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February 23, 2010

Michael T. Lesar, Chief
Rulemaking and Directives Branch
Division of Administrative Services, Office of Administration
Mail Stop: TWB-05-B01M
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

RE: Comments on Draft Supplemental Environmental Impact Statement (SEIS) for the Moore Ranch ISR Project in Campbell County, WY, Supplement 1 to the Generic EIS for In-Situ Leach Uranium Milling Facilities (NUREG-1910, Supplement 1)

Dear Mr. Lesar:

On December 11, 2009, the U.S. Nuclear Regulatory Commission (NRC) staff requested comments on the Draft Supplemental Environmental Impact Statement (SEIS) for the Moore Ranch ISR Project in Campbell County, WY. The draft SEIS was published as Supplement 1 to the Generic EIS for In-Situ Leach Uranium Milling Facilities (NUREG-1910, Supplement 1). Uranium One has reviewed the draft SEIS and provides the attached comments.

If you should have any questions concerning these comments, please contact me by phone at (307) 234-8235 ext. 331 or by email at jon.winter@uranium1.com.

Sincerely,
Uranium One Americas



Jon Winter
Manager of Environmental and Regulatory Affairs, Wyoming

SONSI Review Complete
Template = ADM-013

E-REDS = ADM-03
Add. = B. Shroff (bfs2)

P. Swain (pba)



Comments on:

NUREG-1910, Supplement 1

**Environmental Impact Statement for the
Moore Ranch ISR Project
In
Campbell County, Wyoming**

**Supplement to the
Generic Environmental Impact Statement
for
In-Situ Leach Uranium Milling Facilities**

Draft Report for Comment

December 2009

Prepared By: Uranium One Americas
907 North Poplar, Suite 260
Casper, Wyoming 82601

INTRODUCTION

In December 2009, the U.S. Nuclear Regulatory Commission (NRC) published a draft report for comment entitled "Environmental Impact Statement for the Moore Ranch ISR Project in Campbell County, Wyoming". This document is published as Supplement 1 to NUREG-1910, "Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities", which was originally published in May 2009. NRC solicited comments on the draft report (known as a Supplemental Environmental Impact Statement or SEIS) from the applicant (Energy Metals Corp. dba Uranium One Americas at the time of submittal), various government agencies, and the public. Comments are due by February 1, 2010.

The following are comments prepared by Uranium One Americas (Uranium One) after careful review of the draft report. Comments are organized by document section. General comments on a section (if any) are provided followed by specific comments listed by page and line number to facilitate NRC review.

ABSTRACT

Page iii, Line 9: Line 9 begins "In June May 2009..." NUREG-1910 was issued in May 2009.

EXECUTIVE SUMMARY

General Comments

- General Comment 1: Throughout this section, NRC states that the application is for a new “source material license”. Uranium One notes that the license will also need to authorize possession of byproduct material as defined in section 11e.(2) of the Atomic Energy Act as amended. The license should be referred to as a materials license authorizing the possession of source and byproduct material.
- General Comment 2: NRC’s description of its statutory mission should be changed to reflect the fact that it is responsible for protecting public health and safety from AEA materials and operations.
- General Comment 3: Throughout this section and the remainder of the SEIS, NRC should use the terms “proposed” and “potential” when referring to the proposed action and the impacts analyzed.
- General Comment 4: It would be helpful for the public if NRC provided a discussion of how highly regulated Moore Ranch ISR operations are and how many different statutory and regulatory programs apply. Uranium One understands that NUREG-1910 contains a detailed discussion of these complimentary regulatory programs but it would be helpful to provide a site-specific discussion related to Moore Ranch to demonstrate that protection of public health and safety and the environment will be assured.
- General Comment 5: It would be helpful for the public if NRC provided a detailed discussion of the licensing process that has been used for the Moore Ranch project. This includes the safety and environmental reviews of the application by NRC staff, the public participation processes, the issuance of Requests for Additional Information and identification of Open Issues, culminating in publication of the draft SEIS.

Specific Comments

- Page xiii, Line 9: This line notes the project would include “...two deep disposal wells...” Note that the application for a Class I UIC permit submitted to the Wyoming Department of Environmental Quality (WDEQ) envisions two deep disposal wells if injection is authorized in the Lance Formation. However, due to formation characteristics, if the Tecla\Teapot\Parkman (TTP) Formation is permitted by the WDEQ, authorization for four deep wells is sought.
- Page xiii, Line 20: The line states “...in June 2009...” NUREG-1910 was actually published in May 2009.

