



State of Utah

Department of
Environmental Quality

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June 6, 2008

Mr. Steven D. Landau
Manager of Environmental Affairs
Denison Mines (USA) Corp.
1050 17th Street, Suite 950
Denver, CO 80265

Dear Mr. Landau:

SUBJECT: Denison Mines (USA) Corp. (DUSA)
White Mesa Uranium Mill – Tailings Cell 4A
Cell 4A BAT Monitoring, Operations and Maintenance Plan
Request for Additional Information

We received your letter conveying the subject plan dated March 28, 2008. As you are aware, the DRC design approval letter of June 25, 2007 and the Ground Water Discharge Permit list requirements for the subject plan. The permit discusses the plan with respect to required performance standards (I.D.6), monitoring (I.E.8), reports (I.F.3-4), plan submission (I.H.19), proper operation and maintenance (III.E) and other items. As part of the plan submitted by DUSA, the 2/07 revision of the *White Mesa Uranium Mill Tailings Management System and Discharge Minimization Technology Monitoring Plan* (the DMT Plan) was referenced and included.

One of the purposes of the DMT Plan is for existing tailings cell operations, not for new cells such as Cell 4A. Cell 4A is to be operated under the numerous Best Available Technology (BAT) provisions of the permit. The subject BAT plan will need to stand alone and be separated from the DMT Plan, if the commingling of these plans creates any negative effects.

We have reviewed the subject plan and have the following comments that must be resolved before the plan can be approved:

DRC Design Approval Letter of June 25, 2007:

1. Per the above letter, the manual for Cell 4A must include “Actions for successful prevention of pond overflow. Planned effort must be made to properly manage and apply volume inventory controls to prevent overflow events from occurring. These efforts must be described in the operations and maintenance manual.” A description of the specific efforts needed to prevent pond overflow by properly managing and applying volume inventory controls needs to be in the subject plan. This description should include not only the current need, but the level of effort that will be

needed for overflow prevention as the levels of tailings inventory changes and progressive cell reclamation occurs.

Performance Standard Monitoring (I.E.8):

2. Per the permit section referenced directly above, “At a minimum, said BAT monitoring shall include: Weekly Leak Detection System (LDS) Monitoring – including: Leak Detection System Pumping and Monitoring Equipment – the Permittee shall provide continuous operation of the leak detection system pumping and monitoring equipment, including, but not limited to, the submersible pump, pump controller, head monitoring, and flow meter equipment approved by the Executive Secretary. Failure of any pumping or monitoring equipment not repaired and made fully operational within 24-hours of discovery shall constitute failure of BAT and a violation of this Permit. . . the Permittee shall measure the fluid head above the lowest point on the secondary flexible membrane by the use of procedures and equipment approved by the Executive Secretary.”
 - a). We do not detect from the current plan the detail level required by the above, i.e. the equipment items listed above, and the procedures to use that equipment for the required measurements. The design configuration, equipment specifications and salient elevations for the equipment and pertinent facilities needs to be submitted as well.

The operation of all LDS equipment must be described in detail with their location specified. The head sensors for measurement must be attached at fixed locations and elevations with certified surveyed bottom liner elevations shown on the as-built drawings. Exclusive location dedicated flow meters with volume totalizers are required. Equipment maintenance frequencies must be at least as often as the manufacturer recommendations, and maintenance must be recorded and submitted in accordance with the permit reporting requirements.

- b). Please include in the subject plan the requirements to record and report to management on the above. There does not seem to be conveyed in the plan a sense of the urgency for any needed repairs as described above. Please include these items, and provide deadlines for corrective actions, and a description of how maintenance and repairs will be documented.

Monitoring Reports (I.F.3-4):

3. Per the permit section I.F.3 referenced directly above, “the Permittee shall provide quarterly monitoring reports . . . required by Part I.E.8 of this Permit. . . . At a minimum, reporting of BAT monitoring for Cell 4A will include: a) Leak detection system (LDS) Monitoring – including: 1) Report on the operational status of the LDS pumping and monitoring equipment during the quarter, including identification of any intervals of non-operational status and repairs. 2) Measurement of the weekly fluid head at the lowest point of the secondary membrane . . . b) Measurement of the weekly wastewater fluids elevation in the Cell 4A to determine freeboard.” These report items need to be appropriately included in the verbiage of the methods and the forms for the subject plan (I.H.19). Please provide detailed descriptions of all equipment, forms, and procedures that will be used in this reporting.
4. Per the permit section I.F.4 referenced above, “DMT and BAT Performance Upset Reports – the Permittee (DUSA) shall report any non-compliance with the DMT or BAT performance criteria of Part I.D in accordance with the requirements of Part I.G.3 of this Permit.” This verbiage with direct reference to the actual performance criteria needs to be included in the subject plan.

