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**VIA OVERNIGHT MAIL**

May 12, 2011

United States Nuclear Regulatory Commission  
Attn: Keith I. McConnell, Deputy Director  
Decommissioning and Uranium Recovery  
Licensing Directorate  
Division of Waste Management and Environmental Protection  
Office of Federal and State Materials and  
Environmental Management Programs  
Mail Stop T-8F5  
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Rockville, MD 20852

**RE: License No. SUA-1139, Highland Reclamation Project, License Amendment Application**

Dear Mr. McConnell:

By this letter, ExxonMobil Corporation (ExxonMobil)<sup>1</sup> respectfully requests an amendment to its United States Nuclear Regulatory Commission (NRC) License No. SUA-1139 for its Highland Uranium Mill Site in the State of Wyoming. ExxonMobil's license amendment application is included with this letter.

In its license amendment application, ExxonMobil requests that NRC approve site and constituent-specific alternate concentration limits (ACL), including the establishment of a new point of compliance (POC) and points of exposure (POE) for 11e.(2) byproduct material constituents seeping into site groundwater from ExxonMobil's reclaimed uranium mill tailings

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<sup>1</sup> This letter and the attached license amendment application will refer to ExxonMobil unless the context or history demands a specific reference to Exxon Corporation (Exxon), Humble & Refining Company (Humble) or Exxon Coal & Minerals Company (ECMC). Humble & Refining Company (a Delaware corporation) was a wholly-owned subsidiary of Standard Oil Company (New Jersey) from 1959 to 1973 and merged into Exxon in January 1973 and continued operations as Exxon Company USA, and unincorporated division. ECMC is an unincorporated division of Exxon. Exxon changed its name to ExxonMobil Corporation (ExxonMobil) when it purchased Mobil in 1999. Thus, all of the rights and responsibilities of Exxon, Humble, and ECMC now reside in ExxonMobil.

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impoundment to the "Southeast Drainage" (i.e., site areas to the south and east of the tailings impoundment) and with a POE and "alternative" for 11e.(2) byproduct material constituents that have seeped to the Highland Pit Lake to the west of the tailings impoundment.

As noted above, ExxonMobil's license amendment application proposes an "alternative" to the typical ACL formula contained in NRC's 10 CFR Part 40, Appendix A requirements by requesting that the Highland Pit Lake be included within the newly proposed long-term surveillance and monitoring boundary (LTSB). As will be discussed below, the Preamble to Appendix A permits licensees to request alternatives to any or all requirements for closure of uranium milling facilities such as the Highland site. As shown in its license amendment application, ExxonMobil has determined that 11e.(2) byproduct material constituents have seeped from the reclaimed tailings impoundment and migrated to the Pit Lake where they will remain for the mandatory site closure period as delineated in Appendix A. Based on this, ExxonMobil respectfully requests that NRC approve its proposed license amendment to include a new proposed ACL for the Southeast Drainage and an alternative such that the Pit Lake and lands immediately surrounding it will be included in the proposed LTSB for eventual transfer to the United States Department of Energy (DOE) for long-term surveillance and monitoring (LTSM).

To facilitate an efficient review process, ExxonMobil is providing NRC Staff with background information in this letter, including a legal analyses of the applicability of the Atomic Energy Act of 1954, as amended by the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA) (collectively the "AEA") and relevant NRC regulations and guidance to ExxonMobil's license amendment application. This letter also addresses site licensing history, an overview of ExxonMobil's application, and a discussion of the proposed LTSM boundary. The full suite of supporting data, analyses, and documentation is contained in ExxonMobil's application.

## **I. Exxon Highland Site Licensing History**

In the late 1960s, Humble Oil and Refining Company discovered uranium deposits in the southern portion of the Powder River Basin of Wyoming and commenced uranium exploration operations at what is now the Highland site. In 1970, ECMC started surface mining at the Highland site and began processing uranium-bearing ores at the mill site in October of 1972 pursuant to Atomic Energy Commission (AEC) License No. SUA-1139. ECMC initiated a pilot-scale test of *in situ leach* (ISL) operations on property immediately north and west of the Mill site in 1972, and by 1977, ECMC also was engaging in underground mining at the site.

