




STATE OF WASHINGTON
DEPARTMENT OF HEALTH
OFFICE OF RADIATION PROTECTION

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August 19, 2011

TO: Interested Parties, Dawn Mining Company Closure

FROM:  Mikel J. Elsen, Supervisor
Waste Management Section

SUBJECT: Dawn Mining Company Uranium Mill License Amended to Allow Continued Disposal of Midnite Mine Water Treatment Plant Sludge into TDA-4

This memo is to inform you that the Department of Health (the Department) has amended Dawn Mining Company's (DMC) radioactive materials license. The license amendment changes License Condition 33 to extend disposal of Midnite Mine water treatment plant (MMWTP) sludge into Tailings Disposal Area 4 (TDA-4) at the DMC millsite near Ford, Washington until December 31, 2013. I have attached Amendment 26 to DMC's radioactive materials license and an addendum to existing State Environmental Policy Act (SEPA) documents for closure of the DMC millsite for your information.

DMC's Request to Amend Radioactive Materials License WN-I043-2

DMC submitted the amendment application on February 14, 2011 for its Ford, Washington uranium millsite. The new license amendment allows continued disposal of MMWTP sludge until the end of the 2013 treatment plant operation season. The department evaluated DMC's request in order to ensure that: (1) there would be no additional significant impacts to human health and the environment; and (2) extension of sludge disposal into TDA-4 would not delay completion of the final cover and radon barrier over TDA-4. The attached SEPA Addendum provides the technical and regulatory basis for the department's evaluation of DMC's proposal for extension of water treatment plant sludge disposal at the millsite.

The initial authorization for Midnite Mine sludge disposal was granted by the department in 2001 after a detailed human health risk and environmental review (Addendum to Environmental Documents, sent to the DMC Interested Parties mailing list June 2000). The initial authorization and the authorization to dispose of sludge into TDA-4 through 2008 was granted after the department received concurrence from the U.S. Nuclear Regulatory Commission (USNRC), the U.S. Department of Energy (USDOE), and the Northwest Regional Low-Level Radioactive Waste Compact. After detailed review of DMC's request to continue sludge disposal into TDA-4 through 2010, the department determined that the two-year extension continued to meet the ten criteria required by USNRC guidance, and the USNRC, USDOE, and Northwest Compact



concurrent. Concurrence for authorizing the extension through 2013 has been received from USNRC, USDOE, and the Northwest Compact. The department's review of DMC's amendment request also considered whether, under SEPA, there are changes to the approved closure plan that are substantial and/or present new information indicating probable significant adverse environmental impacts not adequately evaluated in the existing environmental documents. The department's conclusion is that this license amendment does not include any changes to the approved closure plan that were not previously evaluated in those documents. The department is issuing the attached Addendum to document the changes to License Condition 33 of DMC's radioactive materials license.

Summary of Changes to DMC's Radioactive Materials License Condition 33

The change to License Condition 33 is the extension of sludge disposal through 2013 and the establishment of conditions for the continuation of sludge disposal through 2013. License Condition 33 contains milestones to ensure that final closure occurs before December 31, 2019.

Conclusion

DMC's amendment request complies with applicable radiation protection laws and regulations contained in RCW 70.98 and WAC 246-252. There are no changes to the radioactive material license that have not already been evaluated under existing SEPA documents. Amendment 26 is attached and will be posted on the department's website at <http://www.doh.wa.gov/chp/rp/default.htm>. Anyone who is not on the department's list for receiving these mailings related to closure of the DMC millsite may be added to that list, or may request copies of these attachments, by contacting Kristin Felix at 360.236.3240, at Kristin.Felix@doh.wa.gov, or at DOH Office of Radiation Protection, PO BOX 47827, Olympia, WA 98504-7827.

MJE:krf

Attachments: WN-I043-2, Amendment 26
Addendum to Existing Environmental Documents, July 2011

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License Number: WN-I043-2
Amendment No. 26

DAWN MINING COMPANY, LLC
5326 Uranium City Road
Ford, Washington 99013

Attention: Robert Nelson
Vice-President & General Manager

In accordance with the amendment request information referenced in License Condition 53.H, regarding extending the receipt and disposal of Midnite Mine Water Treatment Plant (MMWTP) sludge into TDA-4, License Condition 33 of Radioactive Materials License Number WN-I043-2 is amended as follows:

License Condition 33 is amended to read:

