Todd Alsbury

Fish Biologist & Construction Project Team Leader

Biohabitats

EMPLOYMENT

2024 – Present	Biohabitats, Inc., Portland, OR, Fish Biologist & Construction Project Team Leader
2019-2024	Altap Restoration LLC
2019-2024	Cascade Environmental Group
2002-2019	Oregon Department of Fish & Wildlife
1998-2002	South Puget Sound Salmon Enhancement Group

EDUCATION

B.Sc., Aquatic Wildlife Biology, University of Montana, 1997

CERTIFICATION & TRAINING

Trained in assessment and preparation of reports related to the Oregon Department of State Lands (ODSL) Stream Function Assessment Methodology (SFAM)

Trained in conducting wetland determinations with a focus on wetland restoration to offset impacts from development actions.

PROFESSIONAL ASSOCIATIONS

American Fisheries Society

EXPERIENCE

Todd Alsbury is a fisheries biologist who began his career in stream restoration working for a non-profit in the south Puget Sound region of Washington state before joining the Oregon Department of Fish and Wildlife as a Stream Restoration Biologist. Todd assisted restoration partners with conceptual design, permit coordination, habitat assessment and monitoring, and fish salvage planning and implementation.

Todd managed regionally important fish populations in the Clackamas, Sandy, and Molalla rivers for the state of Oregon, where habitat restoration continued to be a focus, providing coordination and assistance to local watershed councils and restoration partners including Portland General Electric, Metro, and the U.S. Forest Service. Todd has extensive experience conducting habitat surveys, analyzing habitat related data, conceptualizing instream restoration actions, monitoring fish populations through a variety of techniques, and planning and conducting fish and wildlife salvage operations associated with instream and wetland restoration projects.

As an environmental consultant, Todd continued collaborating with many of the same groups he worked with as a state employee and expanded his client base to include larger entities such as NW Natural Gas, the City of Eugene, the City of Portland, RestorCap, and Clackamas Water Environment Services. With Biohabitats Construction, Todd has assisted with planning and permitting; led fish and wildlife salvage operations; provided project management and oversight; and conducted site safety coordination? and construction supervision for stream and wetland restoration projects. He has also conducted bird nesting surveys and assisted with the analysis of ecologically significant property in Tillamook, OR, and on McNeil Island in Washington state.

Biohabitats (June 2024 – Present)

Fish Biologist/Construction Project Team Leader

- Conducted habitat assessments of areas planned for development in floodplain habitats. Determined mitigation actions needed to offset potential impacts from development.
- Determined a strategy for successful salvage and relocation of fish and amphibians that could be impacted by the removal of Balm Grove Dam. Successfully relocated over 2,500 fish, many that are listed as threatened under the Endangered Species Act.
- Developed an invasive species control protocol for the Biohabitats Construction Team to be used at all stream and wetland restoration projects. The protocol is needed to prevent the spread of invasive species to other watersheds.
- Procure and maintain fish and wildlife salvage equipment including Smith Root LR-24 electro-fisher, fish seines, oxygen supplementation systems, scales, and temperature probes.
- Provide leadership and supervision of a crew for four summers in successful fish and wildlife salvage efforts throughout the

Pacific Northwest.

- Coordinate planning and implementation of diversion and dewatering systems prior to initiating stream/wetland restoration actions. Ensure diversion and dewatering systems are designed and maintained to prevent water from accessing a work site.
- Performed site supervision and project management on large scale wetland grading project (Bronson Creek Greenway/Wetland Enhancement).

Altap Restoration LLC (May 2019 – December 2024)

Principal/Owner

- Conduct watershed and aquatic habitat assessments to identify areas of concern and potential habitat restoration opportunities.
- Managed fish exclusion and salvage efforts for instream construction and restoration projects, ensuring compliance with environmental regulations and minimizing harm to aquatic ecosystems.
- Coordinate acquisition of scientific take permits through the Oregon Department of Fish & Wildlife (ODFW) and NOAA Fisheries to ensure take associated with salvage and relocation of fish is covered by the agencies. Prepare reports to document compliance with all permit requirements.
- Successfully pursue and secure new business opportunities through proactive business development strategies, including cultivating relationships with potential clients, and identifying new areas of opportunity.
- Develop strategic plans and prioritization frameworks for habitat restoration projects, utilizing expertise in ecological principles and best management practices.
- Conduct water quality monitoring (aerial thermal imaging and instream temperature probes) to assess the health of aquatic ecosystems and identify potential sources of pollution.
- Utilization of underwater cameras and snorkel surveys to assess fish assemblages pre- and post-implementation of stream/wetland restoration actions.
- Demonstrated proficiency in regulatory permitting and compliance monitoring, including conducting biological assessments and utilizing assessment methodologies developed by the ODFW, Washington Dept. of Fish & Wildlife, U.S. Fish & Wildlife Service, and the Environmental Protection Agency.
- Collaborate with non-profit clients throughout Portland/Metro area to develop restoration actions within the watersheds they work. Assist with the development of grant applications to secure funding for actions identified within their watersheds. Provide leadership in project development and implementation to ensure restoration actions are successful at providing the intended benefits to natural resources.

Cascade Environmental Group (February 2019 - 2024)

Senior fish Biologist

- Demonstrated expertise in fish habitat restoration planning and implementation, including fish habitat monitoring and ensuring compliance with ESA fish salvage/scientific take permit requirements.
- Conducted comprehensive watershed and wetland assessments, utilizing a range of ecological and environmental metrics to identify areas of concern and opportunities for improvement.
- Proven record of success in regulatory permitting and compliance monitoring, including managing the permitting process and ensuring adherence to all relevant environmental regulations.
- Maintain relationships developed with regulatory agencies to aid in processing of permits to conduct instream and wetland restoration.
- Conducted fish passage assessments and compliance with Oregon fish passage statutes via annual monitoring and reporting to ODFW.
- Performed monitoring and assessment of a stormwater treatment system developed by Clackamas County to treat stormwater from an industrial complex near the Clackamas River in Oregon. The system treated approximately 50% of the total watershed yield and provided habitat for migratory birds, songbirds, amphibians, and other native wildlife present near a developing industrial area.

Oregon Department of Fish and Wildlife (2002 – January 2019)

District Fish Biologist

- Coordinated and implemented comprehensive fish resource management activities across the Cascade and Coast Units of the North Willamette Watershed District (NWWD) from 2004- 2019, utilizing expertise in fisheries science and management principles.

- Spearheaded the collection of extensive biological and physical data on fish populations and their habitats within the district, utilizing innovative tools and techniques to ensure accuracy and completeness (e.g., tracking tagged adult and juvenile fish, aerial habitat surveys using drone technology, temperature monitoring using thermal imaging cameras)
- Formulated and executed highly effective recommendations and management strategies aimed at maintaining and improving fish populations and the quality of their habitats, collaborating with stakeholders and partner agencies.
- Served as a trusted technical expert and advisor on fisheries-related matters, providing critical information and guidance to the public, landowners, and other agencies on a wide range of issues.
- Managed multiple public access sites for angling throughout the NWWD, ensuring a safe and enjoyable experience for all users while protecting the ecological integrity of the surrounding areas.
- Skilled in identification of native and non-native fish and amphibian species present throughout the Pacific Northwest.

RELEVANT PROJECT EXPERIENCE

Balm Grove Dam Removal and Fish Salvage, Gales Creek, OR (2021/22) - Developed a plan for salvage and exclusion of fish and wildlife from an isolated reach of Gales Creek prior to the start of stream restoration activities. Led a crew of Biohabitats staff and volunteers to remove over 2,500 fish from 1,200 feet of stream. A sizable portion of the fish collected are listed under the ESA and are afforded protection that requires stream restoration proponents to safely remove them prior to the start of work. The project restored access for migratory fish to over twelve miles of habitat previously restricted by the dam.

Willamina Creek Water Supply Project – Biohabitats conducted a bird nesting survey using USFWS protocol to assess the presence of nesting birds in trees that would be removed during project construction. Biohabitats also conducted fish salvage and relocation services during instream work where the prime contractor removed the installed new intakes for city water.

Bronson Creek Greenway Wetland Enhancement, Beaverton, OR. Biohabitats installed basking logs, rock piles, nesting habitats, and movement corridors for native turtles and amphibians on land that had been previously tiled and drained, transforming it into a palustrine emergent/palustrine scrub-shrub/open pond habitat. Non-native fish were removed from the pond prior to dewatering and humanely euthanized to prevent them from being a source for the restored wetland habitat. Todd provided project management, site safety coordination, and construction supervision for this wetland restoration project.

RELEVANT PROJECT EXPERIENCE PRIOR TO BIOHABITATS

Fish Passage and Stream Temperature Monitoring in the North Clackamas Watershed Council Area Streams, Clackamas County, OR (2020-present) - We are in the fourth year of a multi-year study to investigate sources of stream heating and locations of cold-water refuge for salmon and steelhead in NCWC area streams. The goal of the effort is to identify specific streams, stormwater sources, or other impacts in the watershed that are contributing to stream heating. Another goal is to identify potential cold-water refuges that could be improved, or access provided to support fish.

Carli Creek Stormwater Treatment System Monitoring, Clackamas, OR (2021-present) - Monitored the site prior to construction and every 3 years post to assess riparian and instream habitat conditions in Carli Creek downstream of the stormwater treatment system. The productivity of the fish population is also being assessed to determine if habitat conditions are providing an increase in the number of native fish in the system.

Stream Temperature Monitoring in the Abernethy Creek Watershed, Clackamas County, OR (2018-2019) - Conducted temperature monitoring over two seasons in the Abernethy Creek watershed. Investigated sources of heating in the stream that is leading to temperatures that exceed criteria established for salmon and steelhead bearing streams. We determined that a reservoir in the watershed is the primary source of heating with an increase of over 12°F (65°F to 77°F) in the stream below the reservoir. An increase that can lead to mortality of salmon and steelhead if they are not able to find refuge from the high-water temperature.

Rapid Bioassessment Stream Habitat Inventory & Fish Distribution Analysis in the Abernethy Creek Watershed: Findings and Restoration Opportunities, Clackamas County, OR (2019) - Completed a rapid bioassessment of stream habitat in the Abernethy Creek watershed to have up to date information on the status and trends of fish habitat and fish distribution. The rapid bioassessment provided the information needed to complete the Strategic Restoration Action Plan for the watershed.

