STATE WATER RESOURCES CONTROL BOARD (STATE WATER BOARD)
DIVISION OF WATER QUALITY RESPONSE TO COMMENTS ON THE
PROPOSED UST CASE CLOSURE OF CHEVRON #9-1202,
9491 EDINGER AVENUE, WESTMINSTER, ORANGE COUNTY (Site)

The State Water Resources Control Board (State Water Board) received one comment letter from Orange County Local Oversight Program (LOP) on November 10, 2016 and one comment email from the Orange County Water District (OCWD) on December 6, 2016. An additional comment email was received from OCWD on March 13, 2017. Though the additional comments were provided after the public comment period (which ended on January 6, 2017 at noon), the State Water Board has included the comments in this Response to Comments.

Since some of the comments from OCLOP and OCWD include similar matters, the State Water Board has summarized their comments below and provided response to each concern. The summarized comments and our responses are presented herein.

COMMENT 1: Tert-Butyl Alcohol (TBA) is a toxic chemical that poses an unacceptable risk to human health and the environment at elevated concentrations.

RESPONSE: State Water Board staff utilized the Division of Drinking Water's (DDW) Drinking Water Notification Level (Notification Level) for TBA of 12 micrograms per liter (µg/L) to ensure case closure is protective of human health, safety, and the environment. During the August 2016 groundwater monitoring event, TBA was only detected above the Notification Level in onsite well MW-02. Comparison of this concentration to historical concentrations and distribution indicate that the TBA plume is defined and concentrations are decreasing. Based on the available data, current TBA concentrations in groundwater do not appear to pose a significant risk to human health or the environment.

COMMENT 2: The lateral and vertical extent of TBA in soil and groundwater has not been adequately delineated downgradient. Remaining TBA concentrations may pose a risk to production well FV-9.

RESPONSE: Based on review of available Site data, the State Water Board staff feels that the Site TBA plume does not require additional lateral and vertical delineation. There has been extensive soil and groundwater investigation conducted at the Site, which defines TBA in soil to 25 feet below ground surface (bgs) by non-detect concentrations. Grab-groundwater samples collected during investigation indicate that the plume is orientated southeast. Though State Water Board staff recognizes that grab-groundwater samples collected during historical assessments represent groundwater conditions at the time of collection, current groundwater monitoring and sampling data indicate that the remaining TBA plume over the Notification Level of 12 µg/L is less than 250 feet in length, as supported by non-detect concentrations in monitoring well MW-05.

Additionally, it has been well-documented in literature and through experience at individual UST release sites that petroleum fuels and additives, such as TBA, exhibit a significant ability to naturally attenuate. Historical groundwater monitoring and sampling data indicate that contaminants have been degrading in place over time since 1999. This natural attenuation slows and limits the migration of dissolved petroleum plumes in groundwater.

Since TBA is lighter than water, it is unlikely to exhibit significant downward vertical migration over short distances, so evaluation of TBA at deeper intervals is not warranted. In the Groundwater-Specific Criteria of the State Water Board's Low-Threat Closure Policy for petroleum UST cases (the Policy), Critera 2 establishes a conservative set-back distance of 1,000 feet to the nearest water supply well for a plume less than 250 feet in length. It is highly unlikely that migration of TBA will impact drinking water supplies in production well FV-9 based on its depth (1,114 feet bgs) and distance (3,400 feet south) from the Site. No TBA has been detected in groundwater samples collected at downgradient monitoring well MW-05 since 1997. There are also no other potential nearby receptors (i.e. surface water bodies or supply wells) within 1,000 feet of the site, which could be potentially impacted.

Based on the above and on review of historical and current Site data, State Water Board staff determined that the monitoring well screen intervals and lateral locations provide representative data of petroleum constituents in groundwater for completion of the conceptual model. Additional lateral and vertical delineation of TBA contamination attributed to this Site will not likely change the conceptual model. This Site poses a low threat to well FV-9, as well as human health, safety, and the environment.

COMMENT 3: Methyl tert-butyl ether (MTBE) was detected at up to 38,400 µg/L in Site monitoring well MW-02, which is located on the southeast corner of the Site, downgradient from the Site MTBE release location.

