9506 LLC P. O. Box 84584 Seattle, WA 98124

June 16, 2021

Henry & Jennifer Jacky CHJ Properties LLC c/o Henry Jacky, Governing Person 7822 11th Avenue NE Seattle, WA 98115 James & Crystal Koory CHJ Properties LLC c/o James Koory, Governing Person 8215 15th Avenue NE Seattle, WA 98115

Re: Galloway Environmental, Inc.'s Draft Cleanup Action Plan

Dear Mr. and Mrs. Jacky and Mr. and Mrs. Koory:

Enclosed please find the Technical Memorandum from Thomas C. Morin, L.G., Principal Geologist and Pacific Northwest Area Practice Leader for TRC, which presents TRC's comments on the draft Cleanup Action Plan ("Draft CAP") prepared by Galloway Environmental, Inc. for Cascade Built. The Draft CAP relates to CHJ Properties LLC's commercial property located at 9506 19th Avenue S.E. in Everett, on which 9506 LLC is the lender. The comments were prepared for and on behalf of 9506 LLC.

Nothing in this letter or in the enclosed Technical Memorandum shall constitute a waiver of any of the rights of 9506 LLC and/or its officers, directors, employees and agents, and they each expressly reserve all of their respective rights, under the Hazardous Substances Agreement and any of the other Loan Documents. 9506 LLC and its officers, directors, employees and agents each expressly reserve the right to pursue any and all remedies under the Hazardous Substances Agreement and/or other Loan Documents.

Sincerely,

9506 LLC

mutusta Jennifer L. Habu, Member

Enclosure

cc: Dylan Galloway, Galloway Environmental, Inc. Blair M. Russ (counsel for CHJ Properties LLC) Kim Maree Johannessen (counsel for 9506 LLC)



TECHNICAL MEMORANDUM

DATE: June 16, 2021

TO: 9506 LLC

- CC: Kim Maree Johannessen Johannessen & Associates, P.S.
- FROM: Thomas C. Morin, L.G. Principal Geologist/PNW Area Practice Leader signed elecronically on 6/16/2021, 12:23 pm
- RE: Technical Comments to Draft Cleanup Action Plan Former Suns Mini Mart and Gas Site 9506 19th Avenue South East Everett, Washington Facility ID 56571915 Cleanup Site ID 12382

TRC Project Number: 417623.0001

TRC has prepared this technical memorandum on behalf of 9506 LLC at the request of its counsel, Ms. Kim Maree Johannessen of Johannessen & Associates, P.S. This technical memorandum presents TRC's comments to the Draft Cleanup Action Plan for the Former Suns Mini Mart Site prepared by Galloway Environmental, Inc. and dated April 27, 2021 (CAP).

TRC's comments are provided based on the information provided and reviewed. Our comments also incorporate our experience with similar sites under the current Washington Department of Ecology (Ecology) Voluntary Cleanup Program (VCP), the Pollution Liability Insurance Agency (PLIA) Petroleum Technical Assistance Program (PTAP), Agreed Orders, and our experience with Ecology staff and supervisors.

GENERAL COMMENTS

The following are general comments regarding the document and its relationship to the Model Toxics Control Act (70.105D RCW) and its implementing regulations (WAC 173-340), collectively "MTCA", and Ecology policy.

Comment 1 – The CAP does not meet the criteria for a cleanup action plan.

By definition, a cleanup action plan is a plan that addresses the totality of a "site" as that term is defined under in MTCA. Addressing the totality of a site includes all current and potential future exposure pathways. The CAP demonstrates that the entire site (i.e., an "...*area where a hazardous substance has been deposited, stored, disposed of, or place, or otherwise come to be located*" as defined in WAC 173-340-200) has not been characterized, will likely not be fully addressed by the selected remedy and that substantial data gaps remain. The lateral extent of impacts to soil and groundwater at concentrations exceeding applicable cleanup levels have not been characterized to the south, east, northeast, or northwest (additional detailed provided below). This is confirmed by the numerous question marks on Figures 4a, 4b, and 6a of the CAP. Additionally, the observed impacts appear likely to extend off property to the east. Ecology is unlikely to consider the Remedial Investigation (RI) of the site complete and may not accept it into the VCP on that basis.

Therefore, the CAP only addresses a portion of the MTCA-defined site and the proposed action is more appropriately considered an Interim Action (IA).

Comment 2 – The proposed action not likely to result in a No Further Action (NFA) determination.

An IA is not likely to result in a an NFA determination because, by definition, an IA only addresses a portion of a site. Even for property-specific NFA determinations, Ecology requires that the full lateral and vertical extent of impacts must be characterized and that all current and potential future exposure pathways have been evaluated and addressed by the proposed or completed remedial actions. It is TRC's experience that in the absence of that level of characterization, an NFA will not be granted.

