Paul S. Fendt, P.E.

Bachelor of Science, Geological Engineering
Registered Professional Engineer in Washington and Florida

Paul Fendt has more than 18 years of stormwater engineering and planning experience. His project experience includes a broad range of stormwater and surface water projects, including hydrologic and hydraulic modeling (HEC-1, WaterWorks, HEC-2, HEC-RAS), NPDES stormwater permits, erosion control on creeks and lake shores, comprehensive storm and surface water plans, and preparation of drainage ordinances and environmental impact statements.

Prior to joining Parametrix, Mr. Fendt was the manager of the Polk County, Florida, Surface Water Management Plan (SWMP). His other job responsibilities included the preparation of applications for environmental permits related to wetlands and surface water protection, public drainage project design, stormwater detention facility design, and reports on county projects related to stormwater, wetlands, permitting and flooding.

Sea-Tac Airport Master Plan Update and On-Call Stormwater Services – Port of Seattle, WA

Mr. Fendt is Parametrix Project Manager providing environmental services to the Port of Seattle in support of the Master Plan Update EIS, SEPA and permitting process, and on-call services to support the Sea-Tac Airport stormwater program. The Master Plan Update project, which includes a new third runway and many redevelopment projects, will require extensive environmental mitigation of wetland, stream, and stormwater impacts. Parametrix is responsible for wetland delineations and other field work and obtaining the permits needed to implement the Master Plan projects, including Section 404 and 401 approvals for wetland impacts, HPA for instream work, and several local permits. Parametrix is conducting studies and preparing design plans for the mitigation required projects, including:

- A large wetland mitigation project at a 69-acre site in Auburn.
- Relocation of approximately 1,000 feet of Miller Creek.
- Restoration of a 200-foot-wide buffer along 6,500 feet of Miller Creek.
- Fish passage improvements along Miller Creek.

Mr. Fendt is also responsible for development of a comprehensive stormwater management plan for the Master Plan projects and is conducting hydrologic modeling and stormwater treatment analyses in support of stormwater detention and treatment facility design. On-call stormwater support has included updating of the airport stormwater conveyance maps and hydraulic models, field investigations of drainage and water quality problems, design of stormwater improvements, preparation of stormwater pollution prevention plans for construction activities, monitoring of stormwater runoff for the airport NPDES construction permit, and numerous other activities to support the environmental and stormwater management programs at Sea-Tac Airport. The contract has included 91 tasks to date.

Valley Creek Estuary Restoration – Port of Port Angeles, WA

Project Hydrologist for design and permitting of a new, man-made 4-acre marine estuary in downtown Port Angeles. The new estuary and associated park is a centerpiece for the downtown Port Angeles re-development program. The project consists of converting an existing log-sort yard and tight-lined 84-inch-diameter culvert into a combination of a park, marsh, beach, and mud-flat estuary.

Design and Operation of Stormwater Treatment System – Port of Seattle, WA
Parametrix staff designed two movable stormwater treatment systems to treat up to 500 gpm stormwater per unit from a 40-acre parking lot construction site. The systems were designed to reduce turbidity and were operational within two weeks. Alum was used as the coagulant. Additionally, our staff also managed the procurement and assembly of rental equipment and were responsible for the operation and staffing of the units, which are operated two shifts a day, 7 days a week, when required by weather conditions.

Butter Creek Engineering Analysis – Lewis County, WA
Parametrix will provide an engineering analysis of revetment repair and actions taken in response to flooding along lower Butter Creek. Responsibilities will include document review, scheduling interviews, and site visits.

Sammamish River Habitat Improvements – City of Redmond, WA
Parametrix was selected by the City of Redmond to design habitat enhancements for the Sammamish River through downtown Redmond. The river was channelized for flood control with little consideration of habitat and aesthetics. Mr. Fendt is the Project Manager and Fluvial Geomorphologist for the habitat enhancement planning and design effort. Habitat enhancements include modifying the channel geometry with benches and meanders, adding emergent wetland habitat, enhancing channel substrate, removing exotic vegetation, and replanting the riparian corridor with native plants to improve wildlife habitat. Project planning has included public workshops and meetings with affected agencies, including the Army Corps of Engineers, Washington Department of Ecology, Washington Department of Fish and Wildlife, the Muckleshoot Tribe, and King County. Construction was completed in the summer of 1997.

On-Call Small Stormwater Projects Program – City of Redmond, WA
Provides on-call services for the City's Stormwater Management Division. Projects include small project designs to solve neighborhood flooding problems, drainage studies to identify alternatives for solving flooding problems, surveying easements for stormwater facility maintenance, basin planning assistance, and spill response. The key to the success of the project has been our rapid turnaround preparing work authorizations.

