



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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February 26, 2025

Sent via email

Molly Hanson
Holden Remedial Project Manager
US Forest Service, Pacific Northwest Region (R6)
215 Melody Lane
Wenatchee, WA 98801

RE: Ecology Comments on Draft Holden Mine Site, Performance Standards Verification, 2024 Annual Compliance Assessment Report Addendum, January 2025 (Sediment ACAR)

- **Site Name:** Holden Mine
- **Site Address:** Chelan County
- **Ecology Facility Site ID No.:** 338
- **Ecology Cleanup Site ID No.:** 4414
- **UAO, EPA Docket No:** CERCLA-10-2012-0127

Dear Molly Hanson:

Thank you for providing the State of Washington (State) (represented by the Department of Ecology (Ecology)) an opportunity to review and comment on the above-referenced document in accordance with Part XIII of the Unilateral Administrative Order. Below are Ecology's comments on the Draft Performance Standards Verification 2024 Annual Compliance Assessment Report Addendum – Sediment Quality Evaluation, prepared by Floyd|Snider, dated January 2025 (Sediment ACAR), received on January 10, 2025.

In section XVIII, compliance with Applicable Laws of the Uniform Administrative Order (UAO), the UAO identifies requirements that the Respondent to perform all activities in accordance with state regulations. Ecology is providing an opinion of the presented activities in the Sediment ACAR Addendum in meeting state laws, with an emphasis on ensuring compliance with the Sediment Management Standards¹ (SMS), consistency with the Sediment Cleanup User's Manual II² (SCUM II), and identifying fatal flaws or red flags.

¹ <https://apps.ecology.wa.gov/publications/SummaryPages/1309055.html>

² <https://apps.ecology.wa.gov/publications/SummaryPages/1209057.html>

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Our opinions expressed in this letter are consistent with our authority under the Model Toxics Control Act (MTCA), Chapter 70A.305 RCW.³ In addition to MTCA, our opinions are expressed consistent with our authority under Chapter 90.48 RCW,⁴ the Water Pollution Control and Chapter 90.70 RCW,⁵ the Puget Sound Water Quality Authority Act.

Below are Ecology's comments, and an associated recommendation to achieve resolution. Ecology is available to review our comments with the US Forest Service and the Rio Tinto – Floyd|Snider team as needed. Please distribute our comments to the Respondent as well as to the other members of the Government Team.

Ecology Comments on the Draft ACAR Addendum Sediment Report

- 1) Issue: At clarity regarding “Ecology sediment experts.”** Section 1.1, Page 1.1, 4th line.

Recommendation: To avoid confusion, please clarify to say, “representatives from the Ecology Toxics Cleanup Program’s Sediment Policy Team.”

- 2) Issue: The need for future sediment monitoring.** Section 5, Page 5-2 includes the conclusion *“Based on the attainment of RAO 2 in Railroad Creek, no additional sediment characterization is recommended to assess the effectiveness of the Phase 1 remedial action.”*

Ecology agrees that sediment sampling and analysis (i.e., bioassays, chemistry, or biomonitoring) is not necessary in 2025 for Railroad Creek and Lucerne Bar.

However, Ecology does not agree that additional sediment characterization is unnecessary over the long term. The limited sediment data set, including the 2024 sediment sampling and analysis which appears to be appropriately completed in compliance with the Sediment Management Standards rule, is insufficient to conclude that the Phase I remedial action is effective and remains protective.

The containment of contamination remedial technology for the Phase 1 remedial action includes the assumption that contamination will not be attenuated/treated for centuries, if at all. In this case, long-term sediment monitoring is necessary to ensure that Phase 1 and future Phase 2 remedial actions are effective and remain protective.

