

Draft Documentation of U.S. Nuclear Regulatory Commission Review of the Termination Findings for the Hecla Mining Company's Uranium Milling License Submitted by the Colorado State Department of Public Health and Environment

Licensee: Hecla Mining Company
Licensee No.: CO-317-02
Location: Montrose County, Colorado
Area: 160 Acres
Type of License: Conventional Uranium Heap Leach Facility
Full / Partial License Termination: Full License Termination

A. Major events/activities/documents related to the review of the Completion Review Report (CRR) for the Durita Site

1. On October 1, 2004, U.S. Nuclear Regulatory Commission (NRC) staff received a letter from the Colorado Department of Public Health and Environment (CDPHE) with the draft Completion Review Report (CRR) for the Hecla Mining Company's Durita site. The CDPHE letter and draft CRR can be found in Attachment A ([ML17243A174](#)).
2. On February 1, 2005, NRC staff received a letter from the U.S. Department of Energy (DOE) with a draft final Long-Term Surveillance Plan (LTSP) for the Hecla Mining Company's Durita site. The DOE letter and draft final LTSP can be found in Attachment B ([ML17243A178](#)).
3. On February 10, 2005, after reviewing the CDPHE's draft CRR dated October 1, 2004, NRC staff provided comments to the CDPHE. The cover letter and enclosed comments can be found in Attachment C ([ML17243A182](#)).
4. On June 6, 2005, NRC staff received an e-mail from the CDPHE with responses to the NRC staff's comments and a revised draft final CRR for the Hecla Mining Company's Durita site. The CDPHE e-mail and revised draft CRR can be found in Attachment D ([ML17243A185](#)).
5. On July 15, 2005, after reviewing the CDPHE's revised draft CRR dated June 6, 2005, NRC staff provided comments to the CDPHE and communicated that the groundwater section of the revised draft CRR was still under review. The e-mail with comments can be found in Attachment E ([ML17243A190](#)).
6. On September 7, 2005, NRC staff received an e-mail from the CDPHE with responses to the NRC staff comments from the e-mail dated July 15, 2005. The e-mail and responses to the NRC staff comments can be found in Attachment F ([ML17243A230](#)).
7. On December 2, 2005, after reviewing the groundwater section of the revised draft CRR dated June 6, 2005, NRC staff provided the CDPHE with its concerns that CDPHE prematurely allowed the Hecla Mining Company to discontinue the groundwater detection monitoring program for the Durita site prior to license termination. The letter can be found in Attachment G ([ML17243A233](#)).

8. On January 4, 2006, NRC staff received a letter from the CDPHE expressing disagreement with the NRC staff's assessment in the letter dated December 2, 2005. The CDPHE letter can be found in Attachment H ([ML17243A241](#)).
9. On March 9, 2006, in response to CDPHE's letter dated January 4, 2006, NRC staff stated that it could not concur with the groundwater section of the revised draft CRR and suggested that CDPHE reconsider NRC's letter dated December 2, 2005, and its proposed path forward. The letter can be found in Attachment I ([ML17243A245](#)).
10. On March 31, 2006, NRC staff received a letter from the CDPHE reaffirming disagreement with NRC staff's perspective on groundwater monitoring at the Durita site, and disagreeing with the NRC staff's position that reinstallation of monitoring wells was necessary. The letter can be found in Attachment J ([ML17243A247](#)).
11. On July 12, 2006, NRC staff met at the Durita site with CDPHE, DOE, and Hecla Mining Company representatives to assess the physical characteristics of the relevant geologic units of the site at a scale not readily discernable from the published reports.
12. On May 3, 2007, NRC staff completed a report titled "Assessment of Hydrogeologic Conditions and Need for Long-Term Groundwater Monitoring at the Former Durita Uranium Mill, Naturita, Colorado." The report states that based on a review of documents, observations, including the July 2006 site visit, and independent calculations, additional groundwater information or monitoring at the Durita site was necessary and appropriate to determine whether there is reasonable assurance of adequate protection of public health and safety and the environment. The report can be found in Attachment K ([ML17243A316](#)).
13. On May 9, 2007, a public meeting was held between NRC, Hecla, and CDPHE to discuss the status of the NRC review of the groundwater evaluation of the Durita site and the draft CRR review process. The public meeting announcement can be found in Attachment L ([ML17243A318](#)).
14. On May 14, 2007, NRC staff received a letter from the Hecla Mining Company stating that Hecla intended to conduct an analysis and prepare a formal response regarding the groundwater issues at the Durita site and provide this information to CDPHE, as was discussed at the May 9, 2017 public meeting. The letter can be found in Attachment M ([ML17243A323](#)).
15. On October 25, 2007, NRC staff received an e-mail from CDPHE with a revised draft CRR that incorporated the responses (Attachment F) to the NRC staff comments (Attachment E). The CDPHE e-mail and revised draft CRR (dated December 2007) can be found in Attachment N ([ML17243A356](#)).
16. On November 8, 2007, NRC staff received a letter from CDPHE in response to the NRC staff report dated May 3, 2007. The CDPHE response disagreed with many of the conclusions in the NRC staff report. The CDPHE reiterated its opinion that the Durita site had been appropriately remediated, reaffirmed that there was no need for additional

groundwater monitoring, and requested that the NRC accept the CRR and approve termination of the Durita license. The CDPHE letter can be found in Attachment O ([ML17243A360](#)).

