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Rachael E. Koss
Adams Broadwell Joseph & Cardozo
601 Gateway Blvd., Suite 1000
South San Francisco, CA 94080

Subject: Comments on the 2012 Draft Supplemental Environmental Impact Report and 2012 Draft Marin County Housing Element for Marin County, California

Dear Ms. Koss:

We have reviewed the 2012 Draft Supplemental Environmental Impact Report ("DSEIR") prepared for the 2012 Draft Marin County Housing Element ("2012 Housing Element"). Our review is focused on potential health impacts to workers and future residents who may be exposed to hazardous soil conditions related to past uses, which include gas stations and an automotive maintenance facility.

The 2012 Housing Element identifies 52 sites for housing development (DSEIR, Exhibits 3.0-13 and 3.0-14). We focused our review on five sites located in the Tam Valley region of Marin County, California:

- Site 4: 21 housing units at 204 Flamingo Road, former location of a Chevron gas station;
- Site 9: 3 units at 150 Shoreline Highway, former location of a Texaco gas station;
- Site 18: 45 housing units at 150 Shoreline Highway, former location of a Texaco gas station;
- Site 19: 60 housing units at 237 Shoreline Highway, former location of Tam J Retail and approximately 530 feet away from Site 4; and
- Site 14: 53 housing units at 217 and 221 Shoreline Highway, former location of Armstrong Nursery and approximately 700 feet away from Site 4 (See DSEIR, Exhibit 2.0-4 and Exhibit 2.0-14).

The DSEIR identifies two of these sites, Site 4 and Site 19, as contaminated from past industrial uses on or near the sites. Our review shows that the remaining three sites, Sites 9, 14 and 18, may be contaminated as well. Residential development on contaminated sites can pose significant risks to human health through exposure to contaminated soil through inhalation and dermal contact.

We have reviewed each site for all potential contaminants that may be present in soil and groundwater on the site and the health risks of these contaminants:

Site 4: 204 Flamingo Road

The 2012 Housing Element proposes 21 housing units at Site 4, a 0.79-acre lot located at 204 Flamingo Road (DSEIR, p. 18). Site 4 is located on the site of a former Chevron gas station, which operated from 1950 to 2006. As part of regulatory site closure, four underground storage tanks (USTs), one hydraulic hoist, a waste oil tank, and all associated dispensers and piping were removed. One hydraulic hoist was removed prior to this work in 2006. One hundred and twelve tons of contaminated soil was also removed.[1]

In November 2009, following cleanup activities, the SF Bay Regional Water Quality Control Board (RWQCB) issued a closure letter for the site. The letter includes the following table showing the maximum concentrations of pollutants in the site's soil and groundwater before and after cleanup:

MAXIMUM DOCUMENTED POLLUTANT CONCENTRATIONSCBEFORE AND AFTER CLEANUP

POLLUTANT	Soil (ppm)		Water (ppb)		POLLUTANT	Soil (ppm)		Water (ppb)	
	Before	After	Before	After		Before	After	Before	After
Total Oil & Grease		1,000		3,600	Ethylbenzene		0.007		52
TPH-g		19	4,900	5,000	Xylenes		0.068		740
TPH-ho		1,300	----	----	Toluene		0.003		930
TPH-d		540	44,000	1,400					
Benzene		0.006		240	MTBE		0.011		19

Comments (Depth of Remediation, etc.): Soils in UST areas excavated to approximately 8 fbg during 2006 UST removal. Over 112-tons of hydrocarbon-bearing soil was over-excavated from the tank pit area, dispenser island area. 57,280 gallons groundwater purged, treated and disposed.