Strategic Restoration Action Plan for Native Fish in the Abernethy Creek Watershed Clackamas County, OR (2021) -Identified stream habitat restoration actions intended to offset impacts to habitat from various development actions in the watershed. Restoration actions were prioritized based on a set of factors that if implemented, would support recovery and persistence of native fish in the watershed.

Lower Columbia Conservation & Recovery Plan for ESA Listed Salmon & Steelhead Species, Northwest Oregon (2007-2012) - Participated in technical work groups and committees established to identify limiting factors and threats to ESA listed fish species in the Lower Columbia Evolutionary Significant Unit. Provided direct input on species and habitat status for the Clackamas (including Johnson Creek), Sandy, and Molalla river populations of fish listed under the ESA.

Sandy Basin Hatchery Fish Management Program, Sandy, OR (2006-2019) - Managed operation, maintenance, and program reporting on operation of three adult fish collection sites in the Sandy Basin. River-wide picket weirs and adult traps were used to sort hatchery and wild fish, allowing wild fish to migrate upstream to spawn with wild counterparts. Authored Hatchery Genetic Management Plans for Summer Steelhead, Winter Steelhead, Spring Chinook, and Coho Salmon. The plans detailed hatchery operations and management actions to reduce potential negative interactions between hatchery and wild fish in the Sandy River Basin.

PUBLICATIONS

Alsbury, L. T. 2019. Abernethy Creek Watershed – 2019 Rapid Bioassessment Stream Habitat Inventory & Fish Distribution Analysis: Findings and Restoration Opportunities. Prepared for the Greater Oregon City Watershed Council

Alsbury, L.T. 2021. Strategic Restoration Action Plan for Native Fish in the Abernethy Creek Watershed
http://www.gocwc.org/wp-content/uploads/2021/07/Abernethy_StrategicRestorationActionPlan_Final.pdf

Alsbury, L.T., 2025. Carli Creek Water Quality Project – Aquatic Inventory and Fish Sampling Report. Prepared for Clackamas County Water Environment Services

PRESENTATIONS & CONFERENCES

Restoring Habitat for Native Fish in Developing Watersheds – Clackamas Population of Salmon & Steelhead. Presentation to the Clackamas County Water Environment Services Advisory Committee.
https://www.youtube.com/watch?v=eQLEvrgkyyo&feature=youtu.be

Ted Brown, PE, LEED AP

Senior Water Resources Engineer

Biohabitats

EMPLOYMENT

2006 – Present	Biohabitats, Inc., Baltimore, MD, Senior Water Resources Engineer
1998 – 2006	Center for Watershed Protection, Ellicott City, MD, Director of Watershed Implementation
1994 – 1998	Wright Water Engineers, Inc., Denver, CO, Water Resources Engineer

EDUCATION

M.S., Civil Engineering, University of Virginia, Charlottesville, VA, 1994
B.A., Economics, University of North Carolina, Chapel Hill, NC, 1988

PROFESSIONAL REGISTRATION

Maryland Professional Engineer, License Number 32002, 2005
New York Professional Engineer, License Number 086739, 2009
New Jersey Professional Engineer, License Number GE47917, 2009
North Carolina Professional Engineer, License Number 038017, 2011
New Hampshire Professional Engineer, License Number 16703, 2021

TECHNICAL TRAINING

LEED Accredited Professional for New Construction (USGBC), 2009

EXPERIENCE

Ted has over 30 years of experience in ecological restoration, watershed management and planning and stormwater management services. For the last fifteen years, he has served as a practice leader, with business development, staff supervision and mentoring, and quality control responsibilities. In 2024, Ted became President and Chief Executive Officer of Biohabitats, where he works with a senior leadership team to carry forward Biohabitats mission and purpose. Ted's technical focus is on green stormwater infrastructure solutions in urban settings, nature-based solutions for flood resiliency and climate adaptation, and holistic water management planning that considers innovative approaches to reducing overall water demands and pairing non-potable demands with non-potable supplies. Ted previously served as an at-large member of the Chesapeake Bay Program's Urban Stormwater Workgroup whose purpose is to facilitate the implementation of stormwater controls to achieve the necessary pollutant reduction planning targets as defined under the 2010 Chesapeake Bay TMDL.

Prior to joining the Biohabitats Team, Ted worked for eight years at the Center for Watershed Protection (CWP), a nationally recognized non-profit that develops innovative technical guidance relating to watershed assessment and management, stormwater management, NPDES regulatory compliance, and natural resource conservation. While at CWP, he served as Director of Watershed Implementation and played important roles in the development and writing of state stormwater manuals for the states of New York, Vermont, Georgia, and Minnesota. His CWP work also included writing national guidance for EPA to support the NPDES Phase II Stormwater Program.

RELEVANT PROJECT EXPERIENCE

Mollie's Branch Stream Restoration and Flood Resiliency, Whiteville, NC. As Water Resources Engineer and engineer of record, Ted oversaw the design of a floodplain restoration project in Whiteville, NC to relieve localized flooding that was causing repetitive losses on residential and community property. The design approach avoided wetland impacts and the need for a 404 permit and reduced flood impacts for storm events up to and including the 100-year storm. Biohabitats partnered with Gresham Smith to combine infrastructure modifications with floodplain expansion to create an effective solution for the community under the BRIC grant.

Tower Grove Park, St Louis, MO. As project team lead, Ted supervised stream restoration and stormwater management design for this stream daylighting project in a historic City park. The stream had been "buried" in storm drainpipes for decades and the project focused on creating an interactive, educational, and inspirational park amenity Working with a multi-disciplinary team, Biohabitats designed the stream system in a way that celebrates the role water and ecology in the culture of the land's original inhabitants, the Osage Nation. Specifically, Ted supervised

preliminary stream alignment, hydrologic and hydraulic computations and water quality best management practice preliminary siting and sizing.

Georgetown Water Balance, Washington, DC. Ted served as project manager on this two-part planning effort at Georgetown University. The work was carried out under a contract with a third party energy consultant for the University, Engie North America. The work focused on developing a better understanding of campus water use and opportunities to realize the University's sustainability goals, which included increasing pervious surfaces to 40 percent of the campus and reducing potable water use by 25%. For the first task, Ted led the Biohabitats team in developing a water balance to better understand campus potable and non-potable supply and demand, and recommending strategies to conserve water and use non-potable supplies to meet non-potable demands. For the second task, he led the Biohabitats team in developing an inventory of stormwater retrofits to treat untreated impervious areas with green stormwater infrastructure elements that provide multiple benefits. He also supervised the development of concepts were developed for the top four ranked opportunities to support grant applications for design and implementation.

EPA Disaster Resilience Technical Assistance, Various Sites, USA. The Environmental Protection Agency Office of Community Revitalization provides technical assistance to hundreds of communities in the form of urban design charrettes and facilitated policy evaluation and planning workshops. Biohabitats served as a subcontractor to Spackman Mossop Michaels to plan proactive, nature-based solutions to natural hazards of climate change. Ted was the project team lead and oversaw efforts in the Gullah-Geechee community of St. Helena's Island, SC. He also contributed to the production of a nationwide guidance document on nature-based solutions to bolster resilience to natural hazards exacerbated or caused by climate change.

Vanderbilt University Water Management Master Plan, Nashville, TN. Biohabitats supported the University's water management master planning effort by focusing on water reuse strategies for energy systems and irrigation. Water balances were developed to optimize opportunities to reduce potable water supply for non-potable water demands. Ted served as Biohabitats project manager and technical lead on the project.

City of Durham MS4 Audit, NC. Biohabitats was part of a team of stormwater program experts assisting the City with their preparation for an audit of their program by the State. Biohabitats focused on compliance with TMDL and water quality monitoring components of their program. Ted served as the lead technical expert for Biohabitats.

Durham County Nutrient Management Strategy, NC. Biohabitats was part of a team that helped the County identify opportunities to manage stormwater runoff in a way that optimized nutrient reduction in the Falls Lake and Jordan Lake watersheds, where nutrient TMDLs are in place. Biohabitats focused on compliance with TMDL and water quality monitoring components of their program. Ted served as the project manager for Biohabitats.

Baltimore Harbor & Curtis Creek/Bay Polychlorinated Biphenyls (PCB) TMDL Restoration Plan, Anne Arundel County, MD. Ted provided QA/QC and technical support on the development of a PCB TMDL restoration plan that set forth a strategy to achieve the reductions required to meet the PCB SW-WLA. The restoration plan supplements broader watershed restoration actions underway for the County's MS4 permit by outlining targeted actions intended to specifically reduce PCB loads. Through source targeting, modeling, and proposed monitoring, the restoration plan provides a blueprint that will guide efforts to efficiently reduce PCB pollution. Ted also supported the effort to provide a response to MDE comments as well as reviewed model updates for annual reporting to reflect progress towards meeting the TMDL.

New York City CSO-PlaNYC Green Infrastructure Initiative - Jamaica Bay Ecological Watershed Atlas, New York, NY. Ted served provided project engineering related to conceptual design and QA/QC support for this GIS-based ecological atlas within the watershed of Jamaica Bay. Tasks included investigating all city-owned vacant lands, developing potential ecological and stormwater restoration concepts, and identifying opportunities for priority marine and wildlife habitat for threatened and endangered species. The atlas will be used by restoration practitioners to develop and leverage future ecological projects, based on a prioritized list and map of potential sites for restoration and conservation.

NYCDEP Green Infrastructure Research and Development, Brooklyn-Queens-Bronx, NY. As part of a multi-disciplinary team, Biohabitats worked with the New York City Office of Green Infrastructure to implement their green infrastructure (GI) plan. Building on our earlier monitoring and data collection efforts for the City, the team conducted research to evaluate the City's bioswales performance and functionality over time. We developed a monitoring protocol with the ultimate goal of providing recommendations for improving the performance of bioswales with a particular emphasis on plant health and survivability. We also evaluated and quantified co-benefits of bioswales. Ted provided technical support on review of monitoring approaches along with QA/QC of Biohabitats' deliverables to the team and client.

University of Virginia Ivy Corridor Phase 1 Planning and Design, Charlottesville, VA. Biohabitats is providing stream restoration and stormwater management planning and design services for the redevelopment of a highly visible gateway to the University of Virginia. The focus of Biohabitats' effort is to design 900 linear feet of stream and integrate stormwater treatment for water quality requirements associated with the University's stormwater permit. The stream is a central element and focal point of the redevelopment. Ted served as the project

manager for Biohabitats portion of the project and also led the stormwater management planning and design components.