17. On May 22, 2008, CDPHE scheduled a site visit for May 22, 2008, to conduct an annual inspection in accordance with the Hecla Mining Company (Hecla) radioactive materials license. DOE was invited to visit the site at the same time to meet the licensee and regulator, and to assess conditions in advance of the Hecla license termination and site transition to DOE for long-term surveillance and maintenance. The letter from the DOE with recommendations from the inspection and DOE inspection report can be found in Attachment P ([ML18164A405](#)) and Attachment Q ([ML18164A406](#)).
18. On April 11, 2012, NRC staff received a letter from Thompson & Pugsley, PLLC. (representing Hecla Mining Company) questioning the NRC staff's lack of progress on the review of the CDPHE's revised draft CRR for the Durita site. The letter can be found in Attachment R ([ML17243A366](#)).
19. On May 11, 2012, in a letter responding to the Thompson & Pugsley, PLLC. letter dated April 11, 2012 (Attachment R), NRC staff indicated that the initial review of the revised draft CRR identified a gap in the groundwater monitoring data for the Durita site, and the evaluation of the revised draft CRR was ongoing. The NRC staff anticipated providing a response (final comment on the groundwater monitoring issue in the revised draft CRR) to CDPHE by September 4, 2012. The letter can be found in Attachment S ([ML17243A369](#)).
20. On May 1, 2012, a public meeting was held between NRC, DOE, and the Hecla Mining Company to discuss the license status of the Durita site and the status of the NRC staff's review of CDPHE's revised draft CRR for the Durita site. A June 5, 2012, summary of the public meeting can be found in Attachment T ([ML17243A370](#)).
21. On September 25, 2012, NRC staff received a letter from the DOE responding to an inquiry from NRC staff regarding the potential need for future groundwater monitoring at the Durita site. The DOE stated that it would revise the LTSP to incorporate the scope of work necessary to perform the long-term care of the site as determined by CDPHE and NRC. The letter can be found in Attachment U ([ML17243A399](#)).
22. On May 23, 2013, the NRC staff participated as observers during the CDPHE's annual inspection of the Durita site.
23. On May 13, 2014, in a letter to the CDPHE, NRC staff provided its conclusions that CDPHE had not provided adequate information and data to determine whether there is an unacceptable risk to public health and safety and the environment from wastes stored at the Durita site, and that without additional information, the NRC staff would be unable to concur on a final CRR for the Durita site. The letter can be found in Attachment V ([ML17243A404](#)).
24. On June 13, 2014, NRC staff received a letter from Hecla Mining Company expressing disappointment with the NRC staff position described in its May 13, 2014, letter. The Hecla Mining Company letter can be found in Attachment W ([ML17243A408](#)).
25. On September 16-17, 2014, NRC and CDPHE staff met in Denver, Colorado to review information and discuss CDPHE's analysis of the groundwater system at the Durita site.

Following the meeting, CDPHE provided the NRC staff with more than a dozen historical reports and documents about the Durita site which had not been previously provided to the NRC. These documents informed the CDPHE's subsequent CRR submittals and the NRC staff's final determination. A listing of these documents can be found in Attachment X ([ML14300A034](#)). The documents can be found in an additional ADAMS package ([ML14300A031](#)).

