



iSOC[®] YOUR ULTIMATE MANAGED ATTENUATION TOOL

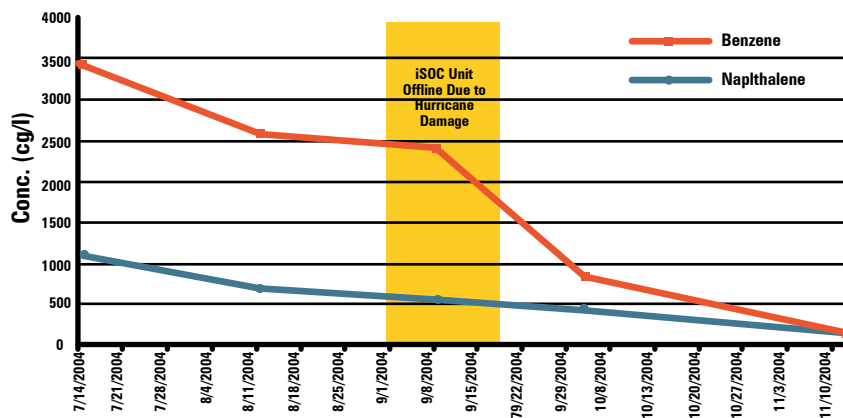


CASE STUDY: MANUFACTURED GAS PLANT

PROBLEM

- Primary remediation – Excavation and ISS
- Residual source material at the edge of stabilized material.
- Regulators forced installation of monitoring well in close proximity to ISS (in-situ solidified) material.
- Offsite wells clean.
- MNA trend in onsite well is upward.
- Interbedded clays and sands prevent sparging.

PILOT CELL RESULTS: MW 101



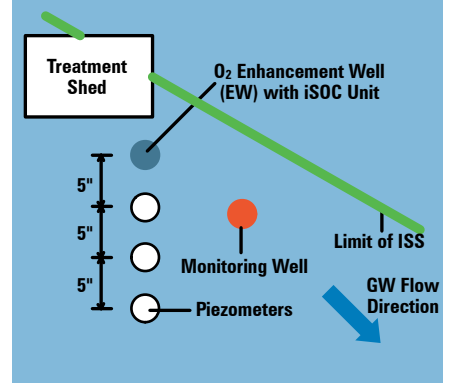
IN-SITU OPTIONS

- Chemical Oxidation
- Enhanced Bioremediation
- Chem-Ox ruled out due to cost and uncertainty.
- Enhanced Bio was determined to be the cheapest alternative.
- Original enhanced bio pilot proposed ORC slurry injected into treatment zone but was considered labor intensive and expensive.

