

Education

M.A. Urban and Environmental Policy and Planning, Tufts University

Certificate in Water: Systems, Science, and Society, Tufts University

H.B.S. Environmental Economics, Policy, and Management, Oregon State University

H.B.S. Geography, Oregon State University

Minor in Natural Resources and Environmental Law and Policy, Oregon State University

Years at ECONorthwest: 16

Years in Industry: 17

Areas of Expertise

Ecosystem Services Valuation

Benefit-Cost Analysis

Water Resource Economics

Socioeconomic Impact Analysis

Environmental Justice Analysis

Sarah Reich, Project Director

Sarah specializes in environmental and natural-resource policy, planning, and economics. Her professional and academic experience focuses on the economics of water resource planning; integrated watershed management; and socioeconomic dimensions of environmental planning and environmental impact assessment. She conducts quantitative and qualitative economic assessments using an ecosystem-services framework grounded in ecology and economics. With degrees in both the natural and social sciences, she provides valuable contributions to interdisciplinary teams by connecting ecological and economic concepts and translating meaningful information for effective decision processes. She has managed large-scale socioeconomic analyses for federal and state environmental review and has NEPA experience with all of the federal land and resource management agencies. She has presented her work on the economics of green infrastructure at regional and national conferences. In 2006, she was recognized with an AICP Outstanding Student Award. She volunteers for the Tualatin Riverkeepers on their Community Watershed Watch committee and enjoys gardening, cooking, and paddling the flat water around her community.

REPRESENTATIVE PROJECTS

Sarah has served as Project Manager or Director on the following projects, unless otherwise noted:

Socioeconomic Impact Analysis

Socioeconomic Analysis of the Chehalis Basin Local Action Non-Dam (LAND) Alternative—Western WA (2022–Ongoing) Project Director. Conducting economic analysis of effects on rural landscapes and communities from flooding and flood mitigation actions. The analysis includes an evaluation of changes in the value of ecosystem services to tribes and local communities, and an assessment of the equity outcomes of different flood management strategies for vulnerable populations.

- **Socioeconomic, Recreation, and Environmental Justice Impacts of Department of State Lane’s Proposed Habitat Conservation Plan for the Elliott State Research Forest—Western Oregon (2022–Ongoing).** For USFWS and NOAA Fisheries, preparing socioeconomic, recreation, and environmental justice impact assessments for a NEPA evaluation of DSL’s proposed Habitat Conservation Plan for the Elliott State Research Forest.
- **Socioeconomic, Recreation, and Environmental Justice Impacts of Oregon Department of Forestry’s Proposed Habitat Conservation Plan—Western Oregon (2021–Ongoing).** For NOAA Fisheries and USFWS, prepared socioeconomic, recreation, and environmental justice impact assessments for a NEPA evaluation of ODF’s proposed Habitat Conservation Plan.
- **Economic Analysis of Alternatives to Manage Capitol Lake—Olympia, WA (2019–Ongoing) Project Manager.** Conducting economic analyses for a SEPA EIS of the Capitol Lake–Lower Deschutes Estuary Long-Term Management Project.
- **Economic Support of the Funding and Governance Working Group for Capitol Lake Management—Olympia, WA (2019–Ongoing) Project Manager.** Developing materials and an economic framework to guide the Funding and Governance Working Group’s process to select a funding and governance model to implement the Capitol Lake–Lower Deschutes Estuary Long-Term Management Project.
- **Socioeconomic Analysis of the Chehalis River Basin Flood Damage Reduction Project—Western WA (2018–Ongoing) Project Manager.** Conducting the socioeconomic analysis for the NEPA EIS of the Chehalis River Basin Flood Damage Reduction Project for the U.S. Army Corps of Engineers.
- **Goal 5 “Economic, Social, Environment, and Energy” (ESEE) Analysis for the Witch Hazel Village South Plan Area—City of Hillsboro (2021–2022).** Developed an ESEE analysis evaluating tradeoffs of developing or protecting natural resources in a new UGB expansion area of the City of Hillsboro.
- **Economic Analysis of the 2020 Fires in the Santiam Canyon—Marion and Linn Counties, OR (2021) Project Manager.** Estimated the economic impacts of the Beechie Creek and Lionshead Fires on the communities in the Santiam River Canyon and Marion and Linn Counties. In collaboration with other partners, identified development strategies and opportunities for investments to accelerate economic recovery.
- **Clear Branch Dam NED and EA—Parkdale, OR (2016–Ongoing) Project Manager.** Conducting a benefit-cost analysis under federal *Principles, Requirements and Guidelines for Water and Land Related Resources Implementation Studies* and preparing a socioeconomic analysis under NEPA to support rehabilitation planning for Clear Branch Dam on the Middle Fork Hood River.

