



Tesoro Alaska Company LLC

Kenai Refinery
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May 31, 2023

Ms. Jan Palumbo
EPA, Region 10
1200 Sixth Avenue, Suite 155
Seattle, WA 98101

**Re: EPA - TECHNICAL REVIEW COMMENTS Quarterly Progress Reports No. 22-4 and No. 23-1
RCRA Post-Closure Permit No. AKD 04867 9682 Tesoro Alaska Company, LLC.**

Dear Ms. Palumbo:

Tesoro Alaska Company LLC (Tesoro) is providing this response to comments received via email on April 4, 2023 on the Quarterly Progress Reports No. 22-4 and No. 23-1. Enclosed is a response to comments table addressing the Technical Review Comments.

Upon EPA approval, Tesoro will update the Kenai Refinery's Quarterly Progress Reports No. 22-4 and No. 23-1 and resubmit to EPA. If you have questions or concerns, please contact me at (907) 776-2090 or splate@marathonpetroleum.com.

Sincerely,

A handwritten signature in cursive script that reads 'Stephanie Plate'.

Stephanie Plate, PE
Tesoro Alaska Company. LLC

Attachment 1 – Response to Comments Table

RESPONSE TO TECHNICAL REVIEW COMMENTS

Quarterly Progress Reports No. 22-4 and No. 23-1
 Tesoro Alaska Company, LLC. Kenai, Alaska
 31-May-23

EPA General Comments	Response
<p>1. The QPR 22-4 presents the fall quarter 2022 groundwater monitoring data, which includes a more comprehensive monitoring of site hydraulic conditions and groundwater quality required by Table 4 of Tesoro Post-closure Permit. More comprehensive data analyses, including groundwater elevation contour maps and temporal distribution graphs for the indicator contaminants of concern (COCs), are also presented. EPA generally agrees with the data evaluations in the QPR 22-4 for the Surface Impoundment (SI) Area, the Phillips Marathon (PM) Area, the Phillips Remedial Measure (PRM) Area, the Beach Seep Area, and the Upper Confined Aquifer (UCA). However, EPA is concerned that an increasing trend of benzene concentrations is continuously observed in the north of the Injection Trench #5 (wells E-072RR and E-097) area. EPA agrees that benzene contamination observed in this area will likely be captured by downgradient extraction wells and/or the PRM Air-sparging System. A closer groundwater monitoring in this area, including quarterly monitoring of wells E-072RR, E-097, E-179, and E-162, must be conducted. A new monitoring well to the south of well E-072RR must be proposed if the spring 2023 monitoring data shows continuous elevated benzene concentration in well E-072RR.</p>	<p>Noted. E-072RR, E-097, E-162, and E-179 will be add to all quarterly sampling events starting Q23-2. There are 4 temporary piezometer wells (1-inch wells with no sand pack [TPZ-1 through TPZ-4]) located south of E-072RR. Screening level data was collected from TPZ-1, TPZ-2, & TPZ-4 (TPZ-3 could not be located and was not sampled) in June 2021, and were non-detect for BTEX. E-072RR data in Q22-4 presents continuous elevated concentrations (2030 µg/L). Marathon concurs that a new monitoring well south of E-072RR would more closely bound the benzene plume and provide more confidence of capture. A separate monitoring well installation work plan will be submitted to EPA for approval in June 2023.</p>
<p>2. The QPR 23-1 presents the implementation data for the SI Area Supplemental Pilot Study Remedial Action (a permeable reactive barrier [PRB] wall with PlumeStop™ combined with S-Micor Zero Valent Iron [S-MZVI]). It appears that the Pilot Study Remedial Action with PRB shows its initial effect at direct downgradient location of SMW-31; TCE concentrations at well SMW-31 decreased from previously detection of 24.8 µg/L on August 30, 2022 (the QPR 22-4, Table 2A and Figure 3A) to non-detect (ND) on December 8, 2022 (the QPR 23-1, Appendix C, Table 3).</p>	<p>As noted, a TCE concentrations showed a decrease in SMW-31 between Q22-4 and Q23-1. Analytical results were not highlighted due to high turbidity and the presences of carbon in the groundwater during sampling, likely biasing the data low. As suspended carbon settles into the soil matrix, sampling results are anticipated to be more reflective of PRB effectiveness. We expect analytical results to be more reflective of PRB effectiveness in Q23-2.</p>
<p>3. Appendix C of the QPR 23-1 must include soil and groundwater data collected from the two temporary wells (TW-1 and TW-2) to evaluate the PRB reagents (PlumeStop™ and S-MZVI) subsurface distribution during the PRB wall injection/installation. Also, groundwater remediation effectiveness monitoring must be clarified (see specific comment #10 below).</p>	<p>Noted. TW-1 & TW-2 were temporarily utilized to confirm adequate PRB carbon distribution. They were constructed with 1-inch PVC without sand pack as a way to assess presence of carbon during PRB injections. Both temporary monitoring wells removed following PRB installation. Additional text was added to Appendix C for clarification (see specific comment responses #9 & #10 below).</p>
<p>SPECIFIC COMMENTS</p>	
<p>1. QPR 22-4, Page 2-2, Section 2.3, third paragraph: The second sentence that “[T]he composition of mass flux as daughter product (cis-1,2-DCE) versus TCE at SMW-31 was slightly higher than at SMW-31” is confusing because of a typographic error. Based on the discussions of this section and Figure 3A, the first well in the sentence should be SMW-36 instead. This error must be corrected.</p>	<p>Typographic error corrected.</p>