PILOT DESIGN

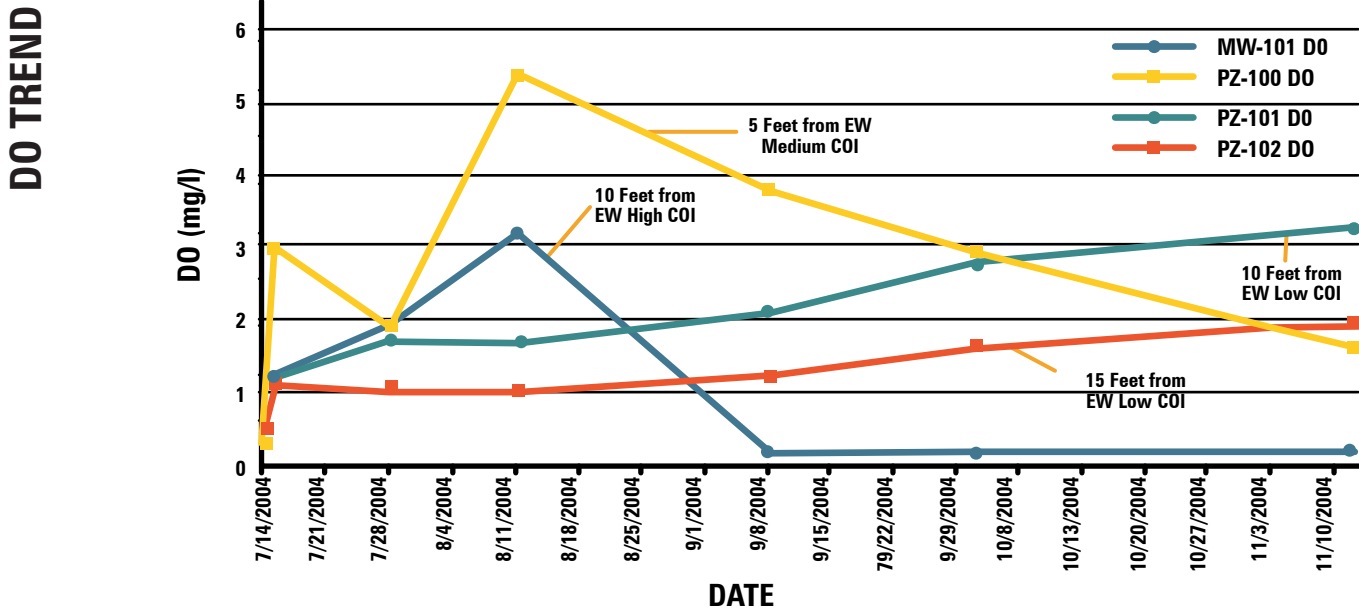
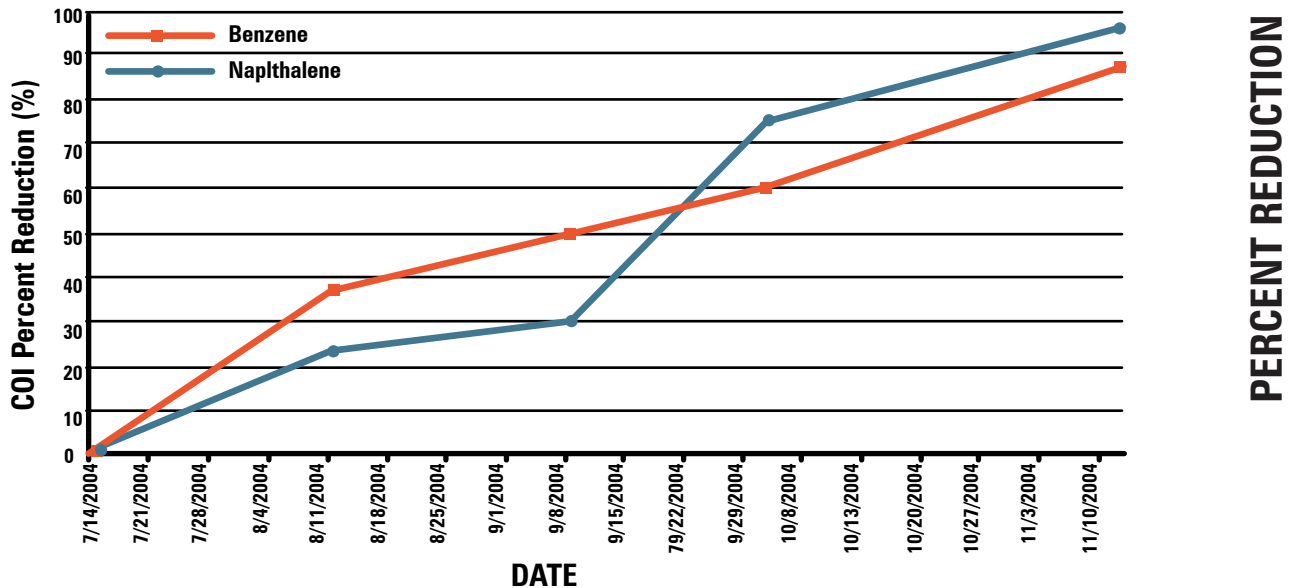
- iSOC[®] Gas inFusion system using O₂ selected as economical and effective.
- Pilot cell located at historically impacted well.
- Pilot duration - 6-months
- Monitor O₂ levels in wells and piezometers. Measure COI (Constituents of Interest) change in monitoring well.

PILOT CELL RESULTS



O & M

- Long term O&M is favorable versus ORC and air sparging.
- To date pilot has cost \$36 in oxygen and O₂ tank rental.
- On a separate site RETEC is currently designing a 24 unit iSOC[®] system, O&M with iSOC[®] using O₂ is estimated at \$30K/year.
- Same site, ORC O&M estimated at \$60-80K/year and air sparging at \$30-50K per year each with significant upfront capital costs.



CONCLUSION

- Enhanced Bioremediation has been successful in controlling GW COI levels.
- One of the first MGP sites in the nation to use O₂ infusion with iSOC[®].
- Combination of low O&M cost and effectiveness provides many benefits over other forms of O₂ delivery.
- Next step is installation of full scale treatment wall.