

RISK-BASED NAPL MANAGEMENT



What is it?

A guidance document for risk-based management of non-aqueous phase liquids (NAPLs) was issued by the Texas Commission on Environmental Quality (TCEQ) in February 2008. The NAPL guidance (RG-336/TRRP-32) is based on the Texas Risk Reduction Program (TRRP), 30 Texas Administrative Code (TAC) Chapter 350 regulations. The guidance reviews the choice of recovery and/or control options to manage NAPL, and describes the documentation required by TCEQ to support those decisions.

Overview

The NAPL management process consists of 5 steps: **1)** assessment of the nature and extent of NAPLs, **2)** identification of NAPL conditions (triggers) that require response actions, **3)** response action objectives and endpoints for the identified triggers, **4)** a NAPL management strategy to achieve the response action endpoints, and **5)** implementation and evaluation of the NAPL management strategy. The first three steps are accomplished through an Affected Property Assessment Report (APAR), step 4 is completed through a Response Action Plan (RAP), and step 5 is pursued through a Response Action Effectiveness Report (RAER), Response Action Completion Report (RACR), and Post-Response Action Completion Report (PRACR).

Depending on the nature and extent of NAPLs, receptors and site conditions, the response action endpoints could be based on a recovery option (Standard A), a control option (Standard B) or combination of recovery and control options (Standard B). Figure 1 illustrates the salient features of the NAPL management policy.

The Process

Step 1. Assessment: An understanding of the nature and extent of NAPL in the *vadose zone*, *saturated zone*, *surface water and sediments* is necessary to identify the triggers for response action, which in turn will define the response objectives and endpoints. The presence of NAPL in any of the four environments will lead to the next step in determining whether the presence of NAPL triggers a response action.

Step 2. Response Triggers: Any of the seven conditions of NAPL occurrences listed in Table 1 triggers a response action. If none of these conditions exist, then no response action is required. Presence of food grade mineral oil in subsurface soil at residual concentrations overlying Class 3 groundwater is an example of a condition that does not trigger a response.



TABLE 1

NAPL Conditions Requiring Response Action
Potentially explosive vapors or exceedence of the inhalation PCL Air inh-V
Migrating NAPL zone
Mobile NAPL
Aesthetic or nuisance (taste, odor, color) impact caused by NAPL
NAPL discharge to groundwater
NAPL discharge to surface water
NAPL discharge to sediments

Step 3. Response Objective/Endpoint: A response objective is the performance-based goal that manages the threat posed by a NAPL condition that requires a response action (trigger). An endpoint is a site-specific response action goal that eliminates the threat to human and ecological receptors, created by NAPL trigger. Recovery and Control are two viable response actions to address NAPL triggers.

Recovery options consist of vapor recovery and/or recovery of NAPL to residual saturation in the vadose zone, saturated zone and sediments. TRRP 32 also defines the conditions where NAPL does not have to be recovered. According to a methodology presented in TRRP 32, if readily recoverable NAPL is present, it must be recovered or managed under a Technical Impracticability (TI) waiver. However, if readily recoverable NAPL is not present then NAPL can be controlled if it is present in Class 2 / Class 3 groundwater within a Plume Management Zone (PMZ).



Control options are available for vapors (as long as explosive conditions do not exist) to eliminate exposure in excess of protective concentration levels (PCLs), and physical and institutional controls are available to cease migration and mobilization of NAPL. Control options for NAPL in sediments and Class I groundwater are available only via a Technical Impracticability (TI) demonstration. A TI Demonstration must comply with the regulatory requirements of §350.33(f)(3) and (4). Control options are not available if NAPL is released to surface waters.

NAPL beneath a Waste Control Unit (WCU): A WCU is defined as a municipal or industrial landfill with a liner and a cap. If the WCU is appropriately closed then no groundwater points of exposures (POEs) are expected to exist within the footprint of WCU. Control options beneath the WCU are subject to approval by the TCEQ, and applicable institutional controls (§350.33(f)(2)). A response action is only required in the cases of NAPL-generating vapors and migrating NAPL zones because groundwater response objectives must be met beyond the perimeter of the WCU.

Step 4. NAPL Management Strategy: The goal of a comprehensive NAPL management strategy is to achieve all of the response action objectives with minimum endpoints. The NAPL management strategy should take into consideration all of the recovery and control endpoints, including non-NAPL response actions, to develop a single comprehensive response action plan for the affected property.