Tibbetts Brook Combined Sewer Overflow Reduction and Daylighting in Van Cortlandt Park, Bronx, NY. Biohabitats is working as part of a team with HDR and dland Studio to develop two concepts for enhancing the wetlands at Tibbetts wetland, representing the first phase of the Tibbetts Brook daylighting project. The first phase is part of a larger effort focused on removing a portion of Tibbetts Brook flow from the combined sewer system into which it is currently conveyed. Ted provided conceptual design input related to site hydrology and provided overall QA/QC of the concept designs developed.

Booker Creek Watershed Study, Chapel Hill, NC. Biohabitats was a subcontractor to W.K. Dickson to assess and analyze selected subwatersheds in the Booker Creek watershed for stream and riparian buffer condition and various stormwater attributes of concern. Biohabitats performed a detailed field assessment of stream stability, riparian buffer condition, aquatic habitat, stormwater outfalls, and utility and road crossings on intermittent and perennial streams. Assessment methodologies taken from the EPA and Center for Watershed Protection and applied, with some modifications, in the field assessment process. The data were used to develop stability and habitat rating categories for the stream reaches, and identify problem areas for rehabilitation. Biohabitats performed a desktop screening analysis to characterize subwatershed ROW, utility and infrastructure attributes and identify potential retrofit opportunities for greenstreets, low impact design and green infrastructure. In addition, an outfall analysis was performed to identify retrofit opportunities, and an impervious surface study was done to inform the retrofit analysis process. Water quality modeling was also done to evaluate the benefits of proposed retrofits. Biohabitats generated capital cost estimates for proposed stream restoration and retrofits, and participated in public information meetings for the project. Ted served as a project engineer on the effort focusing on the desktop analyses, public outreach, and water quality modeling efforts.

Teaneck Creek Park Habitat Restoration, Teaneck, NJ. Ted served as engineer of record for this wetland and floodplain restoration project. In partnership with Bergen County, Rutgers University and Teaneck Creek Conservancy, Ted participated in site assessments, assisted with the developing the hydrological and hydraulic modeling study, reviewed an invasive and adaptive management plan, and oversaw the development of bid documents for the wetland and floodplain restoration. The restoration is part of an overall remediation plan for the previously contaminated site. The project includes restoring eroding drainage gullies using regenerative storm water conveyance features, attenuating flood flows using sand seepage berms and diversion berms, and developing invasive vegetation management strategies using modified site hydrology and grading approaches.

Montgomery County Department of Environmental Protection (MCDEP) MS4 Program Management, Montgomery County, MD. Ted served as project manager in the development of Watershed Implementation Plans throughout the County that set forth a strategy for meeting local TMDL waste load allocation (WLA) requirements as well as impervious cover restoration requirements per the County's MS4 permit. An extensive GIS and desktop analysis identified hundreds of potential locations for new stormwater BMPs, green streets, stream restoration projects, pervious area reforestation and residential neighborhood on-lot practices. Field assessments were then conducted to evaluate initial project potential and feasibility. The potential restoration projects were prioritized based on factors such as biological condition of receiving waters, cost-effectiveness, and feasibility. Concept designs were created for the top tier projects to populate the County's capital improvement program (CIP) for restoration work. Impervious area treated and pollutant load reductions from restoration projects will estimate progress towards MS4 and WLA requirements.

Philadelphia Water Department – Outfall Feasibility Study, Philadelphia, PA. Ted served as project manager for this Green Infrastructure inventory effort where the Biohabitats team utilized existing GIS data from the City of Philadelphia to locate and prioritize stormwater BMP retrofit locations. Using GIS, Biohabitats collected information about various stormwater outfalls within the City, applying previous knowledge of constraining factors for stormwater BMP retrofits to develop screening criteria and weighting schemes for opportunities. This methodology was developed for application city-wide, necessitating easily reproducible site analysis criteria.

University of Virginia Stormwater Utility Master Plan, Charlottesville, VA. Biohabitats was hired to assist with the analysis of the University's stormwater utility as part of a larger utility master planning effort. Ted serves as the project manager for the stormwater analysis and is overseeing the development of a hydrologic & hydraulic model utilizing InfoSWMM software. This model is an integration of University stormwater GIS layers and the EPA SWMM model. In addition, Biohabitats is analyzing the University's MS4 permit including identification of potential retrofit and restoration projects that could be utilized to meet the University's permit requirements. The Master Plan will look at phased implementation of priority projects over time that also include looking at planned redevelopment zones across campus and the potential for broader integrated water strategies including reuse.

Communities for Clean Water: Stormwater Management at Los Alamos National Lab, *Los Alamos, NM.* As technical support and water resources engineer, Ted provided technical assistance to Communities for Clean Water (CCW) to ensure the implementation of an individual stormwater permit that was established for Los Alamos National Labs (LANL) in response to a Clean Water Act citizen's lawsuit they filed in 2006. The lawsuit stemmed from concerns about industrial stormwater flowing off of LANL's 40-square-mile campus and into the Rio

Grande. The Rio Grande is not only a drinking water source for the cities of Santa Fe and Albuquerque, but an important habitat, recreational, and agricultural resource for New Mexico, Texas, and Mexico. This assistance included participating in a series of meetings with LANL staff and CCW stakeholders, technical assistance with stormwater best management practices (BMPs) at the LANL site(s) and technical review of LANL submittals and permit-related documentation. As a result of this work, Biohabitats successfully helped CCW petition the USEPA for a unique MS4 permit specific to LANL.

Rutgers University Landscape and Stormwater Management Master Plan, Piscataway, NJ. Ted was project manager responsible for a holistic, ecosystems-based approach to developing the stormwater and landscape management master plan (SWLMMP) for the Busch and Livingston Campuses. To accomplish this, we developed a sound understanding of the existing ecological conditions of the 1,700 acres of campus as well as surrounding areas and used this information to inform the design components of the SWLMMP. In the process, Biohabitats developed a better understanding of the existing green infrastructure resources and explored opportunities to enhance and integrate these assets throughout the campuses, while providing the highest level of water quality and water quantity controls.

University of North Carolina Stormwater Master Plan Concepts, Phase II, Chapel Hill, NC. Biohabitats was retained by the University to provide detailed stormwater retrofit concepts and stream stability assessments for 6 different locations, encompassing hundreds of acres of campus lands. Ted served as senior design engineer supporting field reconnaissance, hydrologic modeling, and concept development and drawing production for the project. He led or participated in all phases of client interaction and presentation of deliverables.

New York City CSO-PlaNYC Green Infrastructure Initiative - Neighborhood Demonstration Areas, New York City, NY. Ted served as project manager and assisted in the field reconnaissance, design, and development of full construction plans for various green infrastructure (GI) practices to address Combined Sewer Overflows (CSOs) in the 26th Ward, Newtown Creek, and Bronx River areas of Brooklyn and the Bronx. The project was a Joint Venture with Hazen & Sawyer and HDR/HydroQual for a design-bid-build project in partial fulfillment of the City's Consent Order for CSO abatement within the State Pollutant Discharge Elimination System permit. The GI practices included bioswales, bioretention, green roofs, blue roofs, permeable pavement and subsurface gravel beds. The goal of the demonstrations was to manage one-inch of runoff from a minimum of 10% of the impervious surfaces within the neighborhoods areas, and monitor the impact of the designs on reducing flow in the combined sewer system.

New York City CSO-PlaNYC Green Infrastructure Initiative - BMP Manual, New York City, NY. Ted served as task manager and QA/QC reviewer of various chapters of the BMP design manual including blue roofs, subsurface storage vaults, and gravel beds. The chapters included guidance for calculation requirements; siting considerations; design of inlets, drains, pretreatment, outlet control structures, materials specification, and climate considerations; construction sequencing; and operations and maintenance. The chapters were added to the final "Guidelines for the Design and Construction of Approvable Stormwater Management Systems for Complying with New York City's Stormwater Performance Standard."

Waterfront Partnership of Baltimore Harbor Action Plan, Baltimore, MD. Ted served in a technical peer review and quality assurance role for Biohabitats work related to the Healthy Harbor Action Plan. Biohabitats primary effort related to developing and implementing innovative pilot scale restoration practices around the Inner Harbor of Baltimore. Examples include floating wetlands, trickling filters to treat bacteria, algal turf scrubbers, vacant lot restoration to urban gardens, and pier regeneration as elevated wetlands and water aerators. For each pilot project, planning level costs and pollutant load reductions were quantified and summarized alongside conceptual plans depicting the technology.

University of Delaware Interdisciplinary Science and Engineering Building, Newark, DE. As project manager, Ted oversaw the schematic design and design development phases of this redevelopment project for University of Delaware. Design elements included hydrologic analysis, BMP sizing and location, development plan, and profile drawings accompanied by design details. Close coordination with the building architect and other members of the design team enabled the design to reflect a fully integrated stormwater management strategy that maximized treatment of rooftop and other impervious area runoff using green infrastructure and low impact development practices such as bioretention, stormwater planters, and porous paving elements. Design criteria met the more stringent requirements associated with the White Clay Creek watershed.

Expert Witness Baltimore County Private Residence, Baltimore County, MD. Ted served as an expert in support of a drainage dispute case looking at hydrologic trespass issues related to a private residential property in Baltimore County. Services provided included conducting an independent hydrologic analysis of site conditions to determine runoff volumes and rates over a range of return frequency storms.

Baltimore Watershed Agreement Action Plan, Baltimore, MD. Ted was project manager for this project which involved providing the Baltimore County Department of Environmental Protection and Resource Management (DEPRM) with support and technical services associated with the implementation of various actions identified in the Phase 1 Baltimore Watershed Agreement Action Plan. Tasks included developing technical papers on environmental justice and restoration funding opportunities and gaps; developing action item

timelines and work plans; facilitating workgroups comprised of County and City staff and watershed stakeholder groups; and developing progress summaries to be presented at local meetings and conferences. Ted's role included technical writing, research, meeting facilitation, and overall project coordination.

Carolina North Water and Energy Plan, University of North Carolina, Chapel Hill, NC. As the project manager, Ted oversaw the development of a water balance model and subsequent presentations to guide decision-making for water reuse, water harvesting and aggressive potable water use reduction for the planned development of 2 million square feet of research, education and residential development as part of a new 250-acre academic campus. Working collaboratively with local civil engineering, MEP and economic consultants, Ted was part of a team that took a leadership role in examining the water-energy-land use nexus as part of leading-edge sustainable development strategies for this site.

