



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

**Department of Environmental
Conservation**

DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites Program

555 Cordova Street
Anchorage, AK 99501
Phone: 907-269-7557
Fax: 907-269-7687
www.dec.alaska.go

File: 2106.26.015

March 7, 2024

Myong Cha Kim
K and SC Corporation
PO Box 671507
9700 Vanguard, Suite 62
Chugiak, AK 99567

Re: Decision Document: Peters Creek Chevron
Cleanup Complete Determination – Institutional Controls

Dear Myong Cha Kim

The Alaska Department of Environmental Conservation, Contaminated Sites Program (DEC) has completed a review of the environmental records associated with the Peters Creek Chevron located in Chugiak, Alaska. Based on the information provided to date, it has been determined that the contaminant concentrations remaining on site do not pose an unacceptable risk to human health or the environment and no further remedial action will be required as long as the institutional controls are maintained and effective and no information becomes available that indicates residual contamination poses an unacceptable risk.

This Cleanup Complete with Institutional Controls (ICs) determination is based on the administrative record for the Peters Creek Chevron. This decision letter summarizes the site history, cleanup actions, regulatory decisions, and specific conditions required to effectively manage remaining contamination at this site.

Site Name and Location:

Peters Creek Chevron
20808 Bill Stephens Drive
Chugiak, AK 99567

Name and Mailing Address of Contact Party:

Myong Cha Kim
K and SC Corporation
PO Box 671507
9700 Vanguard, Suite 62
Chugiak, AK 99567

DEC Site Identifiers:

File No.: 2106.26.015
Hazard ID.: 26123

Regulatory Authority for Determination:

18 AAC 78 and 18 AAC 75

Site Description and Background

The Peters Creek Chevron Station located on Bill Stephens drive adjacent to the Glenn Highway in Chugiak was used as vehicle maintenance business and gas station since at least the early 1970s. Four underground storage tanks (USTs) used to store gasoline (tanks #3,4,5, and 6) were removed in 1992 and later granted a cleanup complete determination in 1998. See DEC File No. 2106.26.012 for tanks #3,4,5, and 6.

Two replacement tanks; a 10,000-gallon gasoline tank (tank #1), and a 12,000-gallon dual compartment gasoline and diesel tank (tank #2) were installed approximately 100 feet southwest of the former tanks in 1992. During an inspection in 2013 contamination was found in the sumps of both tanks. Later site characterization efforts confirmed a large gasoline release impacting soils down to the water table.

Contaminants of Concern

During the site investigation and cleanup activities at this site, samples were collected from soil, groundwater, and surface water and analyzed for gasoline range organics (GRO), diesel range organics (DRO), residual range organics (RRO), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and lead. Based on these analyses, the following contaminants were detected above the applicable cleanup levels and are considered Contaminants of Concern at this site:

- GRO
- benzene
- toluene
- ethylbenzene
- xylenes
- naphthalene

Cleanup Levels

Gasoline range organics, benzene, toluene, ethylbenzene, xylenes, and naphthalene were detected in soil above the approved Method Two migration to groundwater cleanup levels for the over 40-inch precipitation zone, established in 18 AAC 75.341(c), Table B1, and 18 AAC 75.341(d), Table B2.

Benzene was detected in groundwater above the approved cleanup levels established in 18 AAC 75.345 Table C.

Table 1 – Approved Cleanup Levels

Contaminant	Soil (mg/kg)	Groundwater (µg/L)
GRO	260	2,200
benzene	0.022	4.6
toluene	6.7	1,100
ethylbenzene	0.13	15
xylenes	1.5	190
naphthalene	0.038	1.7

mg/L = milligrams per liter

µg/L = micrograms per liter

Characterization and Cleanup Activities

During an inspection in September 2013, gasoline was found in the sumps of both tank #1 and #2. During release investigation the concrete was removed to uncover the top of the tanks and fuel dispenser piping, 5 cubic yards of accessible soil surrounding each sump was removed and thermally remediated. Excavation of contaminated soil was limited as the sides of the tank and bottom could not be accessed without removing the tank. Samples were collected from excavated and in-situ soils. These samples contained GRO up to 1,500 mg/kg, in excess of the human health cleanup level, benzene and naphthalene were found at up to 3.63 mg/kg and 4.53 mg/kg, in excess of the respective migration to groundwater cleanup levels.

