



EDUCATION

B.S., Ecology, The Evergreen State College, 1993
Graduate Coursework, Salmon Ecology, The Evergreen State College, 1999
Graduate Coursework, Soils Geomorphology, Portland State University, 2008

PROFESSIONAL REGISTRATIONS & MEMBERSHIPS

Certified Professional Wetland Scientist, Society of Wetland Scientists
Society of Wetland Scientists, Pacific Northwest Chapter

EXPERIENCE

Principal, Cascade Environmental Group, LLC, Portland, Oregon, August 2010 – Present
Senior Wetland Ecologist, ICF/Jones & Stokes, Portland, Oregon, July 2005 – August 2010
Senior Wetland Ecologist, Washington State Department of Transportation, Olympia, Washington, April 1995 – July 2005
Biologist, Bureau of Land Management, Lander, Wyoming, April 1994 – November 1994

QUALIFICATIONS

Mr. Brent Haddaway, PWS is a Principal with Cascade Environmental Group, LLC, and has worked for over 27 years as a wetland scientist and project manager in the Pacific Northwest. Brent performs and manages wetland delineations, functions assessments, wetland restoration and mitigation projects, restoration implementation oversight, wetland permitting, and compliance monitoring. These projects require applying wetland science methods under high degrees of scrutiny, developing analytical tools and interpreting environmental policy as needed to assess project specific conditions, managing budgets and staff, and effectively communicating with a wide range of stakeholders including private land owners and individuals working in industrial, governmental, and non-profit sectors.

Over his career, Brent has delineated sites with a wide range of land alterations. Brent has managed linear wetland delineation projects extending over 50 miles in length and study areas exceeding 7,000 acres. Brent was selected by the US Army Corps of Engineers to instruct wetland delineation trainings for WSDOT and local government staff, and has provided senior review of consultant delineation work while employed at WSDOT. He also has extensive experience in aquatic resource mitigation, including mitigation banking, stream mitigation, and developing out-of-kind mitigation plans. Brent is a partner in the Garret Creek Mitigation Bank in Molalla, Oregon, managing all aspects of bank operations, and participating in DSL forums on mitigation policy as a member of the mitigation banking community.

Brent was a technical committee member for the development of the *Wetland Rating System for Washington State* (WA Dept of Ecology, 2004) and the *Wetland Functions Assessment Method for Washington State* (WA Dept of Ecology, 1999), was a contributing author of the *Wetland Characterization Tool for Linear Projects* (WSDOT), is experienced with *Oregon Wetland Assessment Protocol* (DSL), and has developed project-specific wetland functions assessment protocols. He has managed research projects assessing wetland mitigation performance criteria for the EPA to determine appropriate benchmarks for tree and shrub growth rates, and for the Federal Highway Administration to determine appropriate performance standards for invasive species cover.

SELECTED PROJECTS

Kwoneesum Dam Removal Project – Cowlitz Indian Tribe, Skamania County, Washington

Senior Ecologist. Brent led the wetland and waters delineation fieldwork and reporting, including developing streamlined protocols for the reservoir and riverine wetland areas. Brent developed draft protocols, and gained agency approval prior to starting fieldwork, saving substantial effort over the 64-acre study area. In addition to leading the wetland delineation, Brent developed a project-specific functions assessment method that could illustrate the project benefits. The project would convert a 10-acre reservoir to a much smaller, but higher functioning, stream area. Brent adapted a functions assessment method that was recently approved in Oregon, that would provide a framework for illustrating wetland and riverine functions, as well as values. The functions assessment was submitted as an attachment to the JARPA to justify the self-mitigating nature of the project.

Wapato Valley Conservation and Mitigation Bank – Plas Newydd Conservation Farm, LLC, Clark County, Washington

Project Manager and Wetland Ecologist. Brent served as the project manager for wetland delineation and functions assessment of the over 800-acre study area that is being developed as a wetland and conservation bank. Delineation required evaluation of wetland and upland characteristics across levee-protected and floodplain areas along the Columbia and Lewis Rivers, where river flows fluctuate



significantly during the year, and across multiple years. The entire property is underlain by hydric soils due to the hydrologic regime present on site before the development of the Columbia River Hydropower System, and vegetation on site includes both pasture and native floodplain species with broad tolerances for hydrologic regimes. Soil saturation could not be observed during fieldwork, requiring additional information to be considered. Brent reviewed hydrologic studies of nearby restoration projects and determined river stage data could be used as a reliable surrogate for soil saturation conditions; the study used a series of piezometers to establish connectivity of river stage and soil saturation for the restoration project with similar geomorphic conditions. To establish reasonable hydrology indicators, Brent reviewed river stage data for 15-years to establish "typical" growing season saturation levels. Soil pits were augured in low-elevation test areas where soil saturation could be directly compared to river stage to confirm reliability of river stage as a wetland hydrology indicator. Overall, stage data correlated with presence of hydrophytic vegetation, supporting the wetland delineation.