Conceptual Stormwater Plan for Carolina North, Chapel Hill, NC. Ted was the project manager in a multi-disciplinary planning effort for Carolina North, a 270-acre site that was developed over a 50-year timeframe into a sustainable, world-class research and learning campus for the University of North Carolina. The work was targeted at the development of a stormwater master plan which met multiple layers of regulations, including 401 water quality certification, local stormwater requirements, a regional nutrient strategy, and a development agreement with the Town of Chapel Hill. Ted oversaw the hydrologic analysis of existing and proposed conditions and was involved in the selection, placement, and sizing of proposed stormwater management features. These features included rainwater harvesting, bioretention, and wetlands that were integrated into the building and landscape design with principle philosophy is to control stormwater at the source.

Ecological and Best Management Practices Planning to Address Combined Sewer Overflows, New York, NY. Ted was project engineer for this effort to support the New York City Department of Environmental Protection's sustainable approach to addressing water quality and ecological concerns in the City's waterways. His role included developing stormwater management guidance and retrofit design concepts and overseeing watershed plan development. Design guidance work included the development of a draft manual for the design, installation, and maintenance of rooftop and subsurface stormwater controls. Retrofit design work included concept development and support for bioretention, blue roof control, and subsurface storage at a City housing development and bioretention treatment in Shoelace Park and in a major roadway median.

Development of a Coordinated Implementation Strategy and Assessment for ESD/LID Implementation, Montgomery County, MD. As project manager, Ted led the Biohabitats team in the development of a county-wide watershed implementation plan strategy. This involved an evaluation and prioritization of numerous watershed assessments; stormwater management improvement and restoration opportunities; and developing prioritizations that result in improved water quality and permit compliance. Other work associated with the project included a thorough code review to identify barriers and opportunities related to Environmental Site Design regulations outlined in Maryland's Stormwater Management Act 2007.

Croton Kensico Watershed Intermunicipal Coalition Regional Stormwater Improvement Plan, Westchester County, NY. The Croton and Kensico Reservoirs are significant sources of drinking water for New York City and Westchester County, and Total Phosphorus is a primary pollutant of concern. As such, municipalities within the drainage basin, under their MS4 General Permit for Stormwater Discharges, are required to develop and implement stormwater retrofit programs that will meet annual phosphorous reduction targets set in the Croton Watershed Phase II Phosphorus TMDL Implementation Plan. Biohabitats worked in association with O'Brien & Gere, Hahn Engineering, and Insite to develop a regional stormwater retrofit program, with a five-year implementation schedule and budget, for the 12 municipalities within the Westchester County portion of the reservoir drainage basins. Ted served as the QA/QC officer for the project.

University of North Carolina Stormwater Master Planning Services, Chapel Hill, NC. Ted led Biohabitats' effort with other team partners in assisting the University of North Carolina to develop a stormwater master plan for their major property holding in Chapel Hill. Efforts targeted providing support for NPDES permitting compliance, pollutant loading and reduction analysis, stormwater retrofit inventory assessments, BMP maintenance guidance, and development of BMP-related design guidelines for future projects to adhere to.

New York City Long Term Control Plan, New York City, NY. As project engineer, Ted was responsible for assessing opportunities to employ stormwater best management practices (BMP) to mitigate the quantity and quality of stormwater runoff entering New York City's entire sewer system. Given identified opportunities and constraints for this ultra-urban area, Biohabitats considered a wide array of technologies, including collection, filtering and treatment systems; non-structural and structural strategies; changes in existing maintenance and management practices; education tools and stakeholder awareness programs; and changes in development regulations, architectural guidelines and land use policies. New emerging technologies were also explored (green roof canopy concepts, green corridors, etc.) in a manner tailored to New York City's ultra-urban infrastructure and unique environmental conditions. Ted helped prepare a report documenting the methodologies, findings and recommendations of this study.

Westchester County Water Resource Buffer Brochure, Westchester County, NY. Ted served as project manager in the development of a twelve-page publication on aquatic buffers for the Westchester County, NY Department of Planning and Soil and Water Conservation District. The publication was included as an appendix to the County's Bronx River Watershed Management Plan, but was also written in broad enough terms so that it could be used for wider distribution throughout the County. A key component of this effort was to tailor the writing and information for an audience comprised of municipal and county elected officials, municipal staff and municipal volunteer board members. The objective was to effectively educate this target audience with concise, compelling, and important facts on benefits of buffers, especially those representing urban/suburban communities. The content conveys technical information in a distilled, easy to understand style using graphics and tables to make and highlight key points.

Jamaica Bay Watershed Protection Plan, New York City, NY. Ted was project engineer for the development of a comprehensive watershed management plan and restoration strategy for the Jamaica Bay watershed, in a highly urbanized portion of Brooklyn and Queens on Long Island. His duties included the review and integration of existing technical research into a watershed management plan, including the analysis and application of low-impact stormwater management design throughout the watershed to achieve volume reduction and water quality treatment targets.

RELEVANT PROJECT EXPERIENCE PRIOR TO BIOHABITATS

Minnesota Stormwater Management Manual. Ted served as the project engineer on the State of Minnesota Stormwater Management Manual update. This project explored the challenges associated with managing stormwater runoff in cold climates and various design modifications to BMPs to improve practice performance and reduce maintenance.

Vermont Stormwater Management Manual. Ted developed a statewide stormwater guidance manual tailored to the unique needs, climate and development conditions of Vermont. The comprehensive design manual provided sizing criteria for water quality, overbank flood control, and extreme flood control for new development. It also included detailed design examples, and selection matrices to help designers pick the best practice for a site. Some key features specific to Vermont included design modifications to account for the very cold conditions in the state. A stormwater credit system was also presented in the manual, whereby developers and engineers can implement better site design practices to fully or partially meet several of the criteria.

Georgia Stormwater Management Manual. Ted served as the project manager in a subcontractor role on the Georgia Stormwater Management Manual. Ted assisted with the development of a statewide stormwater design manual, successfully introducing new and more protective stormwater requirements for the Atlanta metropolitan region and the other different ecoregions of the state. The unified manual was the first of its kind in Georgia, and was needed to protect streams and lakes from the fast pace of land development.

Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments. Ted served as the project manager and co-author on $0.5 million EPA research project that assessed techniques and methods for identifying and correcting illicit and inappropriate discharges. The project was done in collaboration with the University of Alabama, and ultimately resulted in the development of a national manual geared for NPDES Phase II communities to assist them in building a local Illicit Discharge Detection and Elimination (IDDE) program. The 14 chapter manual contains information on establishing adequate legal authority; developing accurate mapping resources; conducting outfall reconnaissance investigation; using indicator monitoring to find and isolate discharges; techniques to prevent illicit discharges from generating sites; and methods to scope and cost a local IDDE program. The manual was released for national distribution in the fall of 2004. Four EPA internet-based watershed academy training modules were also developed as part of this project. Date of Service: 2001-2004; Fee: $0.5 M

National Stormwater Quality Database. Ted served as the project manager on this EPA research project to compile and examine the stormwater monitoring data collected nationally during the first phase of the NPDES stormwater permit program. This project was a partnership with the University of Alabama. Stormwater quality data was collected from more than 40 communities nationally, and after intensive quality control, was entered into a national database. The current database contains event mean concentrations for more than 35 water quality parameters during 3800 individual storm events, which makes it the world's largest and most up-to-date characterization of stormwater quality. The final report provided guidance for local stormwater program managers and state permit writers on estimating local stormwater pollutant loadings and assessing future sampling needs. Date of Service: 2001-2004; Fee: $0.2 M

New York State Stormwater Management Design Manual. Ted worked for the New York State Department of Environmental Conservation (DEC) to produce the New York State Stormwater Management Design Manual, which was a key tool for implementing NPDES Phase II stormwater regulations statewide. As part of this project, the Center trained DEC regional staff on the content and application of the manual for implementation statewide. In addition Ted participated in the development of additional technical guidance related to better site design, stormwater credits, maintenance, and redevelopment to support the State's stormwater management program.

PROFESSIONAL ASSOCIATIONS

American Society of Civil Engineers
Urban Water Resources Research Council

SELECTED PUBLICATIONS, TECHNICAL REPORTS & PRESENTATIONS

Brown, T, J. Dowdell, S. Richter, and L Porter. 2012. Integrated LID and Green Infrastructure Planning at Rutgers University to Achieve Better Ecological Outcomes at Lower Cost. Proceedings from 2012 International LID Symposium. Philadelphia, PA.

Brown, E., Berg J. and K. Underwood. 2010. Replacing Incised Headwater Channels and Failing Stormwater Infrastructure with Regenerative Stormwater Conveyance. Proceedings from Low Impact Development 2010, San Francisco, CA.

Brown, T. 2010. Can Volume-Based Stormwater Criteria Make a Difference in Receiving Stream Health?. AWRA Impact. March 2010.

Brown, T. 2009. Application of Regenerative Stormwater Conveyance with Other LID Elements to Approach Zero Discharge Systems. AWRA Impact. September 2009.

Brown E. 2009. Whole System Campus Planning. Proceedings from Rocky Mountain Sustainability Summit: Forging Solutions at Colleges and Universities. Boulder, CO.

Brown, E., Berg J. and K. Underwood. 2008. Replacing Incised Headwater Channels and Failing Stormwater Infrastructure with Regenerative Stormwater Conveyance. Proceedings from Society for Wetland Scientists 2008 Annual Conference. Washington, DC.

Elfland, C, S. Myers, T. Brown, and S. Hoyt. 2008. Green Infrastructure at the Campus and Watershed Scale at the University of North Carolina at Chapel Hill. Proceedings from Water Environment Federation International Sustainability Conference. National Harbor, MD.

Berg, J, K. Underwood, E. Michelsen, R. Bowen, M Plaitt, D McMonigle, and T. Brown. 2007. Wetland and Stream Ecosystem Restoration Adopted by Anne Arundel County, Maryland Department of Public Works as a Tool to Remediate and Minimize Stormwater Impacts. Proceedings from Pennsylvania Stormwater Management Symposium, Villanova University.

Tasillo, J. and E. Brown. 2005. Methods for Detecting Illicit Discharges in the Field. Proceedings from Pennsylvania Stormwater Management Symposium, Villanova University, October, 2005.

