

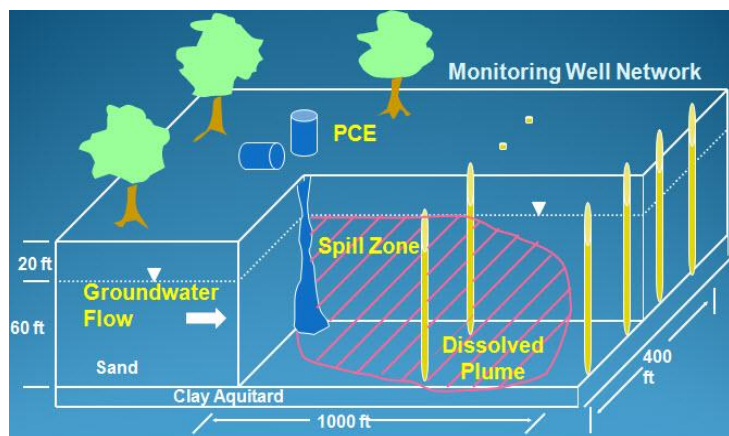
NutriPlus™ a Proprietary Nutrient Package For Aquifer Remediation and Conditioning

Why use NutriPlus™?

The addition of nutrients and Vitamin B₁₂ has been demonstrated to enhance in-situ bioremediation. (see technical references).

What is the anaerobic bioremediation process?

The anaerobic bioremediation process uses microorganisms to degrade chlorinated solvents such as tetrachloroethene (PCE) and trichloroethene (TCE). An organic substrate is added to the groundwater to generate reducing conditions and provide the necessary carbon and hydrogen to support biodegradation of the chlorinated solvents.



When would I want to use NutriPlus™?

NutriPlus™ can be added to other carbon substrates like lactate, molasses and emulsified vegetable oil substrates to enhance in-situ bioremediation. (see technical references). NutriPlus™ contains:

Ingredient	Benefit
Liquid Yeast Extract	Liquid yeast extract provides nitrogen and phosphorus for enhanced in-situ bioremediation.
Vitamin B ₁₂	He et al. 2007 demonstrated that Vitamin B ₁₂ is an important micronutrient to enhance dechlorination activity.
DAP	Diammonium phosphate provides additional nitrogen and phosphorus for enhanced in-situ bioremediation.



What are the best applications for NutriPlus™?

- Addition to carbon substrates for aquifer remediation of chlorinated solvents
- Addition to soluble substrates like lactate and molasses for conditioning of the aquifer before an SRS® emulsified vegetable (EVO) injection
- Addition to carbon substrates for biobarrier applications to quickly cutoff plume migration onto adjacent properties
- Addition to carbon substrates for aquifer remediation of certain pesticides/herbicides, nitrate, perchlorate, RDX and the immobilization of metals such as hexavalent chromium.
- An ideal supplement for fast-track projects when demonstrating short-term results are critical.

Technical References for the benefits of using a nutrient package for in-situ Bioremediation?

1. He et al (2007) *"Influence of Vitamin B12 and Cocultures on the Growth of Dehalococcoides Isolates in Defined Medium"*
2. Harkness et al 2012 *"Use of statistical tools to evaluate the reductive dechlorination of high levels of TCE in microcosm studies"*
3. Tang et al 2013 *"U(VI) Bioreduction with emulsified Vegetable Oil as the Electron Donor - Model Application to a field Test"*