- **Economic Impacts of the Cascadia Earthquake Scenario—Portland-Vancouver Metro Region, OR & WA (2018–2020) Project Manager.** Estimating the economic impacts of a potential M9.0 Cascadia Subduction Zone earthquake on the Portland-Vancouver regional economy. Partnering with the Regional Disaster Preparedness Organization and DOGAMI.
- **Socioeconomic Analysis of the Dalles Lock & Dam Tribal Housing Village Development Plan—Klickitat County, WA & Wasco County, OR (2017–2020) Project Manager.** For a NEPA EIS and to support the Village Development Plan, assessing the socioeconomic, recreation, transportation, land use, and environmental justice impacts of developing a tribal village for members of the four Columbia River Treaty Tribes, as authorized by the Flood Control Act of 1950.
- **Socioeconomic Analysis of Elements of the Yakima River Basin Water Enhancement Project—Central WA (2015–2020) Project Manager.** Assessing the socioeconomic impacts of the Kachess Drought Relief Pumping Plant, Kachess-to-Keechelus Conveyance, and the Cle Elum Pool Raise Project for the U.S. Bureau of Reclamation and Washington Department of Ecology. Conducting economic analyses under the *Principles, Requirements and Guidelines for Water and Land Related Resources Implementation Studies* and adapting the findings for Environmental Impact Statements of the projects.
- **Broadway Corridor Development Impact Analysis—Portland, OR (2019). Project Advisor.** Described the economic consequences of environmental and social impacts arising from moving the central post office to the Cully neighborhood and redeveloping the former Broadway site in NW Portland.
- **Economic Impacts of Issuing a Recreational Use Permit for Burning Man—Black Rock Desert, NV (2018) Project Manager.** As a subcontractor to EMPSi, evaluated the socioeconomic impacts of BLM's proposal to issue a revised Special Recreation Permit for the Burning Man event in the Black Rock Desert, Nevada.
- **Socioeconomic Impacts of the Skookumchuck Wind Energy Project—Western WA (2018) Project Manager.** For a private client, conducted a socioeconomic impact analysis for an EIS under SEPA for a proposed wind energy project in western Washington. Assisted in adapting the analysis for the NEPA EIS.
- **Economic Analysis of Recreation Impacts of the Jordan Cove Energy Project and the Pacific Connector Gas Pipeline—Southwestern OR (2012–2018) Project Manager.** Performed an analysis of the impacts to in-water and terrestrial recreation and tourism arising from the proposed Jordan Cove LNG terminal in Coos Bay and the Pacific Connector Gas Pipeline.