Hoyt, S. and E. Brown. 2005. Stormwater Pond and Wetland Maintenance Concerns and Solutions. Proceedings from World Water & Environmental Resources Congress, Anchorage, AK, 2005.

Brown E., D.S. Caraco, and R. Pitt. 2004. Illicit Discharge Detection and Elimination A Guidance Manual for Program Development and Technical Assessments.

Zielinski J. and Brown E. 2003. Inappropriate Discharge Detection and Elimination: What Phase I Communities are Doing to Address the Problem. Proceedings from National Conference on Urban Storm Water: Enhancing Programs at the Local Level. Chicago, IL. February, 2003.

DANIEL BOULTINGHOUSE, PE

Project Engineer

Bio

Dan has served public and private clients for over 30 years, bringing a wealth of expertise and leadership to a broad range of civil engineering projects. His experience spans managing large-scale commercial and industrial developments as well as designing systems for energy, transportation, and water infrastructure. Dan also has a strong background in construction management, long-range planning, entitlements, hydraulics, and survey. His technical capabilities include land development for residential, commercial, and resort sites with a focus on site grading and infrastructure integration. He is highly experienced in hydrology, hydraulics, and flood control, with a portfolio that includes the design of drainage channels, detention basins, culverts, storm drains, pump stations, and lakes.

Education

BS, Civil Engineering,
San Diego State University

Registration

Professional Engineer
Oregon #79865
Washington #43540
California #C61165
Arizona #35737

Relevant Experience

City of Warrenton

Water Reservoir Siting and Design, Warrenton, OR*

Project Manager for the Reservoir and Hydraulic Model Assessment for the City of Warrenton, which aimed to expand water storage capacity, reduce system losses, and support long-term growth. Dan was responsible for managing the design and construction of the 3.5-million-gallon reservoir, associated pump station, and citywide water model. He oversaw permitting, land use entitlements, and construction inspection services.

Sandoval County

La Barranca Stormwater Master Plan, Sandoval County, NM*

Stormwater Design Lead for this regional drainage study covering an 11-square-mile watershed. The project developed a long-range flood control and stormwater management plan focused on public safety, existing drainage conditions, and natural channel treatments. Dan was responsible for designing stormwater energy dissipaters and detention dam footprint concepts.

Trilogy at Glen Ivy

Stormwater Master Plan, Corona, CA*

Project Manager for this 270-acre storm drainage and stream restoration project. The project included restoration of two blue line streams and construction of a 100-acre-foot sediment basin integrated into the driving range design. Dan was responsible for mass grading, lake and stream design, and rough grading of a future golf course to optimize both drainage functionality and aesthetics. He also led the USACE 404 permitting process, which was streamlined thanks to his advisory role.

Port of Cascade Locks

Marine Park Beach Expansion, Cascade Locks, OR*

Lead Engineer for this shoreline improvement project focused on increasing public access and enhancing the natural environment. The project aimed to replace steep rip-rap with more accessible shoreline, reduce invasive fish habitat, and minimize dredging needs. Dan was responsible for leading design efforts along 1,900 linear feet of shoreline, including a proposed multi-use trail and site layout with parking.

Wetlands of Avondale

Large-Scale Bio-Reactor, Avondale, AZ*

Associate Project Engineer for this innovative 88-acre lagoon and wetland treatment system serving an 800-unit mixed-use development. Dan was responsible for design of the Bio-Reactor system, which treats up to 13.5 MGD of irrigation water to drinking water standards through 16 interactive, stepped wetland lagoons. He also oversaw hydraulic infrastructure, water flow controls, and water quality monitoring.

*Previous firm experience

RAFAEL GAETA, PE

Sr. Project Manager/Civil Lead

Bio

Rafael brings 28 years of experience in civil engineering design and project management. His design expertise includes grading, drainage, earthwork, and erosion control; LIDA and green street design; sanitary and storm sewer conveyance systems; and the design of water quality facilities, detention and retention systems, and drywells. He also specializes in roadway restoration, ADA curb ramp design, pedestrian crossings, and multimodal improvements commonly required for water resource projects. Rafael offers comprehensive expertise across all project phases, from conceptual design to the development of final PS&E construction documents.

Education

BS, Civil Engineering, Portland State University

Registration

Professional Engineer
Oregon #55529
Washington #24002379

Relevant Project Experience

Portland Water Bureau

Bull Run Filtration Program, Portland, OR

Task Lead for this program to construct a water treatment facility to comply with the federal Long Term 2 Enhanced Surface Water Treatment Rule (LT2) requirements. The program was split into separate contracts, which include design of facilities on-site (water treatment plant) and design of facilities off-site (new conduit and piping to connect the existing conduit alignment to the proposed water treatment facility and on-site processes). Rafael led Emerio's team to provide civil services for both contracts, including site layout and design, grading, stormwater management, ADA accessibility, 1200-C compliance, septic sewer design, yard piping layout, retaining walls, roadway widening, traffic control, and pavement restoration.

Portland Water Bureau

NE Cully Neighborhood Street Improvements Project, Portland, OR

Task Lead for this roadway improvement project to construct new curb and sidewalk, stormwater facilities, and road reconstruction in Portland. As part of the project, existing water mains were relocated for sidewalk installation and hydrants were renewed to match the new sidewalk levels. Rafael led Emerio's team to provide CAD/drafting support for the horizontal alignment and profile of the water main, existing road surface, and locations of fittings, valves, air release/vacuum valves, blow-off valves, and other appurtenances.

Portland Water Bureau

Fulton Pump Mains Replacement, Portland, OR

Task Lead for this project to install 3,350 feet of water main in southwest Portland. The aging pipes pass underneath the I-5 freeway and SW Barbur Boulevard and had reached the end of their useful life. Rafael led Emerio's team to provide CAD/drafting support for the horizontal alignment and profile of the water main, existing road surface, and locations of fittings, valves, air release/vacuum valves, blow-off valves, and other appurtenances.

Portland Bureau of Environmental Services

Sheridan Trunk Rehabilitation, Portland, OR

Task Lead for this project to complete the final design of the Sheridan Trunk sewer collection system, a new pipeline alignment collecting stormwater from a natural area and storm drainage/sanitary/combined flows from local customers. Rafael led Emerio's team to provide surface restoration for the new pipeline and surface collection system, erosion and sediment control measures for all disturbance areas, TPAR to maintain bicycle and pedestrian access along a thoroughfare designated as a major city walkway and bikeway, and traffic control for the multiple work zones along a vital major emergency response corridor.

Portland Bureau of Environmental Services
Columbia Blvd Wastewater Treatment Plant Expansion, Portland, OR
Task Lead for this project to increase capacity and prevent unnecessary overburden of the treatment plant. Rafael led Emerio's team to provide site civil design, including geometric design, grading, drainage, utilities, stormwater, and erosion control, as well as drafting and surveying services.

Portland Parks & Recreation
Mill Park Development, Portland, OR
Task Lead for this 5.7-acre park redevelopment project, adding a recreational space to the existing trail, open space, and mature trees. Rafael managed Emerio's design team to provide site plan coordination with the landscape architect, utility design, stormwater design, and an erosion control report.

Portland Parks & Recreation
Fernhill Park, Portland, OR
Project Manager for this park upgrade project. Rafael led Emerio's team to provide on-site civil improvements, including a new playground area/splash pad, an ADA accessible multi-use path and curb ramps, and utility improvements for the existing restroom facility. Emerio worked directly with PP&R to provide grading and erosion control plans, civil design for underground utilities and a potable water line, PS&E documents for construction, and permitting.

Portland Bureau of Environmental Services
SW Ventilation Facility and Capacity Improvements, Portland, OR
Task Lead for this project to reduce sewer odors and increase the capacity of the Southwest Parallel Interceptor sewer system. Rafael provided civil design, grading, and erosion control for the parking lot and small diameter sanitary sewer conveyance.

Portland Bureau of Transportation
Central Eastside Access and Circulation Enhancement, Portland, OR
Task Lead for this project to improve freight access and circulation and reduce conflicts in the Central Eastside. Rafael led Emerio's team to provide utility conflict identification, storm drainage design, traffic structure design (signal pole foundation), and erosion control.

Beaverton School District
William Walker Elementary School, Beaverton, OR
Task Lead for this redevelopment project that replaced the current facility with a modern, 87,200 ft^2 building for 750 students. Rafael led Emerio's team to provide design support for grading and erosion control plans, sanitary sewer conveyance, sidewalks, and pavement restoration.

"I have enjoyed working with Rafael and especially appreciate his attention to the needs of the project.

I am fully confident in his professional skills and abilities and have been impressed with his regular and clear communication."

- Travis Ruybal,
Project Manager,
Portland Parks & Recreation

Phil Gleason

Senior Air Quality & Acoustics Analyst & Project Manager

EDUCATION

B.S., Atmospheric Science, University of California, Davis

9 YEARS' EXPERIENCE

PROFESSIONAL AFFILIATIONS

California Association of Environmental Professionals, Member

Phil Gleason is a senior technical analyst and project manager with nearly a decade of experience. He is well versed in many aspects of environmental analyses, but specializes primarily in air quality, greenhouse gas (GHG), and noise analyses for environmental documents prepared pursuant to the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

Phil is well versed in assessing and analyzing air quality and GHG emissions a wide range of projects. Mr. Gleason also has expertise in preparing human health risk assessments (HRAs) associated with receptor exposure to toxic air contaminants using dispersion models (e.g., AERMOD) and guidance issued by regulatory entities and the California Office of Environmental Health Hazard Assessment. He has analyzed impacts from individual, site-specific development projects, as well as larger planning documents, such as Specific Plans, General Plans, and Comprehensive Plans. Given the vast number of projects he has worked on, ranging in type and scale, Phil has developed expertise in conducting emissions evaluations and HRAs using a variety of tools. He has a robust understanding of air quality and GHG models (e.g., U.S. EPA MOVES and NONROAD) and emission factor data sources (e.g., U.S. EPA AP-42), and uses these tools to assess typical and atypical emission sources and scenarios.