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Step 5. Implementation: Implementation of the NAPL strategy, and evaluation of the progress and effectiveness of the response action is the final step of the NAPL management process. Data collected during various phases of implementation of the response action is submitted to the TCEQ via the RAER, RACR, and PRACR documents.



Key Points

- NAPL is not required to be recovered if it is not readily recoverable from Class 2 / 3 groundwater within a PMZ.
- A TI demonstration can be used for all three classes of groundwater, soil and sediments under remedy Standard B.
- A TI demonstration is not allowed for releases of NAPL to surface water.
- Immobile NAPL under a WCU may not trigger a response action.

- Consolidate response actions to address all of the triggers.
- Appropriate tables provided in the NAPL guidance (RG-336/TRRP-32) guidance should be completed for submission with APAR and/or RAP.

For More Information

The complete NAPL guidance and forms are available from the TCEQ website at:

<http://www.tceq.state.tx.us/remediation/trrp/guidance.html>

TRRP rules may be found at:

<http://www.tceq.state.tx.us/rules/indxpdf.html>

Please feel free to contact us at GSi Environmental Inc. (GSi) with any questions you may have regarding this issue. Visit our website: www.gsi-net.com

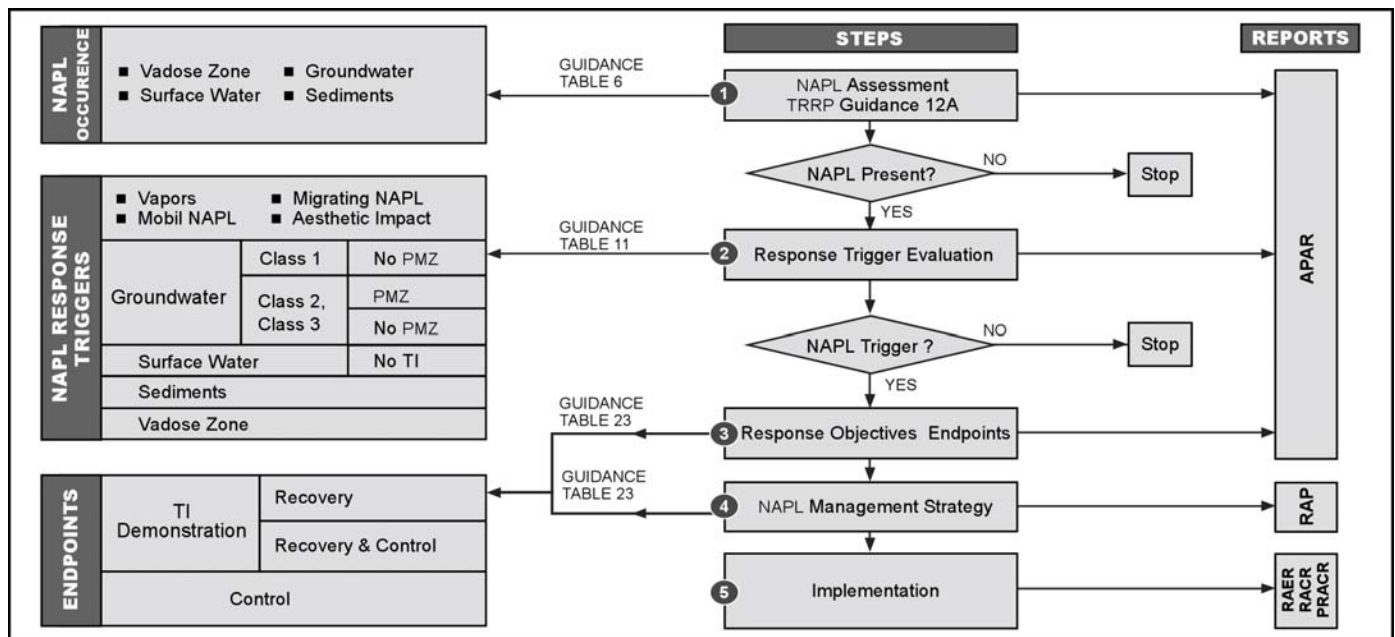


FIGURE 1



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About GSi

GSi ENVIRONMENTAL INC. (GSi), is an environmental engineering consulting company located in Houston, Texas, which specializes in the management of environmental risk. Since 1986, GSi, has been providing industry with innovative solutions to soil, groundwater, surface water, and air pollution problems.

■ GSi WILL CONTINUE TO PROVIDE periodic updates regarding important regulatory developments in Texas. Should you have any questions regarding these or other upcoming issues, please feel free to contact us at 713-522-6300.

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