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**REDACTED**

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**Subject:** RE: Gasco OU FS PRGs - Final Ecological COC-PRG Tables for Review/Approval

Wes,

Please find attached the Gasco OU Ecological PRG tables for review and approval. These tables have been revised consistent with comments received from DEQ on September 26, 2023, and the PAH PRGs agreed to between NW Natural and DEQ during the October 5, 2023, PAH PRG Meeting.

The draft versions of these tables have been updated based on DEQ comments and several tables have been combined as requested. We have provided a version of the tables that have the edited text in red font to assist in review (redline version). We have also provided a clean version to approve. In accordance with DEQ comments, we are providing the following Ecological PRG tables:

- Ecological PRG Table 1 – Gasco OU Ecological Surface Soil COCs
- Ecological PRG Table 2 - Gasco OU Ecological Surface Soil PRGs
- Ecological PRG Table 3 – Gasco OU Groundwater COCs and PRGs – Source Control. Upland to Willamette River Pathways
- Ecological PRG Table 4 – Gasco OU Groundwater COCs and PRGs – Hot Spot Evaluations. Upland to Willamette River Pathways

- Ecological PRG Table 5 – Gasco OU Riverbank Seep COCs and PRGs – Source Control. Upland to Willamette Riverbank Pathways
- Ecological PRG Table 6 – Gasco OU Riverbank Seep COCs and PRGs – Hot Spot Evaluations. Upland to Willamette Riverbank Pathways
- Ecological PRG Table 7 – Gasco OU Ecological Fill WBZ Groundwater Migration to Doane Creek and Doane Creek Surface Water COCs
- Ecological PRG Table 8 – Gasco OU Ecological Fill WBZ Groundwater Migration to Doane Creek and Doane Creek Surface Water PRGs
- Ecological PRG Table 9 – Gasco OU Ecological Doane Creek Sediment COCs
- Ecological PRG Table 10 – Gasco OU Ecological Doane Creek Sediment PRGs

Please let us know if there are any questions that come up during your review. Thanks!

**Taku Fuji, Ph.D.** | he/him

**ANCHOR QEA, LLC**

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**Subject:** RE: Gasco OU FS PRGs - Riverbank COC/PRG Tables 5a and 5b

Taku et al.,

DEQ has reviewed the Gasco OU Feasibility Ecological PRG tables 1 through 13 provided to DEQ on August 24<sup>th</sup>, September 1<sup>st</sup>, and September 21<sup>st</sup>. DEQ and NW Natural's technical team discussed the contents of these tables during several meetings. We note that Tables 1 and 2 were also revised based on previous feedback from DEQ. DEQ has the following comments on the ecological PRG tables. Please revise and resubmit the PRG tables in one final package. We plan to approve the ecological PRGs once our comments have been addressed.

Table 2.

- For clarity, please list the receptor-based RBCs for metals in the blue shaded columns, even in cases where background values are lower.
- We believe there was a miscommunication regarding how background values should be presented that result in use of the 90<sup>th</sup> percentile background concentration for DEQ-published background concentrations for the Portland Basin. Please revise the background concentrations to be those listed for the Portland Basin in the fact sheet located at the following link: (<https://www.oregon.gov/deq/FilterDocs/cu-bkgrmetals.pdf>). The intent of our original comment was that the basis for calculating the background value (e.g., 95% Kaplan-Meier UPL, 95 UPL) be footnoted in Table 2.
- DEQ confirms that the HPAH RBC calculated for avian and mammalian exposure scenarios were correctly calculated using exposure parameters provided by DEQ, and supersede the default HPAH RBCs for these receptors provided in the DEQ's 2020 Conducting Ecological Risk Assessments guidance for use on the Gasco OU.

Table 3.

- We understand that NW Natural has included Table 3 in order to distinguish between screening level values applicable to source control decision making and PRGs applicable to the upland remedial action. Table 3 contains screening level values applicable to source control decision making. DEQ does not believe Table 3 is necessary

for the FS. Further, we intend to use ROD Table 17 (not the proposed Table 3) for source control decision making, and do not plan to curtail the COC list provided in ROD Table 17.

#### Table 4.

- DEQ accepts use of ecological aquatic life PRGs developed in the Portland Harbor BERA as part of the hierarchy for identifying upland PRGs. However, the column title references Table 17 groundwater cleanup levels, and the footnote does not include enough information to explain the basis for the screening levels included in the table. We understand that some of the screening level values are listed as BERA PRGs and ROD CULs, while others are only BERA PRGs (e.g., when Portland Harbor human health screening level values are lower than aquatic life values). Please revise the column heading to more clearly identify the screening level values as BERA PRGs, provide footnotes that clarify which values are taken from the BERA and ROD vs. just the BERA, and reference the BERA table(s) from where these values are taken.
- The 'DEQ Proposed Aquatic Life PRG' listed for benzo(a)anthracene, benzo(b)fluoranthene, and chrysene appear to be incorrect. We recommend a QA/QC check of the values provided listed in the table.
- It appears that the PRG selected for benzo(k)fluoranthene was sourced from DEQ's 2020 guidance and not the Portland Harbor BERA.
- Revise the total phenol PRG to 160 ug/L.
- Since the total xylene PRG is taken from Portland Harbor, and is lower than the Proposed DEQ PRG, we recommend removing PRGs for individual xylene isomers (i.e., o-Xylene, m,p-Xylene).
- The site-specific TPH RBCs supersede the TPH fraction RBCs provided in our 2020 Conducting Ecological Risk Assessments Guidance. Please remove the PRGs for individual fractions.
- Please replace the PAH TU PRG with a "Total PAH HI" PRG (based on the PRG and not a narcosis RBC). DEQ believes that this approach is more consistent with the methodology described for chemical classes in footnote #6 on the README tab of DEQ 2020 (Conducting Ecological Risk Assessments), Table 2, Risk Based Concentrations for Water. DEQ is happy to discuss this request further, if needed.
- Clarify in the table footnotes that AWQC values were determined by selecting the lower value between the Oregon Ambient Water Quality Criteria (OAWQC) and the National Ambient Water Quality Criteria (NAWQC), if available.