33. The receipt and disposal of MMWTP filtercake sludge (solids) at the licensee's millsite is authorized through **December 31, 2013**, provided that Dawn Mining Company meets the following milestones:
- A. A report scope (outline) shall be submitted to the department for review and approval before September 15, 2011, for updating the Evaporation Pond Water and Residuals Management Plan. The report scope shall address, at a minimum: end of season water volumes for all of the evaporation ponds; evaporation rates and remaining volumes of pond process water; TDA-4 underdrain pumping discharge volume, rate, quality data, and piezometer water level data; plan and schedule for discharging meteoric water; evaluation of alternatives for enhancing evaporative losses of process water; and projected impacts on proposed decommissioning schedule. The plan shall also include detailed discussion of residuals management and characterization. The updated Evaporation Pond Water and Residuals Management Plan report shall be submitted to the department for review and approval by November 1, 2011, and shall include all available data from January 1, 2011 through October 15, 2011.**
 - B. A report scope (outline) shall be submitted to the department for review and approval before September 30, 2011, for the updated Ore Stockpile/Lower North Area Investigation Report. The updated Ore Stockpile/Lower North Area Investigation Report shall be submitted to the department for review and approval by November 15, 2011. The Investigation Report shall be a complete enough integration of physical and chemical conditions to form the basis for development of**

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the Ore Stockpile/Lower North Area evaluation of alternatives and selection of remedial actions, to be provided to the department for review and approval by March 15, 2012.

- C. DMC must comply with all U.S. Department of Transportation (USDOT) requirements for the transportation of radioactive materials.
- D. Sludge (solids) transport to TDA-4 and disposal operations shall cease when winter weather results in hazardous road conditions, making it unsafe for operations personnel.
- E. An annual Facility (TDA-4) Utilization Report shall be submitted to the department by March 1 of each year and shall include an aerial photograph of the millsite, surveyed footprint and final surface elevations of all materials (sludge and evaporation pond residuals), disposed material activities and volumes, projected remaining capacity of TDA-4, settlement monitoring summary report, the as-built report for temporary and annual covers constructed over the disposed materials, and any proposed operational changes for the coming year.

In the event that any of the milestones are not met for filling and stabilization activities in TDA-4, authorization for the two-year extension for the receipt and disposal of MMWTP filtercake sludge may be modified, suspended, or revoked.

License Condition 53.H is added:

- 53. H. Letter and attachments dated July 5, 2011, signed by Robert E. Nelson, Vice President and General Manager, RE: Revised Proposal for Disposal Midnite Mine Water Treatment Plant Solids in Tailings Disposal Area 4.

FOR THE STATE OF WASHINGTON DEPARTMENT OF HEALTH

Date: August 16, 2011

By: for Mikel Elsen

Mikel Elsen, Supervisor
Waste Management Section

Dawn Mining Company Uranium Millsite
ADDENDUM TO EXISTING ENVIRONMENTAL DOCUMENTS
August 2011

Washington State Department of Health
Office of Radiation Protection

This document is an addendum to the following existing environmental documents:

- **DMC Millsite:**
 - 1991 Final Environmental Impact Statement, Closure of the Dawn Mining Company Uranium Millsite
 - 1994 Supplemental Final Environmental Impact Statement for Millsite Closure
 - 2000 Addendum to Existing Environmental Documents
 - 2009 Addendum to Existing Environmental Documents
- **Midnite Mine Water Treatment Plant:**
 - 1992 Declaration of Non-Significance for Mill Processing of Midnite Mine Water Treatment Plant Sludge

Dawn Mining Company (DMC) submitted an application for a radioactive materials license amendment on February 14, 2011, for the Ford, Washington uranium millsite. Following Washington State Department of Health's (DOH) completeness review of their February request, DMC submitted a revised license amendment request on July 5, 2011. The license amendment request is to extend authorization for disposing Midnite Mine water treatment plant (MMWTP) sludge (source material) into Tailings Disposal Area 4 (TDA-4) for as long as TDA-4 remains open for disposal. As stated in the application, current information regarding the length of time that TDA-4 will be available for disposal is that "TDA-4 will remain available for MMWTP sludge disposal through at least 2013."¹ The initial authorization for MMWTP sludge disposal was granted by the department in 2001, after detailed human health risk and environmental review (*Addendum to Environmental Documents*, June 2000). Authorization was granted after concurrence from the U.S. Nuclear Regulatory Commission (NRC), the U.S. Department of Energy (DOE), and the Northwest Regional Low-Level Radioactive Waste Compact (NW Compact). In 2008 DMC applied for an extension, DOH reviewed the application (summarized in the *Technical Evaluation Report* dated January 2009), and, with concurrence from DOE, NRC, and the NW Compact, granted a two-year extension of MMWTP sludge disposal into TDA-4. The authorization for extension expired December 31, 2010.

DOH has evaluated DMC's license amendment request for further extension of MMWTP sludge disposal for compliance with NRC's *Final Revised Guidance on Disposal of Non-Atomic Energy Act of 1954, Section 11.e(2) Byproduct Material In Tailings Impoundments*, applicable state radiation protections laws and regulations, and the State Environmental Policy Act (SEPA). This evaluation is summarized below.

¹ DMC refers to MMWTP sludge as MMWTP solids in their application. The MMWTP solid material described in their 2011 application is the same material referred to as sludge in DMC's 2000 and 2009 applications reviewed by the department.