- Page xiv, Line 10: The line states that the city of Gillette is located 53 miles from the project. The Environmental Report states that Gillette is located 54 miles from the project.
- Page xiv, Line 11: The line states that the city of Casper is located 53 miles from the project. The Environmental Report states that Casper is located 52 miles from the project.
- Page xiv, Line 25: A generic description of ISR operations should not make the blanket statement that all pipelines are buried at these sites. This depends on the geographic location of the particular project.
- Page xiv, Line 27: The term “leached from solution” is technically incorrect and should be revised to state “removed from solution.”
- Page xiv, Line 35: The lines states that Uranium One has proposed five-spot patterns for Moore Ranch. The Environmental Report in Section 2.2.7 states that alternative patterns may be used. Note that NRC recognizes the potential for alternate pattern designs later in the SEIS on Page 2-8, Line 20.
- Page xiv, Line 41: In statements such as this, NRC needs to make clear how these types of activities are regulated. In this example, NRC should add that this activity is done in compliance with NRC and DOT regulations.
- Page xv, Line 8: The SEIS also evaluates potential public health and safety impacts or the document would not include impact analyses of items such as public and occupational health.
- Page xvi, Line 9: Socioeconomic impacts or effects need to be divided up-front into a positive and negative category.
- Page xvii, Line 11: NRC notes that “...potential impact to land use would diminish...” as aquifer restoration proceeds. Land use restrictions in the affected areas would not be lifted until successful surface reclamation, decommissioning, and NRC approval have been completed.
- Page xvii, Line 42: NRC notes that earthmoving would include the “...removal of top soil covering about 61 ha (150 ac).” Uranium One has no intention of removing top soil from the entire affected area, which is 150 acres. Please see Section 4.3.2 of the Environmental Report, which states that no top soil would be stripped in wellfield areas. Top soil stripping activities in wellfields would be limited to header house areas and access roads.

- Page xviii, Line 6: The statement that the removal of uranium from the ore body would result in a “permanent change” to the uranium-bearing rock most likely is not correct.
- Page xviii, Line 41: NRC states that there would be no impact to surface water during aquifer restoration because waste water would be disposed of via deep well injection. Uranium One notes that this is also true of the operation phase of the project.
- Page xix, Line 9: NRC states that the primary impact to groundwater during construction would be from consumptive use. Uranium One notes that there would be little consumptive use during construction, particularly when compared to the operation and aquifer restoration phases, since use of site water resources during construction would be limited to the water needed for well drilling and dust suppression activities. The SEIS notes this later in Section 4.5.2.1.1, page 4-23, beginning at line 34.
- Page xix, Line 11: NRC states that groundwater could be impacted during construction due to surface spills that could potentially migrate to groundwater. Uranium One notes that during the construction phase, radioactive materials will not be produced and hazardous chemicals will not be on site with the exception of petroleum products used as fuel. The SEIS notes this later in Section 4.5.2.1.1, page 4-24, beginning at line 15.
- Page xix, Line 11: NRC states that the consumptive use of groundwater would be from an “...aquifer located deeper than the proposed mining zone”. The Environmental Report did not state this and, in fact, the water used during construction may be from an aquifer located above or below the proposed mining zone depending on the availability of adequate water supplies.
- Page xix, Line 24: NRC states that there are “...no wells for domestic, agricultural, or livestock use...within the proposed license area”. This is not accurate. Please see Section 3.4.1.2 of the Environmental Report.
- Page xix, Line 30: The word “with” should be “within”.
- Page xix, Line 41: “...into a Class I disposal permitted...” should be revised to “...into Class I disposal wells permitted...” The project will require two wells if the Lance Formation is the injection zone and four wells if the Teckla\Teapot\Parkman formation is chosen.
- Page xix, Line 43: NRC states that the groundwater formations considered for deep well injection must not be a potential underground source of drinking water “...meaning that the total dissolved solids must exceed 3,000 parts per million...” This is actually an incomplete definition of the criteria for designation of an aquifer as a non-USDW. NRC is referred to WDEQ-

Water Quality Division regulations covering Class I disposal wells in Chapter VIII.

This sentence goes on to note that the ore production zone is in an exempted aquifer. Considering that the topic of this paragraph is liquid waste disposal, this statement does not seem to have a bearing on the subject.

