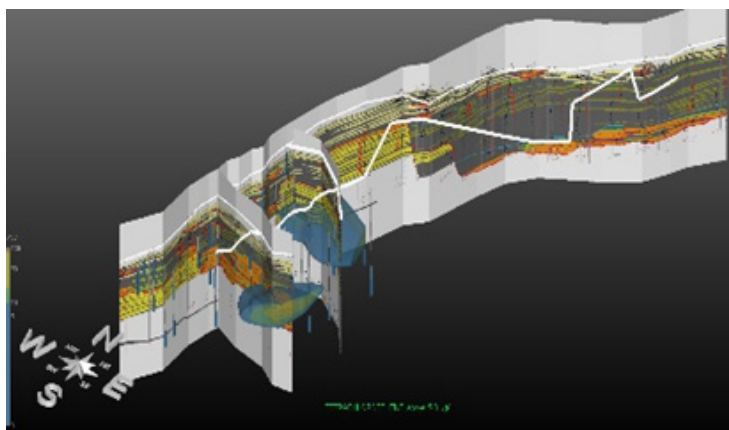


# PRedictive Integrated Stratigraphic Modeling (PRISM®)



PRISM® is an adaptive investigative approach that leverages petroleum industry best practices of sequence stratigraphy and facies analysis to enhance the conceptual site model (CSM). PRISM® provides a much more accurate picture of groundwater flow pathways than previous models - invaluable for developing cost-effective remedial strategies.



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## Overview

PRISM® (PRedictive Integrated Stratigraphic Modeling) is AECOM's state-of-the-art investigative approach that constructs a predictive 3-Dimensional (3D) subsurface framework, synthesizing all relevant geologic, hydrogeologic, and chemical data to evaluate preferential groundwater flow pathways and contaminant transport. By delivering critical insights into subsurface conditions, PRISM® empowers clients to **implement smarter, faster, and more cost-effective remedial strategies.**

Traditional subsurface investigation methods often fail to capture subsurface heterogeneity – the variations in sediment layering and flow pathways that drive contaminant migration. PRISM® overcomes these limitations by leveraging petroleum industry best practices of sequence stratigraphy and facies analysis to **create detailed cross sections of sediment layering** consistent with known depositional patterns. These cross sections, combined with hydrology, chemistry, and advanced data visualization tools, form fully integrated Conceptual Site Models (CSMs) that guide effective remedial strategies.

PRISM® can be scoped up-front as part of any remedial project budget (e.g. Site Inspections, Remedial Investigation, Interim Remedial Actions, Optimized Remedial Contract, Feasibility Study, etc.) making it a strategic/cost-effective investment in project success rather than an added cost.