- **Economic Impact Assessment of the French Hazard Wildland-Urban Interface Project (2017)—Cascade, ID Project Manager.** For the U.S. Forest Service, Boise National Forest, quantified and described the socioeconomic impacts of a proposed wildland restoration and hazardous fuels reduction project in the Boise National Forest. The analysis was included in the agency’s Environmental Assessment of the project under NEPA.
- **Goal 5 “Economic, Social, Environment, and Energy” (ESEE) Analysis for the Jackson East Plan Area—City of Hillsboro (2016-2017).** Developed an ESEE analysis evaluating tradeoffs of developing or protecting natural resources in a new UGB expansion area of the City of Hillsboro.
- **Socioeconomic Analysis of the Crystal Springs Hatchery Program—Central ID (2016) Project Manager.** For the Bonneville Power Administration, analyzed the socioeconomic, land use, recreation, transportation, and environmental justice impacts for an Environmental Impact Statement of the Shoshone-Bannock Tribes’ proposed Crystal Springs Hatchery Program in Idaho.
- **Socioeconomic Analyses of BLM Resource Management Plans for Western Oregon Districts—Western OR (2015) Project Manager.** Analyzed socioeconomic impacts of BLM’s proposed RMPs for Western Oregon Lands through an ecosystem goods and services framework. The analysis quantified the RMP’s economic impacts on traditional resource goods (i.e., timber, mining, and grazing) and ecosystem services (i.e., recreation, water supply, and carbon sequestration). The analysis also evaluated how the RMPs would impact revenue streams to local entities arising from timber harvest. The impact analysis was adapted for the Environmental Impact Statement of the RMPs.
- **Socioeconomic Impacts of a Transmission Line Project—Various, OR and WA (2015) Project Manager.** For the Bonneville Power Administration, analyzed the socioeconomic impacts for an Environmental Impact Statement of the I-5 Corridor Reinforcement Project, a proposed 500-kV transmission line through southwest Washington.
- **Socioeconomic Analysis of the Proposed Walla Walla Basin Spring Chinook Hatchery Program—Northeastern OR and Southwestern WA (2013) Project Manager.** For the Bonneville Power Administration, analyzed the socioeconomic, land use, recreation, and environmental justice impacts for an Environmental Impact Statement of the Confederated Tribes of the Umatilla Indian Reservation’s proposed Spring Chinook hatchery and holding/spawning facility on the South Fork of the Walla Walla River.

- **Socioeconomic Analysis of the Yakima River Basin Integrated Water Resource Management Plan—Central ID (2012) Project Manager.** Assessed the benefits, costs, and economic impacts of the Yakima River Basin IRWMP and prepared an economic report following BOR’s “four accounts” guidelines. Adapted the “four accounts” analysis to an Environmental Impact Statement of the IRWMP.
- **Socioeconomic Analysis of the Cascade Crossing Transmission Line—Eastern and Western OR (2012) Project Manager.** For Portland General Electric, prepared the socioeconomic report for inclusion in the Environmental Impact Statement for the Cascade Crossing Transmission Project.
- **Socioeconomic Impacts of a Road and Bridge Linking Isolated Alaskan Villages—South-Central AK (2012) Project Manager.** For the Alaska Department of Transportation and Public Facilities, conducted a socioeconomic assessment as part of an environmental re-evaluation for a proposed bridge that would span the Newhalen River between the villages of Iliamna and Nondalton. In addition to drafting a technical assessment, performed field reconnaissance, conducted local interviews, and staffed on-site public forums and listening stations.
- **Socioeconomic Analysis of a Proposed Transmission Line—Various, MT and ID (2012) Project Manager.** Analyzed the socioeconomic and environmental justice impacts for an environmental impact statement of Mountain States Transmission Intertie (MSTI), a proposed 500-kV transmission line through Montana and Idaho for the U.S. Bureau of Land Management and the Montana Department of Environmental Quality.
- **Framework for Incorporating Ecosystem Services into Environmental Impact Assessment in Jamaica—Kingston, Jamaica (2011) Project Manager.** Evaluated an approach for integrating ecosystem services into the environmental impact assessment process for Jamaica for the National Environment & Planning Agency.
- **Economic Review of the Environmental Assessment of the MARC I Hub Line Project—Various, PA (2011) Project Manager.** Reviewed the socioeconomic and cumulative impact elements of the Environmental Assessment of the MARC I Hub Line Project, including cumulative effects on jobs and incomes, tax revenues, property values, public services, quality of life, and values derived from ecosystem services.
- **Socioeconomic Analysis of Springfield Sockeye Salmon Hatchery Program—Springfield, ID (2011) Project Manager.** For the Bonneville Power Administration, analyzed the socioeconomic, land use, and environmental justice impacts for an environmental assessment of the Springfield Sockeye Salmon Hatchery Program.

- **Economic Impacts of a Wind Farm—Union, OR (2010) Project Manager.** Analyzed the potential impact of a nearby wind farm on the costs incurred by the City of Union, Oregon to provide public services and on property values in the City and future property tax revenues.