Plan Submission (I.H.19):

5. Per the permit section I.H.19, "Said Plan shall include [the reporting] requirements in Part [I.]F.3 of the Permit and include . . . the following: a) Operation and Maintenance Procedures - including operational sequences, transporting methods, equipment operation / maintenance, safety and emergency procedures, b) Operation, Maintenance, Monitoring, and Recordkeeping – for evaluation of the following: i) Leak detection system – including operational status of equipment, daily wastewater head, daily flow rates, etc., ii) Slimes drainage system – including operational status of equipment, daily flow rates, monthly wastewater recovery head monitoring, etc, c) Freeboard limits on dikes – including monitoring and proper management and volume inventory controls to prevent release of wastewater to the environment."

The permit (I.H.19) requires the subject plan to specifically capture the concepts expressed the items in the paragraphs above. Please demonstrate that these specific concepts are addressed in the submitted plan, or capture in writing this information in a revised plan including these items.

As mentioned earlier, the operation of all LDS equipment must be described in detail with their location specified. The head sensors for measurement must be at attached at fixed locations and elevations with certified surveyed bottom liner elevations shown on the as-built drawings. Flow meters with sole location dedicated volume totalizers for the LDS are required. Equipment maintenance frequencies must be specified to be at least as often as the manufacturers recommend. This must be verifiable by the subject plan specifying the frequencies and giving reference to on-site retrievable manufacturer manuals or manufacturer maintenance manual inserts in the subject plan. Maintenance of equipment must be recorded and submitted in accordance with the permit reporting requirements.

Proper operation and maintenance (III.E):

6. Per the permit section III.E, "The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit."

The subject plan must specifically capture the concepts expressed the items in the paragraph above both in terms of equipment and procedures. Please demonstrate that these specific concepts are addressed in the submitted plan, or capture in writing this information in a revised plan including these items.

Other Comments:

7. The as-built plans and specifications must be referenced and included as part of the subject plan. Approval of the subject plan will need to be contingent upon submission and approval of these items.
8. In the subject plan on page 1, the last number of first sentence should be 2007.

9. Page 3, item f) discusses splash pads. Additional splash pads are needed per plan Figure 1, than are currently required by the approved plans. Please provide the timeline for the installation of the additional pads with respect to the timeline for facility construction completion and the commencement tailings deposition.
10. On page 4:
 - a. With respect to the first paragraph, please indicate by drawings or otherwise, where the operational valves for tailings conveyance will be placed with respect to the new lining system. Also, specify the types of valves that will be used to minimize potential damage to the lining system.
 - b. The third paragraph pertains to the reclaimed water system. The second sentence should begin with, "The pump barge . . .", and the last phrase of that sentence end with ". . . or subsequent operation and maintenance activities."
 - c. The last sentence of the third paragraph should end with the word "inspections." The frequency and description of the pump barge inspections needs to be included in the text and the corresponding forms prepared accurately to receive all necessary data described.
11. On page 5 of the subject plan:
 - a. The paragraph numbered 1) needs to state that the flow meter includes a volume totalizer. A separate totalizing meter also needs to be stated as required for the slimes drain system.
 - b. The paragraph numbered 2) states that "the Permittee shall measure the fluid head above the lowest point on the secondary flexible membrane by the use of procedures and equipment specified in the *White Mesa Uranium Mill Tailings Management System and Discharge Minimization Technology Monitoring Plan* [the DMT Plan] 2/07 Revision: DUSA-2." There are some issues regarding this statement that need to be resolved, as follows:
 - (1). By making the DMT Plan part of the subject plan, additional changes to the currently approved DMT Plan will be necessary.
 - (2). The DRC currently approved DMT Plan is the 3/07 Revision: DUSA-3, not the one stated in the plan.
 - (3). A copy of the 2/07 DMT Plan was provided as an attachment to subject plan. The subject plan needs to state the *currently approved DMT Plan* is part of and attached to the subject plan. (The currently approved DMT Plan must also be kept with and attached to the subject plan).
 - (4). How is the head measured in the Cell 4A LDS per the DMT plan? In addition to the actual measurement methods, please include as a side note in the plan verbiage that BAT requirements apply for Cell 4A.
 - (5). Other comments, specific to using the DMT Plan as part of the subject *Cell 4A BAT Monitoring, Operations and Maintenance Plan*, are noted below in this letter.
12. On page 6 of the subject plan:
 - a. Part of last sentence of the first paragraph needs to be changed to ". . . on a monthly basis, reviewed and signed by the Mill Manager."
 - b. A section on this page discusses the freeboard calculation for Cell 4A. Comment number one above, refers to this as well. In the plan, the relationship of the current freeboard calculation methods, as-built conditions, and the new spillway(s) elevations is unclear.

