

**BRIEF FOR MARYLAND SQUARE DCI DRYCLEANER SITE, LAS VEGAS**  
**Prepared by NDEP Bureau of Corrective Actions**  
**Revised June 25, 2007**

**Statement of the Issue**

- The data indicate that the solvent tetrachloroethylene (PCE or “perc”) has migrated over 3,000 feet in groundwater from PCE-contaminated soils and groundwater at a former drycleaner at 3661 S. Maryland Parkway, and is currently underneath the Boulevard Mall and the residential neighborhood east of the mall (see attached aerial photograph).
- PCE is a volatile chemical that evaporates readily. Because groundwater in the affected area is relatively shallow (9 to 16 feet below ground surface) and soil is relatively sandy, the potential for vapor intrusion is relatively high.
- Samples of soil gas collected from three areas above the groundwater plume were found to contain from nondetect levels to as much as 170,000 µg/m<sup>3</sup> of PCE.
- The PCE vapors present in soil gas may pose long-term (30+ years) health concerns via inhalation if they migrate into homes through pipe entries or slab joints or cracks (see attached vapor intrusion process figure).

**Background Information**

- Property Owners and Responsible Parties
  - DCI operated the drycleaner from 1969 to 2000. The company appears to be in poor financial condition.
  - DCI claims that the PCE-plume off-site is from other sources and that they are not responsible for it, although they have provided no convincing evidence to support this claim. DCI’s counsel provided a statement from a former dry-cleaning employee regarding a spill of PCE at 1195 E. Desert Inn Road sometime in 1992/93.
  - Other parties potentially responsible for the contamination include the following past and current property owners: the Herman Kishner Trust and Maryland Square LLC. Clark County School District owned the property for several years, but was indemnified against liability for the pre-existing contamination.
- NDEP received notification of a PCE release at the property in November 2000, and since has directed an investigation conducted concurrently with 2 property transactions, a change in responsible parties, and multiple negotiations of off-site access agreements with adjacent property owners.
- The investigation has included drilling of 44 soil borings, 16 multi-depth soil gas probes, and installation and monitoring of 27 groundwater monitoring wells at an estimated combined cost to the Herman Kishner Trust and DCI of over \$300,000. To date, the investigation has not indicated any immediate health concern exists in the affected area.
- About 148 homes in the neighborhood are potentially affected by PCE vapors migrating upward from the plume. Ruby S. Thomas elementary school lies a few hundred feet to the north and William Orr Junior High School lies several hundred feet south of the plume within the residential neighborhood (see attached aerial photograph).

**NDEP Evaluation of Exposure Potential**

- NDEP evaluated the potential for human exposure by entering the analytical data from the affected area into an EPA model for vapor intrusion. NDEP also compared the analytical results to sites across the country with both soil gas and indoor air data that have been evaluated by the Agency for Toxic Substances and Disease Registry (ATSDR).
- Based on model results and comparisons to other sites, NDEP has determined that:
  - Soil vapors emanating from the groundwater plume may be present at concentrations above EPA and ATSDR health-protective levels in indoor air at residences and therefore may pose a long-term health concern.

**Proposed Actions and Resources (see next page for additional detail)**

- NDEP is proposing a door-to-door outreach program to: (1) provide additional information to residents at 148 homes, (2) offer to conduct indoor air sampling, (3) conduct sampling for residents who request sampling, and (4) determine appropriate mitigation. The outreach program and sampling will take place in July through September, 2007.
- Costs for this effort are estimated to range between \$200,000 and \$750,000 depending on the number of homes affected and whether NDEP pays for installation of mitigation systems at homes found to be adversely affected by PCE vapors.
- NDEP will also be directing the responsible parties to install a groundwater cleanup system, currently estimated to cost between \$1,000,000 and \$1,500,000.

<b>Applicable Authorities</b>		
<b>Agency</b>	<b>Statute/Regulation</b>	<b>Summary</b>
NDEP	NRS 459.755	Use of Contingency Account for Hazardous Materials to pay for costs of cleaning and decontamination of area affected by spill or accident.
	NRS 459.760	Reimbursement of expenses of responding state agency; reporting of need for additional funding; action by Attorney General.
	NAC 445A.2269.3(a)	Assessment of conditions at site of facility after notification of release of pollutant.
	NAC 445A.22725	Contamination of groundwater; Order by Director for corrective action; request for exemption; exception
Southern Nevada Health District	NRS 439.366	Powers and jurisdiction of district board of health and district health department; regulations of district board of health.

