

COMPLEX SITES

SIMPLE SOLUTIONS FOR COMPLEX SITES

Many sites are complex and require a smart combination of characterization and remediation. Clients and their consultants may spend years sorting through options before a solution is found. Cascade Technical Services can expedite this process and find an optimal solution quicker, safer and cost-effectively.

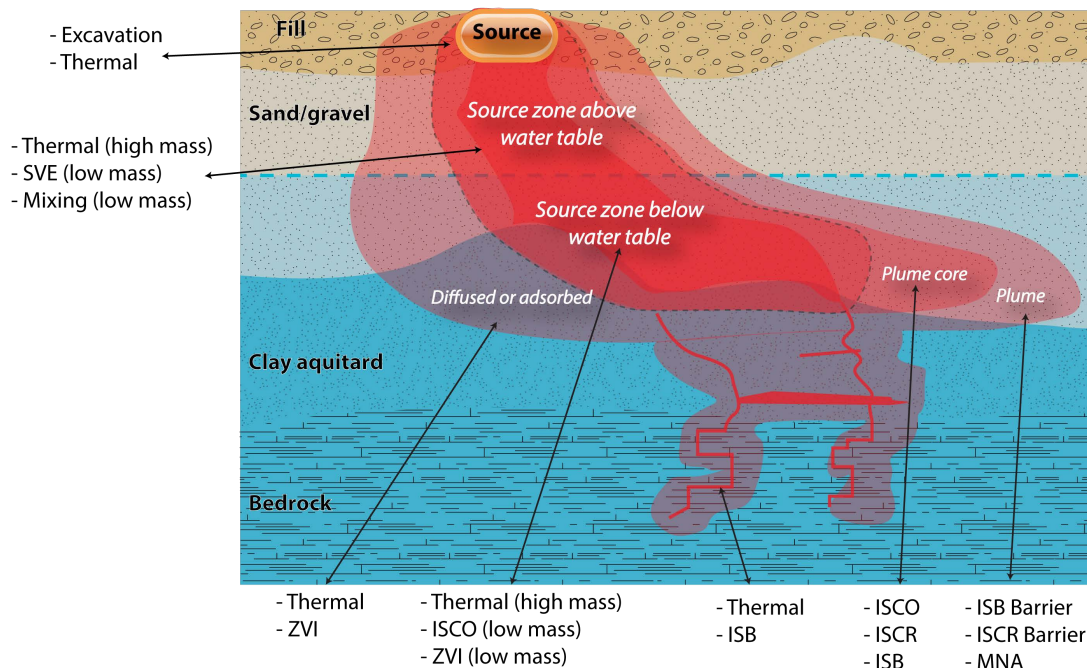


Illustration of a combined remedy for DNAPL site – thermal treatment of the source and low permeability zones combined with enhanced bioremediation in the plume.

WHAT MAKES A SITE COMPLEX?

Sites may be complex for several reasons:

- **Setting and geology:** Multiple contaminated zones, hard to treat layers such as bedrock or thick clays
- **Depth:** Too deep for excavation and simple mixing technologies
- **Contaminants:** Hard to treat chemicals, mixed wastes
- **Both source zone and plume:** A solution needed that addresses both
- **Access limitations:** Hard to access areas for characterization and remediation

CASCADE SOLUTIONS

Site Characterization

High resolution profiling, soil, vapor and water sampling, data integration and presentation.

Remediation

We master the range of technologies from MNA through aggressive thermal treatment, and customize the choice to each situation. Specifically, we combine source zone remedies with plume remediation for a more cost-effective and sustainable solution.

Integrated and Flexible Implementation

One team using state of the art techniques to optimize the characterization and remedy as we implement.

WHAT MAKES US UNIQUE...

One-Stop Shop

We can help you from start to finish and deal much more efficiently with surprises and dynamic, flexible implementation.

We have all the top methods in house.

No need to hire multiple vendors for completion of different project areas.

Flexibility and Dynamics

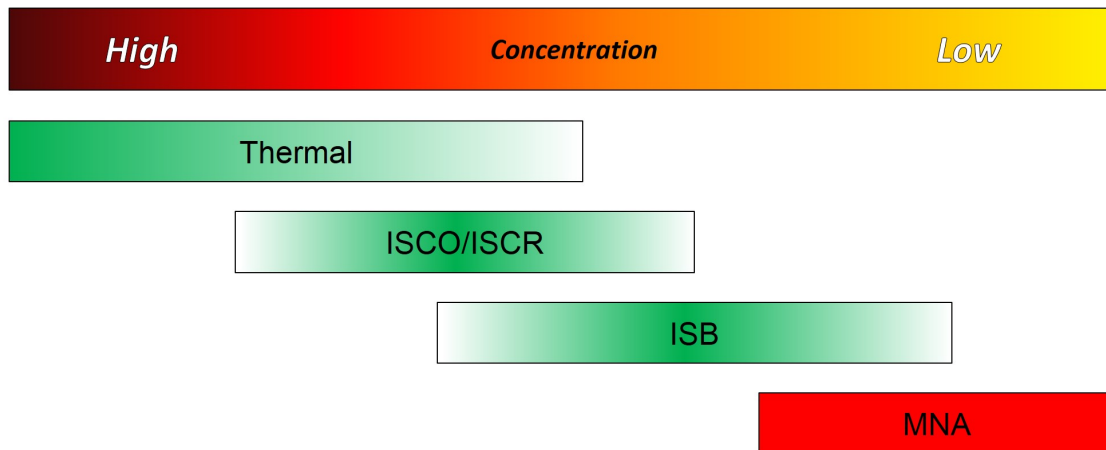
When you hit a bump in the road we have the tools to get over it. This saves time, headaches and money.

Cost and Sustainability

Our solutions are more focused. We foresee synergies between characterization and remediation, optimize placement and construction of borings and wells such that no over drilling is needed. By minimizing the effort to achieve the project goals, we save our clients money and deliver more sustainable solutions.



NAPL pools Mobile NAPL Ganglia Droplets Adsorbed/dissolved Trace



Technology fit versus starting contaminant concentration. ISCO/ISCR = In Situ Chemical Oxidation / Reduction. ISB = In Situ Bioremediation. MNA – Monitored Natural Attenuation