



# STATE OF NEVADA

Department of Conservation & Natural Resources

DIVISION OF ENVIRONMENTAL PROTECTION

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August 8, 2014

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Neil Beller  
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Subject: **Second Quarter 2014 Groundwater Monitoring and Sampling Report**

Facility: Al Phillips the Cleaner (former)  
3661 S. Maryland Parkway  
Las Vegas, Nevada  
Facility ID: **H-000086**

Dear Messrs. Kishner, Swickard, Levy and Beller:

The Nevada Division of Environmental Protection (NDEP) has reviewed the **Second Quarter 2014 Groundwater Monitoring and Sampling Letter Report** prepared by Cardno ATC Associates, Inc. (Cardno ATC) on behalf of the Herman Kishner Trust (Trust) and Maryland Square Shopping Center, LLC (MSSC LLC), dated July 18, 2014 and received in hard copy on July 31, 2014.

## NDEP Comments

1. The unknown field or laboratory error that occurred during the **first-quarter 2014** sampling event led to the rejection of anomalous data for samples collected from the 59 wells that were sampled. Although not formally rejected for laboratory quality control issues, the NDEP found that these first-quarter 2014 data were highly anomalous and inconsistent with historical data. In particular, the following wells showed *highly* anomalous results for the first-quarter 2014 samples: MW-2, MW-5, MW-7, MW-14, MW-17, MW-18, MW-19D1, MW-19D3, MW-20, MW-20D1, MW-20D2, MW-20D3, MW-21, MW-23, MW-25, MW-26, MW-27, MW-30, MW-31, MW-34, MW-35, MW-36, MW-39, MW-40 CMT-40, and MW-40 CMT-45. (No response needed, unless the source of the error has been discovered.)



2. The data for **second-quarter 2014** samples are consistent with historical results, further emphasizing the anomalous nature of the first-quarter data. Unfortunately, the first-quarter sampling is the annual site-wide sampling event for the Maryland Square PCE Site. A total of 36 wells sampled in the first quarter were not sampled in the second quarter. For some of these 36 wells, the first-quarter sample is the annual sample; fortunately, most of the wells sampled annually show relatively low or nondetect concentrations of PCE (see data for monitoring wells MW-3, MW-10, MW-11, MW-15, MW-16, MW-21, MW-22, MW-24, MW-28, MW-29). (No response needed, but the cause of the anomaly remains unknown and is a cause for concern with respect to representativeness of future data; in particular, data that are used to assess efficacy of the groundwater remedy.)
3. The second-quarter report indicates that the vertical gradients across the site remain mixed, with three upward and three downward gradients for the six well pairs examined. The report also notes that concentrations of PCE were found to be increasing (statistically significant trends at greater than 95% confidence) at wells MW-5, MW-6, and MW-7. Concentrations of PCE now hover around 800 µg/L in MW-5 and around 3,000 µg/L in well MW-6. Concentrations of PCE in MW-7 fluctuate between 1 and 11 µg/L, so this result is of minor consequence. Consider what the increasing concentrations in MW-5 and MW-6 may mean and how this may affect the remedy design.
4. The trend tests show that concentrations of PCE in wells at and adjacent to the source area on the west side of S. Maryland Parkway are generally decreasing (>95% confidence for wells MW-1, MW-8, MW-9, MW-17, MW-34, MW-35; >75% confidence for MW-12). Well MW-7 showed a trend of increasing concentrations, but PCE concentrations are low in this well. Consider what the data may mean in terms of the effect of cleanup of source area soils, which was performed in late 2011, and how this may influence the design of the remedy for groundwater.
5. Text on page 11 states that *“There are currently three approximate vertical zones that monitoring wells are grouped in at the site. PCE concentrations and plume size varied significantly based on its location among the three zones. The upper zone contains the majority of monitoring wells, and covers the wells sampled from 25 feet bgs to 40 feet bgs The intermediate zone is considered to be wells with screen intervals and pump inlet levels from 40 feet bgs to 55 feet bgs, and the lower zone is considered to be wells with screen intervals and pump inlet levels greater than 55 feet bgs.”* What criteria were used to designate “zones?” The NDEP notes that, when discussing “zones” in groundwater, it makes sense to discuss the depths in which PCE is present and the general depth below which groundwater contains low to nondetectable levels of PCE. Using this framework in the context of site monitoring wells, most wells are screened in the shallow zone and across the water table (approximately 10 to 35 ft bgs); this is the zone most critical to monitor for vapor intrusion concerns. Mid-zone wells are screened in the range from about 40 to 6 or 70 ft bgs. The deep zone includes wells screened from 80 ft bgs to more than 100 ft bgs; this zone has little to no PCE detected. Please describe your criteria used to designate zones.

