TGE RESOURCES, INC.

Environmental Consulting,
Engineering and Industrial Hygiene

Vapor Intrusion Mitigation System – Site Closure Request Memorandum
Former Payless Auto Mart
29805 Pacific Highway South
Federal Way, King County, Washington
WA Ecology Cleanup Site/Facility ID Nos. – 5427 / 7222592
WA Ecology VCP Project ID No. – NW3270
Lat. 47.33537° / Long. - 122.3126°
King County Parcel No. 042104-9157
TGE Project No.: R13411.11

Prepared for:

MultiCare Health System, a Washington Nonprofit Corporation
315 Martin Luther King Jr. Way
Tacoma, Washington 98415-0299

June 30, 2022

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June 30, 2022

Mr. Mike Warfel
Voluntary Cleanup Program
Washington State Department of Ecology
Northwest Regional Office
3190 160th Avue SE
Bellevue, WA 98008-5452

Subject: **Site Closure Request Memorandum**
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Dear Mr. Warfel,

Upon recent discussion with the Washington State Department of Ecology ("Ecology") Voluntary Cleanup Program (VCP) case coordinator (Mr. Mike Warfel) regarding agency-directed supplemental performace testing at the Property (TGE Report No. R13411.11, dated March 14, 2022) and review of environmental sample data collected to date at the site, TGE herein presents the following data summary for Ecology review and consideration of a request for a "No Further Action" designation (without an Environmental Covenant [EC]) for the Former Payless Auto Mart (redeveloped as the MultiCare Health System – Federal Way Emergency Center), located at 29805 Pacific Highway South in Federal Way, King County, Washington, hereinafter referred to as the "Property".

Property Background

The Property consists of a reported 1.72 acres (74,877 square feet) of land. Prior Property use included fueling station/restaurant facilities from the 1920s to 1960s and an equipment rental/repair facility in the late 1960s/early 1970s, until occupancy of the site in 2007 by a used car sales/repair facility (Payless Auto Mart) and a repossession and impound lot (portions controlled by the federal government). MultiCare Health System, a Washington Nonprofit Corporation (hereinafter "MultiCare" or "MHS"), executed a ground lease agreement with the current site owner (NIKLEXI LLC) in 2017, which was transferred from MHS to "CF Federal Way, LLC" in 2020. Following execution of the ground lease, the Property was repurposed/redeveloped in 2020 with a 9,872 square-foot healthcare facility with associated paved parking areas.

As documented in a Phase I Environmental Site Assessment (ESA) prepared by TGE in July 2017 and updated in 2020, a former fuel station, dry cleaner, and abandoned gravel pit/quarry were positioned in the site vicinity with no apparent/recorded characterization performed at these locations. The occupant of adjoining land north (a Shell branded fuel station) was identified within city directory publications as a fueling/service station with concurrent use of underground petroleum storage tanks (PSTs) since at least the mid-1930s, with a recorded release of lead and petroleum products to the environment. Historic use of adjoining land west as a gravel pit/quarry from at least the 1940s through the 1980s may have included landfilling of materials of unknown character and possible hazardous materials/hazardous waste management (an open cleanup site identified as the "Redondo Oil Pit").

The following summary presents findings from both pre-development and post-remedial action/post-construction field investigation of soil, soil gas, and groundwater.

- Subsurface investigations conducted by TGE at the Property between 2017 and 2019 demonstrated the presence of petroleum products (NWTPH-Gx and NWTPH-Dx); the Resource Conservation and Recovery Act (RCRA) metals arsenic, cadmium, and lead; the organochlorine pesticide dieldrin; and the volatile organic compound (VOC) 1,1,2,2-tetrachloroethane (1,1,2,2-TCA) in soil at concentrations above the applicable Ecology screening limits. As detailed with the previously-submitted Remedial Investigation Report (TGE Report No. R13411.07, dated April 19, 2021), removal of 2,327 truck tons (TT) of impacted soil was conducted in March 2020 via excavation and off-Property, permitted disposal. Visual inspection, field characterization (OVM headspace testing), and analysis of confirmation soil samples collected once the target excavation depth was met documented that Cleanup Action Objectives had been attained. Per MTCA, unrestricted land use cleanup standards represent "*the most protective cleanup levels"* and that use of unrestricted land use cleanup standands will "*result in no significant adverse effects on the protection and propagation of terrestrial ecological receptors"*.

- Temporary screened borehole TSB-1 was installed to a depth of 110 feet below grade (fbg) in 2017 for purposes of groundwater characterization. However, given an absence of a groundwater-bearing unit within the depth of investigation and the associated lack of groundwater production (even at this extended depth), TGE was unable to collect a groundwater sample for analysis.