- Page xix, Line 46: The word “conumption” should be “consumption”
- Page xx, Line 5: NRC should state here that “excursions” are less likely during aquifer restoration than during operations.
- Page xx, Line 35: NRC states that “Wyoming Fish and Game Department (WFGD) guidelines regarding noise, vehicular traffic, and human proximity would be observed during the construction phase”. Detailed Uranium One comments on this commitment are discussed in the comments prepared for Section 4.6 of the SEIS.
- Page xx, Line 37: The sentence states: “No threatened or endangered species are known to occur in within the proposed license area”. The word “in” should be deleted.
- Page xxi, Line 14: The end of the sentence beginning on Line 9 states that “... the distance to the nearest resident who is located miles beyond 304 m (1,000 ft)”. The miles to the nearest resident are not provided. Note that Section 3.1.2 of the Environmental Report provides that the nearest resident is located 4.3 miles east of the plant site.
- Page xxi, Line 19: The sentences states: “Less vehicular traffic would be required during the aquifer restoration phase than during operations because there would be fewer yellowcake shipments than during operations” Uranium One notes that for completeness, the NRC should also note that traffic associated with the delivery of process chemicals will also diminish during aquifer restoration.
- Page xxi, Line 37: The sentence states: “The nearest resident would not notice a change in noise at their location approximately 4.5 km (2.8 mi) east of the site”. Uranium One notes that in the discussion in the previous paragraph on noise during construction, the NRC stated that the nearest resident is “...approximately 4.5 km (2.8 mi) east of the *proposed Moore Ranch licensed area boundary*” (emphasis added). This statement is more correct than using the term “site”. The nearest resident is actually located 4.3 miles east of the plant site (which would be the source of the noise), as discussed in Section 3.1.2 of the Environmental Report.

- Page xxii, Line 4: The sentence states: “Noise during this phase would be temporary, and once decommissioning and reclamation activities were complete, the noise level would return to baseline, with occasional vehicular traffic for long-term monitoring activities”. Note that there are no long-term monitoring activities proposed for the Moore Ranch project and that these are not typically associated with ISR projects. The site will be released for previous use with no restrictions following license termination by the NRC.
- Page xxii, Line 12: The sentence states: “The identified eligible sites would be avoided and, therefore, there would be no impact”. While technically correct, Uranium One notes that the nearest eligible site is located over one mile away from the current proposed areas of surface disturbance.
- Page xxii, Line 13: The sentence states: “If any identified historic or cultural resources were encountered during the construction phase of the proposed Moore Ranch Project they would be evaluated following procedures in an Unidentified Discovery Plan that would be developed prior to initiation of construction”. Uranium One has several comments on this sentence. First, the application did not propose the preparation of an Unidentified Discovery Plan and is not aware of any NRC guidance that discusses the contents or requirements of such a plan. Additionally, this requirement is not discussed later in Section 4.9 of the SEIS, which provides the details of this analysis. Finally, an Unidentified Discovery Plan would not be necessary “...If any *identified* historic or cultural resources were encountered” (emphasis added). A similar comment applies to the sentences that begin on page xxii, Line 19 and Line 28. NRC should state that this is typically done through a license condition or commitment by the applicant/licensee.
- Page xxii, Line 38: The sentence states: “Best management practices such as dust suppression and coloration of well covers would be used to further mitigate the potential impact”. The application proposes dust suppression when necessary to mitigate air quality impacts. It is not proposed as a mitigation technique for visual resource impacts.
- Page xxiii, Line 27: The sentence states: “The local economy would experience a MODERATE impact from the purchasing of local goods and services and taxes derived from construction equipment and other construction-related activities”. Uranium One notes that this section summarizes impacts from Operations and the discussion of “construction equipment and other construction-related activities” would appear to be inappropriate.
- Page xxiv, Line 33: The sentence states: “Two Class 1 deep disposal wells permitted by the WDEQ and reviewed by the NRC would be drilled on site for disposal of liquid effluent wastes”. Uranium One notes that up to four Class I deep

disposal wells may be required depending on the target formation, as NRC discusses in Section 4.5.2.1.2.3 of the SEIS.

Page xxiv, Line 42: NRC should clarify that management of equipment, materials, and buildings may also include disposal as byproduct material at a licensed facility. While Uranium One will try to minimize the quantity of byproduct material generated during decommissioning through reuse or decontamination, the potential for disposal as byproduct material should be identified as a potential impact.