Soil borings were used to delineate impacts between March 2014 and November 2015. Direct push, hollow-stem auger, and air rotary drilling methods were used to advance soil borings to the groundwater interface at 141 feet below ground surface (ft bgs). Soil cores were field screened with a photo ionization detector and analytical samples were collected from several depths per boring in the source area to determine the vertical and horizontal extent of contamination. Maximum contaminant concentration results are displayed in Table 2 below.

Table 2 – Site Characterization Maximum Soil Contaminant Concentrations

Contaminant of Concern	Maximum Concentration in 2014 and 2015 Borings (mg/kg)
GRO	5,550 [†]
benzene	123 [†]
toluene	1,160
ethylbenzene	188 [†]
xylenes	1,066 [†]
naphthalene	0.751

[†] – Exceeds DEC Ingestion, Inhalation, or Human Health Cleanup Level, 18 AAC 75.341 Tables B1 & B2

The impacted area with contaminants above the DEC cleanup levels was delineated to an approximately 80 foot radius surrounding the location of tank #1 and #2. The primary contaminant of concern is benzene with the GRO and other VOC soil plumes being much smaller. Sample results indicated that benzene concentrations were above the migration to groundwater cleanup level near the groundwater table at 141 ft bgs.

To determine possible impacts to groundwater, four monitoring wells were installed at the source area and down-gradient. Groundwater was sampled ten times between August 2014 and March 2022. Benzene was detected above cleanup levels in the source area well in two events, August 2014 and July 2016. Benzene was not found above the cleanup level in the down-gradient wells in any sampling event. The subject property receives water from the municipal water supply. In order to determine potential impacts to receptors a well search was conducted and 5 down-gradient private wells were identified and sampled. No drinking water samples contained detectable levels of any contaminant.

Because the USTs could not be removed to access contaminated soil, a feasibility study was conducted and identified soil vapor extraction (SVE) as the most practicable option for remediation. A pilot study was conducted in which nested extraction wells were installed near tank #1 and #2 to capture soil gas from 15-25 ft bgs and 105-115 ft bgs. Short and long-term pressure testing was performed at each

capture depth. Induced pressure, atmospheric pressure and temperature, flow rate, depth to groundwater, and field screening results were recorded during testing. Soil gas samples were collected from the SVE system exhaust. In 17 samples collected, benzene ranged from 29,000 to 2,000,000 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). Based on pressure differentials measured in four monitoring points the study radius of influence was calculated at 60 feet for the shallow extraction point and 100 feet for the deeper extraction point. The soil gas concentrations and air permeability indicated favorable conditions for SVE.

In 2018 a full-scale SVE system was implemented. The design was similar to the pilot study except larger 3-inch nested extraction wells were installed with screened intervals at 30-50 ft bgs and 110-130 ft bgs. Several monitoring points were used to monitor pressure differentials and soil gas concentrations. Samples were collected monthly then quarterly to estimate system efficacy. Due to technical difficulties with the system it was run intermittently from 2018 until 2021. At this time VOC concentrations from soil gas samples had reached an asymptotic condition and DEC approval was given to shut the system down. It is estimated that between the pilot study and full-scale operation the SVE removed approximately 1,000 pounds of VOC contaminant mass from the subsurface.

The building on the subject property has retail space for the gas station on the first floor and rented office space and residential units on the second floor. Indoor air samples were collected from the retail, office, and residential space five times between September 2015 and March 2019. No indoor air samples to date have exceeded the applicable indoor air target levels found in DEC's *Vapor Intrusion Guidance*.