Dahl Beach Mitigation Project – Port of Portland, Portland, Oregon

Project Manager and Wetland Ecologist. Cascade supported the Port of Portland in developing a mitigation project for impacts to the Willamette River shoreline stemming from an early action environmental cleanup project conducted at the Port's T4 Facility. The cleanup action included placement of riprap along the shoreline, which required mitigation under the federal clean water act. Cascade assisted the Port in identifying a mitigation project within the City of Gladstone, and assisted the Port in negotiating an agreement with the city for restoration to occur at the site. Brent led the presentation of the mitigation plan, which applied federal mitigation rule principles to a riverine setting to demonstrate functions would be replaced at the Dahl Beach site. The project footprint was adjusted twice to accommodate concerns of user groups; Cascade supported the Port throughout the iterations in consultation with Gladstone City Council and with permitting agencies. The project includes restoration of two riverbank areas at the Clackamas and Willamette River confluence, including developing detailed grading plans, planting plans, and designing two large wood structures. Brent managed the Cascade team and several specialist sub consultants in developing the mitigation plan, project design to bid-ready plans, and complete federal, state, and local permit applications. The project received full approvals for the mitigation plan and construction permitting, and construction was completed in fall 2016; active compliance monitoring began in summer 2017.

Garret Creek Mitigation Bank - Garret Creek Mitigation Bank, LLC, Molalla, Oregon

Project Manager and Wetland Ecologist. Brent served as project manager and wetland scientist for developing this project near Molalla, Oregon, which was constructed in 2008 and completed its compliance monitoring period in 2013. The project included delineating actively farmed areas where natural vegetation had been removed and too late in the growing season to directly observe wetland hydrology (mid May). Brent proposed case-specific wetland hydrology indicators by comparing observed site conditions with precipitation and stream gauge data for the delineation year compared with 30-year averages. The approach required exhaustive documentation, but was approved by the Department of State Lands and the Corps of Engineers. The Garret Creek mitigation bank is the only mitigation bank in the Pacific Northwest with CWA Section 404/401-approved stream credits. He performed all delineation and functional assessment studies and authored all mitigation bank instrument documents; the bank project was approved in 11 months following prospectus submittal.

Chehalis Basin Mitigation Bank and Wetland Support – TransAlta Centralia Mining, Lewis County, Washington

Project Manager. Brent served as the project manager for this project, which was approved in April 2013, which expands on existing TransAlta mitigation projects. Brent has managed all wetland technical studies for this project including developing a functions assessment protocol that adapts the Department of Ecology's *Wetland Functions Assessment Method* into a semi-quantitative approach to measure functional benefits of proposed mitigation actions; this site-specific methodology has been approved by both the Department of Ecology and the Corps of Engineers. Wetland restoration design included restoring floodplain wetlands and high-flow channels, integrating those features into a floodplain area with two pre-existing mitigation projects. In addition to the mitigation bank, Brent has assisted TransAlta with additional wetland delineations, compliance monitoring projects, and evaluation of new infrastructure proposals.

Yoncalla Creek Mitigation Bank – North Douglas Betterment, Yoncalla, Oregon

Project Manager and Wetland Ecologist. Brent manages and serves as lead wetland scientist for the proposed bank project to serve the Mid Umpqua Basin. Oregon Department of State Lands had established an In-Lieu Fee program for the watershed and has collected sufficient funds to implement a state-sponsored mitigation bank, but had not been able to find an appropriate mitigation site. Cascade worked with the Elk Creek Watershed Council to identify the property, and have engaged DSL to develop a bank site that can receive the In-Lieu Fee funding in the form of credit sales. The mitigation project focuses around removing relic log storage ponds in the floodplain of Yoncalla Creek and restoring riverine wetland floodplain.