By 1979, the pilot-scale ISL operation was successful enough for ECMC to expand it to full commercial-scale ISL operations, but ECMC sold the ISL operations to Everest Minerals. Everest ultimately re-sold the ISL operations to Power Resources, Inc. (PRI) which, in turn, was

purchased by Cameco Resources (Cameco). Cameco currently engages in active ISL operations on that property to the north and west of the former Highland mill site.

ECMC continued conventional underground uranium mining until 1982 and surface uranium mining until 1984. The uranium-bearing ore from these mining activities was processed at the Highland mill site until mid-1984. The Highland mill site successfully processed approximately 11.3 million tons of uranium-bearing ore during its twelve year operating lifecycle.

In 1988, it was discovered that 11e.(2) byproduct material constituents from the mill site's uranium mill tailings impoundment were seeping into site groundwater. Pursuant to NRC direction, ECMC immediately began preparation of a groundwater corrective action plan (CAP), which began implementation in 1989. NRC approved site-specific ACLs for the constituents nickel, radium-226 & 228, and uranium in May of 1999 and, with NRC's approval, ECMC subsequently discontinued implementation of the CAP.

Over the last few years, ExxonMobil has conducted an evaluation of the previously approved ACLs which has determined that they are inadequate to address all seepage from the reclaimed tailings impoundment. 11e.(2) byproduct material constituents continue to migrate from the reclaimed tailings impoundment to the Southeast Drainage and have migrated to the Pit Lake. As a result, ExxonMobil is submitting this license amendment application to revise its site-specific ACLs and an alternative to include the Pit Lake in the new LTSB.

## **II. Uranium Recovery Statutory and Regulatory Background**

In Chapter 7 of the AEA, Congress created a program under which entities seeking to engage in the production of *source material* would be required to obtain licenses from the AEC (now NRC) so that such *source material* could be used for a variety of purposes such as research and development and the creation of special nuclear material.<sup>2</sup>

It is extremely important to note that, under the AEA's current statutory framework, NRC as successor to the AEC is an *independent* regulatory agency, whose mission is to assure adequate protection of public health and safety and the environment from activities involving AEA materials and operations. Thus, a private (e.g., uranium recovery company) or governmental (e.g., United States Department of the Army) entity may submit license or license amendment applications to NRC for the possession, use, and transfer AEA materials.

“[T]he Commission has no power to compel an applicant to come forward or to require an applicant, once having come forward, to prepare and submit a totally different proposal.”<sup>3</sup>

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<sup>2</sup> 42 U.S.C. § 2093(a)(1-4).

<sup>3</sup> *Id.*

When reviewing a license or license amendment application:

“the available alternatives [to NRC] are to grant the application, grant the application subject to certain conditions, or deny the application, either with or without prejudice.”<sup>4</sup>

Under this scheme, during the life of the license, ultimately the licensee is primarily responsible for the safe management of AEA materials.

In 1978, Congress enacted UMTRCA to provide express statutory authority to regulate the production, long-term containment, and monitoring of uranium and thorium mill tailings. UMTRCA was based upon a finding that uranium and thorium mill tailings located at *active* (i.e., licensed) and *inactive* (i.e., abandoned) mill sites may pose a significant, potential radiation health hazard to members of the public.<sup>5</sup> In explaining the need for UMTRCA, the House Report accompanying the legislation relied upon the description of the potential public health hazard of mill tailings in the testimony of then-NRC Chairman, Dr. Joseph Hendrie:

“The NRC believes that long-term release from tailings piles may pose a radiation health hazard if the piles are not effectively stabilized to minimize radon releases and prevent unauthorized use of the tailings.”