Relevant Experience

Flow Equalization & Resource Recovery Facility Levee Improvements & Bayfront Recycled Water Facility (FERRF Levee Improvements and Bayfront RWF) Project EIR/EA, Menlo Park, CA (Completed Prior to Joining ESA). *Lead AQ and GHG Analyst*. In 2021, the West Bay Sanitary District certified the FERRF Levee Improvements and Bayfront RWF EIR/EA, which encompassed levee improvements at the Flow Equalization & Resource Recovery Facility and the development of the Bayfront Recycled Water Facility in Menlo Park, California. The initiative aimed to enhance flood protection and expand recycled water capabilities to support sustainable water management practices. Phil prepared technical air quality and GHG analyses for the EIR/EA, including a human health risk assessment (HRA) as part of the air quality analysis. The HRA assessed the Project's ability to result in a significant human health impact by quantifying toxic air contaminant (TAC) emissions generated by the wastewater treatment process and comparing those emissions to TAC Trigger Levels established in BAAQMD Rule 2, Regulation 5 (quantitative thresholds below which resulting health risks are not expected to cause, or contribute significantly to, adverse health effects).

City of Half Moon Bay, Half Moon Bay Building and Garden Supply Concrete Batch Plant EIR, Half Moon Bay, CA (Completed Prior To Joining ESA). *Lead Air Quality and GHG Analyst.* In June 2016, the City of Half Moon Bay (client) certified the

Phil Gleason (Continued)

Senior Air Quality & Acoustics Analyst & Project Manager

Half Moon Bay Building and Garden Supply Concrete Batch Plant EIR, which involved the relocation and installation of a new concrete batch plant within the Half Moon Bay Building and Garden Supply facility. Mr. Gleason prepared clear and concise air quality and GHG CEQA impact analyses for the project, which had to carefully consider and document the production capacity in terms of the existing plant's permit capacity as set forth in the Bay Area Air Quality Management District (BAAQMD) permit, the maximum throughput capacity of the proposed new plant, and the actual (realistic) maximum throughput capacity of the new plant, which was constrained by site-specific operational factors including production and loading times, building and site configuration, cement truck capacity, and actual retail demand. Complicating this analysis was the presence of sensitive receptors in proximity of the project site, including an adjacent mobile home park (an existing legal non-conforming land use), an adjacent cemetery (eligible for designation as a historic site), and a nearby high school. Mr. Gleason modeled the project's toxic metals and diesel particulate matter emission sources and estimated health risk impacts at sensitive receptors locations near the site.

California Department of Parks and Recreation Off-Highway Moto Vehicle Recreation Division, Oceano Dunes State Vehicular Recreation Area (SVRA) Dust Control Efforts, Oceano, CA (Completed Prior to Joining ESA). *Technical Air Quality Analyst.* From 2016 to 2024, Phil Gleason assisted the California Department of Parks and Recreation Off-Highway Motor Vehicle Recreation Division (OHMVR Division) with technical and environmental impact analyses related to an unprecedented coastal-dunes dust control project at Oceano Dunes SVRA. Phil worked with an interdisciplinary team of geologists, coastal dune morphologists, atmospheric scientists, and a scientific advisory group to further the understanding of dust generation dynamics at Oceano Dunes SVRA and implement effective dust control measures in these areas. Phil's contributions included, but were not limited to: 1) extensive analysis of meteorological and particulate matter data collected at and in the vicinity of Oceano Dunes SVRA, 2) development and environmental review of seasonal dust control projects (e.g., wind fencing, haybales, re-establishment of a foredune system), and 3) preparation of initial and subsequent programmatic EIRs for dust control activities spanning over 140 acres. This locally controversial project required clear and concise explanations of air quality conditions, expected benefits of the project, and development of the substantial evidence necessary for the OHMVR Division to make informed decisions under CEQA regarding the potential environmental impacts and air quality benefits.

Star Point Properties, LLC, 6th Street Properties Sub Fund, LLC Warehouse (PREA-2020-00163) Project, San Bernardino County, CA (Completed Prior to Joining ESA). *Lead Air Quality and GHG Analyst.* The 6th Street Properties Sub Fund, LLC Warehouse (PREA-2020-00163) Project, approved by the County of San Bernardino in 2021, involved the construction and operation of an approximately 179,000 square foot warehouse on an approximately 9.8-acre lot in San Bernardino County. Phil Gleason served as the lead technical analyst on this project and authored the Air Quality / Health Risk Assessment (HRA) and Greenhouse Gas / Energy Reports, which supported the analysis required for the EIR. The AQ/HRA Report took into account the environmental justice concerns associated with the project. Using OEHHA's CalEnviroScreen, Phil determined that the project site was located adjacent to two census tracts that were considered disadvantaged communities pursuant to SB 535. These areas were also designated as environmental justice focus areas in San Bernardino's Countywide Plan. Mr. Gleason evaluated projects consistency with the environmental justice policies in the Countywide Plan, and the project applicant (client) implemented three best management practices to reduce ozone, particulate matter, and diesel particulate matter concentrations in the vicinity of the project. In addition, after the project had been approved, the client requested (and Phil prepared) a memorandum that set forth electric vehicle infrastructure recommendations to align project design with compliance strategies and phase-in of the South Coast Air Quality Management District's recently adopted Indirect Source Review for Warehouses (SCAQMD Rule 2305).

Education
BLA, Washington State University, 2009
AS, Big Bend Community College, 2005

Experience
NNA Landscape Architecture (Nevue Ngan Associates), 2009 to Present

The Berger Partnership, Internship, Summer 2008

Mithun Architects Designers + Planners, Internship, Summer 2007

Jason is a veteran of the United States Air Force

Registration
Registered Landscape Architect
No. 0821, State of Oregon
No. 24032070, State of Washington

Professional Awards
2011 National ASLA Design of Honor: San Mateo County Sustainable Green Streets and Parking Lots Design Guidebook

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NNA
Landscape Architecture

Jason Hirst

Principal | Registered Landscape Architect

Jason joined NNA in December 2009 after graduating from Washington State University with his degree in Landscape Architecture. With 15 years of experience at NNA, Jason has worked on a variety of public and private projects giving him the experience needed to be able to lead any effort of landscape design services. Jason has worked on a wide gamut of projects including parks, streetscapes, natural areas, and planning documents, with his main area of expertise sitting at the intersection of natural system and the built environment.

Jason has collaborated with many state and local bureaus on projects which range from large scale municipal infrastructure planning and design, down to fine scale planting design and permitting projects. PWB, BES, PBOT, ODOT, PP&R and other governmental agencies and private clients have repeatedly had successful projects with Jason as the lead.

Adept at working with the public, as well as being able to produce materials which meet agency needs, Jason works creatively to communicate design requirements amongst project stakeholders. His graphic communication skills have been pivotal in being awarded ASLA awards and being featured in industry publications. Successful projects that utilize Jason's expertise include the Columbia Children's Arboretum and Boone's Ferry Road.

Projects List

Current

Darcelle XV Plaza Interim Plan, Portland, OR – PP&R
Building a Better 82nd, Portland, OR - PBOT
Bull Run Filtration Project, Multnomah County, OR - PWB
Columbia Boulevard Wastewater Treatment Plant STEP, Portland, OR - BES
Electrical Substations, Washington County, OR

Previous

Private Client Gresham Plaza Upgrade, Gresham, OR
Boones Ferry Road, Reese to Madrona, Lake Oswego, OR
Bush's Pasture Park, Salem, OR
Capitol Highway Green Street, Portland, OR.
Capitol Highway Tree Plan, Portland, OR
Cedar Mill Park: Portland, OR
Columbia Children's Arboretum, Portland, OR
Datacenter for Private Client, Hillsboro, OR
Halsey Weidler Streetscape Improvement Plan, Portland, OR
Multnomah County Behavioral Health Resource Center, Portland, OR
Multnomah County Drainage District Maintenance Launches, Portland, OR
Powell Blvd. Transportation Safety Project, OR
Powell Blvd. Visual Assessment Portland, OR
Powell Butte Nature Park and Interpretive Center, Portland, OR
PSU Ecological Learning Plaza, Portland, OR.
Rollin Tire Interpretive Kiosk at Springwater Corridor, Portland, OR

ERIK MEGOW

PE (MN)

Erik is a water resource engineer with more than 14 years of experience as a consulting engineer in water resources. Erik brings expertise in stormwater best management practice design, regulatory review, hydraulic and hydrology modeling, stream restoration and stabilization design, floodplain analysis, stormwater management, and surface water mixing zone modeling. Erik has managed a variety of different water resources projects since and has experience with XP-SWMM, PC-SWMM, EPA-SWMM, HydroCAD, HEC-RAS, HY8, CORMIX, P8, MIDS, Qual2k, ArcMap (GIS), and ArcGIS Pro.

EDUCATION

BS, Mechanical Engineering, University of Minnesota, Twin Cities, Minnesota

BA, Physics, Lawrence University, Appleton, Wisconsin

REGISTRATIONS

Professional Engineer: Minnesota

RELEVANT EXPERIENCE

Elm Creek Watershed Management Commission | Plymouth, MN| Project/Client Manager

Erik has served as the Commission's Engineer since 2021. In this role, he is assisting the Commission with implementation of a comprehensive stormwater management plan. The Commissions have an active water quality management program that assesses the chemical and biological status of the stream systems and lakes. He was Project Manager for the HUC 8 HEC-RAS Modeling updates.

Minnehaha Creek Watershed District | Minnetonka, Minnesota| Project Manager

Erik was the lead permitting engineer for the Watershed District from 2014-2020. In this role he has helped District staff and applicants work through meeting the District's rules for stormwater management, waterbody crossing, erosion control, floodplain management, and wetland protection projects throughout the District.

Biochar- and Iron-Enhanced Sand Filters | Coon Rapids, Minnesota | Design Engineer

Erik was the lead design engineer for three innovative, large-scale iron-enhanced sand filters (IESFs) to also use biochar to target the removal of Phosphorus and bacteria (E. Coli) from stormwater and runoff. The two filters were constructed in 2020 for the Coon Creek Watershed District and have shown to be as effective at removing phosphorus and more effective at removing E.coli than a standard IESF.

Twin Cities HUC-8 FEMA Updates | Project Manager and Lead Modeler Roles

Using FEMA grant money, Erik worked with the Minnesota DNR and Local Watersheds to update and complete floodplain modeling for waterbodies in the Twin Cities HUC-8 Area. Erik served as the project lead for the Minnehaha Creek Watershed District and Shingle Creek Watershed Management Commission studies and was a technical advisor for the Coon Creek Watershed District study to ensure the projects met FEMA Modeling and reporting standards.