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<p>2. QPR 22-4, Page 2-3, Section 2.5: A bullet must be added to discuss well SMW-36 data. TCE concentration detected in this downgradient well has been a concern for EPA. We agree that “the measured mass flux at SMW-36 is considerably lower than that at SMW-31, suggesting that current mass flux out of the SI area is relatively small.” However, EPA hopes that the TCE mass flux leaving the SI Area will be eliminated after the installed PRB wall takes its effect in the near future.</p>	<p>Bullet addition completed. Marathon would like to note that as of Q22-4, not enough quarterly data points had been collected (13 quarterly data points required) to complete a statistical trend analysis. Once 13 data points have been collected, a statistical trend analysis will be performed. Additional text added to Section 2.5 for clarification presented below:</p> <p>□ SMW-36 is located downgradient of the SI AS treatment zone, and the TCE concentration remains above the TGPS. Currently, there are not enough quarterly data points to perform a statistical analysis; 13 quarterly data points required. SMW-36 will continue to be monitored and a statistical analysis will be performed when 13 data points have been measured.</p>
<p>3. QPR 22-4, Page 3-2, Section 3.2, first paragraph: Hydraulic connections between the Swamp and the A-aquifer have been established based on historical groundwater and the swamp water level gauging data. In general, the Swamp water levels are lower than the A-aquifer water levels in upgradient wells but higher than the groundwater levels in the downgradient direction. However, this may not be the case at wet or dry seasons. The Swamp water level can be a few feet higher than the surrounding wells and a larger than normal surface area caused by accumulation of surface water runoff after an intense or significant rainfall event. Groundwater level responses to rainfall events are usually more delayed than water levels in the Swamp. It is not a surprise for the Swamp water level to be higher than the adjacent groundwater elevations in the surrounding monitoring wells during the QPR 22-4 monitoring period.</p> <p>EPA recommends the last sentence of the paragraph is revised as follows:</p> <p><i>For Q22-4, the Swamp water level was 77.91 feet relative to mean low water level (ft mlwl), which is higher than several groundwater elevations immediately adjacent to the Swamp (Figure 2A), suggesting the Swamp was temporarily recharging the shallow A-Aquifer after significant rainfall event with surface water runoff accumulation.</i></p>	<p>Marathon agrees with EPA that hydraulic connection between the Swamp and surrounding aquifer is never fully 'disconnected'. We have used 'hydraulic connection/disconnection' to explain the relationship between the Swamp and aquifer water elevations, and how the water level dynamic affects benzene concentrations in wells adjacent to the Swamp. The current data set supporting the conceptual site model (CSM) suggests that when Swamp water level is essentially equivalent to surrounding aquifer levels, the SWAMP receives water from the aquifer. In this condition the Swamp serves as a lateral transport mechanism for benzene that is more efficient than benzene transport through underlying soil matrix. When aquifer levels fall below Swamp water level, this efficient connection no longer exists. In that condition, some flux might be happening vertically from the Swamp down to the the groundwater, but is likely low given the observed vertical gradient. We propose revising the use of "hydraulic connection/disconnection" to "flux from the aquifer to the Swamp/hydraulic separation with some potential downward flux from the Swamp to the aquifer". If EPA concurs with the language shift, the last paragraph would be revised to say:</p> <p><i>For Q22-4, the Swamp water level was 77.91 feet relative to mean low water level (ft mlwl), which is higher than several groundwater elevations immediately adjacent to the Swamp (Figure 2A). This suggests hydraulic separation with some potential flux from the Swamp to the aquifer. This potential flux is expected to be low because of the slow vertical movement through fine grain soils lining the Swamp.</i></p>
<p>4. QPR 22-4, Page 3-3, Section 3.3, Benzene Concentration vs. Groundwater Elevation Graph: The figure title cites incorrectly one well ID: E-071RR. Well E-071RR does not exist; the correct well ID should be E-072RR.</p>	<p>Typographic error corrected.</p>