6. Groundwater samples from wells near the pilot test area were collected to evaluate for transformation and mobilization of redox-sensitive metals. Samples from MW-19, MW-19I, MW-20, MW-40 CMT-30, MW-40 CMT-35, MW-40 CMT-40, MW-40 CMT-45, MW-40 CMT-50, MW-40 CMT-55, MW-40 CMT-60 were analyzed for arsenic, manganese, chromium, and hexavalent chromium to evaluate effects of the ISCO pilot tests, in which potassium permanganate and PulseOx technology were used. The report notes that samples collected in June 2014 from MW-19I and MW-40 CMT-60 were found to contain high concentrations of manganese (260,000 µg/L in MW-19I) and total chromium (370 µg/L in MW-40 CMT-60). There is no MCL for hexavalent chromium; however, the tapwater screening level is 0.031 µg/L (USEPA, 2013). The NDEP notes that high concentrations of manganese remain in a number of wells in the pilot test area (e.g., MW-40 CMT-35, MW-40 CMT-45, MW-40 CMT-50, MW-40 CMT-55, and MW-40 CMT-60).
7. Page 14 of the report states that “*With the exception of MW-19I and MW-40 CMT-60, monitoring wells affected by the pilot testing appear to have returned to pre-pilot testing conditions.*” This is a misstatement. It is the **concentrations of some metals in some** of these monitoring wells that have “returned to pre-pilot test conditions.” Please correct this misstatement for future reports. As noted above, concentrations of manganese in groundwater remain elevated in many of the wells.
8. The last paragraph on page 15 states that “*Hexavalent Chromium (Cr(VI)) was detected in monitoring wells MW-40 CMT-30 (5.5 µg/L), MW-40 CMT-45 (0.85 µg/L), and MW-40 CMT-60 (18 µg/L).*” In fact, groundwater samples from **only** these three wells were analyzed for hexavalent chromium. It would be equally true to state that “hexavalent chromium was detected in **every** sample tested for hexavalent chromium.”
9. Section 3.1 recommends continued “*monitoring and sampling of the site monitoring wells in accordance with the NDEP approved 2014 schedule.*” The NDEP is always open to requests to modify the sampling schedule for wells across the site, if the rationale for doing so is acceptable.
10. Section 3.1 states that “*...monitoring wells affected by the pilot testing appear to have returned to pre-pilot testing conditions. Metals will continue to be monitored in MW-19I and MW-40 CMT-60 until pre-pilot test conditions are identified.*” Although not explicitly stated here, the text implies that concentrations of all redox-sensitive metals tested (arsenic, manganese, total and hexavalent chromium) have returned to pre-pilot-test levels. The NDEP acknowledges that concentrations of arsenic were little changed as a result of the pilot tests; however, concentrations of total and hexavalent chromium were altered. As may be expected, concentrations of manganese increased greatly in wells near the injection site and have remained elevated in wells MW-19 and MW-19I. In fact, elevated concentrations of manganese were measured in every groundwater sample tested during the second quarter of 2014.

11. Section 3.2 states that *“This assessment has been based upon prior site history, observable conditions, and the subsurface soil sampling described in this report.”* The report describes sampling and analysis of groundwater, not subsurface soil. You may wish to modify the text in future reports.
12. The NDEP also noted some editorial errors and misstatements; examples are provided below:
  - The topic sentence under Section 1 states *“The Maryland Square PCE Site (site) is located at 3661 South Maryland Parkway in Las Vegas, Nevada.”* This definition of “site” is incorrect, because the “site” refers to the entire area affected by the plume, not just the source area on S. Maryland Pkwy. What is being defined in the topic sentence is the **source area**, not the site.
  - There are typographic errors, such as in the topic sentence in the first paragraph on page 14, which states that *“The primary metal of concern was the effects of the oxidant....”*
  - Cardno Ltd is an environmental services company based in Australia, which perhaps explains the use of Australian English and spelling (e.g., “neighbourhood”), rather than American English and spelling throughout the report. All reports should be written using standard U.S. English.

#### **NDEP Requirements**

Please provide responses to NDEP comments in the next quarterly report. Also, please evaluate the monitoring well network and monitoring frequency, and provide recommendations for changes to the monitoring program, with rationale to back up these recommendations.

The Third Quarter 2014 Groundwater Monitoring Report is due by **October 31, 2014**.

If you have any questions or require additional information regarding this letter, contact me by telephone at (775) 687-9496 or e-mail at [msiders@ndep.nv.gov](mailto:msiders@ndep.nv.gov)

Sincerely,



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