

August 29, 2016

Mr. Matt Dias  
Acting Executive Officer  
California State Board of Forestry and Fire Protection  
PO Box 944246  
Sacramento, CA 94244-2460  
Sent via email to: [Matt.Dias@bof.ca.gov](mailto:Matt.Dias@bof.ca.gov)

Dear Mr. Dias:

Thank you for your phone call earlier this month alerting me to the opening on the Board's Effectiveness Monitoring Committee. I believe my qualifications to serve on the EMC are satisfactory. I have been practicing as a professional hydrologist/geomorphologist in northern California since 1997, and worked in the same field in the State of Washington beginning in 1993. My CV (attached) provides a fairly detailed summary of my skills and experience.

I have previously served on Board committees in the past 10 years. I was a member of the Demonstration State Forest Advisory Group (I believe Helge Eng was the coordinator of that group). More recently I served on the Section V Committee. I have been serving on the Santa Rosa Plain Technical Advisory Group for the past four years; this is a broad-based committee organized by the Sonoma County Water Agency to provide stakeholder technical review of regional groundwater resources plans in parallel with the Basin Advisory Panel which makes policy decisions. Moreover, I am very experienced in working with community stakeholder groups in connection with water resources investigations and flood mitigation studies in which my firm has been the technical/science lead. I have often presented technical material for a lay-audience, and engaged in the dialog needed to make technical material more accessible and comprehensible to stakeholders. I have also been a semi-regular attendee of periodic meetings of the Monitoring Study Group (coordinated by Pete Cafferata).

Also of note is a study of effectiveness of measures used to maintain slope stability in forest harvest practices regulations in the State of Washington my firm was contracted to implement in 2008. The study design was developed by a subcommittee of Washington's Cooperative Monitoring, Evaluation and Research committee. The field study was completed as specified, and its findings were published in 2013 (CMER Publication 08-802).

My interest in serving on the EMC is two-fold. First, I am motivated to provide professional expertise developed over 25 years in the field to assist the Board in fulfilling the EMC's objectives, in particular, to convincingly demonstrate the degree of effectiveness of the Forest Practice Rules. Second, serving on the EMC is a means of maintaining and broadening my knowledge of California forestry issues, in particular, those pertaining to cumulative effects and the effects on salmonids and their habitat.

Thank you for your consideration.



Matthew O'Connor, PhD, CEG #2449  
President, O'Connor Environmental, Inc.



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## **Matt O'Connor, PhD, CEG #2449**

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### **Education**

**Ph.D. Forest Hydrology, University of Washington, College of Forest Resources, 1994**

**M.S. Wildland Resource Sciences, University of California, Berkeley,  
College of Forestry and Resource Management, 1986**

**B.S. Environmental Earth Sciences, Stanford University, School of Earth Sciences, 1981**

### **Overview of Scientific and Technical Expertise**

I possess broad technical expertise in hydrology and geomorphology acquired over 24 years as a consulting professional analyzing watershed management effects on streams and water resources. Most of my professional work has been conducted with the assistance of a small staff of earth scientists working under my supervision. My academic specialty is watershed hydrology and fluvial geomorphology. I have extensive experience analyzing key fluvial processes: runoff, stream flow, erosion, sediment transport, sedimentation, and flooding. Further primary experience includes mapping and analysis of watershed geomorphology pertaining to both hillslope and fluvial domains. This includes systematic classification of stream channels with respect to fluvial processes and status considering likely historic, existing, and potential future conditions, as well as observation of landslide occurrence and slope stability, with consideration of effects of landslide regimes and other sediment sources on stream channels. I have prepared several watershed-scale sediment budgets for watersheds in northern California and Washington. Finally, I have acquired significant regional experience in hydrogeology, focusing on water budgets and groundwater availability assessment. Recent work has focused on design of reach-scale stream restoration projects, fish passage improvement, and implementation of hydraulic and hydrologic models. Project and research experience extends from the watershed scale to project- and site-scale investigations and analyses.

### **Overview of Programmatic Experience**

As a consulting scientist, my technical analyses have helped direct policy and planning for natural resources management, and have facilitated project permitting and resolution of litigation.

Beginning with my dissertation research, I contributed to the science-based forest watershed and State timber harvest regulation initiative Timber/Fish/Wildlife, through which the Washington Watershed Analysis methodology was developed and implemented. I conducted numerous Watershed Analysis projects throughout Washington from 1993 through 1997, and participated on a multidisciplinary team applying watershed analysis methods to development of a regional-scale Inland Fish Habitat Conservation Plan in Montana and Idaho under authority of the Federal Endangered Species Act.

I continued similar work transferring Watershed Analysis methodology to northern California and Oregon beginning in 1997 for development of Habitat Conservation Plans for anadromous fish species, Total Maximum Daily Load for non-point source sediment pollution (Federal Clean Water Act implemented by California Water Resources Control Board) and analysis of stream flow



management alternatives related to reservoir management (Federal Energy Regulatory Commission Relicensing).

This work transitioned to analysis of hydrologic and water quality effects of timber to vineyard conversion projects in Napa and Sonoma Counties regulated by State forest practice rules administered by CALFIRE and often requiring full Environmental Impact Reports under the California Environmental Quality Act (CEQA). In addition to several smaller timber conversion projects, two larger projects in northwestern Sonoma County required detailed watershed characterization and analysis of potential changes in peak runoff, ground water recharge and erosion rates. The largest project comprised a substantial portion of the Gualala River watershed, and my analysis of the project included development of a sediment supply budget and a 7-year hydrologic monitoring program of four sub-watersheds. As a regional expert in hydrologic and geomorphic effects of vineyard development, I participated as a technical expert in developing new vineyard development regulations.