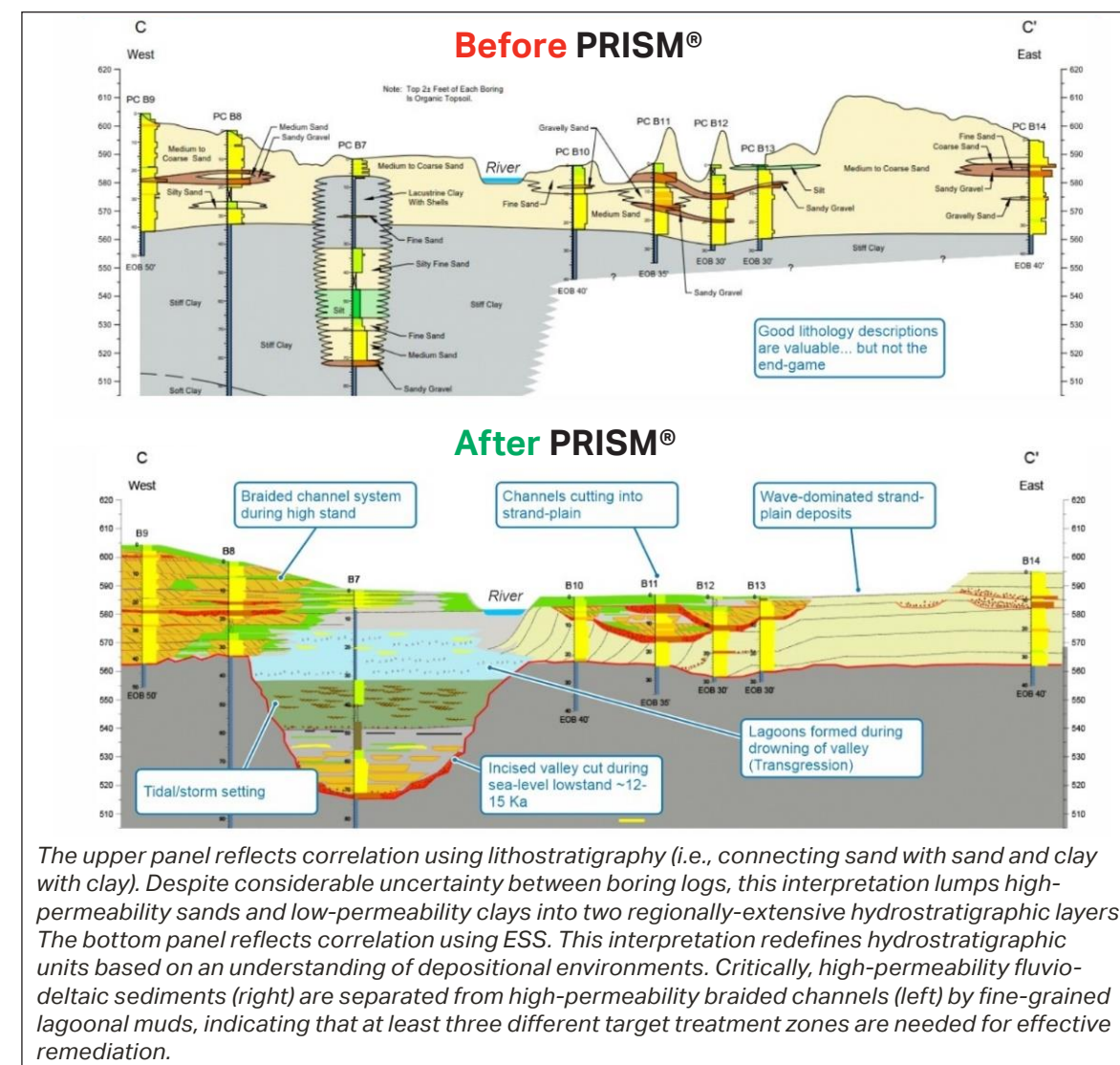
## Areas of Expertise

PRISM® is a versatile, scalable solution applicable to all phases of groundwater studies. Successfully implemented at more than 100 complex sites worldwide, PRISM® is endorsed by the U.S. Environmental Protection Agency (EPA) as a remediation best practice and has been adopted by the U.S. Department of War (DOW) as a reliable tool for developing robust CSMs. Its advanced capabilities address a wide range of contamination-related challenges, including:

- Accurate identification of preferential contaminant migrations pathways and areas of greatest mass transport
- Enhanced 3D visualization and numerical models to evaluate and predict fate and transport of traditional and emerging contaminants (i.e., PFAS)
- Plume delineation to effectively assess risk
- Identification and resolution of critical data gaps
- Streamlined site investigation activities and remedial process optimization (RPO) for cost and time savings
- Characterization of groundwater-surface water interactions
- Litigation support and liability reduction
- Water supply evaluations
- Property condition assessments to support redevelopment and regulatory compliance

“AECOM's expert ESS analysis was critical to developing accurate base-wide groundwater flow models for over 20 bases across America. Their unique methodology & expert stratigraphers provided a realistic basis for analyzing groundwater flow and contaminant migration pathways at these complex sites. These models saved millions of dollars by reducing the uncertainty around cost to closure for performance-based remediation.”  
– AFCEC Client

## PRISM® in Action



# PRedictive Integrated Stratigraphic Modeling (PRISM®) *continued*

## Key Reference Material

"The application of sequence stratigraphy to the investigation and remediation of LNAPL contaminated sites", R. Samuels and J. Sadeque, in R. Lenhard, J. Garcia-Rincon, E. Atekwana, E. Gatsios, and R. Naidu (eds.) "Advances in the Characterisation and Remediation of Sites Contaminated with Petroleum Hydrocarbons", Springer Nature, in press.

"The application of Environmental Sequence Stratigraphy at Department of Defense Sites", R. Samuels and J. Sadeque, Naval Facilities Engineering and Expeditionary Warfare Center (NAVFAC EXWC) Contract No. N39430-16-D-1802, 2021.

"An Overview of the Fundamentals of Sequence Stratigraphy and its Application to Developing Robust Conceptual Site Models and Remedial Strategies", R. Samuels and J. Sadeque, U.S. Environmental Protection Agency Clean-Up Information (CLU-IN) presentation, 2020. <https://www.clu-in.org/conf/tio/DCHWS4/>

## Our Approach

By leveraging both new and legacy site data, PRISM® reduces uncertainty, improves CSMs, and delivers actionable insights that drive efficient, cost-effective remediation. PRISM® provides a scalable, stepwise approach to CSM presentation that supports efficient and reliable outcomes for sites of any size, maturity, or complexity.

- **ENVIRONMENTAL SEQUENCE STRATIGRAPHY (ESS).** PRISM® applies ESS to create geologically defensible frameworks that define subsurface heterogeneity and predict contaminant migration pathways. These frameworks align with known depositional patterns and are **instrumental in identifying and mapping formations with high fluid transmissive properties.**
- Integration of hydrology and chemistry. PRISM® incorporates hydrologic and chemical analyses to refine site understanding and develop tailored Fate and Transport (F&T) models. These models **address unique site challenges**, including surface water/groundwater interactions, chemical compositions (e.g., isotopes, PFAS, solvent degradation compounds), and contaminant pathways from source areas.
- Advanced mapping and visualization. Using tools such as ArcGIS, Leapfrog, and Earth Volumetric Studio (EVS), PRISM® **transforms complex datasets into intuitive 2D/3D visuals.** These maps and cross-sections enhance stakeholder understanding and support informed decision-making throughout the project lifecycle.
- Scalability and adaptability. PRISM® is designed to meet the needs of projects of any size or maturity, from large-scale DOD installations to small commercial sites. This approach is applicable to sites in all sedimentary and carbonate depositional environments.
- Integration into numerical models. Where appropriate, PRISM® can be integrated into numerical groundwater models (MODFLOW) to **validate the CSM, enhance predictive accuracy, and optimize remedial decision-making.**

*In the upper panel (A), the screen intervals are represented by blue rectangles. The well outlined in the black box was unable to be advanced deep enough to adequately capture plume mass, resulting in a misinterpretation of plume shape and extent. The plume was subsequently reinterpreted based on mapped faults identified during the ESS analysis. Compare the initial CSM on the left (B) to the refined CSM after the application of ESS on the right (C). The results indicated two separate source zones of cVOC contamination.*

Cross Section C-C' Displaying Screen Intervals and TCE Concentration Values (Courtesy of NAVFAC)

