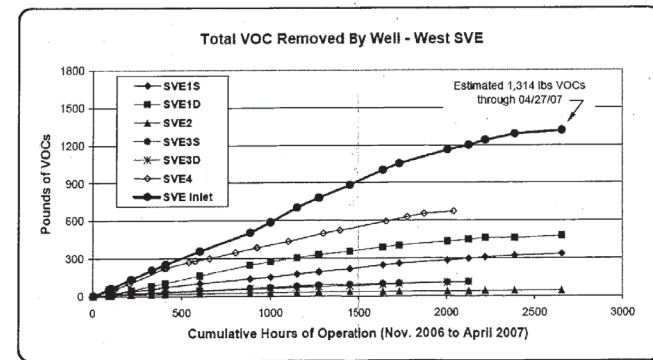
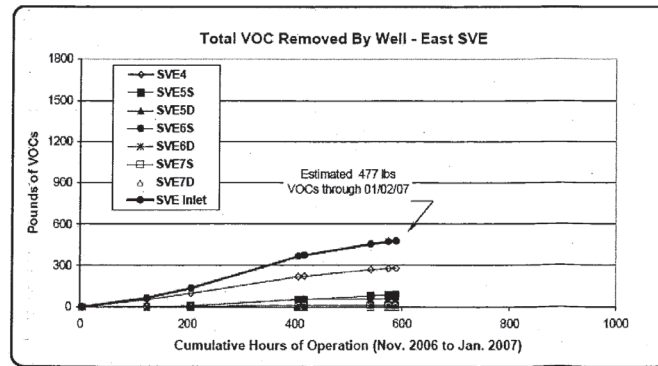


**SAMPLE LOCATIONS**

- MONITOR WELL LOCATION
- SOIL VAPOR EXTRACTION WELL LOCATION
- PROPOSED SVE WELL LOCATION
- SOIL GAS SURVEY LOCATION FOR VOCs
- SOIL GAS SURVEY LOCATION FOR VOCs WITH ADJACENT SOIL BORING FOR VOCs
- TOTAL LEAD AND SOIL GAS SURVEY LOCATION FOR VOCs
- SOIL BORING LOCATION FOR VOCs
- TOTAL METALS (CAM17) AND SOIL GAS SURVEY LOCATION FOR VOCs



**ENTACT**  
environmental services

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NO. DATE REVISION

APP.

Scale: 1"=50' Drawn By: DJL Checked By: GR Date: 6/2/06

JOHNSON CONTROLS, INC.  
PULLERTON, CA

**FIGURE 2-3**

**PILOT STUDY AREA FOR SVE**

monitoring depict a gradual decreasing trend in extraction rates, indicating that VOCs are slowly partitioning from the sorbed phase to the vapor phase. The gradual rate of VOC reduction is presumed to be related to the low permeability of subsurface soils. The aerial effectiveness of VOC removal through SVE has been limited by the vertically and laterally discontinuous soil types and further demonstrated by the erratic nature in productivity and effectiveness within each well location.

The most productive extraction well, SVE4, is located in an area where subsurface soils are considered to be the most impacted with VOCs, but other extraction wells (six) installed in the vicinity of SVE4 have been marginally productive. To further focus the removal efforts in this area, a new extraction well (SVE8) is proposed for installation approximately 25 feet east of SVE4 in an effort to duplicate the production of VOC removal observed at SVE4. Removal of vadose zone VOCs will be concentrated in this area until the extraction rates and/or concentrations reduce over time and/or soil concentrations diminish below the cleanup criteria.

## 2.7 Groundwater Monitoring

Groundwater monitoring was performed on observation wells located within the southeast portion of the site to document groundwater quality at the subject property as compared to the regional groundwater quality. The regional groundwater flow direction is west to northwest with a more northwesterly gradient at the site. Refer to Figure 2-4 for well locations and groundwater gradient. Monitor wells (2) were installed in the southeast portion of the site to an approximate depth of 120 feet bgs with a 20 foot long screen interval. These monitor wells, MW1 and MW2, were sampled on a quarterly basis during the development and implementation of the corrective measures. Samples were obtained using low-flow sampling techniques as described in the *Field Sampling Plan* included as Appendix D of the CMP.

Well purging operations during each sampling activity were conducted with a YSI Water Quality Checker in a flow through cell, and a submersible or bladder pump. Prior to

collecting groundwater samples at each monitor well location, the equipment was decontaminated and the well purged. Purged groundwater was monitored for pH, conductivity, temperature, turbidity, salinity, and oxidation/reduction potential (ORP) until these field parameters stabilized, indicating the production of representative formation water. Groundwater samples were collected after the field parameters stabilized. Refer to Appendix G for groundwater purge records and laboratory reports.

Groundwater samples were analyzed for VOCs by USEPA Method SW-846 8260B. Groundwater samples contained PCE concentrations ranging from 3.7 to 20 ug/l and TCE concentrations ranging from 11 to 290 ug/l. The observation well, FM-5, managed by the OCWD to monitor regional groundwater quality contained PCE concentrations of 34.4 ug/l and TCE concentrations of 100 ug/l in January 2006. This observation well is located in the southwest corner of the site cross gradient and 960 feet to the west of monitor well MW-1. This may indicate that the primary sources of the regional groundwater plume are upgradient of the county observation well FM-5 and MW2. Refer to Table 2-8 for the groundwater sample results.

**TABLE 2-8  
GROUNDWATER CONCENTRATIONS**

Description	Sample Date	VOCs, ug/l		
		PCE	TCE	DCE
Regional GW Quality Well FM-5	Jan-06	34.4	100	10.9
	Jun-06	32.5	58	6.7
	Dec-06	25.8	51.8	5.7
MW-1	Jun-06	10	33	5.5
	Nov-06	9.9	11	1.6
	Feb-07	6.3	13	2.9
	May-07	11	20	2.7
MW-2	Jun-06	3.7	23	7.4
	Nov-06	4.6	13	4.0
	Feb-07	7.8	190	80
	May-07	20	290	88

Regional Well, FM-5, sample results provided by Orange County Water District