



Rincon Consultants, Inc.

250 East 1st Street, Suite 1400
Los Angeles, California 90012

213 788 4842
FAX 908 2200

info@rinconconsultants.com
www.rinconconsultants.com

July 29, 2020
Project 19-07402

Antonio Gardea, Community Development Department
415 Diamond Street, Door 2
Redondo Beach, California 90277

Via email: Antonio.gardea@redondo.org

**Subject: Peer Review of Hazardous Materials Studies for 100-132 North Catalina Avenue
Project, Redondo Beach, California 90277**

Dear Mr. Gardea:

This memorandum transmits the results of a peer review Rincon Consultants, Inc. (Rincon) completed of the Addendum to Soil Vapor Extraction and Soil Treatment Workplan (Workplan) for the Former Catalina Cleaners located at 100-132 North Catalina Avenue in Redondo Beach (Site), prepared by Environmental Engineering Consulting & Remediation, Inc. (E2C).

The following sections include general comments on the defensibility of the study as well as recommendations for addressing data gaps.

Rincon Environmental Engineer Lindsay Ellingson, MS, EIT, and Principal in the Environmental Site Assessment Program, Torin Snyder, PG, CHG, completed this peer review. Mr. Snyder has more than 20 years of experience in environmental site assessment and environmental compliance, and Ms. Ellingson has more than 4 years of similar experience.

At this time, Rincon's review is specific to the Addendum to Soil Vapor Extraction and Soil Treatment Workplan dated July 21, 2020 and does not address the Soil Vapor Extraction and Soil Treatment Workplan dated May 7, 2020. However, Rincon recommends that a single report is prepared that provides adequate evidence that occupants of the proposed development will be protected from human health risks as a result of the known contamination at the Site. This report should include a conceptual site model and all proposed remedial actions for the Site and should be reviewed and approved by the Los Angeles County Fire Department in order to offer a defensible foundation for review under the California Environmental Quality Act (CEQA).

If you have any questions about the contents of this memo, please feel free to contact Lindsay Ellingson at 760-517-9136 or lellingson@rinconconsultants.com.

Sincerely,

Rincon Consultants, Inc.

A handwritten signature in blue ink that reads 'Lindsay Ellingson'.

Lindsay Ellingson, MS, EIT
Environmental Engineer
lellingson@rinconconsultants.com

A handwritten signature in blue ink that reads 'Torin Snyder'.

Torin Snyder, PG, CHG
Principal
tsnyder@rinconconsultants.com



Comments on “Addendum to Soil Vapor Extraction and Soil Treatment Workplan, Former Catalina Cleaners 100 ~ 132 North Catalina Avenue, Redondo Beach, California 90277”, dated July 21, 2020

1. The Workplan does not adequately describe the minimum requirements for the use of a sub-slab vapor barrier

The Workplan does not meet the minimum requirements or manufacturer’s recommendations for the use of a sub-slab vapor barrier. Although the Workplan describes the type of Spray-Applied Gas Vapor Barrier proposed for the project and provides some engineering details about the application of the barrier, the details provided are not sufficient based on the manufacturer’s minimum requirements and recommendations. Each of the items below require review and should be considered in final design plans for the project:

(a) Minimum thickness requirements for the Spray-Applied Gas Vapor Barrier

Section 2.0 of the Workplan describes the proposed soil barrier being “30-mil or thicker HDPE membrane (double textured) or equivalent membrane and 30-mil (minimum) thick layer of Liquid Boot® 500.” According to the manufacturer’s specifications for Liquid Boot 500®, a minimum thickness of 60 dry mils is required, unless specified otherwise. Further, based on the manufacturer’s specification, the use of HDPE with Liquid Boot 500 is not prescribed. Please clarify what materials will be used and if there is a deviation from the manufacturer’s specifications, and provide a letter from the manufacturer stating the design alternative is approved.

(b) Appropriate application of Spray-Applied Gas Vapor Barrier for the contaminants of concern present at the Site

The Workplan states Liquid Boot 500 will be used to address the potential vapor intrusion of volatile organic compounds (VOC). Liquid Boot 500® is recommended for applications where methane and carbon dioxide are the constituents of concern. The manufacturer of Liquid Boot®, CETCO, recommends the application of Liquid Boot Plus® in instances where VOCs, including benzene, toluene, ethylbenzene, and total xylenes (BTEX) and chlorinated solvents, are the major contaminants of concern. Please revise plans per the manufacturer’s specifications for the appropriate Spray-Applied Gas Vapor Barrier.