Throughout my consulting career, I have maintained a practice in hydrologic and hydraulic modeling of watershed runoff and stream channel processes. With the addition of key staff in 2010, I expanded that practice to include the use of hydrologic and hydraulic modeling tools typically employed in engineering practice. We have used such models, in particular the MIKE FLOOD models, to conduct investigations of flooding in coastal areas to determine causes and propose mitigation strategies. We have also used the MIKE SHE model, a spatially distributed physically based watershed model that simulates the full hydrologic cycle including the interaction between surface water and groundwater, to investigate base flow generation and flow conditions with the objective of informing endangered species habitat restoration and conservation and management of water resources.

Concurrent with forgoing work and beginning in 2004 I developed a hydrogeologic practice evaluating ground water availability in northern California, primarily in Sonoma, Lake and Napa Counties. I have conducted or supervised about 50 such studies, each including characterization of local hydrogeology, preparation of water balance analyses, and quantitative assessment of ground water availability in relation to proposed and existing uses to evaluate sustainability of water resources. The regulatory context includes both County-level policy and CEQA.

Concurrent with forgoing work and beginning in 2004 I developed a stream restoration and fish habitat enhancement practice evaluating potential for instream projects and developing restoration designs both as a member of larger consulting teams and as primary designer. We have planned, designed and monitored several reach-scale restoration projects. Projects involve stream bank stabilization and large woody debris placement for habitat improvement on small streams and larger rivers including the Russian River mainstem. Many projects were funded by State of California Fisheries Restoration Program Grants or other public sources; most of these projects have been collaborative efforts sponsored by Resource Conservation Districts.

I have been engaged as an expert witness on multiple occasions, have been deposed, and testified in court.

## Management Experience

I have been the lead scientist as well as the sole executive of OEI since its founding in Seattle in 1996; I operated the business as a sole proprietor beginning in 1993. Over 22 years in business, I have supervised a staff ranging in size from one to a dozen comprised primarily of geoscience professionals specializing in hydrology, hydraulics and geology. About half of the permanent staff have held Master's degrees. Two long-term employees became Professional Geologists through experience and training under my supervision.

I have managed innumerable projects for a clientele including large corporate and small private landowners, State and County agencies, public water districts, non-profit land trusts and watershed groups. I have managed several large-scale, multi-year environmental investigations of a controversial nature that required public hearings and careful coordination with a large project team.

## Professional Certifications & Associations

California Professional Geologist #6847  
 Cal. Certified Engineering Geologist #2449  
 Washington Engineering Geologist #2680  
 American Geophysical Union (25 years)  
 Groundwater Resources Association

## Community & Professional Service

Santa Rosa Plain Groundwater Mgt. Plan Technical Advisory Committee, Sonoma County Water Agency (2012- present)

Mentor, Healdsburg High School Internship Program (2014-2016)

Section V Technical Assistance Committee (2010-2012) Appointed by Director, CALFIRE

Demonstration State Forest Advisory Group (2004-2009) Appointed by Director, CALFIRE

Healdsburg Little League Volunteer, 2002-2009. Board of Directors (3 years), and variously as Coach/Manager, Player Agent, and Safety Officer

North Coast Community Services 2000-2015. Emergency Shelter Volunteer.

Healdsburg Unified School District, HES Site Council 2001-2004. Budget Resources Committee, 2003-09.

## Conference Presentations (Partial List)

### **American Geophysical Union Fall Meeting, San Francisco, 2014**

O'Connor, M.D., Lewis, J. and Andrew, G. Monitoring Sediment Size Distributions in a Regulated Gravel Bed Coastal Stream. (Poster)

### **American Geophysical Union Fall Meeting, San Francisco, 2013**

O'Connor, M.D., Kobor, J. and Sherwood, M. Coho Salmon Habitat in a Changing Environment-Green Valley Creek, Graton, California (Poster)

### **Caspar Creek Research Project: 50 Years of Discovery, Caspar, California, June 28, 2013.**

Applications to Management (Invited speaker)

### **Redwood Science Symposium, Santa Cruz, California, June 2011.**

Sediment Yield in the Gualala River-Comparison of Sediment Budget Techniques and Suspended Sediment (Oral presentation)

### **Groundwater Resources Association of California Symposium, Sacramento, June 2011.**

Kobor, J., O'Connor, M. and Borden, C. A Process-based Modeling Approach for Surface Water/ Groundwater Interaction and Integrated Watershed Management. (Poster)

### **American Water Resources Association Spring Specialty Conference, Anchorage, AK, May 2009**

Monitoring Headwater Streams for Land Use Impacts and Response to Climate Change. (Oral presentation)

### **American Geophysical Union Fall Meeting, San Francisco, 2007**

O'Connor, M.D., Eads, R. Comparison of Erosion Rates Estimated By Sediment Budget Techniques and Suspended Monitoring and Regulatory Implications. (Poster)

Sherwood, M., O'Connor, M. and Pennington, R. Evaluating Channel Head Conditions for Environmental Impact Assessment in Northwestern Sonoma County, California. (Poster)

### **Geological Society of America, Cordilleran Section Annual Meeting, San Jose, CA April 2005**

Sediment Budget for Freshwater Creek Watershed, Humboldt County, California. (Oral presentation).

