STATE OF NEVADA
Department of Conservation & Natural Resources
DIVISION OF ENVIRONMENTAL PROTECTION
Brian Sandoval, Governor
Leo M. Drozdoff, P.E., Director
Colleen Cripps, Ph.D., Administrator

FACT SHEET

(Pursuant to NAC 445A.874)

Permittee Name: **Kinder Morgan Energy Partners, L.P.**
Project Name: **Kinder Morgan Las Vegas Terminal**
Permit Action: **UIC Draft Permit Major Mod.**
Permit Number: **UNEV2005210**

Type of Project: **Remediation**
Address: **5049 North Sloan Lane Las Vegas, Nevada 89115**
Injection Wells (#): **Six (6)**

A. Description of Injection

Location: Five vertical injection wells and one infiltration gallery are located north of the intersection of Range Road and Stafford Drive, on the western (upgradient) edge of the Kinder Morgan (Calnev Pipe Line Company, LLC) Las Vegas Terminal, an operating partnership of Kinder Morgan Energy Partners facility located at 5049 North Sloan Lane, Las Vegas, Nevada 89115 in the SE¼ of Section 34, T19S, R62E, MDB&M, in Clark County. The six and eight-inch diameter injection wells will range from 120 to 130 feet below ground surface (bgs) and the infiltration gallery depth is 7 feet bgs. Groundwater is present at a depth of approximately 75 to 80 feet bgs and flows east-southeast.

Latitude: 36° 14' 57" N
Longitude: 115° 02' 24" W

Characteristics: The groundwater at this location contains dissolved petroleum hydrocarbons, particularly BTEX (benzene, toluene, ethylbenzene, and xylene) and methyl tertiary butyl ether (MTBE) associated with historical releases from subsurface pipelines used for transfer operations at the terminal. The Permittee has requested to continue subsurface injection from a groundwater pump and treat system.

Eight groundwater wells, each six inches in diameter and ranging in depth from 120 to 130 feet, located along the downgradient property boundary of the terminal extract the contaminated groundwater and convey it to a groundwater treatment system. The extracted groundwater is then treated for petroleum hydrocarbons, including the reduction of BTEX and MTBE to concentrations equal to or less than the permit limits. The injected water may be amended with oxygen, sulfate, or nitrate, and will be reintroduced into the aquifer via the upgradient injection wells described above. The purpose of injecting treated groundwater is to enhance naturally occurring biodegradation of BTEX and MTBE in the source area and potentially enhance downgradient capture at the extraction wells.

B. Synopsis

As of February, 2013 Major Modification: The responsible party, Kinder Morgan, has elected to change the remediation project from a pilot study to a full-scale remediation project. The Permittee has requested to add four injection wells (IW-17, IW-18, IW-19, and IW-20) to the permit, bringing the total amount of injection wells to six. Kinder Morgan has also proposed changes to the permit monitoring plan to provide more comprehensive data for the entire remediation project now that additional injection wells are being proposed. These proposed changes to the monitoring plan will remove most wells from a cluster of monitoring points around IW-16 and IG-01 and add wells to the boundary and core of the BTEX and MTBE plume. Changes to the monitoring plan will also add wells directly downgradient from the new injection wells.

As of July, 2011 Renewal and Major Modification: The responsible party decided to change remediation strategies during 2010, and is implementing a pilot project moving all remediation actions on-site to capture more ground water along the extraction well transect (including two new wells), treat in a similar fashion as previous, and discharge into an injection well and an injection trench, trying to focus on enhanced degradation of contaminants within the plume. Oxygen and other nutrients may be added to the injectate to further enhance biodegradation. The permit monitoring and sampling conditions have been modified to reflect the new pilot test. If this approach works, the RP will likely expand the system within the next 2 years to full-scale level. Because well WB-7 is cross-gradient, this well will remain the background WQ well in the permit.

Off-site injection has stopped and General Permit GU07RL-51002 has been cancelled. Any future injection off-site will be incorporated into permit UNEV2005210.

As of May, 2008 minor modification: A one time tracer test is authorized using two separate tracer solutions, one containing 300 ppm rhodamine WT, a proprietary fluorescent tracer dye, and the other containing 800 ppm bromide. The tracers will be injected into three injection wells: One is an existing injection well, IW-12. The other two will be new injection wells drilled upgradient of the existing wells IW-4 and IW-8. The purpose of the tracer test is to evaluate the offsite hydrogen peroxide remediation and to collect data to evaluate other remediation strategies.
The tracer test will be conducted in two phases. The first phase will be a forced gradient test using the rhodamine WT solution. 500 gallons of the solution will be injected in under an hour into each of the three injection wells. The injection rate is higher than the infiltration rate, and is expected to create an injection mound which will push out in all directions from the well. Monitoring will continue for three days using a YS16130 rhodamine sensor or equivalent.

