

INFORMATION SHEET

ALPHA EXPLOSIVES AND HERCULES INCORPORATED
INSITU GROUNDWATER TREATMENT SYSTEM
ORDER NO. R5-2006-XXXX
PLACER COUNTY

Perchlorate and nitrate are groundwater pollutants beneath the Alpha Explosives facility. Perchlorate pollution was a result of research and development of pourable perchlorate slurries, and nitrate pollution was a result of manufacture of ANFO, a mixture of ammonium nitrate and diesel fuel. Perchlorate appears to have entered groundwater from an evaporation pond where waste perchlorate slurries were disposed. Nitrate originates around the ANFO manufacturing portion of the facility. Alpha Explosives and Hercules Incorporated have been experimenting with techniques to biodegrade perchlorate and nitrate insitu. Bench-scale studies and field-scale pilot studies have shown that acetate and ethanol are effective carbon sources to stimulate indigenous microbes to reduce perchlorate to chloride, reduce nitrate to dinitrogen gas, and oxidize acetate and ethanol to carbon dioxide and cell biomass.

The presence of perchlorate and nitrate in the groundwater poses a threat to existing and potential beneficial uses of the groundwater. Alpha Explosives and Hercules Incorporated propose to treat these pollutants insitu by injecting acetate in accordance with these proposed Waste Discharge Requirements. The pilot studies have shown that when the concentration of total organic carbon (an indirect measure of acetate and its breakdown products) is below 10 mg/l, it is rapidly consumed. When total organic carbon is greater than the sum of oxygen, perchlorate and nitrate, then fermentative conditions can develop, which slows the degradation process. If injected acetate is not completely consumed, these Waste Discharge Requirements require investigation into the extent of the treatment area, preparation of a Contingency Plan to remove excess total organic carbon, and if necessary, implementation of the Contingency Plan. These Waste Discharge Requirements also require monitoring and reporting to measure the effectiveness and extent of the treatment area.

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