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<p>5. QPR 22-4, Page 3-3, Section 3.3, first paragraph after the figure: EPA agrees that the benzene concentrations should continue to be closely monitored in this area, particularly at E-072RR where benzene concentrations are continuously elevated over 2,000 µg/L during the last two quarters of 2022. In addition, well E-179 must also be sampled quarterly and data from this well must be included for the graph presentation and data evaluation in the future quarterly reports.</p>	<p>Marathon agrees with adding well E-179 to the quarterly sampling events starting Q23-2. The inset graph will be updated to include E-179 starting Q23-2, including historical data.</p>
<p>6. QPR 22-4, Page 3-3, Section 3.3, last paragraph: A typographic error in the first sentence, "Q22-2" should be corrected as "Q22-4".</p>	<p>Typographic error corrected.</p>
<p>7. QPR 22-4, Page 3-4, Section 3.4.1, first paragraph: The last sentence is technically incorrect. The sentence must be revised as follows (also see specific comment #3 above): <i>Hydraulic data from the Swamp and adjacent groundwater monitoring wells suggest that the Swamp was not receiving contaminated groundwater from the east or northeast and the Swamp was discharging water to the A-aquifer during the Q22-4 monitoring period.</i></p>	<p>Marathon agrees that use of 'west' versus 'east or northeast' is incorrect and needs revision. Per response to comment 3, we would recommend the following sentence change: <i>Fluid level data indicates there is no flux of contaminated groundwater through the Swamp from the east and northeast in Q22-4. In this groundwater level condition there is only potential flux vertically from the Swamp to the groundwater below, and historical data suggests attenuation of hydrocarbons in the Swamp is fast enough to limit measurable impact of vertical flux.</i></p>
<p>8. QPR 23-1, Appendix C, Page 2-1, Section 2.1: Acronym "JSAs" in the last sentence of the paragraph is not defined. It must be defined in the text or the List of Abbreviations and Acronyms.</p>	<p>Edits completed.</p>
<p>9. QPR 23-1, Appendix C, Page 2-2, Section 2.3, second paragraph: The text states that the PRB wall installation injection process was monitored utilizing two temporary one-inch monitoring wells and existing wells SMW-21A and SMW-35. Soil core and groundwater sampling data from the two temporary wells TW-1 and TW-2 are not discussed in the text or presented in the tables of Appendix C. Data from the two temporary wells must be presented in Appendix C.</p>	<p>As noted in general comment No. 3, TW-1 & TW-2 were installed to guide installation and for visual monitoring of carbon during the injection. Temporary well points were installed by direct push methods and no groundwater or soil data was collected during or after installation. TW-1 and TW-2 were removed following installation of the carbon wall. Additional text added to Appendix C for clarification presented below: <i>Temporary monitoring wells, TW-1 and TW-2 were installed by direct push methods and no groundwater or soil data was collected during or after installation. The temporary monitoring points were used to guide the injection process and for visual monitoring carbon in the well points. TW-1 and TW-2 were constructed with 1-inch PVC and 10-foot screen intervals, installed to approximately 68 to 69 feet below ground surface. Both temporary monitoring wells were decommissioned following installation of the carbon wall.</i></p>

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<p>10. QPR 23-1, Appendix C, Page 3-1, Section 3.2.</p> <p>The text discussing remediation effectiveness monitoring in this section is confusing. For example, the text states “[M]onitoring wells SMW-09, SMW-29, SMW-31 and SMW-35 are currently sampled during spring and fall quarters.” Based on the Supplemental Groundwater Pilot Study Remedial Action Plan, these wells should also be sampled quarterly with summer/winter quarters. The text must be revised to state all groundwater monitoring will follow the EPA approved Remediation Effectiveness Monitoring Plan, specified in Table 1 of Appendix C.</p>	<p>Noted. The text was referencing Permit Table 4 requirements, stating that the sampling interval would be increased to quarterly for SMW-09, SMW-29, SMW-31, and SMW-35. Marathon revised the text to clarify. Text revisions are presented below:</p> <p><i>In accordance with Permit Table 4 in the RCRA Post-closure Permit, monitoring wells SMW-09, SMW-29, SMW 31, and SMW-35 are currently required to be sampled during spring and fall quarters, with SMW-36 sampled quarterly. SMW-37 was installed as part of monitoring for the PRB pilot study. Installation of SMW-37 matches SMW-36. These key monitoring wells will be sampled quarterly following the carbon injection, in accordance with the EPA approved Remediation Effectiveness Monitoring Plan, specified in Table 1.</i></p>