The centerpiece of this new grant of direct authority to regulate uranium mill tailings was the creation of a new category of AEA-regulated materials, “11e.(2) byproduct material,” which was defined to mean:

“the tailings or wastes produced by the extraction or concentration of uranium and thorium from any *ore* processed *primarily* for its source material content.”<sup>6</sup>

This class of material was (and is) unique among the materials regulated under the AEA, because it was not defined solely in terms of its radiological characteristics, but instead is defined broadly enough to encompass “all wastes”—both radioactive and *non*-radioactive—resulting from uranium *ore* processing at an AEA-licensed uranium recovery facility.<sup>7</sup> Since this new definition of “byproduct material” is intended to be expansive and to cover the broad range of wastes associated with uranium milling, the tailings and all other wastes produced at uranium milling facilities are referred to as *11e.(2) byproduct material*. Thus, all wastes generated during source

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<sup>4</sup> *Id.*

<sup>5</sup> Pub L. No. 95-604, at 2(a), 92 Stat. 3021-22.

<sup>6</sup> AEA Section 11e.(2) (42 U.S.C. § 2014(e)(2) (emphasis added). Previously, “byproduct material” had been defined to mean “any radioactive material (except special nuclear material) yielded or made radioactive by exposure to radiation incident to the process of producing or utilizing special nuclear material.” See 42 U.S.C. § 2014(e)(1). This definition is currently located at Section 11e.(1) of the AEA.

<sup>7</sup> See 57 Fed. Reg. 20,525, 20,526 (1992).

material recovery operations at AEA-licensed uranium mill sites are classified as 11e.(2) byproduct material, including all wastes deposited in a mill site's tailings impoundment.

A second major component of UMTRCA is the requirement that all 11e.(2) byproduct material and the land on which such material is deposited be transferred to the federal government or the State in which the material and land is located for long-term surveillance and monitoring.<sup>8</sup> Section 83 of the AEA, as amended by UMTRCA, states that:

“ownership of any byproduct material, as defined in section 11e.(2), which resulted from such licensed activity shall be transferred to (A) the United States or (B) in the State in which such activity occurred if such State exercises the option under subsection b. (1) to acquire land used for disposal of byproduct material.”<sup>9</sup>

Section 83(b) also provides for this transfer “unless the Commission determines prior to such termination [of a license] that transfer of title to such land and such byproduct material is not necessary or desirable to protect the public health, safety or welfare or to minimize or eliminate danger to life or property.”<sup>10</sup> Further, UMTRCA mandates that the long-term custodian be a general licensee of NRC in perpetuity and that the 11e.(2) byproduct material and its associated land be transferred at no cost to the government custodian.<sup>11</sup>

In 1983, in response to discontent among licensees seeking to propose site-specific *alternatives*, Congress amended Section 84 of the AEA to allow NRC to approve licensee-proposed *alternatives* to the Commission's requirements if the licensee-proposed alternatives provide a level of protection that is “equivalent to, to the extent practicable, or more stringent than” the level of protection afforded by NRC requirements.<sup>12</sup> Congress' 1983 amendments also clarified United States Environmental Protection Agency's (EPA)/NRC's responsibilities under Section 84(a) of the AEA by specifically requiring that EPA/NRC consider environmental and economic costs and balance those costs against potential risks when developing standards and requirements for the management of 11e.(2) byproduct material.<sup>13</sup> In its report on these amendments, the conference committee explained that:

“The conferees are of the view that the economic and environmental costs associated with standards and requirements established by the

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<sup>8</sup> See generally 42 U.S.C. § 2113 *et seq.*

<sup>9</sup> 42 U.S.C. § 2113(a)(2).

<sup>10</sup> 42 U.S.C. § 2113(b)(1)(A).

<sup>11</sup> 42 U.S.C. § 2113(b)(5 & 7). It is also worth noting that UMTRCA provides unique “land status” requirements for 11e.(2) byproduct material produced at facilities under a license in effect on UMTRCA's effective date (i.e., November 8, 1981). As stated in Section 83(b)(4) of the AEA, “the Commission shall take into consideration the status of the ownership of such land and interests therein and the ability of the licensee to transfer title and custody thereof to the United States or a State.”