Page xxvi, Line 1: NRC states: "The NRC staff finds that, unless safety issues mandate otherwise, environmental impacts of the proposed action (issuing a source material license for the proposed Moore Ranch Project) are not so great as to make issuance of a source material license an unreasonable licensing decision". Uranium One notes that this seems to be a negative endorsement of the analysis completed in this SEIS. NRC has concluded that virtually all of the impacts associated with the Moore Ranch project would be SMALL and that there would be no long term affects. Assuming that there are no significant safety issues identified by NRC in the Safety Evaluation Report that would require denial of a license then issuance of a license is a reasonable action by NRC that will help provide an important energy source. Uranium One notes that the Preamble to 10 CFR Part 51 states that NEPA reviews do not rule out actions that have potentially significant impacts or even requires actions that have the least potential impacts. So, where NEPA review identified impacts that are SMALL and an SER and license conditions demonstrate adequate protection of public health and safety and the environment, NRC has to issue the license.

NRC should look to the Hydro Resources, Inc. Final Environmental Impact Statement (NUREG-1508) for more affirmative, positive language on this. See page xxi of NUREG-1508 for appropriate language such as, "NRC Staff concludes that the potential significant impacts of the proposed project can be mitigated and that HRI should be issued a combined source and 11e.(2) byproduct material license from NRC....".

SECTION 1 INTRODUCTION

- Page 1-1, Line 3: Note this is a “draft SEIS.”
- Page 1-2, Line 37: NRC should describe its “targeted scoping” in more detail and emphasize that, while not mandatory under Part 51, it was conducted to provide interested stakeholders with an opportunity to provide public comments.
- Page 1-2, Line 44: NRC needs to make clear that additional opportunities for public participation were offered including any public meetings and teleconferences.
- Page 1-3, Line 6: NRC should note this is also a “site-specific” evaluation.
- Page 1-4, Line 7: NRC states: “Therefore, although all of the environmental resource areas identified in the GEIS will be addressed in site-specific reviews, certain resource areas would require a more detailed analysis, because the GEIS analysis found a range in potential impacts (e.g., SMALL to MODERATE, SMALL to LARGE) depending upon site-specific conditions (see Table 1-1)”. The list of resource areas in this section includes surface water. Uranium One notes that in Table 1-1, the potential impacts to surface water from all phases are listed as “S” (i.e., SMALL).
- Page 1-4, Line 37: This line states that NUREG-1910 was issued in June 2009. It was actually published in May 2009.
- Page 1-5, Line 39: Applicable regulatory requirements include many more regulatory provisions other than 10 CFR Part 51. 10 CFR Parts 20 and 40, Appendix A, as well as guidance and regulatory guides should also be mentioned.
- Page 1-6, Line 29: NRC should also mention applicable guidance and regulatory guides used for completion of the environmental review, where appropriate.
- Page 1-6, Lines 31: NRC should also mention that requests for additional information (RAIs) were issued for the license application and that Uranium One responded to these requests. In addition, NRC has requested other information in the draft Safety Evaluation Report (SER) “open items” phase.
- Page 1-7, Table 1-2: NRC needs to make sure that its Tables are all updated when the final SEIS is issued.
- Page 1-7, Line 7: This is the first example of where NRC should use the term “milling” or “uranium recovery” if it is going to regulate the activity under the AEA.
- Page 1-8, Line 32: NRC should reference the reports submitted by Uranium One on this issue as an aid to the consultations.