Dredge Island Stormwater Sampling Program – Lavaca Bay Superfund Site, Point Comfort, TX
Mr. Fendt designed and implemented a stormwater runoff collection program on a contaminated dredge spoil island in Lavaca Bay on the South Texas coast. Automated stormwater samplers were installed to collect water and sediment associated with stormwater runoff. Using the results of the six-month program, sediment and contaminant loading will be calculated. The collection system includes lined collection channels and pre-fabricated channels and flumes and collect runoff, transport sediment, and measure flows. The samplers have been programmed to trigger a sampling program when a pre-determined flow rate is measured. Grain size distribution of the sampled storm sediments will be determined to correlate storm intensity and sediment yield.

Stormwater Pollution Prevention Plan (SWPPP) – Port of Vancouver, WA
Project Manager for the completion of an SWPPP for the Port's facilities on the Columbia River. The plan includes a number of Best Management Practices (BMPs) and identifies potential stormwater treatment alternatives.

Strandley Environmental Services – Seattle City Light, Purdy, WA
Project Engineer for a multi-disciplined Superfund site cleanup. A PCB contaminated stream flowing through the project site required assessment and design of a new cleanup project. The project includes removing PCB contaminated soils from the creek while minimizing site disturbance. Stream habitat will be restored using log weirs, deflector logs, and large woody debris from the adjacent remediation areas. Will direct field oversight and field placement of new stream habitat features during construction.

South Prairie Creek Flood Study – Pierce County, WA
The Pierce County Public Works Department is proposing to improve South Prairie Road, with safety improvements that include widening the road and straightening several curves. To improve drainage and public safety in an emergency, the road, which is partially constructed in the South Prairie Creek floodplain, will be raised above the existing 100-year flood elevation of South Prairie Creek. Concerns about potential floodplain impacts from the proposed road improvements prompted the preparation of a new flood study for the potentially affected portion of South Prairie Creek.

A computer simulation of the floodplain was prepared, using the hydraulic backwater model HEC-2. Two HEC-2 models of South Prairie Creek were prepared: the first was created using the input parameters from the original Federal Emergency Management Agency (FEMA) floodplain study; the second model was prepared by supplementing the original study with new channel cross sections. The new model with added cross sections was then checked and used as the basis for comparing impacts from the proposed road improvements. The proposed road improvements were added to the new study and compared to determine flood elevations and impacts from the new road.

Clover Island Redevelopment Stormwater Management Plan – Port of Kennewick, WA
The Port of Kennewick, Washington is proposing redevelopment of Clover Island as part of its future expansion plans. The plans include redevelopment of existing developed areas, expansion of water-dependent businesses, and expansion of the island with new development. A Conceptual Stormwater Management Plan (SWMP) for Clover Island Redevelopment was prepared. The plan included measures for reducing existing stormwater runoff impacts from existing Port facilities. Alternatives for controlling runoff from newly developed areas included biofiltration swales and constructed wetlands.

87th Street Extension Burnt Bridge Creek Flood Study – City of Vancouver, WA
The proposed 87th Street extension contemplated by the City of Vancouver requires a new Burnt Bridge Crossing. To ensure that the crossing will cause no floodplain impacts, Parametrix prepared a flood study of the creek using HEC-2. There was limited existing data available for completing the study, and the existing FEMA study was flawed. Working with the County and City, Parametrix prepared a hydraulic model that determined flood elevations and allowed for bridge design that mitigated potential impacts.

Kalauao Stream Flood Study – Department of the Navy, Oahu, HI
Sediment and debris collecting at the mouth of Kalauao Stream raised concerns about potential house flooding and property damage near the mouth of the stream. Parametrix prepared a study to: (1) determine the current extent of the 100-year floodplain; (2) determine the probable causes of flooding and factors that have changed flood patterns since development along the lower stream banks; (3) develop and compare alternatives for controlling flooding and limiting flood damage; and

(4) make recommendations for action (or no action) to limited flood damage. Several flood control alternatives were considered, and action recommendations were made, including reconstruction of the gas and sewer lines crossing the stream and causing floodplain impacts.

Woodland Creek – Pierce County, WA
Prepared a conceptual regional stormwater reduction plan to reduce potential peak flows. The project included hydraulic modeling (compared HEC-1 against WaterWorks modeling program) and predesign of regional stormwater management ponds to reduce peak flows generated from increased development of the watershed.

Canyon Creek – Pierce County, WA
Prepared a conceptual regional stormwater reduction plan to reduce potential peak flows. Similar in scope to the Woodland Creek project with its own specific design criteria.

Southwest Harbor Project – Port of Seattle, WA
Prepared a site stormwater management assessment and mitigation plan for the proposed expansion of container facilities and site remediation for existing tenants. The project included recommended Best Management Practices (BMPs) for source reduction as well as alternatives for stormwater treatment, such as wet ponds and biofiltration swales.