Rosser, B. and O'Connor, M. Characteristics of Stream Channels Supporting Coho Salmon in Northern California. (Oral presentation)

### **Redwood Science Symposium, Rohnert Park, California, March 2004.**

Sediment Yield from First-order Streams in Managed Redwood Forests: Effects of Recent Harvests and Legacy Management Practices. (Oral presentation)

## **Conference Presentations (Partial List-continued)**

### **American Geophysical Union Fall Meeting, San Francisco, 2003**

Case Studies in Quantification and Mapping of Stream Channel Morphology in the Pacific Northwest: Lessons from Past Efforts and Recommendations for Future Studies, Montana and Northern California. (Oral presentation)

Rosser, B. and O'Connor, M., Statistical Analysis of Streambed Sediment Grain Size Distributions Use of Sediment Budgets for Watershed Erosion Control Planning: A Case Study from Northern California. (Poster)

### **American Geophysical Union Spring Meeting, Baltimore, 2002**

O'Connor, M., McDavitt, B. Use of Sediment Budgets for Watershed Erosion Control Planning: A Case Study from Northern California. (Poster)

### **7<sup>th</sup> Federal Interagency Sedimentation Conference, Reno, NV, March 25-29, 2001**

O'Connor, M., McDavitt, B. Quantitative Assessment of Erosion and Sedimentation Effects of Forest Management in Northern California (Poster)

### **American Geophysical Union Fall Meeting, San Francisco, 1995**

Grain Shear Stress in a Small, Steep Mountain Stream. (Oral presentation)

## Project Summaries and Publications

**Matt O'Connor is responsible professional and primary author unless otherwise noted. References available on request.**

**Integrated Surface and Groundwater Modeling and Flow Availability Analysis for Restoration Planning: Green Valley/Atascadero and Dutch Bill Creek Watersheds, Sonoma County (2012-2016)** Supervised implementation of physically-based, fully-distributed hydrologic model for 51 square miles comprising two adjacent tributaries of the lower Russian River identified as critical for recovery of endangered coho salmon. Evaluated drought impacts on summer base flow and interactions between surface water and groundwater. 172 p.

**Lagunitas Creek Sediment and Streambed Monitoring Plan Technical Completion Report, Stream Conditions 2012 through 2014 (2015)** Prepared for Marin Municipal Water District, Corte Madera, California, in association with Jack Lewis, Statistical Consultant, US Forest Service (Ret.) Report of findings of a statistically-robust long-term and ongoing monitoring plan documenting streambed sediment and habitat conditions affecting endangered salmonids per requirements of State Water Resources Control Board. 70 p.

**Porter Creek Instream Habitat Restoration Project Phase II, Forestville (2014-2015)** Under contract with Sonoma Resource Conservation District designed and supervised construction of ten large wood habitat structures in a 2,000 ft reach to promote coho salmon population recovery in a lower Russian River tributary.

**Green Valley Road Flood Mitigation Study, Graton (2013-present)** Prepared for Gold Ridge Resource Conservation District. Comprehensive analysis of causes of flooding, including erosion and sedimentation, historic channel management, and changing floodplain and riparian conditions, and evaluation of potential flood mitigation strategies. Conducted quantitative watershed sediment source assessment and bed load sediment transport to estimate downstream aggradation rates. Supervised hydraulic analysis (MIKE FLOOD) of flooding and mitigation alternatives. Meetings with stakeholders, County regulatory staff, County Supervisors, and presented finding at public meetings.

**South Main St./Soda Bay Rd. Water System Project Hydrologic Assessment, Lakeport (2015)** Prepared for Lake County Special Districts Administration. Revised 2014 study to focus on a new groundwater source area. Comprehensive review of prior available hydrogeologic analyses and assessment of effects of ground water withdrawal on aquifer and on stream flow, including potential effects on habitat of the Clear Lake Hitch, a newly-listed endangered species endemic to Clear Lake and its tributaries. 54 p.

**Windsor Creek Streambank Restoration Project, Windsor (2015)** Under contract with Russian Riverkeeper prepared streambank stabilization design and supervised construction.

**Analysis of Hydrologic and Erosion Effects of Vineyard Development, Angwin (2015)** Supervised hydrologic analyses and erosion analysis of Ciminelli Estate Vineyard. Quantitative analyses demonstrate compliance with County policy requiring that there be no net increase in peak storm runoff or erosion and to comply with CEQA. Analyses used for project design, County regulatory review and Environmental Impact Report. Reviewed by County of Napa and State CALFIRE.

**Analysis of Hydrologic and Erosion Effects of Vineyard Development, Angwin (2015)** Supervised hydrologic analyses and erosion analysis of Heiser Vineyard. Quantitative analyses demonstrate compliance with County policy requiring that there be no net increase in peak storm runoff or erosion and to comply with CEQA. Analyses used for project design, County regulatory review and Environmental Impact Report. Reviewed by County of Napa and State CALFIRE.

**Groundwater Assessment, Green Pastures Valley, Healdsburg (2015)** Characterized local hydrogeology, developed water balance, and conducted quantitative assessment of ground water availability in relation to proposed and existing uses to evaluate sustainability of water resources. Submitted for review by County of Sonoma.

**Fish Migration Mitigation Design, Fernald Point Lane Bridge Replacement, Santa Barbara (2013-15)** Supervised hydrologic and hydraulic analysis of existing conditions with HEC-RAS and MIKE 11 and design of instream structures to improve fish passage as subcontractor to Garcia and Associates for County of Santa Barbara. Provide fluvial geomorphic analysis for structure stability. Justify objectives and design to obtain approval from National Marine Fisheries Service.