- Page 1-9, Line 11: Although the Bureau of Land Management (BLM) is not involved in the review of the Moore Ranch project (as noted in Line 10), NRC should update the BLM Memorandum of Understanding (MOU) status by stating that it has been finalized (see January 8, 2010, Federal Register notice <http://edocket.access.gpo.gov/2010/pdf/2010-116.pdf>) and what provisions of the MOU are applicable to the Moore Ranch project review.
- Page 1-9, Line 21: This paragraph discusses consultation with the BLM performed in January 2009. Throughout the discussion reference is made to “ISR sites”. While Uranium One recognizes that these discussions with BLM were related to several licensing actions under review by NRC, in the context of this SEIS, the discussion should be specific to the proposed Moore Ranch project.
- Page 1-10, Line 23: NRC states: “The WDEQ expressed concern related to reclamation and restoration, and noted that groundwater quality should be returned to baseline conditions”. The minutes of the meeting held with WDEQ in Cheyenne, Wyoming on January 12, 2009 note that groundwater restoration was discussed but do not indicate that WDEQ “expressed concern” that groundwater should be restored to baseline. Uranium One notes that the groundwater restoration requirements by statute and regulation in the State of Wyoming require restoration to Class of Use and not baseline. Under the Wyoming program, restoration to class of use is deemed protective of the groundwater resources in the State. While the WDEQ may have made this statement in the consultation with NRC, it is not in conformance with the regulatory requirements in Wyoming. Therefore, unless the Wyoming statutes and regulations were amended by legislative and agency action, this concern by WDEQ should be treated as an opinion of the WDEQ staff, which has no place in an environmental impact statement. NRC should clarify this point in the discussion.
- Page 1-10, Line 32: NRC notes that a meeting was held with WDEQ-LQD on January 14, 2009. For clarity, they should note that this meeting was held with WDEQ District 3 staff in Sheridan, Wyoming.
- Page 1-10, Line 35: The sentence states: “WDEQ-LQD staff also stated that groundwater parameters affected by ISR operations need to be restored to original background levels”. Uranium One notes that the minutes contained in Appendix A do not note this discussion and reiterate the comment noted above that if the District 3 WDEQ staff took such a position, it reflects personal opinions and not the statutory and regulatory requirements of the State of Wyoming.
- Page 1-11, Line 12: The word “form” should be “from”.

SECTION 2 IN-SITU URANIUM RECOVERY AND ALTERNATIVES

- Page 2-1, Line 18: NRC should note that its SEIS also took into account a review of the applicant's technical report and consultations with Uranium Recovery Branch staff on its technical review.
- Page 2-3, Line 10: The sentence states: "In addition, under the proposed action two Underground Injection Control (UIC) Class I injection wells would also be drilled for disposal of liquid effluent generated from production bleed, from restoration (reverse osmosis brine), and from miscellaneous plant wastewater". As previously noted, up to four Class I injection wells may be required depending on the final target injection zone selected for the disposal wells.
- Page 2-3, Line 17: The discussion concerning the required Class I injection wells should be corrected to reflect the information submitted by Uranium One in response to RAI question 4.4.2 Number 2 submitted on August 27, 2009. In addition, the proposed locations should be revised to reflect the information submitted to NRC in response to draft Safety Evaluation Report Non-hydrology Open Issue Number 6 from the May 11, 2009 teleconference.
- Page 2-3, Line 38: NRC should add a statement that construction of an ISR facility is small compared to other industrial projects as stated in the Uranerz Nichols Ranch SEIS at 2-3, Line 12.
- Page 2-2, Figure 2-1: Uranium One notes that Figure 2-1 does not reflect the most recent information submitted to NRC. The Central Processing Plant location and layout is based on the original license application. The proposed location and layout of the Central Plant has been revised as discussed in the response to Environmental Report RAI Section 2.5 question number 1 submitted to NRC by letter dated June 19, 2009 and is shown on the revised Figure 2.5-1 contained with that submittal (reference Uranium One 2009a in SEIS Section 2).
- Page 2-5, Line 2: NRC should specifically reference any secondary containment on all facilities, including berms and/or curbs. This comment applies throughout the document.
- Page 2-5, Line 24: The sentence that begins on this line discusses anhydrous ammonia at Moore Ranch. As discussed in the response to Environmental Report RAI 4.12.1.2, Number 3 submitted on August 27, 2009, Uranium One has decided that anhydrous ammonia will not be used at Moore Ranch and requests that all reference to anhydrous ammonia in the SEIS be deleted.