Streambank Stabilization Projects | Twin Cities, MN | Design Engineer

Erik was the design engineer and performed hydrologic and hydraulic modeling to determine the design of suitable stabilization practices for various streams throughout the greater Twin Cities area including:

- Woodcrest Creek in Coon Rapids, MN
- Plymouth Creek in Plymouth, MN
- South Creek in Lakeville, MN
- Straight River in Fairbault, MN

Natural Channel Stream Restoration Projects | Twin Cities, MN | Design Engineer and Project Manager Erik was the project manager and design engineer performing hydrologic and hydraulic modeling to determine suitable stabilization and restoration practices for various streams throughout the greater Twin Cities area including:

- Ditch 59-4 (Coon Creek) in Ham Lake, MN
- Bass Creek in Brooklyn Park, MN
- Shingle Creek in Brooklyn Park and Brooklyn Center, MN

The restoration practices used for these stream restoration projects included vegetated riprap, brush mattresses, log toe, root wads, cover boulders, and two-stage channel design.

Blue Lake BMP Assessment and Construction | Isanti, MN | Project Manager and Lead Design Engineer
Erik was project manager and lead design engineer for the Blue Lake BMP Assessment to reduce Phosphorus and TSS Loads to Blue Lake for the Isanti Soil and Water Conservation District (SWCD). The assessment included water quality review, wetland review, hydrologic and hydraulic modeling, site assessments, and surveying. The assessment lead to the construction a dual-cell settling basin to reduce both TSS and phosphorus to Blue Lake using Clean Water Funds.

Watershed Permitting and Reviews | Twin Cities, MN | Permitting Engineer & Project Management Roles
Erik has completed site plan reviews for hydrologic and hydraulic modeling, water-quality calculations, Wetland Conservation Act implementation, floodplain alteration, water body crossing, erosion control for proposed developments and water resources projects. He has also provided hydrologic modeling for proposed watershed projects and performed construction inspections for the watershed. These watersheds include:

- Minnehaha Creek Watershed District
- Sauk River Watershed District
- Coon Creek Watershed District
- Shingle Creek Watershed Management Commission
- West Mississippi Watershed Management Commission
- Carver County Water Management Organization

Pioneer-Sarah Dissolved Oxygen Modeling | Plymouth, MN | Lead Modeler
Erik was the lead modeler for Dissolved Oxygen modeling for three streams within the Pioneer-Sarah watershed. The TMDL study consisted of three dissolved oxygen impairments and one turbidity impairment. TMDL allocations and source assessments were done using a combination of field surveys, modeling, GIS analyses, and Qual2k modeling.

MCWD Flood Study and FEMA Submittal | Various Locations, MN | Design Engineer
Erik worked Minnehaha Creek District Staff and FEMA to assess six streams for flood damage. Working with District staff, each stream was investigated and assessed for flood damage. GIS figures, coordinates, pictures, and an engineering estimation of each of the damage sites was presented to FEMA to procure over $1M of funds to use in stream restoration and mitigation projects.

Lake Zumbra High Water Level Investigation | Victoria, MN | Lead Modeler
Erik was the lead modeler for an investigation of Lake Zumbra water levels. Working with the City of Victoria, Minnehaha Creek Watershed District, the Three Rivers Park District, and the Lake Zumbra HOA, an investigation of current and historic water levels and water level management was put together to help residents understand and prepare for future large storm and high-water level events. The investigation also provided XPSWMM Modeling results to determine what possible solutions would help home owners prepare for large storm events and what could be done downstream of the Lake to mitigate the occurrence of flooding.

Japs Olson Regional Stormwater Design | St. Louis Park, MN | Lead Modeler and Designer
Erik was the lead modeler and design for a regional stormwater facility for Japs Olson. Japs Olson was adding 150 jobs and was in need of an innovative solution to allow for expansion of their St.
Louis Park facility. Through a partner-ship approach the Minnehaha Creek Watershed District and Stantec, we were able to implement an innovative solution which allowed the facility to compete a 5.2 acre expansion, added 3.7 acres to the Minnehaha Creek Preserve. The project expanded a constrained Minnehaha Creek floodplain, while treating over 20 acres of stormwater and facilitating further public interaction with Minnehaha Creek.

MCWD Fish Barrier Design and Construction | Twin Cities, MN | Design Engineer
Assisted with the design of fish barriers to reduce fish migration throughout the Six Mile Creek Subwatershed for the Minnehaha Creek Watershed District. Modeled the hydraulic passivity of the structures to ensure a no-rise scenario for construction within a FEMA Flood Zone. The fish barriers were permitted by DNR and designed to meet the approved Carp Management Plan.

Hennepin County Surface Water Resiliency Analysis | Hennepin County, MN | Project Manager and Lead Modeler
Worked with Hennepin County and the Minnehaha Creek Watershed District to analyze the modeled results and impacts from predicted, mid-century (2050), extreme rainfall events. The analysis looked at two case study areas along Painter and Minnehaha Creeks in the Cities of Medina, Orono, Independence, Minnetrista, and Minnetonka. The result of the analysis served as a planning tool for Hennepin County by estimating the increases in the flows and high water levels and how the increases would affect existing infrastructure.

Regional Stormwater Retrofit | Victoria, MN | Lead Designer and Stormwater Analyst
Erik was the lead designer and stormwater analyst to provide regional stormwater treatment for the re-development of the City of Victoria's Downtown area. Erik worked with the Minnehaha Creek Watershed District and City of Victoria to retrofit two stormwater basins with filter benches to meet the District's Stormwater Management volume control and water quality requirements for stormwater runoff from the planned redevelopment of parcels in Victoria's downtown area.

JOSH MEYER, PE

Project Engineer

Bio

Josh has six years of experience providing civil design for private development and public works projects. Specializing in stormwater and drainage design services, Josh's expertise includes design of hydromodification, water quality, and quantity control facilities, as well as design of conveyance for storm sewer systems and analysis of existing storm sewer systems. This expertise has been applied in a variety of projects sizes and types, including single-family and multi-family residential developments, along with commercial developments.

Education

BS, Civil Engineering, George Fox University

Registration

Professional Engineer
Oregon #105687

Relevant Project Experience

Steadfast Senior Living, Tigard, OR

Stormwater Designer for the development of this senior living facility, which included on-site parking areas, walkways, and landscaping, as well as public improvements along SW Oak Street in coordination with City of Tigard and Clean Water Services. Josh was responsible for design of on-site and off-site stormwater management facilities, including LIDA planters, a detention pond, water quality swale detention pipe, porous pavement, and a piped conveyance system. He also prepared the drainage report.

Ashbrook Villas, Tigard, OR

Stormwater Designer for the development of 23 townhomes with associated new sidewalk and public street areas in coordination with City of Tigard and Clean Water Services. Josh was responsible for design of on-site stormwater management facilities, including a water quality swale, two hydraulically connected detention pond volumes, and a piped conveyance system. Josh also conducted a downstream analysis and prepared the drainage report.

Tigard Tesla, Tigard, OR

Stormwater Designer for the redevelopment of the old Toys R' Us site into a Tesla dealership in coordination with City of Tigard and Clean Water Services. Development of the site included a new on-site building, redeveloped parking areas, landscape areas, and new on-site utilities. Josh was responsible for design of on-site stormwater management facilities, including a water quality swale, two hydraulically connected detention pond volumes, and a piped conveyance system. Josh also conducted a downstream analysis and prepared the drainage report.

Washington County

SW 188th Ave: SW Kinnaman Rd To SW Blanton St., Aloha, OR

Stormwater Designer for this multimodal improvement project along SW 188th Ave. Project included construction of new sidewalk, 45 ADA curb ramps, roadway widening, storm design/tech memos, utility coordination, and permitting. Josh was responsible for the design of a new piped stormwater conveyance system, application of stormwater management methods, analysis of the downstream stormwater system, and preparation of the drainage report.

Washington County

SW 195th Ave: Keena Court To Farmington Road, Aloha, OR

Stormwater Designer for this multimodal improvement project along SW 195th Ave. Project scope included construction of new sidewalk, ADA curb ramps, storm design/tech memos, and permitting. Josh was responsible for the design of a new piped stormwater conveyance system, application of stormwater management methods, analysis of the downstream stormwater system, and preparation of the drainage report.

Dennis Terzian RG, LG

Principal Geologist

EXPERIENCE

27 Years

EDUCATION

BS Earth Science, Western Michigan University

ACCREDITATION

Registered Geologist, OR #G2096

Licensed Geologist, WA

Certified Water Rights Examiner, OR

OSHA 40-Hour Hazardous Waste Training (HAZWOPER)

Dennis Terzian has more than 27 years of experience managing site investigation and remedial activities for a variety of clients including municipal and state agencies, brownfields properties, industrial/commercial clients, and nonprofit organizations. Through numerous site investigations, he has evaluated and implemented remedial activities at sites with environmental issues related to historic petroleum releases, chlorinated solvents, and metals. He has prepared budgets, proposals, work plans, and status reports along with feasibility studies, remedial investigation/feasibility studies (RI/FS), quality assurance plans, and site closure requests.

Dennis has managed both short- and long-term projects for clients with a focus on safety, meeting client timelines, and effectively managing client budgets.

RELEVANT PROJECT EXPERIENCE

Multiple Low-Income Residential Redevelopment Sites, Vancouver Housing Authority, Vancouver, Washington. Senior project manager in the performance of multiple Phase I/Phase II Environmental Site Assessments (ESAs) in support of acquisition of properties for redevelopment as low-income housing. Worked with the client to address and mitigate a number of site-specific issues including underground storage tank decommissioning, evaluation and management of lead-impacted soil, evaluation of historical pesticide use, and assessment of soil vapor risk.

Winter Street SE Contamination, Salem Health, Salem, Oregon. Senior geologist for site assessment activities related to contaminated soil and groundwater encountered at multiple locations during site redevelopment. PBS completed a site assessment to define areas of contaminated media related to historic releases from a heating oil underground storage tank, performed a site-specific evaluation of site excavation worker exposure, and recommended health and safety measures. Working on behalf of the property owner, PBS requested regulatory closure that allowed for leaving contaminated media in place.

NW 14th Avenue Phase I Environmental Site Assessment Update and Contaminated Media Management Plan, Mill Creek Residential Trust LLC, Portland, Oregon. As project manager, provided oversight of site activities related to management and disposal of contaminated media during redevelopment of a former industrial property in downtown Portland. Assisted with testing and management of discharge to municipal sewer during site dewatering. PBS provided site assessment and subsequent technical support to client in redevelopment of the property. PBS acted as an on-site technical resource in the segregation and management of contaminated soil and for the preparation and training for site-specific issues related to contaminated media. PBS worked with the City of Portland and Oregon Department of Environmental Quality regulators to bring the site dewatering system into compliance, allowing for discharge of water to the municipal storm sewer.