Ecosystem Service Valuation

- **Economic Importance of Water in the North Santiam Basin—Mid-Willamette Valley, OR (2019) Project Manager.** Conducted an economic analysis of the current and expected future uses and value of water originating in the North Santiam Basin.
- **Data Assessment of Water Management in the Harney Basin—Harney County, OR (2019) Project Manager.** Conducted initial assessment of data available to support an economic analysis of the value of water use in the Harney Basin.
- **Economic Benefits of Investments in Wildfire Resilience Projects in the Okanogan-Wenatchee National Forest—Central WA (2018–2019).** Developed a spatial analysis and story map to identify ecosystem service benefits arising from wildfire resilience investments, and build an economic case for private and local contribution to wildfire risk reduction efforts.
- **Co-Benefits of TMDL Bacteria Standard Compliance—San Diego and Orange County, CA (2017) Project Manager.** Quantified the economic value of ecosystem services generated through implementation of structural and non-structural BMPs proposed to remove bacteria from Southern California waterways.
- **Economic Value of Wildlife in Alaska—Statewide, AK (2014) Project Manager.** Analyzed the economic importance of wildlife-related activities to the Alaska economy for the Alaska Department of Fish and Game.
- **Handbook for Quantifying Economic Benefits of Water-Related Projects—Statewide, CA (2012) Project Manager.** Developed an easy-to-use handbook for organizations in California to value ecosystem service benefits arising from investments in water infrastructure and ecosystem restoration projects.
- **Ecosystem Services and Decision-Making in the Sierra Nevada—Nevada City, CA (2009) Project Manager.** Conducted a benefit-cost analysis of water-infrastructure improvement projects in communities in the Sierra Nevada for the Cosumnes, American, Bear, Yuba Integrated Regional Water Management Plan.

- **Habitat Equivalency Analysis of Damages from Mining Activities—Various, OK (2009) Project Manager.** Calculated the economic damages to the Quapaw Tribe associated with forgone ecosystem goods and services destroyed by mining activities in the Tar Creek Superfund Site.
- **Economic Indicators of Agriculture’s Future in Skagit County—Skagit County, WA (2009) Project Manager.** Described the value of agriculture in Skagit County, including its contribution to the economy through amenity values and the production of ecosystem services.
- **Assessment of Ecosystem Services Provided by Land in the Willamette Valley—Various, OR (2008) Project Manager.** Described the cultural significance of restoring natural resources for the Native American Tribes of the Willamette Valley.
- **Economic Importance of Protecting Natural Resources—Portland, OR (2007) Project Manager.** Identified, described, and quantified the economic arguments that support protecting high-quality natural resources in the East Buttes area for the City of Portland.
- **Review of Economic Analysis of Critical Habitat Protection for the Tidewater Goby—Various, CA (2007) Project Manager.** Described the economic consequences of a proposal to protect critical habitat for the Tidewater Goby.
- **Economic Benefits of Wyoming’s Roadless Areas—Various, WY (2007) Project Manager.** Analyzed the economic benefits of national forest roadless areas to Wyoming’s economy.

Benefit-Cost and Financial Analysis

- **Revenue Strategy Development for an Urban Flood District—Multnomah County, OR (2021—Ongoing).** Developing a revenue estimation model and comprehensive revenue strategy for the newly created Urban Flood Safety and Water Quality District, which manages the levees along the Columbia River in Multnomah County.
- **Wildfire Recovery Planning for the Santiam Canyon—Marion County, OR (2022—Ongoing).** For Marion County, in collaboration with EPA and FEMA, develop a recovery plan and funding opportunities analysis to facilitate wildfire recovery efforts.
- **Impacts of Heritage Organizations in Oregon—Statewide, OR (2022—Ongoing). Project Manager.** Estimating the impact of heritage organizations, traditions, and related tourism to Oregon’s economy. Included both the effects of tourism spending related to heritage and a qualitative assessment of the economic value of continued investments to preserve Oregon’s heritage resources.