- Page 2-5, Line 30: In referring to the sulfuric acid, anhydrous ammonia, and hydrogen peroxide storage tanks, the NRC states: "These tanks would all be located separately from each other to minimize the potential for chemical reactions and enclosed to limit the amount of vapors released to the atmosphere". Uranium One has two comments on this sentence. As noted in the previous comment, Uranium One has decided that anhydrous ammonia will not be used at Moore Ranch and requests that this reference be deleted. In addition, the sentence seems to infer that these chemical storage tanks will be enclosed within a structure. If that is NRC's understanding, it is incorrect. The tanks will be located outside the plant structure and will not be within a building.
- Page 2-7, Figure 2-4: Similar to the comment on Figure 2-1 above, Uranium One notes that Figure 2-4 does not reflect the most recent information submitted to NRC concerning the Central Processing Plant location and layout (reference Uranium One 2009a in SEIS Section 2).
- Page 2-8, Line 11: Another example of where the term "mining" should be replaced with "milling."
- Page 2-8, Line 26: NRC provides specific details concerning the current monitor, injection, and production wells planned for Wellfields 1 and 2 and references Uranium One 2008 as the source of this information. This information was actually submitted to NRC by letter dated June 19, 2009 and was shown on the revised Figure 2.5-1 contained with that submittal (reference Uranium One 2009a in SEIS Section 2).
- Page 2-8, Line 42: The sentence states: "Approximately eight header houses have been proposed for Wellfield 1 and 11 header houses have been proposed for Wellfield 2 (Uranium One, 2009a)". The correct number of header houses proposed for Wellfields 1 and 2 are approximately five and eight, respectively, as shown on revised Figure 2.5-1.
- Page 2-9, Line 33: Uranium One notes that Section 2.1.1.2, Construction Activities, does not include a description of all construction activities similar to section 2.1.1.2 of the Uranerz Nichols Ranch SEIS. Specifically, there is no discussion of well construction and testing methods or other structures and systems in this section of the Moore Ranch SEIS. This additional information would help to better describe the Proposed Action.
- Page 2-9, Line 41: Uranium One notes that Section 2.1.1.3, Operation Activities, does not include a description of waste management similar to section 2.1.1.3.3 in the Uranerz Nichols Ranch SEIS (at 2-18). This additional information would help to better describe the Proposed Action.

- Page 2-10, Line 10: This section discusses uranium mobilization. However, the introductory paragraph beginning on line 12 mentions “(2) loading of uranium complexes onto ion exchange resin; (3) reconstitution of the recovery solution by addition of carbon dioxide and/or sodium bicarbonate and an oxidant; (4) elution (recovery) of uranium complexes from the resin, and (5) precipitation of uranium (EMC, 2007b)”. These processes are not part of the uranium mobilization process and are discussed in subsequent sections of the SEIS.
- Page 2-12, Line 16: The sentence states: “Uranium One proposes to install monitor wells both within the mineralized portion of the ore zone and in a ring outside the ore zone around the well fields to monitor for excursions”. Uranium One notes that the wells installed “within the mineralized portion of the ore zone” are identified as “restoration” wells in order to differentiate them from monitor wells. The purpose of these restoration wells within the ore zone is to establish baseline water quality information and to determine whether restoration standards are met after aquifer restoration. These wells are not used to detect excursions.
- Page 2-12, Line 26: The sentence states: “As described in NRC guidance (NRC, 2003a, Section 5.7.8.3), licensees typically retrieve horizontal and vertical excursions back into the production zone by adjusting the flow rates of the nearby injection and production wells to increase process bleed in the area of the excursion”. The words “and vertical” should be deleted because adjusting flow rates to increase process bleed is not an effective method for recovering vertical excursions.
- Page 2-12, Line 34: The sentence states: “NRC license conditions require that licensees conduct biweekly sampling to detect excursions”. Uranium One notes that the Moore Ranch application (Environmental Report Section 6.3.2.6) proposes semimonthly sampling and that this frequency is approved in existing ISR licenses (e.g., SUA-1548 for the Smith Ranch/Highland Uranium Project).
- Page 2-12, Line 44: NRC should emphasize that downflow IX columns as a technology provide additional protection for public and occupational health when compared to upflow atmospheric IX columns due to containment of a significant fraction of the radon gas in solution.
- Page 2-14, Line 24: NRC needs to emphasize how baseline water quality for excursion detection and restoration is determined and that it is done in two phases. Initial water quality is determined prior to the submission of a license application and further wellfield delineation and determination of restoration standards and upper control limits (UCLs) are determined after license issuance.

