

TECHNICAL EVALUATION REPORT  
FOR ALTERNATE GROUNDWATER PROTECTION STANDARDS FOR  
CHROMIUM, URANIUM, SELENIUM, AND NICKEL  
AT THE HIGHLAND RECLAMATION PROJECT

FACILITY: Highland Reclamation Project

LICENSEE: ExxonMobil Refining and Supply Company

DOCKET NO: 40-8102

LICENSE NO: SUA-1139

PROJECT MANAGER: Myron Fliegel

TECHNICAL REVIEWER: Rick Weller

## INTRODUCTION

By letter dated January 16, 2006, ExxonMobil Refining and Supply Company (ExxonMobil) requested that the U.S. Nuclear Regulatory Commission (NRC) staff amend Source Materials License SUA-1139 for the Highland Reclamation Project (Highland) to establish alternate groundwater protection standards for chromium, uranium, selenium, and nickel at the point of compliance (POC) wells designated in the license. In this regard, License Condition (LC) 33 of ExxonMobil's license specifies that a groundwater monitoring program must be conducted at the Highland site and ExxonMobil must comply with the established groundwater protection standards at the designated POC wells for the various constituents of interest, including chromium, uranium, selenium, and nickel. For chromium and selenium, the groundwater protection standards in LC 33B were set at the Maximum Contaminant Levels (MCLs) for those constituents in the table in paragraph 5C of 10 CFR Part 40, Appendix A. The MCLs for the constituents listed in the table in paragraph 5C were derived from the MCLs established for those constituents in the U.S. Environmental protection Agency (EPA) National Primary Drinking Water Regulations (NPDWRs). For uranium and nickel, the groundwater protection standards in LC 33B were based on the NRC approved background concentrations for those constituents in the groundwater. However, in the years subsequent to the establishment of the groundwater protection standards in ExxonMobil's license, the MCLs for chromium and selenium in the EPA's NPDWRs have been modified and a new MCL for uranium has been promulgated. The former MCL for nickel in the NPDWRs was remanded in 1995.

In light of the aforementioned changes to the EPA NPDWRs, ExxonMobil has requested that Source Materials License SUA-1139 be amended to reflect the current MCLs for chromium, selenium, and uranium in the NPDWRs as the appropriate alternate groundwater protection standards for these constituents in the license. Additionally, even though the MCL for nickel has been remanded and nickel is no longer listed as a regulated contaminant in the NPDWRs, ExxonMobil has requested that its license be modified to incorporate the former MCL for nickel as an alternate groundwater protection standard. Specifically, ExxonMobil has proposed the

following modifications to the groundwater protection standards in LC 33B of the Highland license: chromium would change from 0.05 milligrams per liter (mg/L) to 0.10 mg/L (the current MCL); uranium would change from the former radiotoxicity value of 0.43 picocuries per liter (pCi/L)(0.00065 mg/L) to the new chemical toxicity MCL of 0.03 mg/L (20 pCi/L); and selenium would change from 0.01 mg/L to 0.05 mg/L (the current MCL). The standard for nickel would change from 0.02 mg/L to 0.1 mg/L (the former MCL before being remanded by EPA).

## REGULATORY FRAMEWORK

The NRC's groundwater protection standards in 10 CFR Part 40, Appendix A, Criterion 5B(5) specify the following:

- 5B(5) – At the point of compliance, the concentration of a hazardous constituent must not exceed -
- (a) The Commission approved background concentration of that constituent in the groundwater;
  - (b) The respective value given in the table in paragraph 5C if the constituent is listed in the table and if the background level of the constituent is below the value listed; or
  - (c) An alternate concentration limit established by the Commission.

Further, groundwater monitoring to comply with the standards established in accordance with the above specifications is required by Criterion 7A.

The table in Criterion 5C cited in Criterion 5B(5)(b) has not yet been revised to reflect the current NPDWRs for chromium, selenium, and uranium. Notwithstanding the outdated state of the table in Criterion 5C, ExxonMobil has requested alternate groundwater protection standards for LC 33B of Source Materials License SUA-1139 consistent with the intent of Criterion 5B(5). In this regard, the constituent groundwater protection standards in the table in Criterion 5C are intended to be consistent with, and reflective of, the MCLs established by the EPA in the NPDWRs. As noted in Criterion 5B(6), the drinking water limits stated in Criterion 5C are acceptable hazards.