<sup>12</sup> 52 Fed. Reg. 43, 553 (1987).

<sup>13</sup> Pub. L. No. 97-415 § 22 (1983).

agencies *should bear a reasonable relationship to the benefits expected to be derived.* This recognition is consistent with the accepted approach to establishing radiation protection standards, and reflects the view of the conferees that, in promulgating such general environmental standards and regulations, EPA and NRC should exercise their best independent technical judgment in making such a determination.”<sup>14</sup>

Even though EPA’s *generally applicable standards* promulgated for surface reclamation at both “inactive” and “active” uranium mill sites currently are essentially the same as when promulgated with respect to their control requirements for 11e.(2) byproduct material, the “inactive” and “active” sites standards now deviate significantly with respect to the *generally applicable* groundwater standards originally proposed for “inactive” sites.<sup>15</sup> The current EPA groundwater standards for all uranium mill tailings sites, which are directed at both potential radiological and *non-radiological* (i.e., including hazardous and non-hazardous) constituents, are intended to provide a level of protection for *non-radiological* constituents equivalent to that provided by EPA’s regulations under the Resource Conservation and Recovery Act (RCRA).<sup>16</sup> The groundwater standards are divided into a *primary* standard and a *secondary* standard. The *primary* standard is a *design* standard, requiring the installation of a liner under all new tailings impoundments and under new extensions of existing impoundments. The *secondary* standard is a *performance* standard, requiring that groundwater at the POC (i.e., the downgradient edge of the tailings impoundment) meet background levels or drinking water standards (i.e., maximum contaminant limits “MCLs”), whichever is higher or an ACL which is a site-specific, constituent-specific, risk-based limit that assures that concentrations at an identified POC will result in groundwater constituent concentrations that protect public health, safety, and the environment at the POE.

As noted above, under Section 83 of the AEA, as amended, Congress mandated that title to all 11e.(2) byproduct material and the land(s) on which such material is deposited be transferred to either (1) the United States or (2) the State in which such material is deposited.<sup>17</sup> In each case where a mill tailings site has been transferred for long-term surveillance and monitoring, the site has been transferred to DOE as states generally have not availed themselves of the opportunity to take title to such sites.

As a result, in January of 1998, DOE, in conjunction with NRC, generated a protocol for the transfer to DOE and re-licensing of mill tailings sites by DOE as a general licensee for LTSM following “active” site closure and license termination. This *Working Protocol of Long-Term*

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<sup>14</sup> S. Rep. No. 97-113 (1982), reprinted in 1982 U.S.C.C.A.N. 3592, 3617 (emphasis added); *see also* 10 CFR Part 40, Appendix A, Preamble.

<sup>15</sup> *See* 60 Fed. Reg. 2854 (1995).

<sup>16</sup> 42 U.S.C. § 2114(a)(3).

<sup>17</sup> 42 U.S.C. § 2113(b)(1)(A).

*Licensing of Commercial Uranium Mills* (the "Protocol") sets forth a number of principles for NRC and DOE to follow in affecting the transfer of these sites. For example, the Protocol specifies that NRC will require current licensees to demonstrate that all applicable NRC requirements have been met before the Commission will terminate such licenses.

In 2000, the Commission rendered a final determination regarding the scope of its regulatory authority over 11e.(2) byproduct material at uranium mill sites during active operations and for license termination. In SRM-SECY-99-027, the Commission determined that the AEA confers exclusive, federal preemptive jurisdiction over all components (radiological and *non*-radiological) of 11e.(2) byproduct material. As a result, neither Wyoming nor any other governmental entity has jurisdiction over 11e.(2) byproduct material generated and disposed of at the Highland site, whether such material remains contained in the site's tailings impoundment or has seeped into groundwater and travelled to other areas of the site.