We compared the concentrations of contaminated soil following cleanup to soil screening levels established by the SF Bay RWQCB for a direct exposure pathway for a commercial/industrial worker. A commercial/industrial scenario is representative of an on-site worker who spends all or most of their workday outdoors and is expected to be the most highly exposed.[2] Contaminated soil that remains at the site with a concentration of total petroleum hydrocarbons-diesel (TPH-d) at 540 ppm exceeds the RWQCB's screening level of 450 ppm.[3]

We also compared soil sampling results after cleanup to direct exposure soil screening levels for the construction worker scenario. Construction workers are exposed to contaminated soil

[1] Subsurface Investigation Report, Former Chevron Station #9-0024.
[2] *Ibid.*, p. 6-7.
[3] SF Bay RWQCB, Screening for Environmental Concerns at sites with Contaminated Soil and Groundwater, Table K-2.

through incidental soil ingestion, dermal contact of soil, and inhalation of contaminated outdoor air.[4] TPH-hydraulic oil (ho) at 1,300 ppm exceeds the RWQCB's screening level of 1,000 ppm.[5]

We compared soil sampling results to the residential exposure scenario as well. Site soils contain TPH-d at 540 ppm which exceeds the RWQCB's screening level of 110 ppm.[6] TPH-ho at 1,300 ppm also exceeds the RWQCB's screening level of 370 ppm.[7]

Additionally, benzene may be present in soil vapor which may pose a risk to future residents. Benzene was detected in groundwater at 240 ppb after cleanup, a concentration which is below the SF Bay RWQCB screening level of 540 ppb for vapor intrusion concerns.[8] However, only one groundwater sample was collected and no samples of soil vapor have been collected. California state guidance states that a soil vapor investigation should include the collection of groundwater and soil vapor data.[9]

The SF Bay RWQCB closure letter stated that "residual contamination in both soil and groundwater at the site could pose an unacceptable risk under certain development activities such as site grading, excavation, or installation of water wells" which "could necessitate additional sampling, health risk assessment, and mitigation measures."[10] The DSEIR discloses only that "residual hydrocarbons [are] likely in soil" (DSEIR, p. 153). The DSEIR does not provide any detail on the type of hydrocarbons that may exist in site soils, their potential impacts on construction workers and future residents, and the necessity for additional sampling.

Housing development on the site will require extensive construction and soil disturbance that may expose workers to contaminated soil through inhalation and dermal contact. In addition, if contaminated soil is not cleaned up to levels below regulatory thresholds prior to residents moving in, residents may also be exposed to site contamination through dermal contact and vapor intrusion. Additionally, if TPH compounds exist in shallow soils, residential activities such as gardening may present a potential route of exposure for future residents.

TPH may affect the central nervous system and can cause headaches and dizziness at high levels in the air. One TPH compound can cause a nerve disorder called "peripheral neuropathy," consisting of numbness in the feet and legs while others can cause effects on the blood, immune

[4] *Ibid.*, p. 6-8.
[5] SF Bay RWQCB, Screening for Environmental Concerns at sites with Contaminated Soil and Groundwater, Table K-3.
[6] *Ibid.*, Table K-1.
[7] *Ibid.,* Table K-1.
[8] SF Bay RWQCB, Screening for Environmental Concerns at sites with Contaminated Soil and Groundwater, Table E-1.
[9] California Environmental Protection Agency, Department of Toxic Substances Control, Los Angeles Regional Water Quality Control Board, San Francisco Regional Water Quality Control Board, Advisory Active Soil Gas Investigations. http://www.dtsc.ca.gov/SiteCleanup/upload/VI_ActiveSoilGasAdvisory_FINAL_043012.pdf, p. 1
[10] SF Bay RWQCB, Former Chevron Station #9-0024 Site Closure Summary, November 18, 2009, p. 3/14.

system, lungs, skin, and eyes.[11] Benzene causes harmful effects on the bone marrow, can cause a decrease in red blood cells leading to anemia, and is a known human carcinogen.[12]

Because sampling results exceed construction worker, commercial/industrial worker and residential exposure scenarios for various TPH-compounds, site development may pose significant health risks to workers and future residents. The Chevron station was closed under a commercial/industrial scenario and, because residential use is proposed, additional sampling is necessary, consistent with the SF Bay RWQCB conclusions in their closure letter. The additional sampling should provide the basis for a risk assessment that considers construction worker and residential exposure pathways and the results should be included in a revised DSEIR.

Sites 9 and 18: 150 Shoreline Highway

The 2012 Housing Element proposes 48 housing units on Sites 9 and 18, located at 150 Shoreline Highway (DEIR, pp. 18, 32). The DSEIR states that these sites are not located in an area of impacted environmental quality (DSEIR, 153). However, our review shows otherwise. Our review reveals that a Texaco gas station was located at the proposed site.