**Groundwater Assessment, Sonoma Mountain Zen Center, Santa Rosa (2015)** Supervised analysis that characterized local hydrogeology, developed a water balance, and conducted quantitative assessment of ground water availability in relation to proposed and existing uses to evaluate sustainability of water resources. Submitted for review by County of Sonoma.

**Groundwater Availability Analysis, Girard Winery, Calistoga (2015)** Supervised analysis that characterized local hydrogeology, developed a water balance, planning, implementation and analysis of well pump tests, and conducted quantitative assessment of ground water availability in relation to proposed and existing uses to evaluate sustainability of water resources. Reviewed by County of Napa.

**Groundwater Availability Analysis and Slope Stability Assessment, SMR Winery, St. Helena (2015)** Supervised analysis that characterized local hydrogeology, developed a water balance, and conducted quantitative assessment of ground water availability in relation to proposed and existing uses to evaluate sustainability of water resources. Conducted assessment of potential slope stability impacts. Reviewed by County of Napa.

**Groundwater Assessment, Rudd Winery, Healdsburg (2015)** Supervised analysis that characterized local hydrogeology, developed a water balance, and conducted quantitative assessment of ground water availability in relation to proposed and existing uses to evaluate sustainability of water resources. Reviewed by County of Sonoma.

**Groundwater Availability Analysis, Sodhani Winery, St. Helena (2015)** Supervised analysis that characterized local hydrogeology, developed a water balance, and conducted quantitative assessment of ground water availability in relation to proposed and existing uses to evaluate sustainability of water resources. Reviewed by County of Napa.



**South Main St./Soda Bay Rd. Water System Project Hydrologic Assessment, Kelseyville (2014)**

Prepared for Lake County Special Districts Administration. Comprehensive review of prior available hydrogeologic analyses and assessment of effects of ground water withdrawal on aquifer and on stream flow, including potential effects on habitat of the Clear Lake Hitch, a newly-listed endangered species endemic to Clear Lake and its tributaries. 88 p.

**Calistoga Road Fish Passage Retrofit Project, Santa Rosa (2014)**

Prepared under contract with and in collaboration with Bioengineering Institute, Laytonville. Supervised hydrologic and hydraulic analysis (MIKE 21) of existing conditions and development of fish passage design plan. Prepared basis of design report for submittal to CDFW.

**Sweetwater Springs Road Fish Passage Retrofit Project, Healdsburg (2014)**

Prepared under contract with and in collaboration with Bioengineering Institute, Laytonville. Supervised hydrologic and hydraulic analysis (MIKE 11) of existing conditions and development of fish passage design plan. Prepared basis of design report for submittal to CDFW.

**Groundwater Assessment, Roy/Covert Winery, Healdsburg (2014)**

Characterized local hydrogeology, developed water balance, and conducted quantitative assessment of ground water availability in relation to proposed and existing uses to evaluate sustainability of water resources. Prepared response to third-party professional peer review. Reviewed by County of Sonoma.

**Analysis of Hydrologic and Erosion Effects of Vineyard Development, Angwin (2014)**

Supervised hydrologic analyses and conducted erosion analysis of the Friesen Road Vineyard. Analyses were used to demonstrate compliance with County policy requiring that there be no net increase in peak storm runoff or erosion and to comply with CEQA. Reviewed by County of Napa.

**Easkoot Creek Flood Mitigation Study, Stinson Beach (2014)**

Prepared for Marin County Flood Control and Water Conservation District. Supervised analysis of Feb. 2014 flood using MIKE FLOOD hydrologic and hydraulic models previously developed to investigate flooding causes and flood mitigation strategies. Developed design recommendations for sedimentation basin.

**Hydrogeologic Evaluation of Proposed Water Source for Proposed Water Supply System Expansion, Middletown (2013)**

Prepared for Callayomi County Water District, Lake County, CA. Analyzed local hydrogeology and aquifer characteristics to evaluate separation between groundwater and surface water resources in the Long Valley alluvial aquifer.

**Watershed Hydrologic Model Analysis (2013-14)**

Anonymous client in northern California; supervised implementation of spatially-distributed, physically-based hydrologic model (MIKE SHE) featuring direct simulation of groundwater-surface water interaction to evaluate effects of water use on stream flow and fish habitat.

**Easkoot Creek Hydrology & Hydraulics Study, Stinson Beach (2013)**

Prepared for Marin County Flood Control and Water Conservation District. Comprehensive analysis of causes of flooding and potential mitigation including erosion and sedimentation associated with occurrence of episodic mass wasting. Supervised watershed hydrologic modeling by subcontracting PE; supervised hydraulic modeling using MIKE FLOOD. Use of LiDAR, aerial photography and field reconnaissance to characterize mass wasting processes.

Stewart, G. Dieu, J., Phillips, J., O'Connor, M. and Velduisen, C. **(2013) The Mass Wasting Effectiveness Monitoring Project: An examination of the landslide response to the December 2007 storm in Southwestern Washington.** Cooperative Monitoring, Evaluation and Research Report CMER 08-802; Washington Department of Natural Resources, Olympia, WA. OEI was the prime contractor implementing the field study conducted 2008, and was responsible for directing and managing field survey team of 15 employees and contractors. Responsible for data collection, archiving, QA/QC, preliminary analysis draft report.

**Vineyard Stormwater Enhancement Channel Realignment Project, Sonoma (2013-2014)** Leader of design team restoring a 500 ft reach of degraded seasonal stream channel near Sonoma Creek tidelands under contract to Sonoma Resource Conservation District. Supervised project engineer (sub-contractor), hydrologic and hydraulic modeling, implementation and post-construction monitoring, and preparation of basis of design document.