- **Fiscal and Housing Market Consequences of a Ski Area Expansion—Teton County, ID (2021—Ongoing).** Evaluating the distributional impacts to Teton County, ID and local communities of expanding the Grand Targhee Ski area in Teton County, WY. Analysis looked at impacts to cost of providing services, revenues, and housing market effects.
- **Economic Costs and Funding for the Bush Prairie Habitat Conservation Plan—Tumwater and Port of Olympia, WA (2020–2021).** Estimated the costs of mitigation strategies to protect the Mazama Pocket Gopher and several other ESA-listed species. Developed a regional model to identify the land acquisition opportunities and estimate the costs associated with implementing conservation actions as part of the HCP.
- **Economic Impacts of a Habitat Conservation Plan for the Mazama Pocket Gopher—Thurston County, WA (2020–2021).** Evaluated the impacts of adopting a Habitat Conservation Plan on the economic and local businesses in Thurston County, Washington. Developed a business case to evaluate the costs to developers for species mitigation with and without the HCP.
- **Analysis of the Market for Organic Hazelnuts—Statewide, Oregon (2019–2020) Project Manager.** Estimating the international market for organic hazelnuts and assessing the demand for and financial feasibility of developing certified organic processing capacity.
- **Economic Costs of Fracking in Pennsylvania—Statewide, PA (2019). Project Advisor.** Estimated the statewide economic costs of hydraulic fracturing (fracking) development, including impacts on water, air, habitat, quality of life, and other effects.
- **Options for Mitigating Wetland Resources on Industrially-Zoned Land—Lebanon, OR (2019). Project Advisor.** Assessed the current wetland mitigation banking markets in the mid-Willamette Valley, and identified options and costs for the City of Lebanon to meet wetland mitigation requirements associated with developing industrially-zoned land.
- **Economic Analyses of the Mid-Willamette Valley Intermodal Center—Millersburg, OR (2019). Project Advisor.** Conducted a market analysis, feasibility analysis, and economic impact analysis of a proposed truck-to-rail intermodal facility proposed by the Linn Economic Development Group.
- **Economic Analyses of the Treasure Valley Reload Center—Nyssa, OR (2019). Project Advisor.** Conducted a market analysis, feasibility analysis, and economic impact analysis of a proposed truck-to-rail shipping facility in the Treasure Valley, Eastern Oregon for the Malheur County Development Corporation.
- **Economic Assessment of an Allied and Mental Health College—Roseburg, OR (2019). Project Advisor.** Analyzed the economic value, impacts, and return on investment arising from developing a proposed allied and mental health college in southwestern Oregon.

- **Habitat Conservation Plan Business-Case Analysis—Western Oregon (2018–2019) Project Manager.** For the Oregon Department of Forestry, developing a business-case analysis highlighting the benefits and costs of developing a habitat conservation plan for managing threatened and endangered species across all ODF forests in western Oregon.
- **Assessing Demand for Rural Passenger Air Service in Oregon—Statewide, OR (2018) Project Manager.** For the Oregon Department of Aviation (ODA), assessed the potential demand for air passenger service throughout the state, focusing on rural areas. The assessment described current trends in use of air service, identified the primary socioeconomic factors that correlate with demand for air travel and analyzed them spatially, to support Department decisions about where to make future investments in rural passenger air service.
- **Economic Benefits of Reopening Willamette Falls Locks—Clackamas County, OR (2018) Project Manager.** For the Willamette Falls Locks Working Group, assessed the benefits of reopening the Willamette Falls Locks. The study compared different operating scenarios against the U.S. Army Corps of Engineers’ alternative to permanently decommission the Locks, and quantified the benefits associated with commercial and recreational activity, economic development, and historic presentation and cultural value.
- **Impacts of the Oregon Cultural Trust—Statewide, OR (2018) Project Manager.** For the Oregon Cultural Trust, measured the impact of the Trust’s activities, including its tax credit, on the state’s economy and cultural vitality.
- **Financing Mechanisms for Funding Water and Ecosystem Management—Northern CA (2017) Project Manager.** For California’s North Coast Resource Partnership, assessed potential financing mechanisms as part of a region-wide financing strategy for supporting future water infrastructure and watershed management planning and project implementation. The financing strategies investigated ranged from participation in carbon and ecosystem markets, to leveraging legislative programs, to designing creative and innovative local bonds, taxes, and fees.
- **Economic Impacts of a Boil Water Notice—Confidential (2016) Project Manager.** For a private client, evaluated the economic impacts to commercial and residential customers of a hypothetical scenario that involved issuing a 2-week boil water notice to protect public health after a cryptosporidium detection in the water supply.