Maps from the U.S. EPA show the Texaco station to be located at 156 Shoreline Highway[13]:

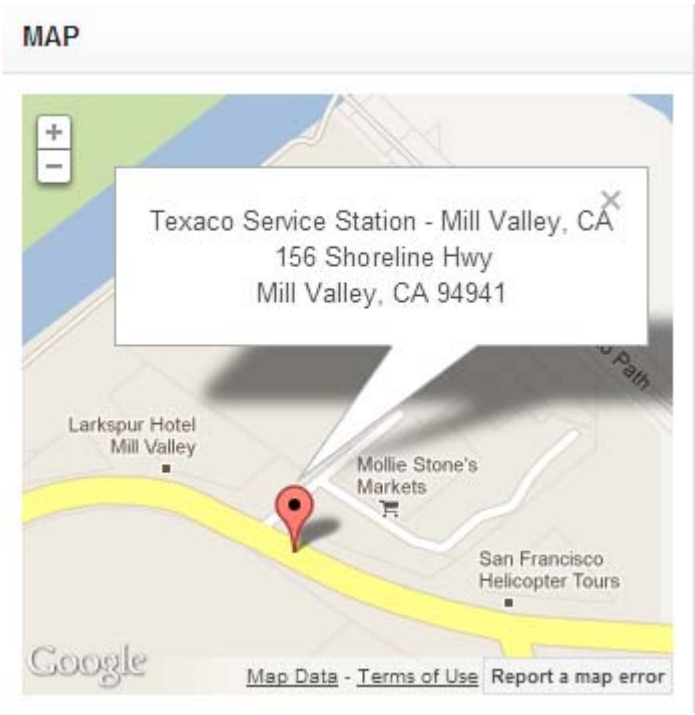
Facility Detail Report

TEXACO SERVICE STATION
156 SHORELINE HWY
MILL VALLEY, CA 94941
EPA Registry Id: 110002824837

[11] Agency for Toxic Substances and Disease Registry, TOXFAQs for Total Petroleum Hydrocarbons (TPH). http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=423&tid=75

[12] Agency for Toxic Substances and Disease Registry, TOXFAQs for Benzene. http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=38&tid=14

[13] *See* http://epa-sites.findthedata.org/l/44675/Texaco-Service-Station; and http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110002824837



A resident of the area confirmed the existence of the gas station at the property and stated that the station was a full-service station, meaning that it not only sold gasoline but also performed numerous automobile maintenance procedures such as oil changes, brake work, tire replacement, and tune-ups.[14] The resident stated that the station closed down approximately 15 years ago. Review of Google Earth imagery corroborates this statement – historical imagery shows a structure to exist on the site until at least 2002 at which time the site appears to be vacant.

Based on the available evidence, we conclude that a Texaco gas station existed at Sites 9 and 18. The 2012 Housing Element, under "Environmental Considerations," does not disclose that a gas station used to exist on the property. A full history of the past uses of these sites should be disclosed. Soil, soil vapor, and groundwater sampling should be conducted at Site 9 and Site 18, as TPH-compounds may potentially be present on the site (as seen at Site 4 which also was formerly used for a gas station). Results should be compared to appropriate construction worker and residential exposure scenario screening levels to identify whether site development for housing units will expose workers or future residents to significant health impacts from potentially contaminated soil and groundwater from the property's former use.

Site 19: 237 Shoreline Highway

The DSEIR identifies Site 19, at 237 Shoreline Highway, as a site for 60 housing units (DSEIR, p. 32). Site 19 is the former location of Tam J Retail and located directly across the street and approximately 530 feet to the east of Site 4. The DSEIR states that shallow groundwater at the

[14] Personal communication with Rachael Koss via e-mail dated February 10, 2013.

site may be impacted from a nearby gas station and that "remnants of volatile organic compounds could pose a potential vapor intrusion risk for residential land use" at Site 19 (DSEIR, p. 155).

Because the DSEIR identifies a potential vapor intrusion risk from remnant volatile organic compounds, a soil vapor sampling investigation should be conducted in accordance with California guidance for the collection of groundwater, soil, and soil vapor data. The results of the investigation should be included in a revised DSEIR.