**Dollarhide Vineyard Engineering Geologic Assessment of Slope Stability and Hydrologic Assessment of Peak Flow and Erosion Impacts, Pope Valley (2013)** Supervised quantitative hydrologic analysis of expansion of existing vineyard and conducted assessment of potential slope stability impacts. Reviewed by County of Napa.

**Groundwater Assessment and Water Supply Permit Application for Roth Winery, Healdsburg, CA (2013)** Groundwater analysis to demonstrate compliance with County and State regulations and obtain required water system certification. Reviewed by County of Sonoma and California Dept. of Public Health.

**Porter Creek Instream Habitat Restoration Project Phase I, Healdsburg (2012-2014)** Under contract with Sonoma Resource Conservation District designed and supervised construction of twenty large wood habitat structures in a 4,000 ft reach to promote coho salmon population recovery in a lower Russian River tributary.

**Thompson Creek Fish Habitat Enhancement, Guerneville (2012-2014)** Developed designs for installation of large woody debris for grant funding, supervision of implementation, and preparation of as-built and performance monitoring reports for Sonoma Resource Conservation District.

**Gill Creek Streambank Stabilization, Geyserville (2010-2012)** Leader of design team stabilizing eroding stream banks in 700 ft reach of stream channel in Alexander Valley (Russian River) for Sonoma RCD. Supervised reach modeling of proposed fish passage structure using MIKE 21 and HEC-RAS.

**Groundwater Assessment for Zialena Winery, Geyserville, CA (2012)** Characterized local hydrogeology, developed water balance, and conducted quantitative assessment of ground water availability in relation to proposed and existing uses to evaluate sustainability of water resources. Reviewed by County of Sonoma.

**Engineering Geology Expert Support, Sonoma County Winegrape Commission (2012)** Provided expert advice and review of proposed revisions to Sonoma County vineyard development regulations related to tree removal and slope stability. Participated in public workshops and negotiations regarding structure and wording of proposed ordinance.

O'Connor, M., Lewis, J. and R. Pennington (2012) **Comparison of Estimated and Measured Sediment Yield in the Gualala River**. Gen. Tech. Rep. PSW-GTR-238, pp. 121-129. Proceedings of the Redwood Science Symposium, UC Santa Cruz, June 21-23, 2011. Evaluation of sediment yield determined by monitoring in relation to estimated watershed erosion rates.

O'Connor, M., and R. Pennington (2012) **Geologic Assessment of Sheephouse Creek Watershed, Jenner**. Provided professional engineering geologic review of slope stability in support of forest road improvement and sediment source reduction project implemented by Sonoma RCD.

**Hydrologic Analysis and Erosion Analysis, Fairfax THP and Conversion, Annapolis (2011)** Quantitative analysis of hydrologic and erosion impacts of a ~100 acre vineyard development in existing woodlands. Analyses contributed to project design, but used primarily for environmental impact analysis for CEQA EIR, including monitoring and mitigation. Complex project with over 10 years planning and analysis.

**Jasud Estate Vineyard Conversion Hydrologic and Erosion Analysis, Calistoga (2011)** Quantitative analysis of hydrologic and erosion impacts of a 15 acre vineyard development in existing conifer forest. Analyses used for project design, County regulatory review and Environmental Impact Report.

**Norton Creek Streambank Stabilization, Healdsburg (2011)** Leader of design team stabilizing eroding stream banks in 500 ft reach of intermittent stream channel in Dry Creek Valley (Russian River) for landowner in association with Sonoma Resource Conservation District.

**Expert Geomorphologist/Hydrologist, Eureka (2008-2011)** Evaluated evidence and supervised preparation of hydraulic models in pre-trial phase of litigation investigating causes of flooding. Conducted surveys of plaintiffs' properties and participated in interview regarding plaintiffs' claims. Clients were insurers of private timber company in northern California.

O'Connor, M. and Lewis, J. (2010) **Sediment and Streambed Monitoring Plan, Lagunitas Creek**. Developed a statistically-robust monitoring plan to monitor streambed sediment conditions that may affect habitat for endangered salmonids for Marin Municipal Water District in support of ongoing monitoring ordered by State Water Resources Control Board.

**Expert Hydrologist, Penngrove (2010)** Evaluated evidence and supervised preparation of hydrologic models in pre-trial phase of litigation investigating causes of flooding of ranch property in Sonoma County. Conducted surveys of plaintiff's and defendant's properties and participated in interview regarding plaintiffs' claims. I was subject of deposition by plaintiff's attorney, and testified at trial. Client was defendant's insurer of defendant in northern California.

**Purrington Creek Geomorphic Assessment, Graton (2010)** Prepared for Gold Ridge Resource Conservation District, Occidental, California. Field-based assessment of hydrologic and geomorphic factors affecting habitat for endangered salmonids. 28 pages plus Appendices A-B.

**Salt Creek Instream Habitat Improvement Project Plan, Healdsburg (2010-2012)** Prepared for Sotoyome Resource Conservation District, Santa Rosa, California. 7 pages plus maps and drawings for 18 improvement sites involving streambank stabilization and large wood structures. Plan implemented 2012; assisted in construction supervision.

**Geologic Report on Landslide Hazards, Preservation Ranch Timber Harvest Plan and Conversion, Northwest Sonoma County, California (2010)** Prepared for Premier Pacific Vineyards. 30 pages, plus Appendices A-F, Volumes 1-5. Slope stability analysis for project planning and CEQA EIR.