Freeboard management in the subject plan needs to be demonstrated clearly. Please revise and clarify.

An annually updated hydraulic profile drawing needs to be used as one of the dynamic tools used to clarify and visually verify the calculation (with the impacted elevations) for the required freeboard in Cell 4A. This profile must include the upstream tailings cells. As you are aware, the freeboard of the last tailings cell (one without a spillway) must be considered with respect to the calculated required freeboard and the necessary PMF required storage.

The use of as-built elevations in the hydraulic profile schematic drawing which includes the impact of projected inventories, PMF water levels, runoff volumes, freeboards and the spillway elevations is needed to help demonstrate their relationship. Please provide the drawing and verbiage in the subject plan to explain the relationship of the required calculated freeboard, spillway elevations, and the necessary set aside PMF storage volume.

- c. The second and third paragraphs of the page need to be revised to remove the references to Cell 4A in License Condition 10.3. There is no reference to Cell 4A in this license condition.
13. On page 7 of the subject plan:
- a. The first sentence of this page states the spillway elevation between Cells 3 and 4A is 5606 amsl. However, that elevation conflicts with the dike crest (DC) elevation stated in the 2007 Annual Technical Evaluation Report (ATER) for the Cell 3 freeboard calculate, which shows the DC as 5608 amsl. The approved plans show the spillway flow level elevation to be 4-feet below the top of the dike, or about 5604 amsl. These elevations in the subject plan and the ATER need to be corrected in accordance with as-built conditions.
 - b. Correct the elevations in the second paragraph correspondingly.
 - c. The last word in the fifth paragraph of this page should be changed to the acronym for Ground Water Discharge Permit.
14. On page 8 of the subject plan, Figure 1 should appear in order before Figure 2.
15. Regarding the DMT Plan submitted as part of the subject plan:
- a. On page 3 of the DMT Plan, the last paragraph needs to add verbiage of how to evaluate the LDS for Cell 4A to determine compliance with the BAT performance standards in Part I.D.6 of the Ground Water Discharge Permit. As you are aware, the volume of any leakage pumped from the LDS is an important parameter. Verbiage addressing and clarifying volumetric leakage limits for at the various liquid depths of Cell 4A must be added as well.
 - b. On page 5 of the DMT Plan under 3.1.a, the first paragraph regarding the blow tube for Cell 4A needs to be updated. Also the last sentence of second paragraph of 3.1.a needs to use the term "LDS."
 - c. On page 7 of the DMT Plan in paragraph 3.1.b.vii needs to be updated per Part I.D.3 of the Ground Water Discharge Permit dated March 17, 2008.
 - d. On page 8 of the DMT Plan, assure that the items required by the DUSA letter of March 14, 2007 are added to 3.1.d.viii.A & B.
 - e. On page 13 of the DMT Plan, the second paragraph should also list the Director of the DRC as a recipient of the ATER. Also, the discussion of the freeboard limits in Section 6.3.a. needs to be updated per the previous discussions in this letter.

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- f. On page 21 of the DMT Plan, the table for the LDS needs to be updated with room to record and calculate all the specific data required for cell 4A including the total date, time, volume pumped, hours since last pumping, calculated leakage rate in gallons/hour and leakage rate in gallons/day.
- g. DUSA's copies of the DMT Plan at all locations must be updated with the above changes and those required by the DRC approval letter of May 9, 2007.

Please resolve the above comments, and revise the subject *Cell 4A BAT Monitoring, Operations and Maintenance Plan*, and resubmit such for DRC approval. If you have questions on the above, feel free to contact me.

Sincerely,

David A. Rupp, P.E.
Geotechnical Section

Cc: Harold R. Roberts, DUSA

DAR:dr