- In 2017 and prior to completion of remedial efforts, soil vapor samples were collected by TGE within the proposed bulding footprint, which identified the presence of the VOC analytes 1,3-butadiene and chloroform in soil vapor (collected from a depth of approximately 5 fbg) at concentrations exceeding applicable MTCA Deep Soil Gas screening limits. Even though both 1,3-butadiene and chloroform were detected in excess of Ecology screening levels, there are numerous published references including a January 2020 article titled "*Problematic Compounds in Vapor Intrusion Investigations"* (www.vaporpin.com/august-radon-news/problematiccompounds/) that reference both chloroform (a byproduct of chlorinated water) and 1,3-butadiene (a motor fuel byproduct) as being "ubiquitous" in both indoor air and soil gas samples.

Soil Gas Analytical Results			
Analysis	**VOCs (EPA Method TO-15)**		
Analyte	**Benzene**	**1,3-Butadiene**	**Chloroform**
WA Method B Deep Soil Gas Carcinogenic Screening Level	32	8	11
WA Method B Deep Soil Gas Non-Carcinogenic Screening Level	1400	91	4500
Samples			
TVMP-1	**26.2**	**54.7**	<0.25
TVMP-2	**7.46**	**24.6**	**38.6**

As demonstrated by soil gas sample collection and analysis within the proposed building footprint prior to Property redevelopment, existing pathways for receptor exposure are not present at the site and operation of a preventative Vapor Intrusion Mitigation System (VIMS) is not necessary to achieve or maintain regulatory compliance with MTCA. In an abundance of caution, MHS opted for the design/installation of a robust VIMS coincident with Property redevelopment as a permanent engineering control to preemptively mitigate (effectively block) future risk of VOC exposure to future occupants of the healthcare facility in anticipation of surrounding urban development. The system, as installed, is comprised of a sub-slab vapor barrier/membrane system (physical barrier sealing off preferential pathways) with a "passive" venting design, as well as "active" forced air capability (pressure gradient barrier) to effectively depressurize the new building slab. Four sets of soil vapor monitoring probes were installed both above (designated "P1A" through "P4A") and below ("P1B" through "P4B") the system membrane (a total of eight) to allow for periodic effectiveness monitoring of the system (necessitated for the engineer's certification of system construction as designed).

Following construction completion, soil vapor samples were collected from probes installed in transmissive sand layers placed both above and below the vapor barrier membrane. VOC-laden chemicals/cleaners are typically (and unavoidably) used in the hospital, and analysis of VIMS probe samples collected quarterly (over a one-year period) have detected target chemicals of concern (COC) above the VIMS membrane, yet concentrations were below respective Ecology screening levels.

As previously stated, VIMS design/installation was "preemptive mitigation" to minimize the potential risk for vapor intrusion within the newly-contructed building, not "remediation" of soil vapor. As such (and as detailed within Washington Adminstrative Code [WAC] 173-340-440[4]), in that an institutional control/environmental covenant is only required to "*assure both the continued protection of human health and the environment and the integrity of an interim action or cleanup action"*, Ecology's requirement for an environmental covenant for the Property is not warranted and unnecessary per provisions of MTCA.

Given the presence of elevated levels of select VOCs in shallow site soils (prior to excavation activities completed during site redevelopment in 2020/2021) and per an Ecology request received on August 18, 2021, TGE conducted a post-redevelopment shallow soil vapor assessment within the southern and eastern portions of the Property in November 2021. This assessment included the collection of shallow soil vapor samples at ten locations from beneath paved areas of the Property east and south of the newly-constructed healthcare building. At each point around the building, a stainless-steel sub-pavement vapor pin was installed via hammer drill through an approximately three-inch thick layer of asphalt and a four-inch layer of sand/gravel base material, and the vapor intakes were set within the top of the underlying soil strata (at a depth of approximately 12 inches below grade). Elevated concentrations of the VOC analytes benzene and naphthalene above MTCA screening levels were initially reported in shallow, sub-pavement soil vapor. Sub-pavement samples were collected directly beneath the recently installed asphalt parking area that continues to off-gas numerous petroleum hydrocarbons and polycyclic aromatic hydrocarbons (PAHs). An abundance of published, scientific literature documents that these two COCs are typical off-gassing constituents from asphalt paving. As such, the naphthalene and benzene concentrations from the sub-pavement probes were more likely than not biased high and are not considered a relevant data set. Furthermore, subsequent sub-pavement soil vapor sampling in May 2022 reported substantially decreased concentrations well below respective Ecology target levels.