NRC FINAL GUIDANCE

The direct disposal of MMWTP sludge into TDA-4 is subject to the ten criteria found in the Nuclear Regulatory Commission's *Final Revised Guidance on Disposal of Non-Atomic Energy Act of 1954, Section 11.e(2) Byproduct Material In Tailings Impoundments* (September 22, 1995 Federal Register). After detailed review, DOH has determined that extending sludge disposal through 2013 continues to meet the substantive criteria required by NRC guidance, and will not delay construction of the final cover.

STATE ENVIRONMENTAL POLICY ACT

The department's review of DMC's license amendment request also considers whether, under the State Environmental Policy Act (SEPA), changes to the approved proposal are substantial and/or involve new information indicating probable significant adverse environmental impacts not adequately evaluated in the existing environmental documents. All of the potentially significant adverse impacts for direct disposal of MMWTP sludge were previously evaluated in the existing environmental documents.

The following discussion provides additional information regarding the technical acceptability of extending MMWTP sludge disposal into TDA-4.

TDA-4 SOLIDS DISPOSAL PLAN

Volume

The June 2000 SEPA Addendum evaluated a total anticipated MMWTP sludge volume of 753,500 cubic feet for placement into TDA-4. From 2001 through 2010, approximately 266,000 cubic feet of MMWTP sludge has been disposed in TDA-4. The maximum additional sludge volume that would be disposed in TDA-4 (if there is MMWTP sludge placed for three years through 2013 at 45,000 cubic feet per year, as stated in the license amendment application) results in 120,000 cubic feet. The addition of three more years of MMWTP sludge would bring the total volume of MMWTP sludge disposed in TDA-4 to about 57% of the total volume initially analyzed and approved.

Geotechnical Stability

The MMWTP process removes all free-standing liquids from the sludge prior to transport offsite, and the sludge is placed in TDA-4 in lifts less than three feet deep. Following placement, the sludge is also exposed to air as much as practicable (allowing further drying and increasing solidification prior to covering), and the operational cover system utilizes soil and reinforced polyethylene (RPE) or equivalent liners to minimize potential rehydration of the sludge from precipitation. These measures greatly reduce the potential for geotechnical instability resulting from consolidation. Further, the anticipated total volume of MMWTP sludge disposal is a small percentage of the total volume of fill to be placed in TDA-4 prior to constructing the final cover system. Therefore, consolidation of the MMWTP sludge disposal as a contribution to overall consolidation and settlement within TDA-4 is not significant, although settlement monitoring of TDA-4 will continue as an operational requirement.

Geochemistry

The MMWTP sludge consists of relatively insoluble and immobile oxyhydroxides from a lime neutralization water treatment plant. Table 1, in Section 3 of the application, presents nine consecutive years of analytical results from Toxic Characteristic Leaching Procedure (TCLP) extraction procedures. In all cases no detectable constituents leached from the treatment plant solids. The geochemistry of the MMWTP solids has not changed since DOH's previous reviews. Based on the geochemical characteristics of the sludge and operational controls that will be implemented, it is unlikely that the solids will chemically alter and produce adverse impacts.

Radioactive Materials

In the June 2000 Addendum to other SEPA documents, the calculated total radioactivity values (uranium, radium, and thorium) for mill demolition debris, site soil cleanup, processed sludge, and direct disposal of unprocessed MMWTP solids, totaled approximately 290 curies. In the year 2000, a volume of 753,500 cubic feet of sludge with an estimated radioactivity of 30 curies was approved for disposal in TDA-4. Approximately one third of that anticipated activity was actually placed in TDA-4 between 2001 and 2010. After a three-year extension of sludge disposal through 2013, the total radioactivity will be less than 50% of what was originally approved for MMWTP sludge disposal into TDA-4.

Transportation Logistics

Transportation of water treatment plant sludge into TDA-4 would not adversely affect other closure activities or jeopardize the safety of workers. The number of sludge shipments would be approximately one truck per day.

Water Management

Disposal of additional MMWTP sludge in TDA-4 would not affect water management plans. As discussed above, the sludge will be placed on existing or newly filled and stabilized areas and will not be in contact with standing water. Operational placement of the sludge into TDA-4 also utilizes soil berms, soil cover, and RPE or equivalent liners to mitigate potential storm water impacts.

CONCLUSION

Dawn Mining Company's license amendment request, to extend direct disposal of Midnite Mine water treatment plant sludge into TDA-4, meets all applicable requirements. The request does not increase the volume or activity of the sludge from what was previously analyzed and approved in the 2000 Addendum. If MMWTP sludge is disposed through 2013, the total maximum volume would be about 57% of what was originally approved, and the total activity of MMWTP solids disposed in TDA-4 will be less than 50% of the originally approved radioactivity. Furthermore, the extension of MMWTP sludge disposal into TDA-4 will not interfere with the timing of closure activities and construction of the final radon barrier. In addition, DMC's amendment request does not involve substantial changes or new information indicating probable significant adverse environmental impacts that have not already been adequately evaluated in existing environmental documents.