The second phase of the tracer test will be a natural gradient test in which bromide solution will be injected slowly enough to minimize mounding, approximately 0.5 gallons per minute for a total of one hundred twenty gallons into each of the three injection wells. Monitoring will continue every two weeks for up to three months.
The total mass of rhodamine WT to be used is 7.5 pounds of dry powder containing 50% rhodamine, which will be mixed with 1500 gallons of water to create the 300 parts per million (ppm) solution. Per the consultant, the manufacturer states that the 50% of the powder that is not rhodamine is "a proprietary blend composed of inert ingredients to act as a stabilizer for the product."
The total mass of bromide to be used is three pounds of dry powder containing 99% bromide, which will be mixed with 360 gallons of water to create the 800 ppm solution.

Seven additional new wells will be drilled for observation of the tracer test. Two will be drilled downgradient of IW-4, two will be drilled downgradient of IW-8 and three will be drilled in the vicinity of IW-12, one north, one south, and one downgradient.

Hydrogen peroxide injection activities will not be conducted during the tracer test. At the conclusion of the tracer test, a determination of how the newly drilled wells will be used for future remediation will be made depending on results of the test.

C. Receiving Water Characteristics

The sedimentary profile beneath the site consists of clays, silt, silty clays, and silty sands. Caliche is present intermittently in both highly cemented layers and nodules. Groundwater is present at a depth of about 75-80 feet bgs and flows east-southeast. The average local gradient is estimated to be approximately 0.01 ft/ft. Hydraulic conductivity values calculated from recent site aquifer testing ranges between 15 ft/day and 30 ft/day. The transmissivity of the receiving formation has a calculated range between 140 and 830 ft^2/day based on recent pump tests at the facility. Average velocity of groundwater in the vicinity ranges between 3.1 and 3.6 ft/day, based on tracer tests performed in 2010, but may vary due to preferential movement in fractures and other higher permeability features in some parts of the facility.

D. Procedures for Public Comment

The Las Vegas Review Journal will publish the notice of the Division's intent to modify a UIC permit authorizing the facility to inject into the groundwater of the State of Nevada on **March 22, 2013**. The notice was mailed to interested persons on our mailing list. Anyone wishing to comment on the proposed permit can do so in writing for a period of 30 days following the publication date of the said public notice. The comment period can be extended at the discretion of the Administrator. All written comments received during the

comment period will be retained and considered in the final determination.

A public hearing on the proposed determination can be requested by the applicant, any affected state, any affected interstate agency, the regional administrator of EPA Region IX or any interested agency, person or group of persons.

Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determines to be appropriate. All public hearings will be conducted in accordance with NAC 445A.238.

The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to NRS 445A.605.

E. Proposed Determination

The Division has made the tentative determination to modify the permit which has been issued for a five year period.

G. Rationale for Permit Requirements

The permit conditions will help to ensure that the injectate does not adversely affect the existing water quality or hydrologic regime.

Prepared by: Jason Ferrin
Date: February 2013

APPENDIX A

PARAMETER	WB-7 sampled 1/5/05	DRINKING WATER STANDARDS (MCL)
Total Dissolved Solids, mg/L	250	1000
pH	7.9	6.5 - 8.5
Chloride, mg/L	6.0	400
Fluoride, mg/L	0.45	4
Sulfate, mg/L	25	500
Nitrate (as nitrogen), mg/L	0.32	10
Nitrite (as nitrogen), mg/L	<0.25	1
Aluminum, mg/L	13	0.2 (Advisory)
Antimony, mg/L	<0.0050	0.006
Arsenic, mg/L	0.035	0.05
Barium, mg/L	0.32	2
Beryllium	<0.0040	0.004
Cadmium, mg/L	<0.0050	0.005
Chromium, mg/L	0.025	0.1
Copper, mg/L	0.016	1.3
Lead, mg/L	0.012	0.015
Iron, mg/L	13	0.6
Magnesium, mg/L	49	150
Manganese, mg/L	0.32	0.1
Mercury, mg/L	<0.0010	0.002
Nickel, mg/L	0.021	0.1
Selenium, mg/L	<0.0050	0.01
Silver, mg/L	<0.0050	0.05
Thallium, mg/L	* <0.0050	0.002
Zinc, mg/L	0.10	5

* Detection limit exceeded the associated Drinking Water Standard. All future sampling must be analyzed using EPA Method 200.8 to obtain a lower detection limit.