State of Illinois
Pat Quinn, Governor

Illinois Environmental Protection Agency
Douglas P. Scott, Director

LEAKING UNDERGROUND STORAGE TANK PROGRAM
Free Product Investigation Guidance

Early Action

As part of early action (EA), the owner or operator may remove any groundwater in the excavation that exhibits a sheen and visibly contaminated fill material. For purposes of payment from the Underground Storage Tank Fund for early action costs, however, the removal of fill material is limited to the amount within four feet from the outside dimensions of the tank.

Analytical results from EA sampling should be checked to determine whether any wall and/or floor concentrations exceed soil saturation limits (C_{sat}), as found at 35 Ill. Adm. Code 742.Appendix A.Table A, for any contaminants of concern. In most cases, the EA removal will address any saturated soil around the tanks and lines. The EA sample analytical results will provide this information.

If free product (FP) is present exceeding one-eighth of an inch in depth, as measured in a groundwater monitoring well, or as a sheen on groundwater in the tank removal excavation or on surface water, it must be removed to the maximum extent practicable during early action. If FP removal activities will be conducted more than 45 days after the confirmation of the presence of FP, submittal of a Free Product Removal Plan (and budget, if payment from the Underground Storage Tank Fund will be sought) is required.

Investigation of Free Product

The first step in free product removal is to remove any remaining saturated soil with contaminant concentrations exceeding C_{sat}. The investigation should then proceed as follows, based upon a groundwater monitoring well with greater than one-eighth of an inch of FP.

The most common FP site is one wherein the tanks and lines were removed some time ago and either new tanks and lines were installed or the site has just been sitting with no removal and/or investigation to date. In this case, the FP will likely be discovered in a groundwater monitoring well. The following guidelines present a reasonable approach to development of a plan for investigation of the FP and remediation of the problem:

- A groundwater monitoring well is discovered with greater than one-eighth of an inch of FP (a free product well [FPW]). If the source is not immediately known, all tanks and lines at the site should be tested for leaks.

- The Free Product Removal Plan should propose removal of saturated soil around tanks and lines (if not completed during EA). The analytical results from EA and/or Stage 1 site investigation sampling should indicate whether contaminant concentrations exceeding

C_{sat} remain that need to be removed. If these samples have not been collected, collection of soil samples around the tank pit and line trenches should be proposed.

- One groundwater monitoring well should be installed on each side of the FPW at a distance of approximately ten feet (for a total of four FP monitoring wells [FPMW]). These wells should be constructed like the FPW (same total depth, screened at the same depth, etc.). One month should be allowed for accumulation of groundwater in the FPMWs. A shorter time frame may be proposed based on site-specific characteristics (hydraulic conductivity, gradient, etc.). Each FPMW should be checked after one month (or shorter time frame, if approved) to measure the depth of FP in the well.

- Besides installation of the four FPMWs, a four-inch recovery well (RW) should be installed at the location of the FPW. An automatic petro recovery pump should be placed in this four-inch RW. This automatic pump should only remove FP and, then, only when FP greater than one-eighth of an inch accumulates.

- Much like the investigation for extent of dissolved contaminant impact, the investigation for FP should continue outward in the direction of each impacted FPMW with FP exceeding one-eighth of an inch. However, only two additional FPMWs should be proposed in each direction where FP is found at a depth exceeding one-eighth of an inch. These should be placed approximately ten feet out from the impacted FPMW (with greater than one-eighth of an inch FP) and spaced approximately 20 feet apart. This process of extending the investigation outward in the direction of FPMWs with greater than one-eighth of inch FP should continue until the extent of FP greater than one-eighth of an inch is defined.

NOTE: See the drawing on the next page for an example of general well placement locations.

- The Free Product Removal Plan should then propose remediation of the area defined with FP exceeding one-eighth of an inch.

- Information gathered from the FPMWs may be the only way to determine the source of FP, especially if no FP is found during EA activities (tank and line removal).

- Soil boring logs and monitoring well construction diagrams should be provided for all wells.

- Depth of FP, in addition to depth to water, should be measured prior to any removal and should be reported for each monitoring event.

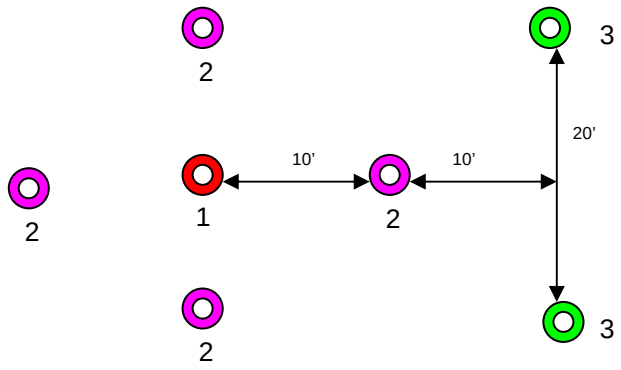
- Wells used to define the FP plume should be checked quarterly for depth of FP in the well. This monitoring should be included in the Corrective Action Plan and Budget (if site investigation is completed) or in the Free Product Removal Plan and Budget.

- Site investigation should continue in conjunction with FP monitoring until a Corrective Action Plan is developed for the site, which would then include any additional FP activities. Discovery of FP should not delay completion of the site investigation or corrective action.

Investigation Results/Plan for FP Recovery
Most, if not all, of the results of the above investigative activities should be included with the Free Product Removal Report that is submitted within 45 days after confirmation of the presence of FP from an underground storage tank. The regulations require submittal of this information. The Free Product Removal Report should present the investigative results (identifying the source and defining the extent of FP) and propose a plan to recover the FP. The budget should include costs of any additional investigation and remediation.

Absent off-site impacts, the plan (and budget) for monitoring and recovery of FP should be included in the Corrective Action Plan for the site. If off-site impact is defined as part of the investigation, the Free Product Removal Plan and Budget may include control measures for the off-site impact until such time as a Corrective Action Plan to address the release at the site (including FP) is approved.

FREE PRODUCT MONITORING WELL (FPMW) PLACEMENT DIAGRAM



1 -- FPW at the Source
2 -- FPMW
3 -- Additional FPMW