, The Optimal Structure of a National Water Resources Research Program, Specialty Conference, Water Resources Planning and Management Division, Houston, Texas (February 1979, Session Co-chair).
American Society of Civil Engineers, Hydraulics Division Specialty Conference, San Francisco, California (August 1979, Plenary Session Chair).
ASCE, AGU, AWRA, and the University of Minnesota, Minneapolis, Minnesota, Symposium on Surface-Water Impoundments (June 2-5, 1980, General Conference Chair).
Chinese Society of Hydraulic Engineers, Second International Conference on River Sedimentation, Nanjing, China (1983, Session Chair).
American Society of Civil Engineers, Hydraulics Division Executive Committee (1982-86, Member; 1984-85, Chair).
International Association for Hydraulic Research, Work Group for Lake and Reservoir Hydrodynamics (1982-84, Chair).

American Society of Limnology and Oceanography, Symposium on Limnology of Upper Mississippi River Impoundments (June 1985, Organizer and Chair).

American Society of Limnology and Oceanography, Symposium on Sediment Transport/ Resuspension in Lakes (June 1985, Organizer and Co-chair).

American Society of Civil Engineers, Conference on Advancements in Aerodynamics, Fluid Mechanics and Hydraulics, Minneapolis, Minnesota (June 1986, Vice-chairman, Technical Program Committee).

National Water Alliance, Washington, D.C. (1985/86, Member).

National Research Council, Glen Canyon Environmental Studies Committee, Washington, D.C. (1986/87 Member).

American Society of Civil Engineers, Task Committee on Fluids Activities (1986/87, Chair).

American Society of Civil Engineers, Energy Policy Committee (1987/90, Member).

ASME, AIAA, ASCE, Sessions on Stratified Flow, First National Fluid Dynamics Congress, Cincinnati, Ohio (1988, Organizer and Chair).

American Society of Civil Engineers, Task Committee on Density Currents (1986/89 Member).

American Society of Civil Engineers, Global Environmental Policy Task Committee (1989/90, Member).

EPRI, NSF, USGS, Workshops on Reservoir Science and Technology and Reservoir Management for Water Quality Improvement (1989/90, Member, Steering Committee).

MPCA, Minnesota Lake Advisory Group (1988, Member).

Governor's Water Supply Task Force, St. Paul, MN (1988/89, Member).

IAHR, International Conference on Physical Modeling of Transport and Dispersion, Boston, MIT (1990, Session Chair).

Environmental Quality Board, Advisory Committee, St. Paul, Minnesota (1992, Member).

Water Resources Conference Planning Committee, Minnesota Section ASCE (2004 – 2007 Member, Session Chair).