## TECHNICAL EVALUATION

This technical evaluation report evaluates the acceptability of the ExxonMobil requested license amendment with respect to the requirements of 10 CFR Part 40, Appendix A, Criterion 5B(5). In this regard, ExxonMobil has requested that the NRC amend LC 33B of Source Materials License SUA-1139 to incorporate groundwater protection standards for chromium, uranium, and selenium that are reflective of the current MCLs for these constituents in the EPA's NPDWRs, consistent with the intent of Criterion 5B(5)(b) to establish constituent concentration limits based on the EPA's NPDWRs. While recognizing that the table of MCLs in Criterion 5C referenced in Criterion 5B(5)(b) is out of date, the staff agrees with ExxonMobil that the intent of Criterion 5B(5)(b) was to establish groundwater protection standards for hazardous constituents consistent with the EPA's NPDWRs. The NRC notes that drinking water limits reflected in the NPDWRs pose acceptable hazards and the EPA has determined these limits to be adequately

protective of public health and safety. Based on these findings, the staff concludes that ExxonMobil's request to establish groundwater protection standards for chromium, uranium, and selenium in LC 33B consistent with the MCLs for these constituents in the NPDWRs is acceptable.

ExxonMobil also proposed to retain a groundwater protection standard for nickel in LC 33B, even though the MCL for nickel was remanded more than a decade ago and it is no longer a regulated constituent. Specifically, ExxonMobil has proposed the former MCL for nickel (i.e., prior to being remanded) as the appropriate groundwater protection standard. This MCL was the former concentration limit that EPA determined would be protective of public health and safety. The NRC finds that changing the allowable nickel level from 0.02 mg/L to 0.1 mg/L is in accordance with Criterion 5B(5)(c), and is acceptable.

### CONCLUSIONS

Based on the foregoing evaluation, the staff concludes that ExxonMobil's proposed alternate groundwater protection standards for chromium, uranium, selenium, and nickel for the Highland site are protective of public health and safety. Accordingly, ExxonMobil's request that NRC amend LC 33B of Source Materials License SUA-1139 to establish alternate groundwater protection standards for chromium, uranium, selenium, and nickel at the POC wells designated in the license is acceptable.

### RECOMMENDED LICENSE CHANGES

The staff recommends that LC 33B be amended to read as follows:

- 33.B. Comply with the following groundwater protection standards at point of compliance well Nos. 125, 175, 176, and 177, with background being recognized in well No. 182:

arsenic = 0.05 mg/L, cadmium = 0.01 mg/L, chromium = 0.1 mg/L, gross alpha = 15.0 pCi/L, lead = 0.05 mg/L, nickel = 0.1 mg/L, radium-226 and 228 = 5.0 pCi/L, selenium = 0.05 mg/L, thorium-230 = 0.55 pCi/L, and uranium = 0.03 mg/L with the exceptions of: well 125 uranium = 0.089 mg/L; well 175 nickel = 1.8 mg/L and radium-226 and 228 = 25 pCi/L; and well 177 uranium = 0.11 mg/L.

Note that in the above revisions to LC 33B, the staff converted all of the radiotoxicity limits (pCi/L) for uranium to chemical toxicity limits (mg/L) using the ExxonMobil conversion factor which equates the new uranium MCL of 0.03 mg/L to 20 pCi/L of activity level.

### REFERENCES:

The following reference is available for inspection at NRC's Public Electronic Reading Room at <http://www.nrc.gov/reading-rm/adams.html>.

ExxonMobil Refining and Supply. Letter dated January 16, 2006, from D. Burnham, ExxonMobil, to G. Janosko, NRC, requesting amendment to License Condition 33 of Source Materials License SUA-1139 for the Highland Reclamation Project [ADAMS Accession No. ML060260421].