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October 17, 2011

Mr. Scott Martin
Kinder Morgan Energy Partners, L.P.
1100 Town & Country Road
Orange, CA 92868

In reply refer to:
SL607392800:smcclain

Dear Mr. Martin:

SUBJECT: POST 2010 REMEDIAL COMPLIANCE EVALUATION OFF-TERMINAL LNAPL ZONE, MISSION VALLEY TERMINAL, SAN DIEGO, CALIFORNIA

This letter is in response to the "Post 2010 Remedial Compliance Evaluation Off-Terminal LNAPL Zone, Mission Valley Terminal, San Diego, California" (RCE Report), prepared by ARCADIS, dated June 29, 2011. The objective of the RCE Report is to demonstrate to the California Regional Water Quality Control Board, San Diego Region (San Diego Water Board) compliance with Cleanup and Abatement (CAO) Order No. 92-01, Addendum No. 5, Directive No. 2 (Directive No. 2).

The Mission Valley Terminal (Site) is comprised of two areas in and around the Mission Valley Terminal: the on-Terminal area and the off-Terminal area. Directive No. 2 ordered Kinder Morgan Energy Partners, L.P. (Kinder Morgan) "... as soon as practicable and no later than December 31, 2010, remove residual light non-aqueous phase petroleum liquid (LNAPL) from subsurface soil and groundwater beyond MVT to the extent technically practicable." Therefore, compliance with Directive No. 2 applies to the entire off-Terminal area.

The San Diego Water Board provided Kinder Morgan the factors (i.e. multiple lines of evidence) needed to support a decision that LNAPL has been removed "to the extent technically practicable."¹ These multiple lines of evidence include:

1. A solid argument that the selected remediation technology (or technologies) is the practicable benchmark for this type of contaminant and setting;
2. A set of expectations for what the technology can practicably achieve, through some combination of empirical experience and modeling. For example, what should residuals in soil look like when the extent technically practicable has been reached and what is the basis for that expectation? This could be the basis for establishing metrics and lines-of-evidence; and

¹ San Diego Water Board, Revised Off-Terminal LNAPL Zone Remedial Compliance Evaluation, November 5, 2010, Mission Valley Terminal, January 3, 2011.

3. Evidence that the technology achieved what was expected and that further operation under optimized conditions would not achieve any additional significant removal.

Primary Off-Terminal LNAPL Zone

The primary off-Terminal LNAPL zone refers to the original LNAPL area as defined in the Site Conceptual Model and Off-Terminal Corrective Action Plan, dated September 8, 2005.² Kinder Morgan has met Directive No. 2 in the primary off-Terminal LNAPL zone. This conclusion is based on the following overview of Kinder Morgan's remedial activities:

1. Selection of an LNAPL remedial approach (i.e. aquifer dewatering and soil vapor extraction) that is well documented as appropriate for petroleum fuel spill sites;
2. Implementation and monitoring of the remedial activities to optimize LNAPL removal;
3. Monitoring outcomes to verify that the remedial approach achieves what is expected under optimal conditions; and
4. Monitoring outcomes to verify that continued remedial efforts to remove LNAPL would provide only disproportionately small incremental benefit.

The RCE Report and supporting documents indicate that by December 31, 2010, the LNAPL-affected soil in the primary off-Terminal zone has reached a condition where continued remedial efforts are providing small incremental benefit (i.e. LNAPL has been removed to the extent technically practicable).³

Addendum No. 5 to the CAO directed Kinder Morgan to monitor the remediation systems, soil vapor, and groundwater to track the remediation effectiveness and progress toward cleanup.⁴ The RCE Report, and supporting documents, provides a synthesis of results from data collected over time that have demonstrated remedial performance goals were achieved by the end of 2010.³

Remedial performance was also tracked over time through a series of soil sampling events at consistent locations within LNAPL footprint. Chemical analyses from these events showed consistent reduction of total petroleum hydrocarbons, benzene, toluene, ethyl benzene, xylene, and methyl tertiary-butyl ether to non-detect or very low levels. Leachate data collected within the LNAPL footprint also showed the same general results.

² LFR Levine-Fricke, *Site Conceptual Model and Off-Terminal Corrective Action Plan*, Mission Valley Terminal, September 8, 2005.

³ Arcadis, *Excavation of LNAPL Affected Soil in the Off-Terminal Area*, Mission Valley Terminal December 29, 2010, and *Rebound Testing and Confirmation Soil Sampling in the Primary Off-Terminal LNAPL Zone*, Mission Valley Terminal, San Diego, California. June 27, 2011.

⁴ Addendum No. 5, to CAO 92-01, Attachment 1, Monitoring and Reporting Program, April 13, 2005.

Kinder Morgan stated that they intend to continue operating the primary SVE system in a bioventing mode until the December 31, 2013 groundwater cleanup directive is met.⁵ The San Diego Water Board encourages Kinder Morgan to take all necessary actions to ensure the next cleanup deadline is met.

Northwestern Off-Terminal LNAPL Zone

The northwestern off-Terminal LNAPL Zone refers to the LNAPL-affected soil that was discovered in late 2009.⁶ The RCE Report and the supporting documents failed to demonstrate that LNAPL-affected soil in the northwestern area was removed to the extent technically practicable.³ Therefore, the northwestern off-Terminal LNAPL zone is not in compliance with Directive No. 2. This is a violation of Addendum No. 5 to CAO No. 92-01 and subjects Kinder Morgan to possible further enforcement action by the San Diego Water Board.

The San Diego Water Board acknowledges that the LNAPL-affected soil in northwestern area was not apparent from initial site characterization data, and that it was not detected until data from the operation of the SVE system showed increasing vapor concentrations at the northwest boundary. Further investigation efforts including installation of temporary soil vapor probes and soil sampling indicated additional LNAPL-affected soil in this area. Kinder Morgan has installed additional soil vapor wells and a separate SVE system to remediate the LNAPL-affected soil in the northwestern area. The San Diego Water Board encourages Kinder Morgan to continue these efforts to complete the cleanup of the LNAPL-affected soil as expeditiously as possible.

If you have any questions please contact me or Mr. Sean McClain at (858) 627-3988 or via e-mail at smcclain@waterboards.ca.gov.

Sincerely,



CRAIG L. CARLISLE
Senior Engineering Geologist
Central Cleanup Unit

CLC:SM

cc: Ms. Grace Lowenberg, Deputy City Attorney, Office of the City Attorney (sent via email).

Ms. Laura Drabrandt, Esq., Office of Enforcement, State Water Resources Control Board (sent via email).

⁵ Addendum No. 5, to CAO 92-01, Directive No. 3, April 13, 2005

⁶ LFR Inc., *Results of a Soil Vapor Survey to Assess Extent of Previously Uncharacterized LNAPL-Affected Soil in the Off-Terminal Area*, Mission Valley Terminal, San Diego, Ca. July 24, 2010.