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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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September 2, 2020

Gary L. Zimmerman
Golder Associates Inc.
18300 NE Union Hill Road, Suite 200
Redmond, WA 98052-3333
(Gary_Zimmerman@golder.com)

Re: White Paper on 1,4-Dioxane detection, occurrence, and evaluation of remedial alternatives at the Landsburg Mine Site – Final Decision

Dear Gary Zimmerman:

In a letter dated June 10, 2020, the Department of Ecology (Ecology) provided a preliminary decision and initial comments on the White Paper on the 1,4-dioxane exceedances at the Landsburg Mine site. The Landsburg Mine Potentially Liable Persons Group (PLP Group) submitted the White Paper in conjunction with a 30% Engineering Design Report for possibly implementing the Contingent Groundwater Extraction and Treatment System Plan that would pump, treat, and dispose of groundwater contaminated with 1,4-Dioxane found in several wells at the north portal area of the Site. In the White Paper, the PLP Group presents a proposal for alternative remedial actions to remediate these 1,4-Dioxane exceedances.

Ecology indicated that a decision on the White Paper will be issued following its preliminary decision and comments.

This letter constitutes Ecology's final decision on the alternative actions that were proposed in the White Paper. Specifically, this letter will address whether to proceed further with implementing contingency actions (essentially pump and treat and related operations) pursuant to the Contingent Groundwater Extraction and Treatment System Plan (Exhibit D, Part C of the Consent Decree) or follow the recommended alternative remedial actions of the White Paper.

Based on the arguments in the White Paper, Ecology is largely in agreement that implementing the contingent groundwater extraction and treatment system under the existing conditions can be expected to have significant adverse environmental impacts and disproportionately high financial costs, with "minimal to no reduction in risk" based on low levels and limited extent of the 1,4-dioxane.

Ecology concurs with implementing the following proposed remedial actions outlined in the White Paper:

- Continue capping the wastes at the northern trench area but with a more impermeable geomembrane cover.
- Increase groundwater monitoring of north portal wells including off-site sentinel well located nearer to Cedar River.
- Connect the Contingency Plan discharge pipe from the north contingent treatment pad to the Soos Creek sewer line.

Ecology will require the following additional actions and conditions:

- Compliance monitoring that shall include off-site sentinel wells (LMW-20, LMW-21, and LMW-22).
- A systematic inventory and evaluation of the full analytical suite of chemicals tested at the site to ascertain that there are no other chemicals with concentrations at or above the trigger levels of the cleanup action plan (Exhibit D. Compliance Monitoring Plan). Ecology will perform its own evaluation and compare results with the PLP Group's evaluation.
- Except for the documented 1,4-dioxane exceedances at the northern portal wells, the trigger levels and contingent actions pursuant to the Contingent Groundwater Extraction and Treatment System Plan (Exhibit D, Part C) shall be strictly enforced for all other contaminants of concern at this area of the site, and will be strictly enforced for all contaminants of concern (including 1,4-dioxane) at the rest of the site. Should a surge of 1,4-dioxane be detected coming from the interior of the former mine above the concentration levels and locations described in the White Paper and the August 16, 2020 Technical memorandum titled "Pre-Remedial Action 1,4-Dioxane Detection at the Landsburg Mine Site", the contingent groundwater extraction and treatment system shall be implemented in strict accordance with the cleanup plan.
- In Situ Bioremediation (ISB), including bioaugmentation and cometabolic bioremediation, should be investigated and implemented if feasible for the northern site wells that contain the 1,4-dioxane exceedances. The work shall be performed by a professional environmental microbiologist or remediation expert who specializes in bioremediation technologies. Scope of work may include microcosm, bench scale, and pilot studies to determine if this approach would effectively remediate the 1,4-dioxane exceedances at the site.

In order to implement this alternative plan, the existing Cleanup Action Plan must be amended and filed with the court as an amendment to the Consent Decree. Ecology is requesting that the PLP Group write an amended Cleanup Action Plan containing a work plan and schedule for the above actions. Outreach planning for the amendment will include a 30 day public comment period on the Cleanup Action Plan amendment, fact sheet, and notification in the site register to

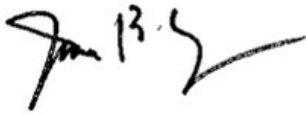
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ensure the public and local government are informed of these modifications and are given the opportunity to comment on them. After Ecology's review and consideration of comments received, the amendment will be filed with the court if no significant changes are needed to the document.

Please be aware that the deadline to file for dispute resolution on this issue is set to occur no later than 30 days following receipt of this letter. If dispute resolution is not filed, Ecology requires that the amended Cleanup Action Plan and Schedule be submitted to Ecology within 90 days following receipt of this letter.

Please don't hesitate to contact me if you have any questions or concerns, or to proceed with further planning of activities by phone at (425) 649-7094 or by email at Jerome.Cruz@ecy.wa.gov.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jerome B. Cruz', with a stylized flourish at the end.

Jerome B. Cruz
Site Manager
Toxics Cleanup Program, NWRO

cc: William Kombol, Palmer Coking Coal, (Palmercokingcoal@aol.com)
Ivy Anderson, AGO-Ecology Division, (ivy.anderson@atg.wa.gov)
Robert Warren, TCP-NWRO, (bob.warren@ecy.wa.gov)