Additionally, Figure 1 and Figure 2 presented in the Workplan refer to a high-density polyethylene (HDPE) liner. Section 2.0 of the Workplan refers to the use of Liquid Boot in addition to the HDPE membrane. The applicant should provide clarification into the design of the sub-slab vapor barrier and the use of both Liquid Boot and an HDPE membrane should be displayed in Figure 1 and 2, if appropriate. Section 2.0 of the Workplan also includes details into the application of UltraShield G-1000 geotextile over the vapor barrier, which is not included in Figures 1 and 2. These Figures should include all design details explained in the document for consistency.

(c) Specific detailed engineering plans for the Spray-Applied Gas Vapor Barrier

The Workplan provides some information as to how the Spray-Applied Gas Vapor Barrier should be applied given standard conditions but does not provide specific details given the project design. Complete engineering plans that include specific details should be prepared and approved by the City of Redondo Beach and the Los Angeles County Fire Department. The location of each element called out in Figure 2 should be referenced in Figure 1 such that the design elements can be easily referred to and compared to design requirements.



(d) Vent riser design

According to the Department of Toxic Substances Control (DTSC) Vapor Intrusion Mitigation Advisory, vent risers are required to extend a minimum of one foot above the highest roof of the building, at a minimum of ten feet away from windows, and should be equipped with a sampling port and fitted with a non-restricting rain guard¹. Additionally, a minimum of two vertical vent risers are required to be present for the first 10,000 square feet of the building footprint underlain by a vapor barrier. One additional vertical vent riser should be provided for each additional 10,000 square feet of building footprint. The applicant should include the total area intended to be covered by a vapor barrier in an effort to demonstrate that the two proposed vent risers will be adequate. Additionally, the applicant should clearly label the location of the vent riser to ensure requirements are being met.

PVC pipe material is not recommended for the vertical pipe for commercial areas. Please consider alternate material that cannot be punctured as a result of tenant improvements.

(e) Pipe spacing design

According to the DTSC Vapor Intrusion Mitigation Advisory, pipe spacing associated with the vapor barrier is dependent on the permeability of the subgrade materials used around the collection piping (DTSC 2011). The Workplan states that the perforated pipes will be placed at the center of the sand trenches and that the trenches are to be located 10 feet apart on centers. The applicant should provide calculations or details that demonstrate that pipe spacing is adequate based on the proposed characteristics of the subgrade materials.

(f) Base soil to be used beneath the sub-slab vapor barrier

The Workplan does not identify the soil characteristics of the base soil that will be used beneath the sub-slab vapor barrier. The subgrade should be prepared in accordance with geotechnical requirements and also the manufacturer's specifications of the prescribed vapor barrier.

Additionally, the Workplan refers to the use of Lonestar No. 3 sand pack in the sand trenches. Rincon recommends that the use of Lonestar No. 3 sand should be approved by a geotechnical engineer for this application to ensure the structural integrity of the concrete slab and footings are not compromised.

(g) Horizontal pipe design

The Workplan refers to low-profile sub-slab ventilation piping as well as two-inch PVC piping to be used below the sub-slab vapor barrier. The applicant should clarify the type of horizontal piping to be used for sub-slab ventilation. In addition, horizontal vent pipes and gravel should be wrapped in geotextile to prevent clogging of the perforated pipe. The Workplan should include details such as design specifications for geotextile or woven fabric to be used in this application.

Further, the design of horizontal pipes does not include details as to how "dead ends" would be avoided or prevented. It is typical for the design of ventilation piping to include a square or rectangle layout with two vent risers to prevent dead ends and to support the flow of vapors through the pipes to the vent risers. The Workplan should include design considerations for continued flow and operation of the ventilation pipes.

¹ DTSC. 2011. *Vapor Mitigation Advisory*. October.



(h) Sub-slab vapor barrier extent

Section 2.0 of the Workplan describes the extent of the proposed vapor barrier to extend three feet beyond the proposed residential units. Per ASTM E1643-18a – *Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill under Concrete Slabs*, the vapor barrier should be installed over the footings and should seal to the foundation wall in accordance with designer's specifications and ASTM E1643. The current design would allow for soil vapor to migrate horizontally in the subsurface and could allow for soil vapor to travel around the barrier and through cracks or cold joints in the concrete foundation. The Workplan should be revised to include design details showing the sub-slab vapor barrier being sealed to the proposed building foundation.