It is possible that an IA may ultimately prove to be sufficient to remediate an entire site, typically in combination with monitored natural attenuation (MNA) of lower concentration impacts more distant from the source areas. However, such an approach requires a full characterization of impacts and the ability to defensibly monitor improvements in soil and groundwater quality over time and to demonstrate compliance with cleanup levels. Those necessary data are not currently available for the site.

SPECIFIC COMMENTS

Comment 3 – The identification of contaminants of concern and cleanup levels is not complete.

The CAP does not identify naphthalene as a contaminant of concern and does not select appropriate cleanup levels for this compound in soil and groundwater. Naphthalene is present in groundwater, as identified in the CAP at 290 micrograms/Liter (ug/L). This value exceeds the MTCA cleanup level of 160 ug/L. Section 7 of the CAP should therefore identify naphthalene as a contaminant of concern, identify cleanup levels for soil and groundwater, and develop soil cleanup levels that are protective of the soil-to-groundwater leaching pathway.

It is also unclear from the CAP whether all potential contaminants of concern have been assessed and identified. Given the age of the potential releases at the Site there is the potential for a range of fuel additives and/or lead to be present. Table 830-1 of the MTCA Regulation (WAC 173-340-900) sets forth the range of compounds to be assessed and analyses to be performed. Absent those analyses, the site



would not be considered as fully characterized. If any of the target analytes are detected at a concentration above a cleanup level, the lateral extent of those impacts would also require characterization.

Comment 4 – The Conceptual Site Model (CSM) is incomplete.

The CSM for the site does not address the vapor intrusion pathway. Volatile compounds are present in soil and groundwater at concentrations exceeding vapor intrusion screening levels. Given the location of those compounds and exceedances in proximity to the on-site building this pathway should be addressed, both through additional assessment and within the CSM.

A vapor intrusion assessment at the site requires shallow soil gas sampling and a comparison to those results screening levels for soil gas. This is a necessary phase of investigation under current Ecology guidance and policy. In the absence of such an assessment to confirm that soil vapor is not a potential exposure pathway, vapor intrusion must be considered in the CSM and must be considered in the effective implementation of any remedy. It should be noted that the selected remedy will not provide mitigation of the vapor intrusion pathway. This may result in a significantly lower score for the selected remedy when compared to other alternatives.

It is also important to note that Figure 8 of the CAP suggests that significant impacts are present beneath the existing structure and that the selected remedy does not appear to propose treatment in those areas.

Comment 5 – Significant data gaps remain in the characterization of the site.

As noted, the current level of characterization of the site does not establish the lateral limits of impacts to soil and groundwater at concentrations exceeding cleanup levels. The CAP appears to acknowledge this condition with numerous queries ("?") on graphics indicating uncertainty.

For soil, data gaps remain in the characterization to the northeast, east, southeast, and south with some uncertainty to the west beneath the existing structure.

For groundwater, similar data gaps remain in the lateral characterization. Only four monitoring wells currently exist, with no wells present within the areas of highest confirmed groundwater results from reconnaissance borings. In particular, the gasoline-range organic concentration in soil at GLB-13 (9,000 milligrams/kilogram, mg/kg) is suggestive of the presence of separate phase hydrocarbons, as is the gasoline-range organic concentration in groundwater at well GMW-4 (34,500 ug/L). The absence of additional wells or characterization in this area or in surrounding areas is a significant data gap that will affect the ability to monitor the efficacy of the selected remedy.

As noted above, the vapor intrusion pathway remains unassessed, as does the presence and lateral limits of other compounds (e.g., naphthalene) in soil and groundwater.



Comment 6 - The CAP does not present the necessary characterization data

The CAP does not provide the data that are material to understanding the site and how remediation may progress. A critical component of understanding site conditions is the direction of groundwater migration and how that migration and water levels vary during a normal seasonal cycle. The CAP only presents an "inferred" groundwater flow direction. The CAP does not present gradient or piezometric contours or information on how groundwater migration may vary over time. This information is important in understanding the potential effectiveness of a proposed or selected remedy. Understanding and documenting groundwater migration directions is also important for determining whether the existing monitoring points are appropriately located to monitor the actual effectiveness of a selected remedy and attainment of cleanup levels at the selected points of compliance.

The CAP does not present the following necessary data:

- Lateral and vertical extent of naphthalene in soil
- Lateral extent of gasoline-range organics, benzene, or naphthalene in groundwater. Figures 5 and 6 are labeled as presenting groundwater quality data, but only soil data are presented.

Comment 7 – The selected remedy is not fully supported.

Figure 8 presents the proposed injection points for the selected remedy. Those injection points and areas of treatment do not appear to overlap. They proposed injection points also do not appear to address the areas of contamination indicated in the plan view portions of Figures 3 through 6. Those graphics and the underlying data indicate that the primary impacts are located near the east end of the fuel canopy and near the eastern property boundary. The treatment plan on Figure 8 does not indicate treatment in that area. The planned injection areas should be clarified and confirmed to overlap with areas of contamination.