#### Table 5a

- Refer to DEQ's comment on Table 3. DEQ does not see a use for Table 5a in the Gasco OU FS, and does not plan on curtailing the list of applicable surface water CULs listed on ROD Table 17.

#### Table 5b

- DEQ identified some transcription errors in the Table 1b Risk Based Concentrations for Wildlife Ingestion of Surface water provided in our 2020 Eco Risk guidance. The correct values can be downloaded from Los Alamos National Laboratory ECORISK Database (Release 4.3). Based on our review of Table 5b, only the vanadium PRG is affected by the transcription error. Please update the vanadium PRG to 18,000 ug/L.
- Please revise or add a footnote for the cyanide PRG that cites the HERA risk assessment for the development of a site-specific value (footnote "c" of Table 10-7). "This screening level was calculated and is based on the robin, the minimum of the calculated robin, shrew, mink, and hawk free cyanide screening level values. The screening level values were calculated based on the assumption that receptors are exposed through drinking surface water and incidental soil ingestion. The equations and exposure assumptions for this screening level were provided by DEQ in communication on April 4 and August 11, 2017, and discussed during a meeting on June 20, 2017."

#### Table 7

- Table 7 is unnecessary and should be removed. DEQ does not desire two different soil PRG tables that apply to different ecological exposure areas within the Gasco OU. The ecological soil PRGs included in Table 2 apply to all ecological exposure areas. NW Natural may note in the Gasco OU FS that the risk assessment only identified a subset of the Table 2 COCs at concentrations above their respective PRG in Doane Creek soils.

#### Table 8 and 9

- Tables 8 and 9 are unnecessary and should be merged with Tables 12 and 13. The PRG for any groundwater COC with a pathway to Doane Creek also applies to Doane Creek surface water; therefore, the COC list in Tables 12 and 13 are more complete. NW Natural may note in the Gasco OU FS that only a subset of COCs associated with the groundwater to surface water pathway for Doane Creek were measured in Doane Creek surface water at concentrations above their respective PRGs. Refer to comments on Tables 12 and 13.

#### Table 11

- Please revise the PRG tables to be consistent with Table 10-8 of the HERA and direction provided in the PRG memo (e.g., apply PRGs to individual PAHs, total LPAH, total HPAH, etc.). DEQ's sediment RBCs were not updated in 2020, and the RBCs in were developed site-specifically for the Gasco OU.
- Refer to DEQ's comments on Table 2.

Tables 12 and 13.

- Please clarify that the PRGs identified in this table apply to groundwater migrating to Doane Creek and to Doane Creek surface water.
- For simplicity and better consistency, DEQ requests that NW Natural adopt the proposed PRGs selected on Table 4 for groundwater migrating to Doane Creek and Doane Creek surface water. This request is optional. For clarification, DEQ recognizes that Table 4 includes consideration of Portland Harbor PRGs within the PRG selection hierarchy. DEQ does not intend to consider Portland Harbor PRGs for other media (e.g., ecological soil exposure, Doane Creek sediments).
- Please add a "Total PAH HI" PRG consistent with our Table 4 comments.
- DEQ identifies all individual PAHs included in the Total PAH HI sum as COCs for the groundwater to surface water pathway.

Please let me know if you would like to discuss these comments.

Wes

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**Subject:** Gasco OU FS PRGs - Riverbank COC/PRG Tables 5a and 5b

Wes,

Please find attached the following Gasco OU Feasibility Study PRG Tables that were discussed during the riverbank PRG meeting held on September 7, 2023, for review.

1. Ecological PRG Tables 5a - Gasco OU Riverbank Seep COCs and PRGs – Source Control
2. Ecological PRG Tables 5b - Gasco OU Ecological Riverbank Seep COCs and PRGs – Hot Spot Evaluations

We understand that DEQ will review and provide updates to the Wildlife Water Ingestion PRGs in Table 5b as DEQ has noted discrepancies in the RBCs presented in Table 1b (Risk Based Concentrations for Wildlife Ingestion of Surface Water) of DEQ's 2020 Conducting Ecological Risk Assessment Internal Management Directive Appendices.

With the submittal of these two tables, Anchor QEA has provided DEQ with the complete set of proposed PRGs for the ecological COCs identified in the Gasco OU risk assessments approved by DEQ. We look forward to reviewing and resolving any comments on these proposed ecological COC/PRG tables.

Thanks!

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