Finally, under the AEA, the Commission has the final "sign-off" authority on whether site closure and license termination are appropriate (i.e., that the licensee has satisfied all relevant NRC requirements).<sup>18</sup> However, the Commission generally has required that DOE be informed of the status of mill tailings sites destined for site closure and license termination and has preferred that DOE concur with NRC's resolution of all site-specific issues such as groundwater containment and monitoring, institutional controls, and engineered barriers. ExxonMobil notes that this "concurrence" policy, while an appropriate exercise of inter-agency courtesy, does not restrict NRC's authority to make final decisions regarding lands necessary for the containment and management of 11e.(2) byproduct material that are binding on DOE. Indeed, on June 20, 1994 and in response to NRC's draft ACL guidance, DOE stated, "[t]he DOE is authorized under the Uranium Mill Tailings Radiation Control Act (UMTRCA) to accept title to the land which is used for the disposal of by-product material.' If that land within a POE is determined by the NRC to be used for the disposal of any by-product material, then the DOE will be able to accept title to the land.'"<sup>19</sup>

When a uranium mill site with 11e.(2) byproduct material has satisfied its Commission-approved reclamation plan, pursuant to 10 CFR § 40.51, the licensee is then required to transfer title to all 11e.(2) byproduct material and the lands within the long-term surveillance site boundary to DOE or the State in which the site is located. This transfer must be completed at no cost to the government (i.e., federal or state government) and must be accompanied by a transfer of funds equal to the amount prescribed in Appendix A, Criterion 10 or to another amount determined by NRC. At the time of transfer, as required by 10 CFR § 40.51(c), DOE or the State possessing the

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<sup>18</sup> *Id.*

<sup>19</sup> See Letter from Albert Chernoff, Project Manager, UMTRA Project Office to Joseph J. Holonich, NRC (June 20, 1994).

site will be a *general* licensee of NRC in perpetuity and subject to all appropriate site-specific conditions set forth in the NRC-approved LTSM plan, as determined by the Commission.<sup>20</sup>

### III. Compliance with Atomic Energy Act Long-Term Surveillance and Monitoring Requirements

#### A. Requests for Alternate Concentration Limits

ExxonMobil is requesting ACLs<sup>21</sup> in accordance with the AEA, as amended, and NRC regulations and guidance. As stated above, 10 CFR Part 40, Appendix A, Criterion 5(b)(5) allows uranium recovery licensees to request ACLs in the event that it can be demonstrated that on a site-specific, constituent-specific basis, the proposed ACL would be adequately protective of public health, safety, and the environment and as low as reasonably achievable (ALARA). Pursuant to applicable NRC guidance, ExxonMobil's proposed ACLs provide for new POC and POEs for the migration of 11e.(2) byproduct material from the reclaimed tailings impoundment to the south and east through the Southeast Drainage and to the west into the Highland Pit Lake.

The major components in NRC's regulatory program for management and control of 11e.(2) byproduct material are found in the "performance-oriented" requirements set forth in 10 CFR Part 40, Appendix A, which have been conformed to EPA's 40 CFR Part 192 "active" uranium mill tailings site standards. In total, Appendix A contains thirteen *Criteria* designed to require licensees to properly locate, manage, and decontaminate and decommission and otherwise prepare their sites for LTSM.

As noted above, NRC's performance-oriented *Criteria* in Appendix A and applicable guidance are specifically designed to allow licensees to take into account site-specific conditions. The Introduction to Appendix A states:

"In many cases, *flexibility* is provided in the criteria to allow achieving an optimum tailings disposal program on a site-specific basis...Licensees or applicants may propose *alternatives* to the specific requirements in this appendix. The *alternative* proposals may take into account local or regional conditions, including geology, topography, hydrology, and meteorology."<sup>22</sup>

Since Appendix A was promulgated with the intention of maintaining *flexible* performance-oriented criteria and Section 84(c) of the AEA as amended by UMTRCA, specifically authorizes licensees to propose alternatives, NRC evaluates site-specific *alternatives* proposed by a licensee

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<sup>20</sup> 10 CFR § 40.51(c).

