

SELECTING A COST-EFFECTIVE SITE ASSESSMENT TOOL

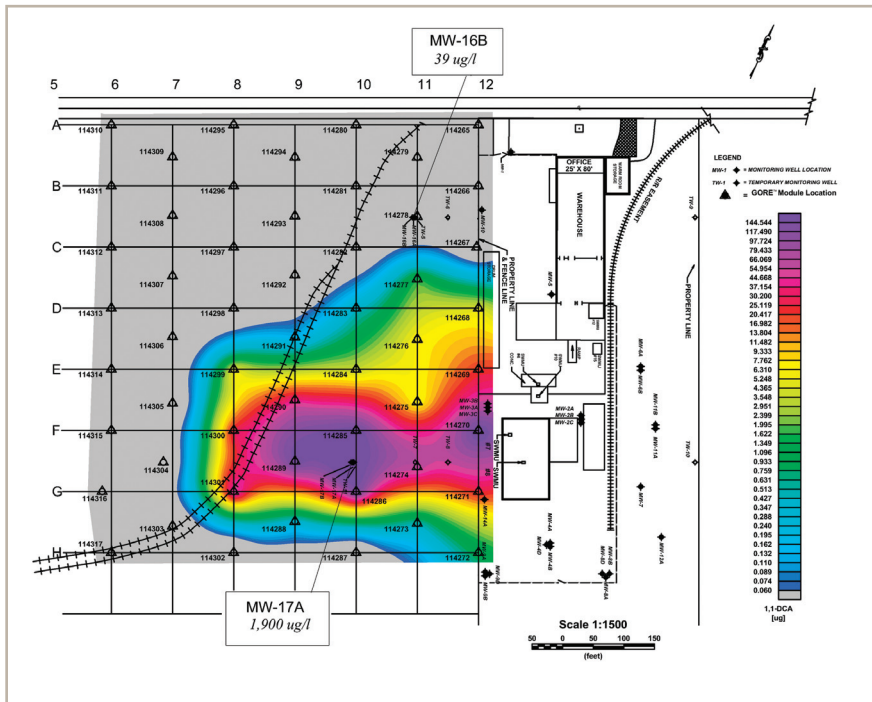


Figure 1: 1,1-DCA distribution in soil gas (µg), along with 1,1-DCA in groundwater (µg/l).

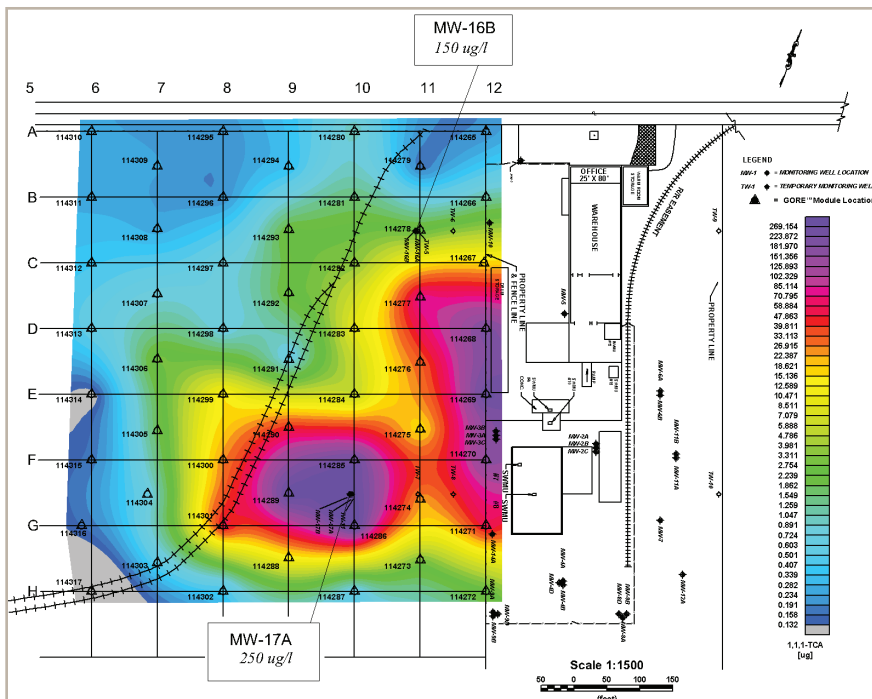


Figure 2: 1,1,1-TCA distribution in soil gas (µg), along with 1,1,1-TCA in groundwater (µg/l).