Additionally, Figure 2 shows a cold joint in the first and third detail that, as shown, would allow for vapor to migrate below the slab. If the sub-slab vapor barrier is to be installed beneath the footing, the liner should terminate above the soil surface or attach to the outside of the footing to preclude vapor intrusion through the building foundation. If terminated at the soil surface, there is potential for water to collect on top of the vapor barrier. Therefore, design considerations should be addressed to prevent water accumulation on top of the vapor barrier.

(i) Operation and maintenance plan

Routine monitoring should occur to ensure system integrity and continued protection of human health and to verify the effectiveness of the mitigation system. An operation and maintenance plan should be prepared to establish routine vapor monitoring, indoor air monitoring, and routine monitoring of system operations at the Site. The operation and maintenance plan should establish a schedule for monitoring based on the potential risk posed by vapor intrusion as well as the effectiveness of the vapor intrusion mitigation system. Other general activities that may be included in the operation and maintenance plan include evaluation of site conditions to ensure the continued function of the mitigation system, inspection of the area of concern including all visible components of the venting systems and vapor probes, monitoring of designated vapor probes, lowest accessible floor of the building, parking garage, and enclosed areas to ensure no significant changes in subsurface vapor concentrations, monitoring of vent risers for flow rates and gas concentrations, and calibration and testing of functioning components of the venting system.

(j) Information for occupants

Due to the intended use for the proposed project, signage with important information about the sub-slab vapor barrier should be installed in prominent locations throughout the proposed project. This signage should state that a sub-slab vapor barrier is present, the sub-slab vapor barrier cannot be punctured, and any proposed penetration or alteration of the floor slab requires a permit to be obtained from the City of Redondo Beach and Los Angeles County Fire.



2. The Workplan does not adequately address all design considerations required for a vapor intrusion mitigation system design.

The Workplan should take into consideration the overall building design for new and existing buildings and should consider other important structural components associated with the project. Each of the items below require review and should be considered in final design plans for the project:

(a) Existing buildings

Section 2.0 of the Workplan describes the extent of the proposed vapor barrier to extend three feet beyond the proposed residential units (refer to comment 1h., above). Based on the nature and extent of contamination in the subsurface, all buildings intended to be occupied should have a vapor barrier installed below the concrete foundation to prevent vapor intrusion into the proposed and existing buildings.

Figure 1 in the Workplan depicts a sub-slab vapor barrier beneath the proposed residential development. Several buildings are displayed in Figure 1 that are not underlain by a sub-slab vapor barrier. Four of these structures appear to be existing structures that would remain intact as part of the project. These include Buildings #1, #2, #3, and #5 in the Planning Submittal Set dated July 8, 2020 (Demolition Plan). If these buildings are to be occupied², a vapor barrier should be included in the Project design. If they are to be unoccupied or if there is a passive venting from the concrete slab to the first floor of occupied space, e.g. parking garage, that fact should be explicitly stated in the Workplan.

(b) Parking garage

Building #4 is intended to be demolished and replaced by a new structure that is not underlain by a sub-slab vapor barrier in Figure 1. This new structure appears to be a proposed parking garage. Due to building requirements for parking garages to have sufficient ventilation, a vapor barrier may not be required. However, the applicant should provide details about the proposed air exchange rate as well as calculations demonstrating that the proposed air exchange rates are adequate to dilute indoor air concentrations in the garage and also the first occupied space above the garage such that human health is protected.

(c) Proposed soil vapor extraction system

The Workplan should address the integration of the soil vapor extraction remediation system with respect to the sub-slab vapor barrier. The existing Workplan addresses the fact that the May 7, 2020 Soil Vapor Extraction and Soil Treatment Workplan has been submitted but does not incorporate information as to how the soil vapor extraction system would impact the design and function of the sub-slab vapor barrier and vice versa. The applicant should provide information regarding the impacts and design considerations required in incorporating both project components. Such considerations may include potential for short circuiting the SVE system, as well as project schedules for the remediation system.

² Occupants include residents, commercial workers or patrons, and other occupants for use of the common workspace in the case of Building #5.