The treatment plan indicates an anticipated 5-foot radius of influence for the shallow points and a total of 96 feet of injection. For the deep injection points, there is an assumed 10-foot radius of influence and a total interval of injection of 200 feet for the shallow injection points. Therefore, the injection plan assumes treatment of 17,600 cubic feet of soil. If it is assumed that the site soils have a relatively low porosity of 25 percent, this treatment plan equates to about 4,400 cubic feet or 33,000 gallons of treatment media. The CAP indicates injection of 16 "Units" of media at the site. The volume of a unit is not specified, but it would need to be about 2,100 gallons to provide sufficient volume as indicated in the treatment plan.

To achieve a radius of influence indicated in the treatment plan, each injection point would need to accept 1,000 gallons of media. At an injection rate of 2 gallons/minute, or about 8.5 hours for each injection point, this would result in about 45 days of injection, including the necessary time to advance each boring and associated tasks.

It is not clear whether an evaluation has been performed regarding the mass balance of oxidant relative to contaminant. Such an evaluation would typically be performed to confirm that the proposed injection volume is sufficient to treat the mass of contamination present, particularly in the higher concentration



areas. It is not uncommon for an oxidant to contaminant ratio of 5:1 or greater to be required. The current proposed oxidant to contaminant ratio is not presented in the CAP and cannot be determined based on the information provided.

The CAP also appears to propose injecting the same volume of treatment media in each location regardless of the anticipated contaminant mass present. Shallow treatment points are more closely spaced than the deeper injections, but that spacing does not correlate with higher levels of contamination as indicated in the CAP. It is not unusual for a higher volume or concentration of treatment media to be injected in areas of higher contaminant concentrations and vice versa.

Given the local soil types, it is unclear the degree to which they will accept the injected media and at what rate. Understanding these parameters greatly affects the practicability and implementability of the selected remedy.

The selected remedy is described as "chemical oxidation and microbial digestion". Oxidative methods are general incompatible with microbial degradation of contaminants because the oxidation is toxic to soil and groundwater microbes.

Additionally, oxidative methods are non-discriminate in that compounds other than contaminants will be oxidized. This is referred to as soil oxygen demand. For example, soil with high amounts of naturally occurring organic material can scavenge the injected oxidant before it can treat contaminants. It does not appear that soil oxygen demand testing has been performed to assess its effects on the treatment method.

The remediation product referenced in the CAP (Petrox) appears to be manufactured by CL Solutions. This product comes in multiple formulations and it is assumed based on available information that the "Petrox 1" product will be used. As described on the CL Solutions website this is a bioremediation product and does not appear to include an oxidation component. This product description contrasts with the remediation method described in the CAP.

In its review of available documentation, TRC has not identified sites in Western Washington where the proposed method or product has been used. In our review of the CL Solutions website and the case studies listed for gas stations, all but one of those cost studies was authored by the same individual (Mike Saul) and the other case study appears to have been authored under an anonymous internet moniker ("cybervise").

Given the uncertainties regarding the selected remedy and its implementability, TRC recommends performance of a field scale pilot test. Such a test could include a reasonable number of injection points within an area that has been well-characterized. An appropriate dose of the media could be applied and the effectiveness of the treatment within that area could then be assessed through follow up soil and groundwater sampling. The test should be scaled sufficiently so that, if effective, the results could be readily scaled to the full site. Similarly, the test should be sized so that if it were not effective, all parties are assured that the results are not a false negative.

Comment 8 – The anticipated restoration time frame appears overly optimistic.



9506 LLC c/o Ms. Kim Maree Johannessen Technical Comments to Draft CAP – Former Suns Mini Mart and Gas Site Everett, Washington June 16, 2021

The CAP estimates a restoration time frame of 4 to 6 months. The CAP also indicates that confirmational soil and groundwater samples will be collected about 45 days after treatment. In TRC's experience, this is an overly optimistic time frame for the method to be used. It is not uncommon for the necessary confirmatory testing to identify areas that have not attained cleanup levels and that may require one or more rounds of additional treatment. Biological processes are also relatively slow and variable, and there are often limiting factors such as the amount of dissolved oxygen available. There also are not bench-scale or field-scale pilot tests to support this assumed restoration time frame.

When discussing restoration time frame it is important to define the end point. If the end point is an NFA, then the restoration time frame should also incorporate long-term groundwater monitoring that will be required to demonstrate compliance with all cleanup levels.

RECOMMENDATIONS

TRC offers the following recommendations for the site:

- Evaluate data gaps in the site characterization and fill those data gaps prior to finalizing the CAP and submitting it to Ecology. In TRC's experience, the primary underlying cause of failed remedial efforts is insufficient characterization. Any monies spent on characterization provide substantial dividends during remedy implementation.
- Perform a field-scale pilot test of the recommended alternative to confirm its effectiveness and to finalize the design parameters for full-scale implementation.
- Revise the CAP with the additional data and incorporate responses to the comments presented above.
- Revise the Focused Feasibility Study using the data from pilot testing and reassess the proposed remedial technologies, including as necessary the evaluation, selection, and ultimate design of the selected remedy.