Cumulative Risk Evaluation

Pursuant to 18 AAS 78.600(d), when detectable contamination remains on-site following a cleanup, a cumulative risk determination must be made that the risk from hazardous substances does not exceed a cumulative carcinogenic risk standard of 1 in 100,000 across all exposure pathways and does not exceed a cumulative noncarcinogenic risk standard at a hazard index of one across all exposure pathways.

Cumulative risk at this site was calculated assuming a residential land use and using the highest detected concentrations of contaminants in all of the samples collected following the cleanup action in 2012. The results indicate a cumulative carcinogenic cancer risk of 21 in 100,000 and a non-carcinogenic hazard index of 5.47. The potential cumulative risk is via the soil inhalation and ingestion pathways.

The inhalation and ingestion exposure pathways are controlled as the remaining contamination at the site is under a paved area and institutional controls are in place to limit activities that could disturb contaminated soil.

Exposure Pathway Evaluation

Following investigation and cleanup at the site, exposure to the remaining contaminants was evaluated using DEC's Exposure Tracking Model (ETM). Exposure pathways are the conduits by which contamination may reach human or ecological receptors. ETM results show all pathways to be one of the following: De-Minimis Exposure, Exposure Controlled, or Pathway Incomplete. A summary of this pathway evaluation is included in Table 3.

Table 3 – Exposure Pathway Evaluation

Pathway	Result	Explanation
Surface Soil Contact	Pathway Incomplete	Contamination was removed from surface soils (0 to 2 feet below ground surface).
Sub-Surface Soil Contact	Exposure Controlled	GRO, benzene, ethylbenzene and xylene contamination exceeds the ingestion and human health cleanup levels in subsurface soils near the former tanks. Institutional controls recorded in an environmental covenant require DEC approval for any activities that may disturb contaminated soil.
Inhalation – Outdoor Air	Exposure Controlled	GRO, benzene, ethylbenzene, xylene, and naphthalene contamination exceeds the inhalation and human health cleanup levels in subsurface soils near the former tanks. Institutional controls recorded in an environmental covenant require DEC approval for any activities that may disturb contaminated soil.
Inhalation – Indoor Air (vapor intrusion)	De Minimis Exposure	Indoor air data collected confirmed that concentrations were below target levels for a commercial or residential use.
Groundwater Ingestion	Exposure Controlled	Benzene has been intermittently detected in groundwater above the cleanup levels under tanks #1 and #2 but was not detected as of 2022. Institutional controls recorded in an environmental covenant require DEC approval to install new wells.
Surface Water Ingestion	Pathway Incomplete	Surface water is not used as a drinking water source in the vicinity of the site.
Wild and Farmed Foods Ingestion	Pathway Incomplete	Contamination is not present in a location where wild or farmed foods are likely to be impacted.
Exposure to Ecological Receptors	Pathway Incomplete	Contamination is not present in a location where ecological receptors are likely to be impacted.

Notes to Table 2: “De-Minimis Exposure” means that in DEC’s judgment receptors are unlikely to be affected by the minimal volume or concentration of remaining contamination. “Pathway Incomplete” means that in DEC’s judgment contamination has no potential to contact receptors. “Exposure Controlled” means there is an institutional control in place limiting land or groundwater use and there may be a physical barrier in place that prevents contact with residual contamination.

DEC Decision

Petroleum contamination remains in sub-surface soil above levels suitable for unrestricted future use; however, DEC has approved the use of institutional controls to limit potential future exposure and risk to human health or the environment. An Environmental Covenant (EC) has been recorded in the land records maintained by the Alaska Department of Natural Resources and a copy is attached to this letter.