**Elected Officials**

- State Senators, District 7, Dina Titus and Terry Care
- State Assembly District 9, Tick Segerblom
- Unincorporated Clark County, Zone E County Commissioner, Chris Giunchigliani

**NDEP Contacts and Phone Numbers**

- o PIO, Dante Pistone (775) 687-9395
- o Bureau Chief, Corrective Actions, Jim Najima (775) 687-9484
- o Supervisor, Remediation Branch, Greg Lovato (775) 687-9373
- o Case Officer, Mary Siders (775) 687-9496

<b>Maryland Square Drycleaner Site Indoor Air Evaluation and Groundwater Cleanup Milestones</b>		
<u>When</u>	<u>What</u>	<u>Who</u>
July	Brief Elected Officials	NDEP
Mid-July	Letters mailed out to 148 homes	NDEP/SNHD
July-August	Door-to-Door Outreach	NDEP/SNHD
August-September	Completion of Indoor Air Sampling	NDEP Contractors
September/October	Indoor Air Results provided to residents along with recommendations for mitigation	NDEP
October/November	Install Household Mitigation Systems (Similar to Radon Systems)	<i>TBD</i>
December	Detailed Design for groundwater cleanup due to NDEP	Responsible Party
January 2008	Potential follow-up winter indoor air sampling	NDEP Contractors
December 2008	Installation of groundwater cleanup system completed	Responsible Party
<i>TBD</i>	Cost Recovery for State Funds Expended	Attorney General

<b>RELEASE DESCRIPTION AND SITE SUMMARY</b>	
Release Reported	November 2000 reported to NDEP Spill Line, as a result of Phase II investigation PCE in groundwater at 2,300 parts per billion (ppb) on site. NDEP receives Phase II report on July 25, 2001.
Soil Contamination (Onsite)	PCE as much as 120,000 ppb in on-site soil (about 100 times the industrial soil EPA Region 9 Preliminary Remediation Goal, and more than 2,000 times the default EPA Soil Screening Level for protection of groundwater).
Depth to Groundwater	On-site: 15 to 20 feet below ground surface (bgs) Boulevard Mall: 13 to 26 feet bgs Off-site, beneath residences: 9 to 16 feet bgs
Groundwater Flow Direction	East, towards Boulevard Mall and the residential community, then southeast toward Flamingo Wash. K averages 4.07 to 9.89 ft/day, and hydraulic gradient is between 0.02 and 0.04 ft/ft. Seepage velocity estimated at 80 to 200 ft/year.
Background Water Quality	Shallow groundwater has elevated TDS (4,000 to 5,000 parts per million)
Investigation Status of GW	27 monitoring wells installed; quarterly to semi-annual sampling Mainly PCE detected in groundwater, although TCE detected in 6 of 27 wells (41 ppb max), and 1,2-cis-DCE detected in 3 of 27 wells (23 ppb max). Both TCE and DCE maximum values were found in well MW-6 (mall).
Known Dimensions of PCE Plume in Groundwater	<ul style="list-style-type: none"> <li>• Contoured at approximately 100 and 1,000 ppb (Drinking water limit is 5 ppb). 400 feet wide, possibly 5,000 feet long and at least 20 feet deep (below the water table). Estimated 800 to 1,200 lbs PCE in dissolved-phase plume.</li> <li>• Statistical tests show concentrations in source area groundwater are decreasing, but concentrations in groundwater at the mall and neighborhood are increasing.</li> <li>• Samples from golf course irrigation supply well approximately 3,200 feet east of the site (directly in the line of the plume) and screened from 500 feet to 746 feet contained PCE at 130 ppb in 2002</li> <li>• Surface water samples collected from Flamingo Wash by SNWA found trace amounts of PCE (0.85 and 0.53 µg/L) at projected intersection of plume with the wash, about 1 mile from source area</li> </ul>
Soil Gas Sampling Results  Potential Concerns for Vapor Intrusion (Modeling Results)	<ul style="list-style-type: none"> <li>• Soil gas samples contained from nondetected levels to 170,000 µg/m<sup>3</sup></li> <li>• Concentrations of PCE in groundwater directly underneath at least 20 residences exceed 1,000 ppb; some exceed 2,000 ppb.</li> <li>• Maximum concentration of PCE in groundwater underneath residences measured at 2,400 ppb in a sample from well MW-18</li> <li>• Using a concentration of 2,400 ppb in groundwater and EPA's online J-E model exceeds 10<sup>-3</sup> risk for chronic exposure of residents via the vapor intrusion pathway</li> <li>• Using soil gas data (46,000 µg/m<sup>3</sup> at 5 ft) as input to EPA's online J-E model exceeds 10<sup>-4</sup> risk for chronic exposure of residents via the vapor intrusion pathway for homes near Spencer Street on the <u>east end</u> of the residential neighborhood (approximately 3,000 feet east of source area).</li> <li>• Chronic exposure assumes the resident exposed 24 hr/day for 350 days per year for 30 years</li> <li>• Home construction is slab-on-grade; most homes from 1960s</li> </ul>
Data Gaps	<ul style="list-style-type: none"> <li>• Depth and lateral extent of groundwater plume not fully delineated on the eastern end of plume.</li> <li>• Factors, such as utility corridors, and their effect on plume migration</li> </ul>

## Maryland Square Chronology of Defining the PCE Plume in Groundwater

Event