Site 14: 217 and 221 Shoreline Highway

The 2012 Housing Element proposes 53 housing units at 217 and 221 Shoreline Highway, a 1.77-acre lot (DSEIR, p. 19). These sites are located approximately 700 feet to the southeast of Site 4. Because the DSEIR identifies the risk for potential vapor intrusion from the former Chevron station at Site 4, we conclude that the same risks could potentially exist at Site 14 as well.

A soil vapor sampling investigation should also be conducted at Site 14 in accordance with California guidance and results from the investigation should be disclosed in a revised DSEIR.

Our review has shown that TPH-contaminated soil, at levels exceeding construction worker and residential scenarios, exists at Site 4 and may also impact soils at Sites 14 and 19. Sites 9 and 18 may be impacted from past use of the site as a Texaco gas station. Contaminant concentrations may pose health risks to workers and future residents from soil disturbances during Project construction and through vapor intrusion. Based on these findings, we recommend that soil vapor investigations be conducted at all sites and results of the investigation be compared to appropriate thresholds. To ensure that future residents will not be exposed to contaminants through a vapor intrusion pathway and reduce contamination to levels that do not pose significant risks to human health[15], mitigation measures such as vapor barriers should be implemented, e.g. installation of sub-slab liners below the building to block the entry of vapors.[16] If reduction of contamination below screening levels is not possible, land use covenants to restrict construction on the site and notify personnel that may come into contact with contaminated soil may be necessary.[17]

Additionally, site development may result in movement of contamination to adjacent waterways and threaten biological and hydrological resources. Development of these sites will involve grading, vegetation removal, and other site preparation work such as excavation (DSEIR, p. 206). Site soils will be excavated and stockpiled awaiting final preparation for construction of the site. Stockpiled soil may be subject to wind and water erosion and the DSEIR itself states that development consistent with the

[15] Department of Toxic Substances Control, California Environmental Protection Agency, Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). http://www.dtsc.ca.gov/AssessingRisk/upload/Final_VIG_Oct_2011.pdf, p. 37.

[16] Department of Toxic Substances Control, California Environmental Protection Agency, Vapor Intrusion Mitigation Advisory. http://www.dtsc.ca.gov/SiteCleanup/upload/VIMA_Final_Oct_20111.pdf, p. 16.

[17] Department of Toxic Substances Control, California Environmental Protection Agency, Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). http://www.dtsc.ca.gov/AssessingRisk/upload/Final_VIG_Oct_2011.pdf, p. 38.

Housing Element could result in "erosion and downstream sedimentation of Marin County waterways" (DSEIR, p. 176).

During periods of rainfall, water may wash over stockpiled and eroded soil, entrain TPH-compounds from contaminated soil in Project runoff and discharge to adjacent waterways. Sites 4, 9, and 19 drain to Richardson Bay while Sites 14 and 18 drain to Coyote Creek (DSEIR, pp. 186-189). Coyote Creek is a tributary to Richardson Bay, which supports numerous special status plants and animals including populations of California Species of Special Concern.[18] Both waterways are listed as impaired[19] under the California Regional Water Quality Control Board's 303(d) List of Impaired Water Bodies. Contaminated Project runoff into these waterways will further degrade water quality and pose a threat to biological and hydrological resources.

The DSEIR states that a Stormwater Pollution Prevention Plan (SWPPP) will be prepared, if necessary, to address post-construction measures that control erosion and sedimentation (DSEIR, p. 119). We recommend that a SWPPP be prepared to also address construction activities such as grading, trenching, excavating, and stockpiling of soils that may result in discharge of TPH-contaminated Project runoff to Coyote Creek and Richardson Bay. Best management practices, specifically designed to address TPH-contamination in soil, such as sorbent socks should be identified in the SWPPP.

Sincerely,

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Uma Bhandaram

[18] Marin County Watershed Program. http://www.marinwatersheds.org/richardson_bay.html

[19] *See* http://www.waterboards.ca.gov/water_issues/programs/tmdl/2010state_ir_reports/category5_report.shtml; and http://www.waterboards.ca.gov/water_issues/programs/tmdl/2010state_ir_reports/category4a_report.shtml