Storm and Surface Water Master Planning Study – City of Camas, WA
Prepared a storm and surface water management plan for a new industrial area. The project includes hydrologic modeling and pre-design of regional stormwater management ponds to mitigate potential impacts from development of the industrial area. Stormwater management planning will be concurrent with wetlands management planning to develop an integrated approach to water resource planning.

Stormwater Improvements – U.S. Navy SUBASE Bangor, Kitsap County, WA
Concept study and design of stormwater improvements for the industrial and vehicle maintenance area at the Bangor base. A stormwater pollution prevention plan (SWPPP) includes a number of source control options for reducing stormwater runoff contact with pollutants. Because of the extensive vehicle maintenance activity at the site, oil/water separators have been included as a stormwater treatment option. The project included modeling the existing storm sewer system, investigating sources of oily discharges, and preparing drawings of the existing storm sewer system.

East Texas Hydrologic Study – Confidential Client
Conducting a hydrologic analysis and model of an interconnected lake system in eastern Texas. The project includes the interpretation of rainfall data, development of a continuous hydrologic model for the watershed, stream gaging, automated sampling, and the use of GIS for determining hydrologic parameters for the model. The results will be used to determine annual pollutant loading in the system.

Waiawa Stream Sediment Removal and Wetland Enhancement – U.S. Navy, Oahu, HI
Prepared a hydrologic study and conceptual engineering design of a wetland enhancement and sediment removal facility to reduce sediment load to Pearl Harbor. The project includes a detailed study of rainfall and stream flow conditions, sediment loads, and wetland hydrology. The conceptual design of the proposed wetland includes removal of suspended sediments in constructed wetlands and enhancement of existing wetland habitat and function.

Lake Park Condominiums Drainage Plan Review – City of Kirkland, WA
Reviewed the drainage plans for a condominium development proposed in Kirkland. The review included potential hydrologic impacts to wetlands, flooding impacts, and flood stages on I ake Kirkland (Forbes Lake). Stormwater mitigation measures were proposed for basin build-out on Lake Kirkland. The Forbes Lake drainage basin was also modeled for existing and basin build-out to determine 100-year flood stages on Forbes Lake.

Aberdeen Sawmill Stormwater Plan – Weyerhaeuser, Aberdeen, WA
Prepared a hydrologic analysis of a sawmill site which included analyzing rainfall records determining return frequencies for different storm durations; estimating runoff volumes and contaminant concentrations; and evaluating stormwater control and treatment alternatives.

Kitsap County Stormwater Management Ordinance – Kitsap County, WA
Prepared a stormwater management ordinance for the County. The Ordinance has heavy emphasis on inspection, maintenance, and enforcement of stormwater systems and construction. The ordinance approval process included a multidisciplinary technical advisory committee review. The ordinance was written to comply with the Stormwater Management Manual for the Puget Sound Basin.

Utilities Comprehensive Plan – Grays Harbor County, WA
Managed storm and surface water portion of the County utilities comprehensive plan. The plan includes water resource protection, facilities improvements, and basin planning concepts. The project has an emphasis in public participation and economic development.

Fitzgerald Road Culvert Replacement – Polk County, FL
Prepared the design and specifications for replacement of culverts in a high, unstable road fill. Existing culverts had been blocked and failed due to bank slumping, causing a back-up that threatened the road and a downstream mobile home park. The design required the use of level pool routing models, riser sizing with trash skimmers, and tightline culverts down the backslope. The project was constructed, and the structure has experienced a significant storm event (between a 10- and 25-year storm) with no further problems.

Lyon Creek 100-year Flood Study – Canaan Apartment, Lake Forest Park, WA
Managed determination of the 100-year flood plain of Lyon Creek for an apartment complex in Lake Forest Park (North Seattle area). Mitigation for proposed flood plain encroachments were included in the final project report.

Derby Ditch – Lake Jessie, Polk County, FL
Developed the conceptual design for a stormwater detention facility in a 400-acre urbanized drainage basin to provide water quality enhancement of runoff to a recreational lake chain. The system will provide treatment of approximately one-third of the contributory drainage basin to the lake.

Amendment to Polk County Flood Protection and Surface Water Management Ordinance – Polk County, FL
Prepared for adoption of a major revision and subsequent amendment to the Polk County, Florida, Flood Protection and Surface Water Management Ordinance. The ordinance also provided for the protection of wetlands and water resources. Responsibilities as program manager included

preparation of map amendments and revisions, interpretation of Flood Insurance Rate Maps, and county compliance with the National Flood Insurance program.

