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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Southwest Region Office
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May 8, 2024

Sara Abdelrahman
Kite Realty Group/KRG Lakewood LLC
30 S. Meridian Street, Suite 1100
Indianapolis, IN 46204
sabdelrahman@kiterealty.com

Re: Technical Assistance on the Proposed Cleanup at a Site:

- **Site Name:** Lakewood Towne Center
- **Site Address:** 6020-6030 Main St SW, Lakewood, WA 98499
- **Facility/Site ID:** 7922231
- **Cleanup Site ID:** 421
- **VCP Project ID:** SW1801

Dear Sara Abdelrahman:

The Washington State Department of Ecology (Ecology) received your recent Workplan and request for an opinion on proposed continued investigation of the Lakewood Towne Center Property (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA),[1] chapter 70A.305 Revised Code of Washington (RCW).[2]

Issue Presented and Opinion

Ecology is responding to your January 23, 2024 Response to Ecology Comments (RTC) on Ecology's December 14, 2023 Opinion Letter. Ecology's letter consisted of comments related to Herrera's October 16, 2023 Work Plan for proposed groundwater treatment and monitoring at

[1] https://fortress.wa.gov/ecy/publications/SummaryPages/9406.html
[2] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305

the Lakewood Towne Center (Site).[3] The Work Plan scope of work was proposed to further assess the nature and extent of halogenated volatile organic compound (HVOC) contamination in soil and groundwater and to develop a preferred cleanup alternative more fully for the Property that meets MTCA requirements. Upon our review of your RTC, Ecology has the following comments**.**

Description of the Site

This opinion applies only to the Site described below. The Site is defined by the nature and extent of contamination in soil associated with the following releases:

- Tetrachloroethene (PCE) and its breakdown products (aka daughter products) trichloroethene (TCE), cis-1,2-dichloroethene (DCE), and vinyl chloride (VC) and several related halogenated volatile organic compounds (HVOCs), were detected in groundwater across the Site.

Enclosure A includes a description of investigative history and diagrams of the Site, as currently known to Ecology.

The parcel(s) of real property associated with this Site are also located within the projected boundaries of the Tacoma Smelter Plume facility (FSID #89267963). At this time, we have no information that those parcel(s) are actually affected. This opinion does not apply to any contamination associated with the Tacoma Smelter Plume facility.

Basis for the Opinion

This opinion is based on the information contained in the documents listed in **Enclosure B**.

These documents are kept in the Central Files of the Southwest Regional Office of Ecology (SWRO) for review by appointment only. Information on obtaining those records can be found

[3] Herrera Environmental Consultants, Inc; Workplan; Additional Monitoring Well Installation and Groundwater Treatment-Lakewood Towne Center; October 16, 2023.

on Ecology's public records requests web page.[4] Some site documents may be available on Ecology's Cleanup Site Search web page.[5]

This opinion is void if any of the information contained in those documents is materially false or misleading.

Opinion

1. Ecology Comments.

Ecology's comments follow those specified in Herra's RTC as follows:

a. **Regarding Ecology's comments for Section 2.a. Proposed Monitoring Well Network Locations.**

Ecology Comment. Ecology concurs with the proposed installation of shallow wells MW-9 and MW-10 to the north and northeast of the former Plaza Cleaners. However, Ecology suggests collection of at least two rounds of groundwater monitoring, preferably during the wet and dry times of the year, to assess contaminant concentration under both minimum and maximum saturated zone thicknesses. In addition, Ecology concurs with installation of soil vapor probes if the groundwater results exceed the respective HVOC vapor intrusion groundwater screening levels. Further, during such groundwater exceedances, Ecology also recommends that an attempt be made to arrange access to 5815 Lakewood Boulevard to conduct Tier 2 indoor air sampling. As stated in Ecology's Soil Vapor Intrusion Guidance,[6] Tier 1 and Tier 2 sampling need not be sequential.

b. **Regarding Ecology comments for Section 2.b. HVOC Degradation at the Site.**

Ecology Comment. To assess the occurrence and magnitude of dechlorination and HVOC plume dispersion and migration, Ecology concurs with the planned installation of new shallow and intermediate zone monitoring wells as well as the groundwater monitoring frequency.

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[4] https://ecology.wa.gov/Footer/Public-records-requests

[5] https://apps.ecology.wa.gov/cleanupsearch/site/421

[6] Ecology; Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action; Revised March 2022.