**Austin Acres Mutual Water Company Water Rights, Cazadero (2010)** Prepared analyses and documents submitted to California Department of Fish & Game associated with permitting existing stream diversion (well). Principal regulatory issue was potential effects of groundwater pumping on stream flow and fish habitat.

**Nelson Water Rights, Asti (2009-present)** Prepared CEQA documents and analyses of Water Rights application for existing reservoir, Alexander Valley, Russian River. Progressed through Water Right process and CEQA process; potential impacts on endangered salmonids was the primary regulatory issue.

**Jenks Water Rights, Philo (2002-2010)** Prepared CEQA documents and analyses of Water Rights application for existing reservoir, Navarro River. Successfully completed Water Right process and CEQA process; impacts on endangered salmonids was the primary regulatory issue.

**Marchesci Water Rights, Healdsburg (2007-2010)** Prepared CEQA documents and analyses of Water Rights application for existing reservoir, Alexander Valley, Russian River. Progressed through Water Right process and CEQA process; potential impacts on endangered salmonids was the primary regulatory issue.

**Austin Creek Mutual Water Company Water Rights, Cazadero (2007-2010)** Prepared analyses and documents submitted to Division of Water Rights associated with permitting existing stream diversion (well). Principal regulatory issue was potential effects of groundwater pumping on stream flow and fish habitat.

**Groundwater Review, Ridgeview Ranch, Lower Lake, CA (2009)** Prepared for Ridgeview Development LLC, San Bernardino, CA. 13 pages plus Appendices A-E.

**Preservation Ranch Hydrologic Monitoring and Evaluation of Project Hydrologic Effects, Annapolis (2009)** 45 pages, plus Appendices A-D. Analysis of large proposed forest to vineyard conversion project for project planning and CEQA EIR.

**Mass Wasting Prescription-Scale Effectiveness Monitoring Project (2009)** Presentation of Preliminary Findings to Washington Forest Practices Adaptive Management Annual Science Conference, March 18, 2009. Large intensive field-based landslide investigation; assembled and managed field crew of 15 for six months field work. Project data base management in GIS for subsequent statistical analysis by project collaborators.

**Adaptive Geomorphic Plan for the Willow Creek Valley above the 2nd Bridge Crossing, Sonoma County, California (2008)** Prepared for State of California, Department of Parks and Recreation, Russian River District. 59 pages. Evaluation of fluvial processes in rapidly aggrading channel.

**Preservation Ranch Vineyard Hydrological Assessment, Annapolis (2008)** Prepared for Premier Pacific Vineyards in Association with Kleinfelder. 82 pages. Field-based assessment of likely hydrologic impacts of forest conversion on erosion rates and slope stability.

**Preservation Ranch Sediment Source Assessment and Evaluation of Project Effects, Annapolis (2008)** Prepared for Premier Pacific Vineyards in Association with Kleinfelder. 71 pages, plus Appendices A-O. Watershed-scale sediment source assessment including analysis of landslide processes and rates.

**Geotechnical Assessment Report, Green Diamond Resource Company Harvest Unit WS183 (2008)** Prepared slope stability assessment in proposed harvest area on glaciated steep slopes with potentially unstable landforms. Reviewed by Washington State Department of Natural Resources, Forest Practices.

**Geotechnical Assessment Report, Green Diamond Resource Company Harvest Unit WS187 (2008)** Prepared slope stability assessment in proposed harvest area on glaciated steep slopes with potentially unstable landforms and evaluated stability of proposed 3,000 ft road alignment. Reviewed by Washington State Department of Natural Resources, Forest Practices.

**Martinelli Non-industrial Timber Management Plan Geologic Assessment, Forestville (2008)** Prepared engineering geologic assessment of past landslides and stability assessment of proposed road improvement in Watershed and Lake Protection Zone, Sonoma County, California.

**Geotechnical Assessment Report, Green Diamond Resource Company Harvest Unit NB150 (2008)** Prepared slope stability assessment in proposed harvest area on glaciated steep slopes with historic roads and evidence of prior mass wasting. Reviewed by Washington State Department of Natural Resources, Forest Practices.

**Groundwater Resource Assessment, 16756 Butts Canyon Road, Long Valley, Lake County, CA (2005-2008)** Developed quantitative analysis of groundwater resources and potential impacts of proposed water use for water skiing facility; testified at County hearings, Planning Commission and Board of Supervisors.

**Geomorphic Analysis of Gualala River In-stream Gravel Mining (2006-2008)** Quantitative analysis of proposed mining operations on behalf of project proponent in support of County-led CEQA assessment. Presentations at County of Sonoma hearings, Planning Commission and Board of Supervisors.

**O'Connor, M. and Eads, R. (2007) Comparison of erosion rates estimated by sediment budget techniques and suspended sediment monitoring and regulatory implications.** Poster H51D 0743, American Geophysical Union Fall Meeting, San Francisco, December 2007.

**Geotechnical Assessment Report, Green Diamond Resource Company Harvest Unit NN144 (2007)** Prepared slope stability assessment in proposed harvest area on glaciated steep slopes with potentially unstable landforms. Reviewed by Washington State Department of Natural Resources, Forest Practices.

O'Connor, M.D., Perry, C.H. and W. McDavitt. **(2007) Sediment yield from first-order streams in managed redwood forests: effects of recent harvests and legacy management practices.** Redwood Science Symposium: What does the future hold? March 15-17, 2004, Rohnert Park, California. USDA Forest Service Gen. Tech. Report PSW GTR-194. Pp. 431-443

Rosser, B. and O'Connor, M.D. **(2007) Statistical analysis of streambed sediment grain size distributions: implications for environmental management and regulatory policy.** Redwood Science Symposium: What does the future hold? March 15-17, 2004, Rohnert Park, California. USDA Forest Service Gen. Tech. Report PSW GTR-194. Pp. 445-456.