RESPONSE: State Water Board staff concurs that the maximum historical concentration of MTBE was 38,400 µg/L in monitoring well MW-02 on July 14, 1999. However, concentrations have degraded significantly over the last 18 years and no MTBE was detected in any of the monitoring wells during the last groundwater monitoring event on August 5, 2016.

COMMENT 4: The TBA concentrations in monitoring well MW-02 are not stable and may be migrating offsite, as indicated by the presence of TBA in well MW-05.

RESPONSE: The two common ways to demonstrate plume stability include 1) routinely observing non-detect values for groundwater parameters in downgradient wells and 2) showing stable or decreasing concentration levels in downgradient wells at the distal end of the plume. Both the Policy (page 6) and Technical Justification for Groundwater Media-Specific Criteria (Groundwater Technical Justification) state that "a plume is considered 'stable or decreasing' if a contaminant mass has expanded to its maximum extent: the distance from the release where attenuation exceeds migration." The Groundwater Technical Justification also notes that "concentration levels may exhibit fluctuations due to seasonal variations. These variations may be also attributed to man-made factors, including but not limited to: varying sampling techniques, false positive results, or laboratory inconsistencies."

The Policy does not prohibit fluctuations in contaminant concentrations as long as the plume is stable or decreasing in areal extent. Over the course of 49 sampling events in monitoring well MW-05 between 2000 and 2016, there was one single low detection of TBA on January 28, 2013. This single data point does not constitute a trend and is likely attributed to a false positive result or laboratory inconsistency. This data adequately demonstrates that non-detect values for TBA were routinely observed in downgradient well MW-05, therefore plume stability is demonstrated.

COMMENT 5: OCWD monitoring wells have confirmed a downward hydraulic gradient in this part of the basin. However, no deeper wells have been installed on- or offsite to delineate the vertical extent of groundwater contamination beneath the Site.

RESPONSE: State Water Board staff concurs that a downward gradient appears to exist in the vicinity of OCWD monitoring well FVM-1; this downward gradient is likely created by the 20 small lakes and two irrigated golf courses located within the Mile Square Regional Park where FVM-1 is located, which is over 1.3 miles from the Site. Additionally, the hydraulic gradient was determined to exist between 220 to 230 feet bgs and 360 to 370 feet bgs; however, Site contaminants are defined to 30 feet bgs or shallower. As described in the Response to Comment 2, the vertical extent of TBA in soil and groundwater has been defined to 25 feet bgs. MTBE in soil has been defined to 25 feet bgs in soil by non-detect concentrations. Grab-groundwater samples collected at 30 feet bgs indicate a maximum concentration of 3.8J µg/L MTBE. Based on this site characterization, the Site monitoring wells are screened at the appropriate depth to provide characterization of contaminants at this Site. Monitoring well data indicates that the low levels of contaminants remaining are naturally attenuating and the plume is shrinking, so it is unlikely that contaminants will travel approximately 4,400 feet from the Site to production well FV-11.

COMMENT 6: Groundwater beneath the site flows in the direction of production well FV-11 in which MTBE was detected in 2008 and 2010. Even though MTBE concentrations detected in well FV-11 are below the state's primary maximum contaminant level (MCL) of 13 µg/L, these MTBE detections might be the early arrival of a larger contaminant plume.

RESPONSE: This Site is located within the Pressure Area of the Coastal Plain of Orange County Groundwater Basin. This area is characterized by semi-perched groundwater at depths of less than 50 feet bgs. Based on a review of nearby Sites in GeoTracker, the groundwater flow direction in this semi-perched groundwater is highly variable. Although the flow direction is predominantly to the southeast within the immediate vicinity of the Site, this flow direction in the shallow semi-perched groundwater is expected to vary over thousands of feet. As stated in the Response to Comment 5, Site data defines MTBE to MCLs well above the principal aquifer at approximately 300 feet bgs, which more consistently flows to the south-southeast than the semi-perched aquifer.