Groundwater meets the applicable cleanup levels as of 2022 and SVE operation likely reduced contaminant concentrations near the groundwater table, Therefore, DEC has determined the residual soil contamination does not pose an unacceptable migration to groundwater concern

Institutional controls necessary to support this closure determination include:

1. No groundwater wells shall be installed on the contaminated area of the Property without prior DEC approval.
2. Contaminated groundwater underlying the Property may not be pumped, drained, or dewatered; or used for irrigation, dust control, or any other purpose without prior DEC approval. If that use is approved under this Covenant, that use is still subject to all applicable treatment, monitoring, disposal, and permitting requirements.
3. If the use of a building on the Site changes, or if buildings are constructed within 30 feet of tanks #1 and #2, DEC must be notified and may require that Grantor complete an evaluation of vapor intrusion and mitigation of any vapor intrusion risks.
4. Excavation, drilling, and other intrusive activities below a depth of 2 feet are prohibited within the Site, without prior review and approval from DEC.
5. In the event that contaminated soil on the Property becomes accessible in the future, the Grantor shall notify DEC, characterize the contamination, and, if determined necessary by DEC, cleanup the soil pursuant to DEC's Site Cleanup Rules.
6. DEC must be notified in advance of any subdivision or replat of the Property. This Covenant must be included as part of future Property transactions and attached to subsequent associated parcels, as determined applicable by DEC.

Standard site closure conditions that apply to all sites include:

1. DEC approval is required prior to moving soil or groundwater where contamination remains above applicable cleanup levels. If DEC approval for movement is granted, any moved soil or groundwater must still be characterized and managed following regulations applicable at that time.
2. Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 Water Quality Standards is prohibited.
3. Groundwater throughout Alaska is protected for use as a water supply for drinking, culinary and food processing, agriculture including irrigation and stock watering, aquaculture, and industrial use. Contaminated site cleanup complete determinations are based on groundwater being considered a potential drinking water source. In the event that groundwater from this Site is to be used for other purposes in the future, such as aquaculture, additional characterization and treatment may be required to ensure the water is suitable for its intended use.

DEC has determined the cleanup is complete as long as the institutional controls are properly implemented, and no new information becomes available that indicates residual contamination may pose an unacceptable risk.

The DEC Contaminated Sites Database will be updated to reflect the change in site status to “Cleanup Complete with Institutional Controls” and will include a description of the contamination remaining at the site.

The institutional controls will be removed in the future if documentation is provided that shows concentrations of all residual hazardous substances remaining at the site are below the levels that allow for unrestricted exposure to, and use of, the contaminated media and that the site does not pose a potential unacceptable risk to human health, safety or welfare, or to the environment. Standard conditions 9-11 above will remain in effect after ICs are removed.

This determination is in accordance with 18 AAC 78.276(f) and does not preclude DEC from requiring additional assessment and/or cleanup action if the institutional controls are determined to be ineffective or if information indicates that contaminants at this site may pose an unacceptable risk to human health or the environment.

Informal Reviews and Adjudicatory Hearings

A person authorized under a provision of 18 AAC 15 may request an informal review of a contested decision by the Division Director in accordance with 18 AAC 15.185 and/or an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340. See DEC’s “Appeal a DEC Decision” web page <https://dec.alaska.gov/commish/review-guidance/> for access to the required forms and guidance on the appeal process. Please provide a courtesy copy of the adjudicatory hearing request in an electronic format to the parties required to be served under 18 AAC 15.200. Requests must be submitted no later than the deadline specified in 18 AAC 15.

If you have questions about this closure decision, please feel free to contact me at (907) 334-5939 or via email at michael.hooper@alaska.gov

Sincerely,

Michael Hooper
Project Manager

Note: This letter is being transmitted to you in electronic format only. If you require a paper copy, let us know and we will be happy to provide one to you. In the interest of reducing file space, the Division of SPAR/Contaminated Sites Program is transitioning to electronic transmission of project correspondence.

Enclosures: Recorded EC which includes site figure(s) showing the extent of residual soil contamination and boundaries of areas covered by ICs.

cc: Spill Prevention and Response, Cost Recovery Unit