Survey Summary

Location: Eastern US

Property: Chemical distribution facility

Objective: Delineate off-site solvent migration

- AGI Survey selected as the most cost-effective and efficient assessment tool
- Off-site migration successfully delineated
- Single nested well set installed instead of several
- Est. \$55,000 saved in comparative assessment costs

Survey Objective

A chemical distribution facility under RCRA Facility Investigation (RFI) noted that chlorinated solvent contamination was migrating to an adjacent site. After considering several site assessment alternatives, the site owner selected the AGI Survey as the most cost-effective and efficient method to achieve an accurate delineation of the off-site solvent migration.

Site Background & Geology

- Active chemical storage and distribution facility, Eastern US
- Very fine sand over alluvial deposits of mixed silt, sands and clay
- Groundwater depth: 15 – 24 ft.
- Data from installed wells indicated that contamination was migrating off-site; extent was unknown

AGI Survey

- 51 AGI passive samplers over 10 acres
- Regular grid, 50 ft. spacing, 3 ft. deep
- 14-day exposure
- Modified EPA method 8260/8270 GC/MS analysis at Gore labs

Survey Results

Table 1 summarizes the projected effort and costs of each assessment approach considered (1995 costs). Fig. 1 illustrates the distribution of 1,1-dichloroethane in the soil gas. The soil gas data for 1,1,1-TCA are presented in Figure 2, and reveals a slightly different subsurface distribution, which would not be captured if relying on single compound reporting. Corresponding groundwater data are also posted on the maps, and show excellent agreement with the AGI Survey results.

Survey Conclusions

Based on the successful delineation achieved by the AGI Survey, and supported by pre-existing groundwater quality data, the site owner was able to install one additional nested well set, instead of several. The savings resulting from fewer well installations, and associated long-term O & M costs, were likely significant. From an assessment standpoint, the savings realized by using a AGI Survey, compared to alternative site assessment approaches, was estimated upwards to \$55,000 (Table 1).

Factors Considered In The Selection of a Site Assessment Tool:

- Degree of data-point coverage
- Off-site access
- Cost
- Planning complexity
- Ease of installation
- In addition, consideration was given to the likelihood that data gaps would still remain if intrusive matrix sampling approaches were used. Data gaps would require additional site assessment phases to further delineate the extent of the off-site contamination.

| Phase | Task Item | Cluster Wells | | Hydropunch single wells | | AGI Survey | |
|----------------------------------|-------------------|---------------|-----------------|-------------------------|-----------------|------------|-----------------|
| | | Qty | \$ | Qty | \$ | Qty | \$ |
| I | Soil Gas Labor | - | - | - | - | 1 | \$3,000 |
| | Soil Gas Survey | - | - | - | - | 51 | \$11,900 |
| | Single Wells | - | - | 4 | \$12,000 | - | - |
| | Cluster Wells | 5 | \$50,000 | - | - | - | - |
| II | Hydropunch Points | - | - | - | \$6,400 | - | - |
| | Single Wells | - | - | 2 | \$6,000 | - | - |
| | Cluster Wells | 2 | \$20,000 | - | - | - | - |
| III | Hydropunch Points | - | - | 4 | \$3,200 | - | - |
| | Cluster Wells | 1 | \$10,000 | 1 | \$10,000 | 1 | \$10,000 |
| Project Total \$\$ | | | \$80,000 | | \$37,600 | | \$24,900 |
| Savings using AGI Surveys | | | \$55,100 | | \$12,700 | | |

Table 1: 1995 costs