<sup>21</sup> To the extent that the Highland Pit Lake, as a passive barrier to 11e.(2) byproduct material migration to a point of potential public exposure, does not fit the typical formula of an ACL proposal, ExxonMobil submits its proposal as an alternative under the Preamble to Appendix A.

<sup>22</sup> See 10 CFR Part 40, App. A (emphasis added)

in conjunction with a licensee's operating or decommissioning proposals. As stated in the Introduction to Appendix A:

“the Commission may find that the proposed *alternatives* meet the Commission's requirements if the *alternatives* will achieve a level of stabilization and containment of the sites concerned, and a level of protection for public health, safety, and the environment from radiological and non-radiological hazards associated with the sites, which is equivalent, to the extent practicable, or *more* stringent than the level which would be achieved by the requirements of this appendix and the standards promulgated by the Environmental Protection Agency in 40 CFR Part 192, subparts D and E.”<sup>23</sup>

With respect to ACLs, Appendix A, Criterion 5(B)(5) sets forth the Commission's requirements for groundwater protection at 11e.(2) byproduct material disposal sites. Criterion 5 incorporates the basic groundwater protection standards as promulgated by EPA in 40 CFR Part 192, Subparts D & E, which incorporates RCRA standards in 40 CFR Part 264 *et. seq.* and which apply both during operations and to final closure. As noted above, Criterion 5 prescribes a specific course of action for implementing *primary* and *secondary* groundwater standards which include provisions for ACLs, the classification of hazardous constituents, and whether they may be exempted from regulation.

For purposes of NRC's Criterion 5(B)(5) requirements, an ACL is a site-specific, constituent-specific, risk-based standard that requires an affirmative demonstration by a licensee that revising the site-specific groundwater standard to the proposed ACL will adequately protect public health, safety and the environment at the POE and is ALARA. That is, according to NRC requirements, an ACL can be granted if the licensee demonstrates that: (1) the hazardous constituent(s) will not pose a *substantial* present nor potential hazard to human health or the environment at the POE as long as the ACL is not exceeded and (2) the proposed ACL value is as low as reasonably achievable (ALARA), after considering practicable corrective actions.<sup>24</sup> For this reason, ExxonMobil's proposed ACLs include a newly proposed or amended POC and new POEs.

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<sup>23</sup> To be successful, licensee-proposed *alternatives* to NRC or EPA regulatory *requirements* likely will require substantial justification, thorough review by NRC Staff, a public hearing, and, ultimately, a decision by the Commission. (emphasis added).

<sup>24</sup> In implementing Appendix A Criteria, the Commission will consider the terms “practicable” and “reasonably achievable” as equivalent. In addition, decisions involving the use of these terms will account for the current state of technology and economic improvements in relation to benefits to public health and safety and other societal considerations and the utilization of atomic energy in the public interest. See 10 CFR Part 40, Appendix A, Preamble.

**B. Classification of Highland Pit Lake Material as 11e.(2) Byproduct Material and Determination that the Highland Pit Lake Properly Belongs Within Final LTSM Boundary for Transfer to DOE**

ExxonMobil's request for a determination that, due to the 11e.(2) byproduct material constituents (both radiological and *non*-radiological) contained in the Highland Pit Lake, it is necessary for the control of such materials to include the Highland Pit Lake in the future LTSM boundary is consistent with the AEA, as amended, and NRC regulations and guidance, including NRC precedent for closure of other uranium milling sites. As noted above, the Commission has the final "sign-off" on site closure, license termination and transfer of *all* the land necessary for LTSM of 11e.(2) byproduct material in accordance with the AEA, as amended by UMTRCA.<sup>25</sup>

Appendix A specifically provides a licensee the right to propose ACLs in accordance with Criterion 5(B)(5) or *alternatives* to such requirements. With that said, for any ACL or alternative associated with the LTSM of 11e.(2) byproduct material, the benchmark standard for determining the lands to be transferred to DOE for LTSM is that DOE must receive all 11e.(2) byproduct material and the lands associated with its containment and management.