- Page 2-14, Line 35: In the sentence beginning on this line, delete repeated words “in each”. There also needs to be a more precise description of the Appendix A Criterion 5(B)(5) standards for groundwater restoration. NRC should clearly state that the standards are baseline or an MCL, whichever is higher, or an ACL and describe what an ACL is.
- Page 2-15, Line 22: The reference EMC, 2007a is provided for this discussion. This data was actually provided in response to Technical Report RAI item 2-6 question f submitted to NRC on October 27, 2008.
- Page 2-16, Line 25: The sentence states: “Ion exchange, reverse osmosis, or electro dialysis reversal treatment equipment have been proposed for use during the groundwater treatment phase of the Moore Ranch Project” The sentence should be revised to state: “Ion exchange, reverse osmosis, *and/or* electro dialysis reversal treatment...”
- Page 2-16, Line 28: The sentence states: “During this phase of aquifer restoration, groundwater recovered from the restoration well field is passed through an ion exchange system via either reverse osmosis or electro dialysis reversal prior to treatment to the majority of the contained soluble uranium for chloride or sulfate”. This sentence is incorrect and should be revised to state: “During this phase of aquifer restoration, groundwater recovered from the restoration well field is passed through ion exchange prior to reverse osmosis or electro dialysis reversal treatment. IX exchanges the majority of the contained soluble uranium for chloride”. Please note that although the Moore Ranch license application discusses the use of ion exchange resin in the sulfate form for completeness, the specific process description and material balance for Moore Ranch describes the use of sodium chloride for elution followed by a sodium bicarbonate rinse. See Moore Ranch License Application Environmental Report Section 2.3.1.2.
- Page 2-17, Line 1: The sentence states: “Make-up water, which could come from water produced from a well field that is in a more advanced state of restoration, water being exchanged with a new mining unit, water being pumped from a different aquifer, the purge of an operating well field or a combination of these sources, could be added prior to the reverse osmosis or well field injection stream to control the amount of "bleed" in the restoration area”. Please remove the phrase “...water being pumped from a different aquifer...” This will be removed from the revised license application in response to a comment received from the WDEQ on the Moore Ranch Permit to Mine application.
- Page 2-17, Line 10: The sentence states: “Bioremediation could also be employed as a reduction process”. This was removed from the application at the request of the NRC Uranium Recovery Branch staff in response to an RAI on the Technical Report.

- Page 2-17, Line 19: The sentence states: “Upon completion of restoration activities, a minimum six month groundwater stability monitoring period would be implemented to demonstrate that the restoration goal has been adequately maintained in accordance with WDEQ guidelines”. Please revise this sentence to discuss a minimum twelve month groundwater stability monitoring period. This change was made to the application in response to comments from the WDEQ and the NRC Uranium Recovery Branch.
- Page 2-17, Line 30: The sentence states: “The NRC license would be amended to initiate the decommissioning process and to provide NRC the detailed information required for NRC to evaluate the proposed decommissioning plan”. While it is true that the license would be amended to initiate the decommissioning process, Uranium One would be required to submit a decommissioning plan for approval before the referenced license amendment is issued. The decommissioning plan would provide NRC with “the detailed information required for NRC to evaluate the proposed decommissioning plan”. In addition, Uranium One was required to submit the functional equivalent of a restoration action plan, including a decommissioning cost estimate, in the application. The financial assurance cost estimate accompanying the decommissioning approach must be approved by NRC Staff but does not need to be in place until operations are to commence. In addition, Uranium One may perform some reclamation activities in older wellfields while still operating the Moore Ranch project.
- Page 2-17, Line 35: This is an example of where NRC should clearly use the term “unrestricted use”.
- Page 2-18, Line 13: The sentence beginning on line 13 discusses removal of surface equipment including “injection and production feed lines”. Uranium One notes that these lines are buried for freeze protection and are not surface equipment. In addition, this sentence should recognize that disposal of this equipment at a licensed byproduct material disposal site is an alternative to surveying equipment and materials for release.
- Page 2-18, Line 24: This should reference an “AEA or NRC/Agreement State-licensed” facility.
- Page 2-20, Line 32: The sentence beginning on line 32 discusses airborne emissions including “...uranium particulate emissions from yellowcake drying”. The Environmental Report in Section 4.12.2 states that there are no airborne particulate emissions from the dryer technology proposed (i.e., vacuum drying). The SEIS recognizes this in Section 4.13.1.2.1.