O'Connor, M.D. **(2007) Riparian zone management and analysis of flood hazard in urban and rural areas.** Redwood Science Symposium: What does the future hold? March 15-17, 2004, Rohnert Park, California. USDA Forest Service Gen. Tech. Report PSW GTR-194. Pp. 527-529.

O'Connor, M.D. and Rosser, B. **(2006) Lagunitas Creek Fine Sediment Investigation.** Prepared for Marin Municipal Water District. 74 p., plus Appendices. Investigation to document in-stream channel sedimentation conditions.

WaterCycle Inc. **(2006) Forsythe Creek Watershed Assessment & Priorities for Action, Cloverdale.** Prepared landslide inventory and sediment source assessment based primarily on analysis of aerial photography under sub-contract. Tributary watershed of upper Russian River with extensive deep-seated rockslides and earthflows.

**Hydraulic and Geomorphic Analysis, Russian River Streambank Restoration Project, Healdsburg (2005)** Provided fluvial geomorphic and hydraulic analysis in support of planning and permitting for bioengineered restoration project of 900 ft length of streambank.

**Landslide Hazard Evaluation, Pott Vineyard, 2272 Mt. Veeder Road, Napa County, California (2005)** Analyzed effect of vineyard development upslope from rock slide complex.

**Blue Lakes Ranch Erosion Assessment, Lakeport (2005)** Assessment of road-related landslides and slope stability, Lake County, California.

O'Connor, M.D. and Rosser, B. **(2004) Pescadero-Butano Watershed Assessment-Current Channel Conditions, Pescadero.** Watershed-scale assessment of fluvial geomorphology in relation to anadromous fish habitat. Prepared under sub-contract for ESA, 30 p.

**Lolonis Reservoir Sedimentation Investigation and Reservoir Management Plan, Redwood Valley (2004-2005)** On behalf of Mendocino County landowner subject to regulatory enforcement action by Regional Water Quality Control Board, prepared analysis of downstream sedimentation and developed analysis of reservoir hydrology and a management plan to manage reservoir release.

**Landslide Investigation Report, Boonville (2004)** Prepared for Hanes Ranch, Inc. to comply with Regional Water Quality Control Board Cleanup and Abatement Order No. R1-2003-0123A. Prepared a landslide inventory for 575 acre timberland property and 16 mile road system in Navarro River watershed, Mendocino County. Presented findings to RWQCB in public hearings.

**Hydraulic and Geomorphic Analysis, Russian River Streambank Restoration Project, Asti (2003-2004)** Provided fluvial geomorphic and hydraulic analysis in support of planning and permitting for bioengineered restoration project of 1,000 ft length of streambank.



O'Connor, M.D. and Rosser, B. **(2003) Fluvial Geomorphic Assessment of Gravel Mining, Gualala River Permit Area, Sonoma County, California.** Prepared for Gualala Redwoods, Inc. 39 p.

O'Connor, M.D. and Rosser, B. **(2003) Green Valley Creek Spawning Substrate Characterization and Fluvial Geomorphic Analysis.** Prepared for Sonoma County Water Agency. 23 p.

McKee LJ, Pearce S, O'Connor M, Jones B. **(2003) Channel Geomorphology Assessment: A component of the watershed management plan for the Carneros Creek watershed, Napa County, California.** SFEI Technical Report, Regional Watershed Program.

McKee LJ, Pearce S, O'Connor M, Jones B. **(2003) Channel Geomorphology Assessment: A component of the watershed management plan for the Sulphur Creek watershed, Napa County, California.** SFEI Technical Report, Regional Watershed Program.

McKee LJ, Grossinger RM, Pearce S, O'Connor M. **(2002) Napa River Sediment TMDL Baseline Study: Geomorphic Processes and Habitat form and function in Soda Creek.** SFEI Technical Report.

**Erosion Control Plan for Portions of the Alder Springs Ranch, Mendocino County, California (2002)** Prepared for property owner and submitted to Regional Water Quality Control Board. Investigated erosion from landslides, roads and vineyards caused by extreme rainfall event, and developed erosion control measures to mitigate future impacts.

**Landslide Inventory and Slope Stability Assessment, Mendocino Redwood Company (2000-2002)** Developed methodology and supervised MRC professional staff in preparation of landslide inventories and slope stability assessments on commercial timberlands in three large watersheds.

**Alden Vineyards Landslide and Erosion Investigation Report, Geyserville (2002)** Prepared for Alden Vineyards, Sonoma County, to comply with Regional Water Quality Control Board Cleanup and Abatement Order and to support owner's legal defense. Prepared a landslide and erosion rate estimate for ranch and road system, including both road-related and natural landslides.

**Technical Support for Development of Habitat Conservation Plan, Olympic Peninsula, Washington (2000-2001)** Participated in Simpson Timber Company project team to develop mass wasting, slope stability and erosion elements of HCP for aquatic species.

**Geotechnical Assessment Report, Simpson Timber Company Harvest Unit WC86 (2001)** Prepared slope stability assessment in proposed harvest area on a large, deep-seated landslide complex. Reviewed by Washington State Department of Natural Resources, Forest Practices.