Appendix A also provides NRC Staff with the discretion to use flexibility when evaluating a licensee's compliance with its Criteria, including the use of alternatives. Given the highly site-specific nature of uranium recovery facilities, it is imperative that NRC Staff take into account all site-specific aspects of such facilities when determining whether proposed site closure methodologies are adequately protective of public health and safety. NRC's recognition that flexibility is an essential component of Appendix A and that a licensee has the right to propose an alternative have been demonstrate at least two Commission-approved examples where site-specific processes and conditions have played critical roles in its site closure evaluations. ExxonMobil's proposed ACLs or alternative are consistent with such prior decisions and, therefore, with the AEA, as amended by UMTRCA, and the Commission's 10 CFR Part 40, Appendix A requirements.

The Commission has, on at least one occasion, determined that lands containing co-mingled 11e.(2) and non-11e.(2) byproduct material are eligible as a whole to be considered 11e.(2) byproduct material eligible for transfer to DOE for LTSM and on another occasion that licensee-proposed alternatives regarding *all* lands necessary for LTSM of 11e.(2) byproduct material some of which did not involve transfer of title in *fee simple* are acceptable.

**1. Sequoyah Fuels Corporation**

Sequoyah Fuels Corporation (SFC) operated a uranium conversion facility that received yellowcake that was converted into UF<sub>6</sub> for use in the commercial nuclear fuel production cycle.

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<sup>25</sup> *Id.*

During front-end site process operations, yellowcake received by SFC required additional concentration/purification to meet final specifications for conversion to UF<sub>6</sub> and the process generated wastes that contained both radiological and *non*-radiological components. SFC asserted that these front-end wastes were generated by the functional equivalent of uranium milling. The definition of uranium milling at 10 CFR Part 40.4<sup>26</sup> recognizes that it does not necessarily have to take place at a conventional uranium mill. Accordingly, SFC argued that the front-end concentration/purification of source material primarily for its source material content generated 11e.(2) byproduct material. At the conclusion of active operations, seventy-eight (78) percent of the mass and ninety-two (92) percent of the radiological content generated was from the front-end concentration/purification process and hence was alleged by SFC to be 11e.(2) byproduct material.

SFC submitted a request for legal determination to NRC Staff arguing that, due to the substantial amount of 11e.(2) byproduct material in its waste disposal facilities, the entirety of the wastes should be classified as 11e.(2) byproduct material and, thus, would be suitable for transfer to DOE for LTSM. After review of SFC's proposal, NRC Staff recommended to the Commission that, as a matter of law, the front-end concentration/purification wastes could be classified as 11e.(2) byproduct material and suitable for transfer to DOE for LTSM. More specifically, NRC Staff stated, "[t]his option provides a more certain resolution of long-term control for most, if not all, of SFC's waste, by using DOE as the long-term custodian under UMTRCA, if these wastes are left on-site." NRC Staff made the legal determination that, despite the presence of some *non*-11e.(2) byproduct material in these site waste storage facilities, the 11e.(2) byproduct material present and the land associated with its safe containment and management could be transferred to a long-term custodian (e.g., DOE) because it was Congress' intent under UMTRCA to ensure that *all* wastes associated with uranium milling processes are safely contained and managed in perpetuity.<sup>27</sup>

With respect to the Highland Pit Lake, ExxonMobil's license amendment application provides substantial evidence that 11e.(2) byproduct material from the site mill tailings disposal facility has migrated from the disposal facility through a subsurface groundwater plume into the Pit Lake and that there is a secondary source term (i.e., the backfilled areas) and a subsurface pathway through which 11e.(2) byproduct material will continue to migrate. As the 11e.(2) byproduct material migrated to the Highland Pit Lake, it also became co-mingled with water contained in the backfill in the previous surface mining areas. Like SFC, the Highland Pit Lake contains 11e.(2) byproduct material generated during NRC-licensed milling operations as well as materials that can be classified as *non*-11e.(2) byproduct material. In addition, the 11e.(2) byproduct

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<sup>26</sup> 10 CFR Part 40.4 defines "uranium milling" as "means any activity that results in the production of byproduct material as defined in this part.