Recommendation: Ecology requests the following sediment monitoring and schedule for the Phase 1 and Phase 2 remedial actions to determine if RAO 2 is met and maintained:

³ <https://app.leg.wa.gov/rcw/default.aspx?cite=70A.305>

⁴ <http://app.leg.wa.gov/RCW/default.aspx?cite=90.48>

⁵ <http://app.leg.wa.gov/RCW/default.aspx?cite=90.70>

- Phase 1 Year 1 (2024): The 2022 biomonitoring and 2024 sediment sampling events are sufficient for Year 1 sampling, which is intended to determine post-construction conditions.
- Phase 1 Year 3 (2026 or 2027): This sampling should be conducted before construction of the Phase 2 remedial action and is intended to understand if post-construction conditions have changed and if the remedy remains protective. It should include:
 - Sediment sampling and analysis of all stations in Railroad Creek as was done in 2024, with the exception of the upstream and Twenty-Five Mile Creek “reference” stations. Results should be compared to laboratory control.
 - Sediment and surface water sampling and analysis of at least 2 new sampling stations within the mixing zone of the wastewater treatment plant outfall. This should include one sampling station as close as feasible to the mouth of the outfall and another no more than 20 feet downstream of the outfall. Analytical parameters for sediment media should include the same bioassays and chemistry as for other sediment samples. Analytical parameters for surface water should include bioassays using *Daphnia magna* and EPA-821-R-02-012 methods and criteria in “*Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*,” Fifth edition, October 2002). This will inform any sediment, water quality, benthic community, and aquatic life impacts from the treated wastewater. (Note: Ecology recognizes that this comment may be more appropriate for the Mine Water Treatment Plant performance monitoring or NPDES-like permit).
 - Sediment sampling from any new seeps from the Phase 1 barrier wall and downstream of the Phase 1 barrier wall and analyzed for chemistry and bioassays.
 - Water sampling from any new seeps from the Phase 1 barrier wall and downstream of the Phase 1 barrier wall and analyzed for chemistry (including pH) and bioassays using *Daphnia magna* and EPA-821-R-02-012 methods and criteria in “*Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*,” Fifth edition, October 2002. This will help inform water quality and aquatic life impacts from the seeps.

- Sediment sampling of at least an additional 4 stations at the mouth of Railroad Creek and Lucerne Bar area and analyzed for chemistry and bioassays. The sampling should be focused on the alluvial fan where metals from the creek may be concentrating. This will more fully inform sediment quality impacts within the alluvial fan and supplement the limited sediment sampling from the 2020 and 2024 sampling events.

To identify locations for the additional sampling stations, use existing total organic carbon and grain size data within this area to understand where sediment deposition is occurring. If existing total organic carbon and grain size data is insufficient, conduct a study ahead of the 2026/2027 sediment sampling event.
- Monthly pH monitoring of surface water at stations located 300-400 meters before entering Lake Chelan and within the alluvial fan. This will inform our understanding of seasonal fluctuations in pH and the extent of metals ionization, which increases bioavailability of metals. This will help our understanding of bioassay results that may be correlated with metals toxicity.
- Phase 1 Year 5 / Phase 2 Year 1 (2028 or 2029): This sampling should be conducted after Phase 2 construction is complete and is intended to understand post-construction conditions and if the Phase 1 remedy remains protective.
 - Sample all stations in Railroad Creek and Lake Chelan as was done in Phase 1 Year 3 (2026/2027).
 - Conduct benthic community biomonitoring as was done in 2022, but include at least three monitoring stations at the mouth of Railroad Creek and into Lake Chelan where sediment deposition is occurring.
 - If all stations pass SMS sediment biological criteria, meet benthic community monitoring targets, and pass EPA-821-R-02-012 criteria for surface water bioassays, defer future sampling to Phase 1 Year 10 / Phase 2 Year 5 (2034). If these criteria and targets are not met, the agencies should discuss to determine if additional remedial actions are necessary.
- Phase 1 Year 10 / Phase 2 Year 5 (2034):
 - Sample all stations in Railroad Creek and Lake Chelan as was done in Phase 1 Year 5 / Phase 2 Year 1 (2028/2029).