Furthermore, given the distance of the sub-pavement vapor pins from the site building (a minimum of 50 feet), and that the COCs are primarily petroleum hydrocarbon-related constituents, the existing building is not located within the "lateral inclusion zone", which is defined within Ecology's "*Guidance for Evaluating Vapor Intrusion in Washington State*" (finalized in March 2022) as "*30 feet horizontally from the edge of a volatile subsurface petroleum contamination*". As such, the potential for petroleum vapor intrusion (PVI) is not believed a "complete" exposure pathway, and further vapor intrusion investigation and/or mitigation is not warranted for the Property.

As an additional line of evidence that Property conditions are protective of human health (per MTCA requirements), TGE conducted indoor and ambient air testing (a Tier II evaluation) in November 2021 and June 2022. Per Ecology guidance, and based on the current use of the Property building as an emergency care clinic with the use/storage/disposal of various alcohols, solvents, and cleaners (both liquid and aerosol); the interior layout of the site building; and positive-pressure operation of the building's HVAC system; ambient air samples were collected from within an interior hallway adjacent to staff offices, breakroom, and nurse station (i.e., where building occupants spend a significant period of time, yet somewhat distant from background source areas) and both upwind and downwind of the building; near the building, yet distant enough to preclude sample influence by the building.

Interior/Exterior Ambient Air Analytical Results				
Analysis		**VOCs - (TO-15)**		
Analyte		**Carbon Tetrachloride**	**Benzene**	**TCE**
WA Indoor Air Method B Carcinogenic Screening Level		0.417	0.321	0.3339
WA Indoor Air Method B Non-Carcinogenic Screening Level		45.71	13.714	0.914
Sample Location				
Interior	11/16/21	**0.465 J**	**0.309 J**	**0.534 J**
	06/04/22	**0.474 J**	**0.364 J**	ND
Exterior Downwind	06/04/22	ND	**0.390 J**	**4.09**
Exterior Upwind	11/16/21	**0.474 J**	**0.495 J**	**34**
	06/04/22	**0.490 J**	**0.402 J**	ND

Note:
- Bold/highlighted type represents a concentration in excess of the applicable WA Ecology MTCA Method B screening level.
- Non Detect (ND) and/or below laboratory detection limits.

Laboratory analysis of the indoor and exterior ambient air samples (TGE Report R13411.11 dated March 14, 2022) demonstrated an absence of VOC concentrations above respective MTCA Method B screening levels, with the exception of benzene, carbon tetrachloride, and TCE. However, as reported, exterior "upwind" ambient air concentrations of these contaminants were more elevated than interior "indoor" air levels. As such and as detailed within the currently available Ecology guidance document, "*When the building-specific upwind ambient air VOC level is the same or higher than the maximum indoor concentration for the VOC, you can conclude that the presence of the compound is not likely from VI*" it is believed more likely than not that these VOCs are related to background sources and not representative of a soil vapor intrusion condition.

Concluding Summary

As summarized herein (and further detailed within referenced reports):

- Soil impact formerly associated with the Property was removed during a remedial action completed in March 2020;

- Groundwater is not a potential source of COCs given that the depth to groundwater at the Property is in excess of 110 fbg;

- Soil vapor investigation (completed prior to completion of the remedial action) demonstrated the presence of the VOC analytes 1,3-butadiene and chloroform in soil vapor at concentrations exceeding applicable MTCA Deep Soil Gas screening limits; however, published literature demonstrates both 1,3-butadiene and chloroform are ubiquitous in both indoor air and soil gas samples and not likely associated with historical use contamination;

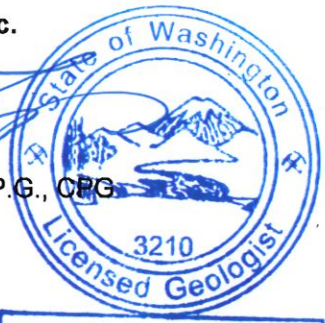
- Indoor air testing has demonstrated that potential vapor intrusion is not resulting in elevated VOC levels within the site building; and

- Laboratory analysis of VIMS probe samples (collected quarterly over a one-year period from above the barrier membrane) reported target COC constituent concentrations below respective Ecology screening levels.

Given that the Independent Remedial Action ("source removal") performed for the Property resulted in the permanent removal of COCs and documented attainment of Site Cleanup Objections, open pathways for receptor exposure do not remain. The preponderance of data from multiple lines of evidence support the conclusion that indoor air is not impacted by vapor intrusion, and operation of the site building's VIMS is not intended to achieve or maintain regulatory compliance with MTCA requirements. Therefore, TGE respectfully requests agency determination that "no further action" is necessary for the Propety and that Ecolgoy has "no interest" in directing further corrective action, including an environmental covenant for the Property.

If you have any questions or comments regarding the information summarized in this letter (or referenced reports), please contact us at your convenience.

Very truly yours,
TGE Resources, Inc.



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cc: Mr. Dudley Carpenter – Emerus Hospital Partners
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