26. On March 30, 2015, NRC staff received from CDPHE a revised draft CRR that included a significantly revised groundwater section that was the result of several meetings between the NRC and CDPHE staff. The CDPHE revised draft CRR, dated March 30, 2015, can be found in Attachment Y ([ML17243A410](#)).
27. On May 1, 2015, in an e-mail to the CDPHE, NRC staff indicated that it had no substantive comments on the March 30, 2015, revised draft CRR, and encouraged the CDPHE to prepare a final CRR for the Durita site. NRC staff also indicated that the technical review of the revised groundwater section was continuing. The e-mail can be found in Attachment Z ([ML17243A412](#)).
28. On March 2, 2016, NRC staff received from CDPHE the final CRR for the Hecla Mining Company's Durita site. The CDPHE final CRR can be found in Attachment AA ([ML17243A414](#)).
29. On June 14, 2018, NRC staff received a letter from the DOE noting that they intend to revise the draft LTSP originally provided to the NRC in 2005. They also indicated that they want all outstanding items associated with the LTSP to be completed prior to NRC's approval of the final CRR and the termination of the Colorado radioactive materials license. This letter can be found in Attachment BB ([ML18165A445](#)).
30. On November 4, 2020, NRC staff completed its technical analysis of the CRR and issued a report on the possibility and potential for release of radioactive elements to the groundwater system and migration offsite, and conservatively estimated the offsite consequence of the release. The report is based on an extensive document review, site observations, and independent calculations related to the Durita site features, groundwater monitoring history, tailings and impoundment characterizations, and the behavior of radionuclides in the groundwater system. The report quantifies the consequence of hypothetical, historical, and future releases from the Durita site using flow and transport modeling. The results of the modeling were used to assist in the determination that the Durita site would not adversely affect water quality of usable groundwater at or beyond the site boundary and does not pose a risk to the public health and safety or environment. The report, titled "Independent Scenario Analysis of the Hecla Durita Heap Leaching Site," can be found in Attachment CC ([ML17243A417](#)).
31. On November 23, 2020, NRC staff received a letter from the DOE with an updated draft final LTSP for the Hecla Mining Company's Durita site. The DOE letter and updated draft LTSP can be found in Attachment DD ([ML20335A147](#)) and Attachment EE ([ML20335A148](#)).
32. On December 17, 2020, the DOE provided a letter indicating that all outstanding items in their letter dated June 14, 2018 (Attachment BB), have been addressed. This letter can be found in Attachment FF ([ML20357B070](#)).

B. Review of items specified in the NMSS Procedure SA-900, “Termination of Uranium Milling Licenses in Agreement States.”

1. A brief description of licensee’s activities associated with decommissioning, tailings remediation and groundwater cleanup, if necessary.

This information is provided in Section 2 of the final CRR (Attachment AA). The submitted information was found to be complete.

2. Documentation that the completed surface remedial actions were performed in accordance with applicable standards and requirements.

This information is provided in Sections 3 and 6 of the final CRR (Attachment AA). The CDPHE staff reviewed geotechnical stability, surface water hydrology and erosion protection, and radon emanation aspects of the reclamation of Hecla Mining Company’s Durita site. Based on its evaluation, CDPHE concluded that reclamation of the site has met all applicable standards and conformed with design specifications. The submitted information was found to be acceptable.

3. Documentation that the completed site decommissioning actions were performed in accordance with applicable standards and requirements.

This information is provided in Sections 4 and 5 of the final CRR (Attachment AA). The CDPHE staff performed confirmatory gamma surveys and soil sampling in areas that were reported to have been reclaimed. Following the initial surveys, all gamma grids and soil grids that were identified to be in excess of cleanup criteria were excavated until results indicated that concentrations were below applicable limits. CDPHE concluded that residual radioactive material in all the areas potentially impacted by the mill operation were cleaned up to State standards. The submitted information was found to be acceptable.

4. Documentation that the completed groundwater corrective actions, if necessary, were performed in accordance with applicable standards and requirements.

This information is provided in Sections 1 and 7 of the final CRR (Attachment AA). CDPHE’s evaluation of all groundwater quality data determined that the activities at the Hecla Mining Company’s Durita site have not adversely impacted the underlying groundwater at the site. Based on its evaluation, CDPHE authorized the closing of the monitoring wells and concluded that the closure of Hecla Mining Company’s Durita site is in compliance with Colorado’s groundwater regulations associated with uranium mill closure. This information and the NRC staff technical report found in Attachment AA support the determination that the Durita site would not adversely affect the quality of usable groundwater at or beyond the site boundary and does not pose a risk to the public health and safety or environment.

5. Discussion of results of CDPHE’s site closure inspection(s).

This information is provided in Section 5.3 of the final CRR (Attachment AA). CDPHE staff performed site closure inspections over time as site remediation moved from one phase to the next. CDPHE has employed inspection staff with geotechnical and geohydrological training or provided specialized consultants from the Colorado Geological Survey to review and verify virtually every aspect of site closure. CDPHE staff site inspections were

conducted to ensure that site reclamation activities were performed as required by State regulations and license conditions. The submitted information was found to be acceptable.

6. For partial terminations, documentation that release of a portion of the site will not negatively impact the remainder of the site to be closed at a later date.

Not applicable. This is a full license termination.

7. IMPEP review of the CDPHE's uranium recovery regulatory program

Based on the most recent IMPEP report ([ML18180A318](#)), CDPHE's uranium recovery program was found to be satisfactory (the highest performance rating possible). This rating is consistent with all previous IMPEP reviews of CDPHE's uranium recovery program.