- If all stations pass SMS sediment biological criteria, meet benthic community monitoring targets, and pass EPA-821-R-02-012 criteria for surface water bioassays, future sampling may be deferred to Phase 1 year 15 / Phase 2 Year 10 (2039). If these criteria and targets are not met, the agencies should discuss to determine if additional remedial actions are necessary.

- 3) Issue: Inappropriate use of the phrase “protective of aquatic life.”** Section 5, page 5-1, and other areas within the document state that metals concentrations are protective of aquatic life because bioassays meet the SMS biological criteria. There are water column-dwelling aquatic life (e.g., fish) that the SMS biological criteria are not intended to address, particularly in areas where seep water has a pH of 4-5.

Recommendation: Please revise to specify that meeting the SMS biological criteria equates to the protection of the benthic community. The SMS biological criteria are specific to assessing the health of the benthic community and do not apply to all aquatic life.

- 4) Issue: Insufficient data to make conclusions about sediment quality in Lucerne Bar.** Section 5, page 5-1, and other areas in the document state that metals concentrations in Lucerne Bar are protective of aquatic life. However, this is based on limited data and sampling stations, and the SMS biological criteria are intended to protect the benthic community, not all aquatic life.

Recommendation: Please caveat these statements that the sediment quality in the areas sampled in Lucerne Bar passes the SMS biological criteria and can be used to assess the health of the benthic community, not all aquatic life.

- 5) Issue: Incomplete explanation of 2020 bioassay testing.** Section 4, page 4-5 states that the 2020 toxicity observed was attributable to low total organic compound (TOC) and insufficient feeding rather than contaminants in sediment, which is an incomplete statement.

Recommendation. Clarify that the updated 2020 ASTM bioassay method, which included a different feeding regime, was used for the 2024 samples but was not used for the 2020 samples. In addition, more appropriate laboratory controls were used in 2024. The contrast in results from 2020 and 2024 samples is attributable to use of these updated methods.

- 6) Issue: Use of background terminology.** Section 5, page 5-1 and other areas mention background but does not specifically refer to the type of background.

Recommendation: Specify the type of background as “soil,” not sediment.

- 7) Issue. Inappropriate use of SMS chemical criteria.** Section 3.1.3, page 3-2 states *“It is understood that the SMS chemical criteria do not apply to mining sites because the criteria may not reliably predict benthic community toxicity....However, the unique geochemical conditions that could increase toxicity, such as low pH porewater, are not present at the sediment sampling stations, suggesting the SMS criteria still provide a valuable threshold for comparison.”* and Section 5, page 5-1 states *“None of the chemistry results exceeded the SMS chemical criteria SCO or CSL. Additionally, none of the results exceeded half the SCO, indicating the metals concentrations are well below the chemical criteria.”* Then this sentence is followed with a caveat that the SMS chemical criteria do not apply to mining sites. Since the SMS chemical criteria do not apply to this site, Ecology does not see the value in continuing to add these statements as they can be misleading for the reader.

Recommendation: Remove all statements referencing chemical criteria. These are neither relevant or applicable, and Ecology has stated this on numerous occasions and in previous comments.

- 8) Issue. Incomplete analysis of sediment sampling stations.** Ecology determined that sediment sampling stations RC-1 and RC-6, which were used as reference stations in 2020, failed performance standards. Therefore, they are not appropriate reference stations. Ecology questioned if these stations may be influenced by upland contamination from Hollywood Heights, windblown tailings, or the ballfield area.

Recommendation. The ACAR should be revised to show the bioassay results when RC-1 and RC-6 are compared to laboratory controls and both the upstream and Twenty-Five Mile Creek reference stations.

Please contact me at (509) 225-0304 or john.zinza@ecy.wa.gov if you require any clarification of these comments or have further questions.

Sincerely,



John Zinza
Cleanup Project Manager
Toxics Cleanup Program
Central Regional Office