<sup>27</sup> In its decision, the Commission also noted that any wastes not classified as 11e.(2) byproduct material could be taken by DOE in accordance with Section 151(b) of the Nuclear Waste Policy Act.

material constituents that are migrating to or have migrated from the former mill tailings impoundment to the Highland Pit lake do not require re-classification by NRC as was case with SFC. This 11e.(2) byproduct material requires LTSM by DOE or the State of Wyoming. Thus, consistent with the goals of Congress in enacting UMTRCA which is to contain and manage *all* 11e.(2) byproduct material, it is appropriate that NRC Staff recognize the presence of 11e.(2) byproduct material and approve inclusion of the Pit Lake in the final Highland site LTSM.

## **2. Western Nuclear, Inc.**

NRC has previously determined that a significant amount of additional land under which a plume containing 11e.(2) byproduct material in groundwater flow from a mill tailings disposal facility should be included within a proposed final site boundary for transfer to DOE for LTSM. Western Nuclear, Inc (WNI), a former uranium milling licensee at the Split Rock, Wyoming mill site, identified a groundwater plume of 11e.(2) byproduct material migrating from both its site mill tailings disposal facility and from a secondary source term outside the tailings impoundment footprint. The plume was migrating through and towards several sections of land that were never part of the NRC-licensed site footprint. WNI requested that NRC Staff approve a license termination proposal that included all land parcels under which 11e.(2) byproduct material was identified as being present in excess of regulatory limits, as well as all parcels under which such material would migrate during the mandatory site control period (200 and, to the extent practicable, 1,000 years) as mandated by 10 CFR Part 40, Appendix A Criterion 6. WNI provided NRC Staff with detailed groundwater modeling and proposed LTSM boundaries, which would provide reasonable assurance that all parcels of land containing 11e.(2) byproduct material in groundwater could be transferred to DOE for LTSM.

WNI's proposed LTSM boundary ultimately, as approved by the Commission, included parcels of land for which WNI was unable to obtain *fee simple* title. The owners of these parcels retained *fee simple* title to their land but for appropriate compensation granted legal covenants (i.e., easements) running with the land restricting use of groundwater for domestic (drinking water) purposes. Since there were no explicit provisions in UMTRCA or 10 CFR Part 40, Appendix A allowing for such easements, WNI proposed an alternative asserting that such easements would be *durable institutional controls* that would be necessary to make the site closure process possible; ultimately, the Commission approved WNI's proposed alternatives to fee simple transfer of affected lands.

## **V. Conclusion**

As stated in the discussion above, ExxonMobil seeks NRC Staff approval of new and revised ACLs and an "alternative" pursuant to NRC regulations at 10 CFR Part 40, Appendix A's Preamble and performance-oriented Criteria. As shown in both the SFC and WNI examples

discussed above, flexible approaches have been employed to assure site closure and license termination in accordance with the goals of NRC's statutory mandate under the AEA, as amended by UMTRCA. ExxonMobil's license amendment application, as well as the detailed site-specific data and analyses for the Highland site offered therein, demonstrates that ExxonMobil's license amendment application is in accordance with NRC regulations and Commission precedent.

For the reasons discussed above, ExxonMobil hereby requests that NRC Staff approve the proposed licensing actions delineated in its license amendment application. Should NRC Staff have any questions regarding the contents of this license amendment application, please do not hesitate to contact me at (281) 654-8458 at your convenience. Thank you for your time and assistance in this matter and I look forward to working with you in the future on our application.

Sincerely,



Mahesh Vidyasagar  
Project Manager

Enclosures (Completed NRC Form 313; License Amendment Application)

CC: Paul Michalak, NRC (1 complete copy)  
Tom McLaughlin, NRC (1 complete copy, 2 additional copies of license amendment application)  
Document Control Desk, NRC (1 complete copy)  
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