Please also provide a reference that explains why the additional parameters critical to the remediation approach and specified by Ecology are not critical to the 6-month to 2-year performance monitoring scope. Further, please discuss the qPCR test quantities that are undefined and their relevance to the treatment performance as well as the specialized specific isotopic analysis. Ecology continues to recommend the suggested analytes to assess the biochemical response from the injections relative to actual plume response versus data tailored to the bacterial count/health.

c*. Regarding Ecology comments for Section 2.c. Villa One-Hour Cleaners/MW-3*.

Ecology Comment. Ecology concurs that a Tier 2 evaluation is necessary at the former Villa Cleaners location. To that end, Ecology recommends that future figures depict exactly what buildings are owned by Kite Realty Group and relative to the Site and the nature and extent of groundwater contamination from the former Plaza Cleaners.

d. Regarding Ecology comments for Section 2.d. Proposed In-Situ Chemical Oxidation (ISCO) Groundwater Remediation.

Ecology Comment. Thank you for obtaining UIC permits and adhering to UIC conditions. While Ecology considers injections as beneficial to reduce contaminant concentrations in the environment, we also consider the UIC conditions as important and equal regulations that have to be implemented in the context of the remedial design.

Ecology concurs with the specifications for the potable water source, mixing procedure, reagents, 35-50 psi injection pressure, and the monitoring procedure for daylighting and upwelling. Ecology also concurs that the non-endangerment standard under WAC 173-218 will likely be met by the remedial design.

Ecology also concurs with your explanation of the 6-month monitoring period selected for assessing the potential for concentration rebounding and the criteria for determining the need for additional contingency injections.

Limitations of the Technical Assistance

1. **Opinion Does Not Settle Liability with the State.**

   Liable persons are strictly liable, jointly, and severally, for all remedial action costs and for all natural resource damages resulting from the release or releases of hazardous substances at the Site. This opinion **does not**:

   - Resolve or alter a person's liability to the state.
   - Protect liable persons from contribution claims by third parties.

   To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW 70A.305.040(4).

2. **Opinion Does Not Constitute a Determination of Substantial Equivalence.**

   To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action a party performs is substantially equivalent. Courts make that determination. *See* RCW 70A.305.080 and WAC 173-340-545.

3. **State is Immune from Liability.**

   The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. *See* RCW 70A.305.170(6).

Contact Information

Thank you for choosing to clean up the Site under the Voluntary Cleanup Program (VCP). After you have addressed our concerns, you may request another review of your cleanup. Please do not hesitate to request additional services as your cleanup progresses. We look forward to working with you.

For more information about the VCP and the cleanup process, please visit our Voluntary Cleanup Program web site.[7] If you have any questions about this opinion, please contact me at (360) 489-5347 or joe.hunt@ecy.wa.gov.

Sincerely,

Joseph B. Hunt, LHG
Toxics Cleanup Program
Southwest Regional Office

JH:kw

Enclosures (2): A – Site Investigative History
B – Documents

cc: Shannon McKernan, Herrera Environmental Consultants, Inc., smckernan@herrerainc.com
George Iftner, Herrera Environmental Consultants, Inc., giftner@herrerainc.com
Tim Mullin, LHG, Ecology, tim.mullin@ecy.wa.gov
Jerome Lambiotte, CPG, Ecology, jerome.lambiotte@ecy.wa.gov
Ecology Site File

[7] https://www.ecy.wa.gov/vcp

Enclosure A

Site Investigative History

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Site Investigative History

Previous site investigations and groundwater monitoring within the northwest portion of the Lakewood Towne Center (Site) indicate a dry cleaner solvent, perchloroethylene (PCE) and its breakdown products (aka daughter products) trichloroethylene (TCE), cis-1,2-dichloroethene (DCE), and vinyl chloride (VC) and several related halogenated volatile organic compounds (HVOCs), were detected in groundwater across the Site.

The extent of HVOC in groundwater across the Mall property was initially evaluated during an August 2000 Hydropunch Investigation (HI) conducted by Impact Environmental. Thirty-four hydropunch locations were drilled and the subsequent groundwater sample results indicated the presence of HVOC in groundwater across the northern portion of the Site. While the groundwater HVOC concentrations were generally below the respective MTCA CULs across the HI network, the results from sample P-12 indicated the presence of an HVOC hotspot where concentrations exceeded the CULs. This location is coincident with the location of the former Plaza Dry Cleaners.