O'Connor Environmental, Inc. and Pacific Watershed Associates **(2001) Freshwater Creek Watershed Analysis-Stream Channel Assessment, Humboldt County.** Watershed scale sediment budget and analysis of stream channel conditions; evaluated management-caused erosion in relation to natural erosion. 169 p.

**Aerial Photo Interpretation of Landslides, Mapleton Study Area, Oregon (2001)** Prepared for Johnson, Clifton, Larson & Corson, P.C., Eugene, OR. Investigation was a peer-review evaluating the accuracy and repeatability of 1999 Oregon Department of Forestry "Storm Impacts and Landslides of 1996."

**Sediment Budget for the Dooley Creek Watershed, Mendocino County, California (2001)** Prepared for California Department of Fish & Game. Landslide inventory and sediment source assessment for 10,000 acre watershed in upper Russian River watershed.

**Geotechnical Assessment Report, Simpson Timber Company Harvest Unit WS91 (2000)** Prepared slope stability assessment in proposed harvest area including previous road and non-road related landslides triggered by heavy rainfall event. Reviewed by Washington State Department of Natural Resources, Forest Practices.

**Erosion Control Conceptual Plan for the Bohemia Ranch, Sonoma County, California (2000)** Prepared for property owner and submitted to Regional Water Quality Control Board; inventory of erosion sources from timberland roads and landslides and development of conceptual erosion control plans.

**Garcia River Large Woody Debris Instream Monitoring (2000)** Prepared for Mendocino County Resource Conservation District and California Department of Forestry. 20 pp plus appendices. [www.fire.ca.gov/bof/pdfs/garcia\\_LWD\\_final.pdf](http://www.fire.ca.gov/bof/pdfs/garcia_LWD_final.pdf).

O'Connor, M.D. and Watson, G. (1999) **Geomorphology of Channel Migration Zones and Implications for Riparian Forest Management**. IN Design of Effective Riparian Management Strategies for Stream Resource Protection in Montana, Idaho, and Washington, Technical Report #7, Plum Creek Timber Company Native Fish Habitat Conservation Plan.

Forest, Soil & Water, Inc., O'Connor Environmental, Inc., and East-West Forestry (1998) **Watershed Assessment and Cooperative Instream Monitoring Plan for the Garcia River, Mendocino County, California (1998)** Compiled for Mendocino County Resources Conservation District and the California Department of Forestry and Fire Protection, January, 1998. Conducted aerial photo landslide inventory of Garcia River watershed and erosion rate estimate and slope stability assessment for use in sediment TMDL development.

O'Connor, M.D. and Krogstad, F. (1997) **South Fork Skokomish Watershed Analysis, Stream Channel Assessment and Mass Wasting Assessment**. Prepared for Simpson Timber Company, Shelton, WA. Watershed-scale landslide inventory and slope stability assessment.

**Grain Shear Stress in a Small, Steep Mountain Stream (1995)** American Geophysical Union Fall Meeting, San Francisco. H41F-4, Oral presentation.

**West Fork Satsop Watershed Analysis, Stream Channel Assessment and Mass Wasting Assessment (1995)** Prepared for Simpson Timber Company, Shelton, WA. Watershed-scale landslide inventory, slope stability assessment, and channel condition evaluation.

**Sediment Transport in Steep Tributary Streams and the Influence of Large Organic Debris (1994)** Unpublished Ph.D. thesis, University of Washington, Seattle, 253 pp.



O'Connor, Matthew D. and Harr, R. Dennis **(1994) Bedload Transport and Large Organic Debris in Steep Mountain Streams in Forested Watersheds on the Olympic Peninsula, Washington.** Research report TFW-SH-94-001, prepared for State of Washington, Timber/Fish/Wildlife and Department of Natural Resources, Sediment, Hydrology and Mass Wasting Steering Committee, 122 pp.

O'Connor, Matthew D. and Cundy, Terrance W. **(1993) North Fork Calawah River Watershed Condition Survey, Part I: Landslide Inventory and Geomorphic Analysis of Mass Erosion; Part II: Channel Condition and Cumulative Effects of Mass Wasting in Headwater Tributaries.** Unpublished technical reports prepared under contract to U.S.D.A. Forest Service, Olympic National Forest. Part I: 17 pp. plus 12 figures; Part II: 33 pp., 39 plates.

**Bedload Transport Processes in Steep Tributary Streams, Olympic Peninsula, Washington, U.S.A. (1993)** IN Wang, S.Y. (ed.) *Advances in Hydro-Science and Engineering*, Center for Computational Hydroscience and Engineering, The University of Mississippi, June 1993. Volume 1, pp. 243-250.

Naiman, Robert J., Beechie, Timothy J., Benda, Lee E., Berg, Dean R., Bisson, Peter A., MacDonald, Lee H., O'Connor, Matthew D., Olson, Patricia L. and Steel, Ashley E. **(1992) Fundamental Elements of Ecologically Healthy Watersheds in the Pacific Northwest Coastal Ecoregion.** IN Naiman, R.J. (ed.) *Watershed Management: Balancing Sustainability and Environmental Change*, Springer-Verlag, New York, pp. 127-188.

O'Connor, Matthew D. and Ziemer, Robert R. **(1988) Coarse Woody Debris Ecology in a Second-Growth *Sequoia Sempervirens* Forest Stream.** IN *Proceedings of the California Riparian Systems Conference*, September 22-24, 1988, Davis, CA, U.S.D.A. Forest Service, General Technical Report PSW-110, pp. 165-171.

**Effects of Logging on Organic Debris Dams in First Order Streams Northern California (1986)** Unpublished Master's Thesis, University of California, Berkeley, 90 p.