The two MTBE monitoring events two years apart in well FV-11 with a 0.02 µg/L reporting limit do not provide enough data to infer a trend. Since MTBE has not been detected in over six years, this data does not indicate a significant increasing trend. If these detections were the early arrival of a larger contaminant plume, concentrations would have been expected to continue to increase above the current 0.2 µg/L reportable detection limit. Furthermore, most concentrations of MTBE in samples from public wells are much less than the California primary MCL of 13 µg/L and the secondary MCL of 5 µg/L (for taste and odor), which are both protective of human health, safety, and the environment. MTBE below MCLs may represent ambient conditions in the Coastal Plain of Orange County Groundwater Basin, due to non-point source contamination such as atmospheric deposition, stormwater runoff, and recharge areas. Well FV-11 is located in the unpaved Mile Square Park, where these non-point source processes are anticipated to occur.

COMMENT 7: The plume may have migrated offsite and could potentially extend under nearby residential homes. The current monitoring well network does not adequately define the downgradient extent of the TBA plume.

RESPONSE: State Water Board staff reviewed the site lithology and determined that significant contaminant migration offsite is unlikely. Historical boring logs and site observations indicate that Site lithology is dominated by low-permeability silt and clay, with contamination concentrated in and directly below a thin water-bearing sand layer at approximately 10 feet bgs. Groundwater wells located in native soil recharge very slowly and there is a low hydraulic gradient at this Site, demonstrating that native Site soil has a low capacity for groundwater and contaminant flow. This data does not support plume migration or a mobile source. The contaminant plume is less than 250 feet in length, the length criterion for a Class 2 contaminant plume in the Policy.

Although the evidence does not suggest the plume extends under nearby residences, the presence of residential properties does not prohibit closure pursuant to the Policy. It is unlikely that TBA poses a significant vapor risk to nearby residences, since the TBA plume is stable and no known vapor intrusion pathways exist. Additionally, there are no known groundwater wells installed at these residences. Any remaining petroleum constituents do not pose significant risk to human health, safety, or the environment under current conditions.

Additionally, State Water Board staff considered the positions of monitoring wells with respect to the source area of the release. Historical soil and groundwater investigations indicate that the fuel oxygenate source area underlies the northeast portion of the former UST area. Monitoring wells MW-01, MW-02, MW-03, MW-04R, and MW-05 (located approximately located 85 feet northeast, 40 feet south, 90 feet southwest, 65 feet west, and 180 feet southeast, respectively) provide sufficient downgradient delineation of the identified source area.

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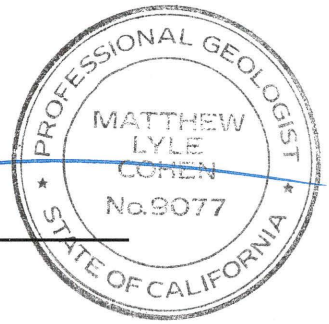
COMMENT 8: During the 2016 annual groundwater monitoring and sampling event, monitoring wells MW-01, MW-02, and MW-05 were purged to dryness and therefore, may not be representative of the formation.

RESPONSE: State Water Board staff recognize that water entering a well that has been purged to dryness may cascade down the sand pack and/or the well screen, stripping volatile organic constituents that may be present and/or introducing soil fines into the water column. However, TBA is fully miscible with water, has a low vapor pressure, and has a low Henry's Law Constant. Due to these properties, TBA does not readily strip from groundwater and would be expected to remain predominantly in aqueous solution. Furthermore, this sampling technique of purging to dryness has been consistently used during all sampling events in the case record. Therefore, the reported contaminant concentrations in all sampling events are self-consistent with respect to the purging method used and are not expected to affect concentration trends.

COMMENT 9: The State Water Board's Revised Review Summary Report (RSR) from January 15, 2015 concurred that the TBA plume was not assessed downgradient of groundwater monitoring MW-02 and that additional sampling southwest of groundwater monitoring well MW-02 should be conducted.

RESPONSE: The information contained in the previously completed Revised RSR was considered in the analysis for this petition to ensure case closure is protective of human health, safety, and the environment. During review of this petition, a separate division of State Water Board staff independently verified this case meets all eight Policy general Criteria and media-specific criteria. The Policy provides that if a regulatory agency determines that a case meets the general and media specific criteria of the Policy, then the regulatory agency shall notify responsible parties and other specified interested persons that the case is eligible for case closure.



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Date