

Wetlands Assessment & Construction

Overview

Exponent staff draws on the knowledge and experience of scientists, engineers, physicians, and business consultants specializing in more than 90 technical disciplines. Our investigations include the assessment of impacts, development of regulatory strategies, evaluation of wetland creation and restoration alternatives, and implementation of constructed wetlands by directing and overseeing regional contractors.

Exponent's focus on the big picture and our extensive experience with ecological risk, natural resource damage assessment, restoration and development projects, and watershed studies gives you the benefit of our breadth of service. We provide technical support in addition to the knowledge, resources, and expertise necessary to help our clients develop cost-effective management and restoration objectives, opportunities, and alternatives that win regulatory and public acceptance. Our diverse background allows Exponent to bring a scientific perspective to the table and enables us to synthesize information from a variety of disciplines, including wetland science, biology, chemistry, ecology, landscape architecture, geology, toxicology, zoology, botany, oceanography, hydrology, hydraulics, and engineering.



Natural wetlands are zones of transition between terrestrial and aquatic ecosystems, possessing characteristics of both environments. Scientists have long acknowledged that naturally occurring wetlands can improve water quality; however, our understanding of how wetlands accomplish the removal and treatment of pollutants is relatively recent. For example, we now know that microorganisms that live on aquatic plants or in the soil can remove constituents, such as COD, biochemical oxygen demand (BOD₅; a portion of COD) and metals. The same biological processes that occur in natural wetlands can be adapted to engineered systems to improve water quality.

Constructed wetland treatment systems are designed and engineered to imitate and enhance the natural cleansing functions performed by natural wetland ecosystems. But, unlike a natural system, a constructed system is a more controlled and focused environment. They work by a transfer process (which includes retention, sequestration, and precipitation) or by a transformation process (which includes biotransformation due to microbes, animals and plants), as well as abiotic transformations (through processes such as oxidation, hydrolysis and photolysis).