

## INFORMATION SHEET

ORDER NO. R5-2005-XXXX  
AIR FORCE REAL PROPERTY AGENCY  
FORMER MCCLELLAN AIR FORCE BASE  
IN-SITU CHEMICAL OXIDATION TREATABILITY STUDY  
AT FORMER DAVIS GLOBAL COMMUNICATIONS SITE  
YOLO COUNTY

The Air Force Real Property Agency (hereafter Discharger) owns and operates a groundwater extraction and treatment system at the Davis Global Communications Site (hereafter Davis Site) in Yolo County. The inactive Davis Site was an annex of the former McClellan Air Force Base and is now managed by the Discharger. This system is being utilized to contain and remove numerous chlorinated solvents (primarily tetrachloroethene and trichloroethene) plumes present in the groundwater. The Discharger is evaluating potential alternative technologies that may replace the existing groundwater extraction and treatment system and reduce the time required to reach applicable water quality standards. The project is being conducted as part of a performance-based contract between the Discharger and CH2MHill. CH2MHill will be constructing and operating the treatability study.

The Discharger proposes to conduct an in-situ chemical oxidation (ISCO) treatability study to evaluate the potential for in-situ treatment of groundwater containing chlorinated solvents at the Davis Site. The Davis Site is located approximately 20 miles southwest of the former McClellan Air Force Base in Yolo County and 3 miles southeast of the City of Davis. It is situated in a predominantly agricultural area near the Yolo-Solano County border, approximately 5 miles south of Interstate 80 at the intersection of County Roads 104 and 36. The Davis Site comprises approximately 316 acres. Contaminants associated with the Davis Site include fuels and solvents. The treatability study will involve injection of potassium permanganate into a test cell.

To expedite remediation of the residual contamination, the Discharger is proposing application of ISCO, initially during a phased treatability test. The ISCO treatability study will be conducted in two phases. Waste Discharge Order R5-2005-XXXX and Monitoring and Reporting Program No. R5-2005-XXXX cover the activities for Phase 1 and Phase 2. Phase 2 is expected to follow procedures similar to Phase 1. Specific details of Phase 2 will be developed using the results of Phase 1. Minor changes in Phase 2 may require revisions to the MRP. Significant changes in Phase 2, if necessary, may require a separate Order and MRP. Chemical oxidation has the capability to reduce the contaminant mass in the subsurface in a much shorter timeframe than a pump-and-treat approach. ISCO can permanently degrade VOCs in months, allowing contaminants in the seasonally saturated zone to be treated during the short periods the zone is saturated. The objective of a full-scale ISCO application would be to remediate the residual VOC contamination in the B aquifer zone and seasonally saturated portion of the A aquifer zone and thereby facilitate the Discharger's goals of property transfer and site closure.

INFORMATION SHEET - ORDER NO. R5-2005-XXXX  
AIR FORCE REAL PROPERTY AGENCY  
FORMER MCCLELLAN AIR FORCE BASE  
IN-SITU CHEMICAL OXIDATION TREATABILITY STUDY  
AT FORMER DAVIS GLOBAL COMMUNICATIONS SITE  
YOLO COUNTY

ISCO causes some secondary effects such as increases in total dissolved solids (TDS) and redox sensitive metals. Potassium permanganate contains impurities including chromium and is known to oxidize trivalent chromium (CrIII) from soil to the more soluble hexavalent form (CrVI). Many factors may affect the rate and extent of mobilization and attenuation. For example,  $MnO_2$ , the product of potassium permanganate reduction, has been reported to both oxidize soil CrIII to CrVI and adsorb CrVI from solution. In addition, ion exchange processes may also be involved in Cr formation and attenuation during permanganate treatment. The literature and prior laboratory testing has shown that CrVI is normally mobilized to some degree during potassium permanganate treatment, but tends to attenuate in groundwater in weeks to months after the permanganate has been consumed. The potential for formation and attenuation of CrVI at the Davis Site will be evaluated during the treatability study. These adverse byproducts created by injection of the potassium permanganate are expected to be transient. Any persistent adverse byproducts created by the treatability study can be captured by the existing groundwater extraction system, if necessary.

11/1/05 JDT