During May-September 2000, a Phase II Environmental Site Assessment was conducted by Herrera Environmental Consultants, including two subsequent follow-up site investigations. A total of 34 direct-push borings were drilled with collection of both soil and groundwater samples and 7 groundwater monitoring wells were installed (Figure 1). Soil and groundwater samples collected from 4 of the direct-push borings (P18 through P21) identified a source area of dry-cleaning solvent in the septic and drain field system at the former Plaza Cleaners that operated from 1968-1987 and was situated south of the existing mall building at 5815 Lakewood Towne Center Boulevard.

The wells were installed at the following locations and are illustrated on Figure 2:

- MW-1S (shallow depth), MW-1M (medium depth), and MW-1D (deep) in the source area;
- MW-2D (deep) upgradient of the source area;
- MW-3 (shallow) at the northwest corner of the former mall complex, approximately 1,300 feet downgradient of the source area;
- MW-4 (shallow) immediately downgradient of the source area; and
- MW-5 (shallow) immediately downgradient of the source area.

The groundwater sample results from these wells indicated PCE and its biodegradation by-products exceeded MTCA CULs in groundwater across a lateral area approximately 150 feet by 250 feet and appeared to be vertically limited to upper portion the water table. Further, PCE concentrations were detected in groundwater below the MTCA Method A CUL downgradient of the north-central portion at well MW-3 which was installed coincident with the location of a second former dry cleaner, Villa One-Hour Cleaners, which operated within Suite O of the existing Mall building at 6111 Lakewood Towne Center Boulevard from 1992 until late February 2003.

However, based on additional soil and groundwater HVOC sample results below the MTCA Method A CULs that resulted from 2 subsequent limited site investigations within the former Villa Cleaners area conducted by Herrera in Spring 2002[8] and May 2003[9], it was concluded that HVOC detected in soil were restricted to the vadose zone well above the capillary fringe. Based on that conclusion and the HVOC results from groundwater samples between MW-3 (0.72 µg/L PCE) and the former direct-push groundwater samples P-16 (0.27 µg/L PCE), P-24 (0.24 µg/L PCE), P-25 (0.78 µg/L PCE), and P-27 (0.39 µg/L PCE), it was further theorized that HVOC groundwater impacts at and around well MW-3 potentially originated from upgradient at the original identified Plaza Cleaners source area near well MW-1S.

Since 2021, groundwater monitoring has shown a decreasing trend in contaminant concentrations at the six existing wells at the site. Concentrations of nearly all HVOC chemicals of concern (COCs) except VC have dropped below their respective Model Toxics Control Act (MTCA) cleanup levels (CULs).

During 2021 and 2022, the VC concentrations detected in groundwater in monitoring well MW-1S exceeded the MTCA Method A CUL. Although VC concentrations have been decreasing since 2004, Herrera's general conclusion is that a decreasing trend of PCE in all six wells indicates biodegradation is ongoing, and concentrations of nearly all HVOCs except vinyl chloride have dropped below the respective MTCA Method A or B CULs.

Herrera developed the current Workplan to i.) describe additional investigation activities planned to further characterize the nature and extent of residual HVOC in groundwater, and ii.) propose groundwater treatment via in-situ chemical oxidation (ISCO) in wells MW-1s, MW-1m, and MW-1d to reduce the HVOC concentrations in groundwater below the respective MTCA CULs. This remedial action would be followed by resampling of the on-site wells approximately 1 year after the ISCO treatment to assess whether HVOC concentrations are below the CULs. If so, this would be followed by three additional quarterly ground water monitoring events to provide a minimum of four consecutive quarters of monitoring data compliant with cleanup levels in order for Ecology to consider a No Further Action.

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[8] Herrera Environmental Consultants, Inc., Limited Phase II Site Investigation and Ground Water Quarterly Status Report – Lakewood Towne Center; June 27, 2002.

[9] Herrera Environmental Consultants, Inc., Limited Phase II Site Investigation and Ground Water Quarterly Status Report – Lakewood Towne Center; J

Site Topography/Hydrogeology

The Lakewood Mall property and vicinity has a poorly developed surface drainage system, due to high infiltration capacity of the gravelly soil and the level topography. Based on historical information, the mall was developed on a marsh that had occupied the east-central portion of the property. A layer of peat reportedly exists beneath the Site based on information gathered during the mall development.