Angela Wieland, P.E.

Technical Reviewer

Angela applies her expertise in water quality and regulatory compliance to help clients successfully execute stormwater initiatives across the region.

Angela is a civil engineer with experience in the assessment, planning and management of water quality and quantity. Her work includes stormwater planning, municipal separate storm sewer (MS4) compliance, water quality analyses, capital improvement program (CIP) development, Low Impact Development (LID) design, groundwater and surface water analysis, best management practices (BMP) evaluations, and hydrologic and hydraulic analysis of drainage systems.

NPDES MS4 Permit Support (2021 to Present), cities of Wilsonville, Salem, Eugene, West Linn, Lake Oswego, Oregon City, Gladstone, Milwaukie, Portland, Port of Portland, Clackamas Water Environment Services, and Oak Lodge Water Services District, Oregon

Project Manager or Project Engineer. Providing ongoing NPDES MS4 compliance support for Phase 1 and Phase II jurisdictions in conjunction with 2020/2021 NPDES MS4 permit reissuance including permit negotiations with DEQ and review/ implementation of post-construction permit language. Additional efforts include SWMP development, monitoring plan development, retrofit and hydromodification assessments, annual reporting, standard operating procedure development and facilitation of inspection programs, code audits and development standards updates.

Currently facilitating Phase I Workgroup meetings on behalf of ACWA to inform permit renewal components. supporting development of the Phase I NPDES MS4 permit renewal applications (due 2026) including pollutant loads modeling and trends analysis.

Stormwater Master Plan Update, City of Wilsonville, Wilsonville, OR

Project Manager. Angela managed the City's 2023 stormwater master plan update to focus on hydraulic capacity analysis, system condition, water quality and natural resources management. Efforts included facilitating public meetings, overseeing InfoSWMM model updates, CIP development, and documentation. Project development included analysis of the Town Center redevelopment area utilizing the City's BMP sizing tool to iteratively size LID and establish hydromodification-based sizing standards for redevelopment.

Design Standards and Hydromodification Best Management Practices Sizing Tool, cities of Wilsonville, Oregon City, Clackamas County Water Environment Services, Oregon

Project Engineer. Provided technical assistance and support in development of stormwater design standards and development of a design tool (BMP Sizing Tool) for developers to size LID facilities that will address hydromodification requirements.

ASSIGNMENT
Technical Reviewer

EDUCATION
MS, Environmental Engineering, Oregon State University, 2003

BS, Civil Engineering, University of Portland, 2001

REGISTRATION
Engineer (Civil), No. 65427PE, OR

YEARS OF EXPERIENCE
22

JOINED FIRM
2010

SUBJECT MATTER SPECIALTIES
Water Resources (Environmental Planning & Permitting, Stormwater & Green Infrastructure)

Conveyance Infrastructure (Master Planning & Modeling (MPM))

RELEVANT EXPERIENCE
- NPDES MS4 Permitting
- TMDL/303(d) Support
- Stormwater Master Planning
- Stormwater Retrofit
- CIP Development
- Stormwater Design Standards
- Stormwater Facility Sizing/Design
- Water Quality Modeling

ORGANIZATIONS
Oregon Association of Clean Water Agencies (ACWA), Stormwater Committee co-chair (2023-Present)

Salem Administrative Rules and Code Update, City of Salem, Oregon

Project Manager. Managing updates to Salem Revised Code and Administrative Rules to integrate retention-based performance standards and facility sizing per the City's 2021 NPDES MS4 permit. Efforts included development of a compliance gap analysis, facilitation of internal workshops and external stakeholder meetings, technical deliverables related to the City's LID/ GI strategy, and code/ standards development.

NPDES MS4 and TMDL Support, City of Portland, Oregon

Project Engineer. Since 2014, providing technical support in conjunction with the City's NPDES MS4 permit, specifically annual report development and permit renewal application support (pollutant load reduction evaluations, wasteload allocation attainment assessment, and TMDL benchmark development). She led development of BES' OBI IDDE SOP to inform field sampling and screening processes. Provided technical support to BES in development of their updated Source Control Manual.

Clear Lake Basin Plan Development, City of Eugene, Eugene, OR

Project Manager. To support recent expansion of the City of Eugene's UGB, the City was seeking alternatives for stormwater infrastructure associated with the Clear Lake Planning Area, a 900-acre urban growth boundary (UGB) expansion area intended to support future development and economic growth associated with manufacturing, light industrial, and health and technology uses. Project efforts included expansion of the City's existing XP-SWMM model, alternative development, costing, and documentation. Angela managed planning efforts, alternative development, and documentation (via fact sheets, cost estimates, and a summary report).

Ada County Highway District, Whitewater Park Boulevard Alternatives Evaluation, City of Boise, Idaho

Project Manager. Angela managed efforts to evaluate and support redesign of a stormwater retention pond at Esther Simplot Park to mitigate water quality concerns. Efforts included assessment of water quality data, basin-wide PCSWMM hydraulic modeling, and alternatives analysis (LID, rerouting, etc.) to mitigate flow to the pond. She developed prioritization criteria and a decision-support tool to inform selection of preferred alternatives. She also costed and documented results for use in ACHD's capital improvement program.

Phase 1 NPDES MS4 Permit Renewal and Negotiations (2014-2017), cities of Salem, Eugene, Fairview, Wilsonville, Gladstone, West Linn, Oregon City, Milwaukie, Lake Oswego; Clackamas Water Environment Services; Oak Lodge Sanitary District; Oregon

Project Manager. Completed a variety of tasks for Phase I jurisdictions in conjunction with the 2015/ 2017 NPDES MS4 permit renewal application deadline and ongoing NPDES MS4 compliance. Efforts included preparation of pollutant load reduction evaluations, wasteload allocation attainment assessments, 303d evaluations, stormwater management program evaluations and stormwater management plan (SWMP) updates, and stormwater monitoring plan updates. Documents were compiled and submitted to DEQ on behalf of the jurisdictions. Facilitated ACWA Phase I Stormwater Committee meetings to develop consistent assumptions and processes for jurisdictions in completing deliverables and applications.

Comprehensive Clackamas County Monitoring Plan, cities of Milwaukie, Gladstone, West Linn, Oregon City, and Clackamas Water Environment Services, Oregon

Project Manager. Since 2008, prepared and continuously updating a comprehensive, coordinated monitoring plan for select Phase I Clackamas County co-permittees to meet stormwater monitoring objectives as outlined in the 2004, 2012, and 2021 Phase I MS4 NPDES permit. The comprehensive plan geographically consolidates sites, outlines sampling methods to conform to objectives, and established QA/QC procedures. Recent updates include coordinated mercury monitoring, pesticide monitoring, and biologic monitoring.

Columbia Slough Sediment Program Technical Support, BES, Portland, Oregon

Principal Engineer. Supported Portland BES implementing Columbia Corridor Stormwater Program (CCSP) to facilitate the identification, prioritization, and completion of the most effective projects and programs to improve the quality and reduce the discharge of sediments to the Columbia Slough. Developed the TBL framework for alternatives evaluations. Preparing presentations and technical memo documentation for communication purposes.

Stormwater Management Manual and Public Works Design Standards Update, City of West Linn, Oregon

Project Manager. Managing development of the City's Stormwater Management Manual and prescriptive facility sizing per the City's 2021 NPDES MS4 permit. Efforts include integration of existing Public Works Design Standards into the Stormwater Manual template, facilitation of internal workshops related to policy determinations, and documentation and formatting.

On-call Stormwater Development Review and Manual Update, City of Lake Oswego, Oregon

Project Manager. Since 2016, managing an ongoing contract with Lake Oswego to provide stormwater design review services for land use decisions. Angela oversees the evaluation of site plans and technical stormwater reports, reviews conditions of approval, and presents findings to the City's Development Review Commission. She developed updates to the City's 2016 Stormwater Management Manual based on issues that have arisen during design review activities. Efforts have included identifying policy changes since initial development of the Manual and developing streamlined development review checklists.

TMDL Implementation Plan update, cities of Wilsonville, Salem, Fairview, Lake Oswego and Milwaukie

Project Manager. Prepared 5-year updates to the Willamette TMDL Implementation Plans to address recently approved TMDLs. Assessed temperature modeling results and documented background related to wasteload and load allocations. Developed measurable goals, milestones, and tracking measures for implementation activities over the next five-year implementation period. Mode recently assisting cities in identification of adjustments to comply with mercury wasteload allocations.

Washington's 2020 Clean Waters Plan, Various Jurisdictions, Washington

Project Engineer. Interviewed states related to listing/ delisting procedures, individual development of TMDLs, TMDL prioritization and incorporation of TMDL information into MS4 permits. Developed recommendations for use by Washington Department of Ecology related to water quality program implementation.

Total Maximum Daily Load Support, City of Bend, Oregon

Project Manager. Assisted the City of Bend in identifying implications of the recent EPA order that disapproved the natural conditions criteria for temperature (NCC) and the statewide narrative natural conditions criteria (SNC). Preparing a water quality database and surface water annual monitoring to aid in documentation and reporting of water quality trends. Preparing a BMP summary document to aid in BMP facility selection and design in conjunction with NPDES and WPCF permit requirements.

Watershed Health Index, City of Lake Oswego, Oregon

Project Manager. Prepared a watershed health index to summarize water quality status of receiving waters from a biologic, chemical, and physical perspective. Developed mapping and fact sheets for clear documentation to the public.

Multnomah Boulevard Stormwater Improvements, City of Portland, Oregon

Project Engineer. Assisted with the design of five Low Impact Development (LID) vegetated stormwater facilities to collect, filter, infiltrate and convey stormwater runoff from existing streets and parking areas, addressing parking and pedestrian needs while also supporting water quality and quantity goals. The City's Office of Transportation was involved to address design needs for retrofit into existing neighborhood streets. Completed the erosion and sediment control facility design for the sites.

City-wide Stormwater Master Plan, City of Medford, Oregon

Project Manager. Served as project manager for the City's stormwater master plan update. The project includes detailed (to 12" pipe) PCSWMM modeling CIP development and prioritization, and a financial evaluation for updated stormwater utility rates and SDCs. Efforts also included development of a PowerBI dashboard tool to effectively communicate model results graphically and query deficiencies in the system.