Decision-Making Framework for Cleanup of Sites Impacted with LNAPL

NAPL Cleanup Alliance

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representing

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Background

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- The NAPL Cleanup Alliance, composed of industry and government partners, was formed in 2001 to promote *practical and reasonable* approaches to LNAPL management at impacted sites
- The Alliance has developed a guide or framework that describes a *collaborative* process for making sound decisions for NAPL management

The Decision-making Framework

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- Recognizes the complexity of the problem and site-specific challenges
- Is based upon participation by a broad stakeholder group
- Is primarily applicable to large complex sites, such as petroleum refineries
- Complies with existing regulatory requirements

The Decision-making Framework…

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- Promotes an innovative consensus-based process focusing on long-term vision for a site
- Provides a roadmap based upon specific goals and endpoints to measure progress towards meeting the goals
- Is flexible, allowing for iterations that may be based upon receipt of new information
- Recognizes the need to manage the project in phases

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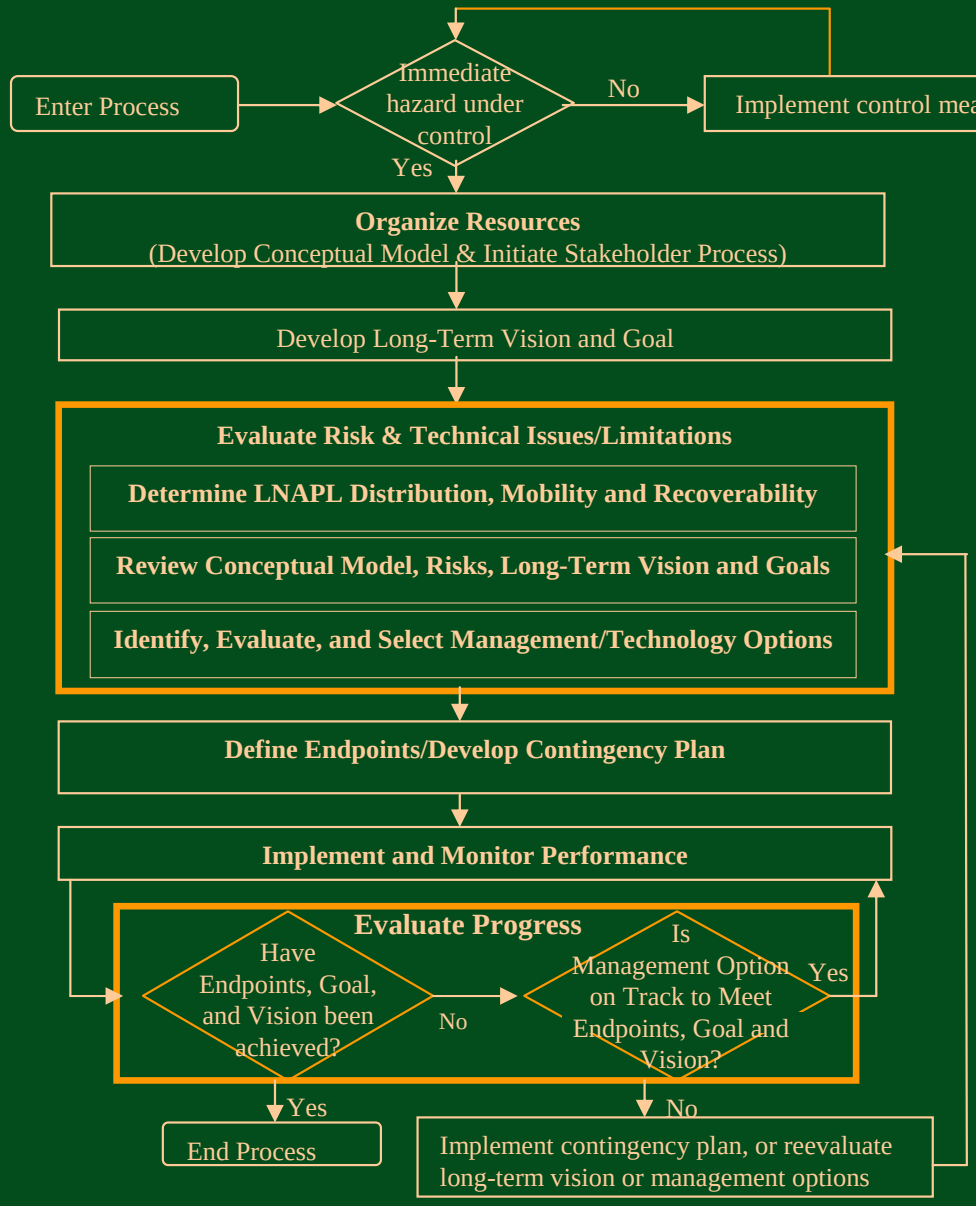
Collaborative Decision-Making Process



Organize Resources

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- Organize Resources (human, $, information)
  - Assess current state of knowledge
  - Develop the site conceptual model
  - Organize the stakeholder process
  - Identify stakeholders
  - Design, agree to, and implement a consensus-based process

Develop Long-term Vision & Goals

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- Develop Long-term Vision
  - Discuss stakeholder interests
  - Develop a common understanding of the problem
  - Prepare the long-term vision statement
- Establish LNAPL Management Goals
  - Specific, measurable, achievable, results-oriented, and time-bound
  - Set goals for each phase of the project (all don’t need to be set up front)

Collect & Analyze Supplemental Data

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- Targeted Objectives
  - LNAPL Distribution
  - LNAPL Mobility
  - LNAPL Recoverability
- Field Data Collection
- Laboratory Analyses
- Data Interpretation

Review and Refine Site Conceptual Model, Long-term Vision, and Goals

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- Revisit previous definitions and decisions using new information collected during supplemental investigation
- Refinements can be made before evaluation of management options

Identify, Evaluate, and Select Management Options

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- Process involves brainstorming followed by structured evaluation
- Treatment, removal, and containment technologies are considered
- Institutional controls are considered
- Technology or other option is selected and may be bench- or pilot-scale tested prior to implementation
- Design system to meet site specific needs

Define Endpoints and Develop Contingency Plan

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- Define an endpoint for each of the goals so that progress towards meeting the goal can be measured
  - Endpoints provide very specific information, e.g., number and location of wells, type of analysis, etc.
- Contingency plans are developed as backup if goals are not met, endpoints are not achieved, and long-term vision is not achieved
  - Recognize uncertainties

Implement and Monitor

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- Implementation occurs in phases to address specific goals for each phase
- Monitoring of progress at regular intervals is critical both during active and passive phases

Evaluate Progress

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- Questions are asked regarding performance towards meeting endpoints, goals, and long-term vision
- If progress is not made, the contingency plan may be implemented; this may include iteration on the process

What Next?

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- Document in EPA legal review; publication expected Summer 2004
- RTDF preparing training
  - Module 1 on The Science of LNAPL has been completed
  - Module 2 on LNAPL management is in preparation
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