Prior to development of the mall in 1957, the marsh drained into Ponce de Leon Creek to the west, which eventually drains into Lake Steilacoom located 0.5 miles west of the mall property. The marsh and creek were diverted and tightlined into a stormwater drainage system beneath the property during the development of Villa Plaza shopping center and later the Lakewood Mall II complex, which continues to discharge into Ponce de Leon Creek (Natansky 2000).[10]

During the previous Phase II Site Investigations (SI) conducted by Herrera, groundwater appeared to seep into the stormwater drainage system, based on observations of running water in some of the drains and water levels measured in nearby probe borings. Groundwater also was observed seeping in an open-bottom storm drain/catch basin located in the far eastern portion of the site. No other continuously flowing streams or surface water channels in or out of the mall property and surrounding area were observed during Phase II investigations.

Area aquifers are recharged primarily by precipitation, with an average annual precipitation of approximately 38 inches. Further, the Site is also located within two wellhead protection areas.

The water-bearing zone at the Site is located within the Steilacoom gravel unit, confined by the consolidated Vashon till layer beneath it. Monitoring wells across the northwest portion of the site have well screen that tap the upper (shallow), middle (medium), and deeper (deep) portions of the water- bearing zone. Shallow wells are screened in the top portion of the water bearing zone at approximately 2.5 feet bgs, medium wells are screened in the middle 7.5 to 12 feet of the water-bearing zone, and the deep wells are screened in the bottom 32 to 46 feet of the water-bearing zone.

Groundwater at the site is encountered from approximately 11.6 feet bgs at the eastern portion of the Site in MW-2M to 18.1 feet bgs at the western portion of the Site in MW-3. In general, groundwater flows to the west/west-northwest and west southwest across the northwestern portion of the site. The hydraulic gradient ranges from approximately 0.0011 to 0.0017 feet per feet across the site.

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[10] Natansky, Mr. Tony (Operations/Property Manager for Lakewood Mall). In-person interview and site visit with Diana Phelan/Herrera; April 21, 2000

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Enclosure B

Documents

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1. Lakewood Towne Center – Response to Ecology Comments on December 14, 2023 Opinion Letter, Herrera Environmental Consultants, Inc., January 23, 2024.

2. Workplan; Additional Monitoring Well Installation and Groundwater Treatment-Lakewood Towne Center; Herrera Environmental Consultants, Inc; October 16, 2023.

3. Scope of Work – Lakewood Towne Center 2023-2024 Ground Water Treatment and Monitoring, Herrera Environmental Consultants Inc., November 29, 2022.

4. August 2021, Ground Water Quality Status Report – Lakewood Towne Center, Herrera Environmental Consultants, Inc., August 19, 2021.

5. Phase I Environmental Site Assessment Report – Lakewood Towne Center South; Partner Engineering and Science, Inc.; June 6, 2019.

6. Transformer Mineral Oil Spill Letter – 5811 Main Street SE, Lakewood, WA; Tacoma Power; September 11, 2013.

7. Phase I Environmental Site Assessment – Lakewood Towne Center; SLA; October 2, 2006.

8. Notification of Pending Inactive Determination Status Dated 4/07/06; MBK Northwest LLC; April 20, 2006.

9. Quarterly Groundwater Monitoring Update – Lakewood Towne Center; Brown and Caldwell; July 14, 2004.

10. Quarterly Groundwater Monitoring Update – Lakewood Towne Center; Brown and Caldwell; April 19, 2004.

11. Fourth Quarter 2002 Groundwater Monitoring Update – Lakewood Towne Center; Herrera Environmental Consultants, Inc.; January 22, 2004.

12. Ground Water Quarterly Status Report – Lakewood Towne Center; Herrera Environmental Consultants, Inc.; September 23, 2003.

13. Limited Phase II Site Investigation – Villa One-Hour Cleaners at Lakewood Towne Center; Herrera Environmental Consultants, Inc.; July 1, 2003.

14. Ground Water Quarterly Status Report – Lakewood Towne Center; Herrera Environmental Consultants, Inc.; April 4, 2003.

15. Ground Water Annual Summary Report – Lakewood Towne Center; Herrera Environmental Consultants, Inc.; January 23, 2003.

16. Ground Water Monitoring Annual Summary Report – Lakewood Mall; Herrera Environmental Consultants, Inc.; January 3, 2002.

17. Letter to Ecology regarding August 25, 2000, Independent Action Notification Regarding the Lakewood Mall; Perkins Coie LLP; July 2, 2001.

18. Ground Water Quarterly Status Report – Lakewood Mall I & II; Herrera Environmental Consultants, Inc.; June 26, 2001.

19. Independent Action Notification Regarding the Lakewood Mall; Impact Environmental, Inc.; August 25, 2000.