Comprehensive Growth Management Plan – Polk County, FL
Prepared and presented the drainage sub-element of the infrastructure element of the County's Comprehensive Growth Management Plan. Provided technical assistance in the preparation of the Conservation (surface water, wetlands, floodplains, groundwater sub-elements), infrastructure (potable water, aquifer recharge), and land use (wetland, floodplain overlays) elements.

Mill Creek Erosion Control – City of Kent, WA
Comprehensive study and preliminary design to reduce erosion in an unstable urban canyon damaged by high flows. Project elements included the following: inventory and prioritization of erosion problems; surveying; hydrologic and hydraulic modeling; and bioengineering and engineering designs for stabilization of streambanks and slopes.

Luther Burbank Park Erosion Control Project – King County Parks Department, WA
King County's Luther Burbank Park on Lake Washington was experiencing accelerated shoreline erosion. Mr. Fendt led Parametrix's investigation of the historical rates of erosion and determined probable causes of the shoreline erosion problems. An innovative combination of engineering design alternatives and recommended operation and use modifications were developed to control the erosion rate while also maintaining the natural, recreational, and aesthetic values of the park.

Madsen Creek Interceptor Environmental Analysis – Metro, Renton, WA
Conducted reconnaissance of streambank and side slope erosion sites in an unstable canyon subjected to increased peak stormflows from urbanization. Evaluated alternatives to reconstruct the sewer interceptor pipe in Madsen Creek Canyon. Identified bioengineering and engineering alternatives for stabilization and erosion control including riprap, gabions, live cribwalls, live staking, and branch packing.

Inspection and Maintenance Manuals for Tyee Pond and Miller Creek Regional Detention Facilities – Port of Seattle, WA
Paul managed the development of inspection and maintenance manuals for two stormwater detention facilities (Tyee Pond and Miller Creek Regional Detention Facility) located on Port of Seattle property to help facilitate the transfer of responsibilities for the facilities from King County to the Port of Seattle. The inspection and maintenance manuals are intended to be working documents that could be used by the field crew responsible for inspecting and maintaining the facilities. In addition, the manuals will serve as documentation of facility maintenance in compliance with State and Local stormwater regulations. Manual development included researching standard inspection and maintenance procedures used by King County and others; conducting interviews with County employees familiar with the operation and maintenance of the facilities; gathering information relevant to the proper functioning of the facilities, such as as-built diagrams and specific equipment operation manuals; evaluation of current facility conditions and operation; development of an inspection and maintenance schedule; and development of inspection and maintenance checklists to be used in the field.

King County Regional Justice Center EIS – King County, WA
Analyzed stormwater quality and quantity discharge on four alternative sites for both pre- and post-development conditions. Developed recommendations for stormwater management facilities to comply with the King County Surface Water Design Manual.

Black River Transfer Facility EIS Stormwater Management – City of Renton, Tukwila, WA
Prepared the conceptual design of a stormwater management system for a regional waste transfer site, and included the preparation of an EIS document for impacts to water. The project required analysis of stormwater quantity and quality discharges, wetlands, and floodplains. The proposed stormwater management facilities were designed for compliance with the King County Surface Water Design Manual.

Indian Summer EIS – Private Developer, Olympia, WA
Reviewed stormwater impacts for a new residential subdivision. The review included an analysis of proposed stormwater management techniques, including filtration facilities. BMPs for erosion control and stormwater discharging to significant wetland resources were also reviewed, and additional mitigation measures were proposed.

Lake Marion Creek – Polk County, FL
Prepared a land acquisition proposal submitted to Florida Water Management Districts under the Save Our Rivers (SOR) acquisition program. The proposal recommends the purchase of an 18,000-acre watershed, nearly one-half of which contains a variety of wetland types. The remainder is relict sand dunes, noted for their high aquifer recharge potential. The watershed is a major tributary to the Kissimmee River, which is the upper watershed of the Florida Everglades. The project was "A" listed, and negotiations are presently underway for purchase of several tracts.

Hillsboro Light Rail Extension – Metro, Portland, OR
Mr. Fendt was the task manager for hydraulic and hydrologic analysis of eight proposed light-rail stream crossings. The proposed alignment was on an existing rail line. Each crossing was assessed for potential floodplain impacts and new crossings were designed to mitigate potential impacts.

Bear Creek Habitat Assistance – City of Redmond, WA
Parametrix has been retained by the City of Redmond to assist with review of the proposed lower Bear Creek Habitat Restoration Plan. The Army Corps of Engineers is preparing the project plans, with participation by the City. Responsibilities include assisting the City with defining project goals, providing technical review and analysis, and participating in team meetings. Technical elements include engineering, floodplain analysis, fish passage and use, and habitat planting review.

State vs. Spath – Olympia, WA
Parametrix will provide expert testimony in support of WSDOT litigation.