

Injection Design Study

Historical data from a site, if available, may provide sufficient information to choose a Trap & Treat[®] product, calculate the amount of product needed, and determine where it should be placed. However, many sites have not been investigated, or the historical data is insufficient or not recent enough, to create an adequate injection design. When this is the case, an Injection Design Study will be necessary.

An injection design study is put together to assess the following:

1. The overall area of soil and groundwater impacted by the contamination;
2. The vertical extent of soil and groundwater impacted by the contamination;
3. Where elevated areas of contamination exist, including free-product; and
4. The subsurface lithology and aquifer characteristics, so that the product is placed properly and efficiently.

Injection Design Study

Because the primary purpose of an injection design study is to gain a better understanding of site characteristics and, particularly, the vertical depth and areal extent of contamination, the design of the study should be directed toward answering these questions. Our experience has been that the weakest area in most site investigations is lack of information about the vertical extent of contamination.

If the plan is to have a mobile laboratory present for onsite analysis, there should be room in the staging area to set up the laboratory and the area should be close to adequate power, so that the lab can be hooked up. If, instead, the samples will be sent to an offsite laboratory for analysis, planning should include obtaining the materials needed to transport the samples properly (often provided by the lab), such as coolers, ice, sample vials for soil and groundwater, labeling materials, chain of custody forms, etc.

Generally, a grid is laid out over the suspected area of contamination to help with location and identification of sampling points. The size of the grid will vary depending on the size of the plume and how detailed a profile is required, but a good rule of thumb is to establish a grid ranging in size from 10 to 50 feet across the investigation area. (See sample grid on the following page.) It is recommended that any monitor wells already present onsite be sampled, and then a variety of temporary implants be installed and sampled with placement biased towards gaining a good idea of the boundaries of contamination. After these samples have been analyzed, soil cores should be taken in the hottest areas (usually three to five continuous soil cores). These soil cores should be analyzed on 2-foot intervals with the intent of getting a good picture of the vertical profile of contamination.

Report of Findings

Once all samples have been gathered and analyzed, a report may be prepared to present the findings of the study and tabulate the data. Frequently, a meeting is held to discuss the results and to agree on the general form of the treatment (injection) plan.

Site Restoration

It is often unnecessary to do any site restoration after an injection design study; however, it is probably wise to have asphalt or cement available to patch any holes made in walkways or driveways. It is also worthwhile to have a source of sod, if it will be necessary to drive onto grassy areas to take samples.