- **Feasibility Analysis and Business Case for an Intermodal Container Facility in the Willamette Valley—Western OR (2016) Project Manager.** Quantified potential demand for an intermodal container facility from Oregon’s agricultural export industry in Western Oregon. Prepared a cost analysis and business case of such a facility, and analyzed the break-even conditions required for operating the facility. Finally, discussed the public benefits the facility could potentially generate for Oregonians from shifting container traffic from trucks to trains.
- **Benefits and Impacts of California Integrated Watershed Management Projects—Various, CA (2006–2014) Project Manager.** Evaluated the benefits and costs of proposed water-development and watershed-restoration projects throughout the North Coast and Sierra regions of California. The analysis quantified the physical changes associated with proposed infrastructure, land use change, and environmental restoration actions, and then quantified where data were available the economic benefits and costs associated with the proposed projects.
- **Socioeconomic Analysis of the Yakima River Basin Integrated Water Resource Management Plan—Central ID (2012) Project Manager.** Assessed the benefits, costs, and economic impacts of the Yakima River Basin IRWMP and prepared an economic report following the Principles, Requirements, and Guidelines for Water and Land Related Resources Implementation Studies.
- **King County WTD Economic Support for CSO Management Costs—King County, WA (2012) Project Manager.** Examined the impacts of implementing the King County Wastewater Treatment Division’s Combined Sewer Overflow Control Plan on ratepayers and assessed their financial capacity to bear these impacts.
- **Economic Analysis of Public-Private Land Exchanges—Whitefish, MT (2012) Project Manager.** Performed an economic analysis of a proposed land exchange between a private landowner and the state of Montana.
- **Economic Impacts of Cleanup Activities for an Urban Superfund Site—Portland, OR (2010) Project Manager.** Developed an analytical approach to describe the short-term and long-term benefits and costs of cleanup and remediation alternatives for the Portland Harbor Superfund Site.

- **Benefit-Cost Analysis of Development Alternatives for a Proposed Port Facility—Portland, OR (2011) Project Manager.** Supported a benefit-cost analysis that compared the economic benefits and costs of port development versus restoration on West Hayden Island. The analysis relied on data from modeled changes in the ecosystem, including critical thresholds in habitat quality and ecosystem services for quantifying economic benefits. The analysis also quantified benefits associated with infrastructure development and changes in key Port market areas.
- **Economic Contribution of Irrigated Agriculture to the Walla Walla River Basin—Various, WA and OR (2010) Project Manager.** Analyzed the value of irrigated agriculture in the Walla Walla River Basin.
- **MTBE-Oxygenated Gasoline Assessments—Various (2008) Project Manager.** Assisted in an analysis that compared and contrasted benefits and costs, stemming from the use of MTBE-oxygenated gasoline with those stemming from the use of ethanol-oxygenated gasoline to determine if refiners could have used ethanol to meet federal reformulated gasoline mandates instead of MTBE during the 1990s.
- **Economic Benefits and Costs of Reclaimed Water—King County, WA (2008) Project Manager.** Described the economic benefits and costs associated with producing and using reclaimed water for King County, Washington.
- **Potential Economic Costs of Climate Change—Statewide, OR, WA, and NM (2008) Project Manager.** Described and quantified potential economic costs of a business-as-usual response to climate change in Oregon, Washington, and New Mexico for the University of Oregon’s Climate Leadership Initiative.
- **Economic Analysis of Alternative Programs for Managing Waste Coal in Central Appalachia—Eastern U.S. (2008) Project Manager.** Analyzed the potential economic consequences of alternative approaches for managing waste-coal piles for the Sierra Club.
- **Analysis of Potential Economic Effects of a Proposed Water-Bottling Facility—McCloud, CA (2007) Project Manager.** Analyzed the potential economic effects of a proposed water-bottling facility, including effects on local employment, population, public resources, and natural resource amenities for the McCloud Watershed Council.
- **Analysis of the Relationship Between Irrigation and Montana’s Economy—Helena, MT (2007) Project Manager.** Analyzed the relationship between irrigated agriculture and Montana’s economy for the Montana Department of Natural Resources and Conservation.
- **Economic Implications of Climate Change on Public-Land Grazing—Western US (2007) Project Manager.** Examined the economic implications of potential interactions between climate change and the management of public lands used for grazing.

- **Economic Analysis of Electricity-Generating Alternatives in Arkansas—Hempstead County, AR (2007) Project Manager.** Described the potential economic impacts of a proposed coal-fired electricity generator for the Sierra Club.

Green Stormwater Infrastructure and Sustainable Site Design

- **Benefits and Costs of Developing Reclaimed Water Infrastructure on South Cooper Mountain—Beaverton, OR (2019–2021).** Evaluated the costs and benefits, including ecosystem service benefits, of implementing a “purple pipe” reclaimed water system that would capture and reuse stormwater for landscape irrigation on South Cooper Mountain.
- **Incentives for Private Investment in Green Infrastructure in the Columbia Slough Watershed—Multnomah County, OR (2019–2020).** Described the economic benefits to private business owners of investing in green infrastructure on private property, and identified potential incentives and tools that local government and watershed organizations can use to generate environmental uplift in an urban setting.
- **Benefits of Investing in Green Stormwater Infrastructure in Arid Climates—Tucson, AZ (2018) Project Manager.** For American Rivers, in support of the City of Tucson’s development of stormwater policy, reviewed the research related to benefits of green stormwater infrastructure (GSI), and described how a proposed stormwater fee would benefit ratepayers.
- **Green Infrastructure Rating System—Austin, TX (2017). Project Advisor.** Assisted the City of Austin, Texas in developing “Functional Green,” a rating system that requires developers to integrate green infrastructure elements into development projects in the downtown area.
- **SITES Rating System and Ecosystem Services—Nationwide (2016) Project Manager.** Conducted an analysis of the economic benefits of ecosystem services impacted by land use changes associated with projects that implement the SITES landscape rating system. The analysis identified pathways through which the SITES credits could generate improvements in the levels of ecosystem goods and services available to provide benefits to human health and well-being and increase resilience to human and climate-induced natural resource scarcity.
- **Benefits of Sonoma County Low-Impact Development—Sonoma County, CA (2013) Project Manager.** Assessed the economic benefits of investments in green stormwater infrastructure in Sonoma County.
- **Assessing Options for Restoring Puget Sound Partnership—Northwestern WA (2012) Project Manager.** Analyzed the costs and benefits of various options for restoring Puget Sound, including low-impact development projects, and assessed the feasibility of various market-based mechanisms for project evaluation and implementation.

- **Ecosystem Services of Sustainable Sites Initiative Case Studies—Nationwide (2011) Project Manager.** Developed a framework that communicates effectively to non-economists how changes in land use, infrastructure, and ecosystems produce economic benefits and costs through changes in ecosystem goods and services. The framework identified relationships between land-use changes and benefits to human health and well-being. It also articulated how changes in development may produce changes in vulnerability, resilience, and adaptation to human- and climate-induced resource scarcity.
- **Economic Factors Influencing Green Infrastructure in Redevelopment—Nationwide (2011) Project Manager.** For Smart Growth America, interviewed members of the development community to understand the factors that influence developers’ decisions to adopt green-infrastructure strategies to manage stormwater in redevelopment projects.
- **Metro Sustainable Building and Landscaping—Portland, OR (2011) Project Manager.** Conducted a literature review of sustainable building practices.
- **Economic Analysis of Eco-roofs—Portland, OR (2007) Project Manager.** Conducted an economic benefit-cost comparison of a conventional roof and a green roof on a commercial building for the City of Portland.
- **Economics of Low-Impact Development—Nationwide (2007) Project Manager.** Conducted a review of the literature on the economics of low-impact development for the Waterkeeper Alliance.