- Page 2-21, Lines 2-7: There is no mention of pressurized down-flow columns and their benefits related to radon releases. These should be described.
- Page 2-21, Line 31: Section 2.1.1.6.2 of the SEIS does not contain any discussion of brine from the reverse osmosis system as a source of liquid waste. This waste stream is one of the most significant sources of liquid waste and should be discussed.
- Page 2-22, Line 3: The sentence discusses two UIC Class I wells. See the previous comments clarifying the required number of disposal wells could be four (4).
- Page 2-22, Line 5: The sentence states: "One formation occurs at depths from 2,322 to 2,930 m (7,916 to 9,610 ft), thousands of feet below the proposed ore production zone and the hydrologic properties of this potential injection zone would allow injection rates of 114 L/min (30 gal/min) per well". Uranium One suggests that NRC add a note that up to four Class I wells would be required with this estimated injection rate.
- Page 2-22, Line 12: The sentence states: "The second formation being considered for injection of liquid effluent at the proposed Moore Ranch Project is the Lance Formation which occurs from depths ranging from 1,186 to 2,286 m (3,700 to 7,500 ft) (Uranium One, 2009a). Uranium One suggests that NRC add a note that two Class I wells would be required for this formation.
- Page 2-22, Line 16: Uranium One suggests that the sentence beginning "Stormwater runoff..." begin a new paragraph since the discussion involves a different source of water requiring management.
- Page 2-23, Line 32: NRC should reference where wastes like this are disposed.
- Page 2-24, Line 1: This entire section needs to be re-written as it does not provide an adequate description of financial assurance. For example, the term "financial assurance" rather than "financial surety" should be used since "surety" is merely one of the many acceptable financial assurance instruments under 10 CFR Part 40, Appendix A. It also should reference Criterion 9 requirements and when the financial assurance cost estimate must be approved and when the money must be posted.
- Page 2-24, Line 5: The sentence states: "Uranium One would maintain surety instruments in the form of an Irrevocable Letter of Credit to cover the costs of reclamation..." Uranium One suggests that NRC recognize that there are other forms of surety acceptable to the agency should Uranium One want to change the type of surety instrument at a future date.
- Page 2-24, Line 35: "Section 2.2.2" should be "Section 2.2.3".

- Page 2-24, Line 35: "Section 2.2.3" should be "Section 2.2.4".
- Page 2-24, Line 36: "Section 2.2.4" should be "Section 2.2.5".
- Page 2-25, Line 26: "...recovers..." should be "...recover..."
- Page 2-25, Line 28: The parenthesis and brackets in the sentence beginning "This process also can..." need to be corrected.
- Page 2-26, Lines 1-3: Heap leach mining does not necessarily involve removal of the ore from other mine units, but rather can also involve heap leaching in place.
- Page 2-26, Line 22: The sentence discussing the alternate plant site locations states that the alternate site *would* have resulted in potential impacts to cultural resources. Uranium One notes that the response to Environmental Report RAI 2.5 Number 1, which discusses the plant site alternatives, does not discuss cultural resources because surveys have already been conducted in both areas and potential sites are avoided. Even if NRC is referring to unidentified sites at the alternate location, the word "would" is inappropriate because unidentified sites could also exist at the preferred location and impacts are not a certainty. NRC should use the term "could" instead of "would."
- Page 2-26, Line 41: Reference at the end of this line is made to Mudd, 2001. If NRC has based this analysis on the same reference included in the Uranium One response to the Environmental Report RAI discussing alternate lixivants, the correct reference should be Mudd, 2000.
- Page 2-27, Line 10: The terms "hazardous or mixed waste" should not be used here since they will not be generated at the Moore Ranch project.
- Page 2-27, Line 17: The sentence states: "Finally, the capital cost for mechanical evaporation would be approximately 4 times greater than that for an ISR facility (Uranium One, 2009b)". The capital costs for mechanical evaporation discussed in the Uranium One submittal would be approximately 4 times greater than those for deep disposal wells.
- Page 2-27, Line 24: A parenthesis is missing between the word action and the number 757,575.
- Page 2-27, Line 42: The paragraph that begins on this line discusses evaluations completed by Conoco in 1982 concerning the use of evaporation ponds at the proposed Split Rock mill, which was located at the same site as Moore Ranch. While this discussion provides historical context from previous evaluations, Uranium One notes that the proposed Conoco project was a

conventional mill, the evaluation was prepared almost thirty years ago, and the waste disposal alternatives discussion provided by Uranium One in response to the Environmental Report RAI evaluates evaporation ponds using the same basis as that used for the other alternatives discussed in this section of the SEIS.

Page 2-30, Table 2-3:

- Ecological Resource Impacts for Construction, Alternative 1 should refer to Section 4.6.1.1.2 of the SEIS.
- Meteorological, Climatological, and Air Quality Impacts for Construction, Alternative 1 should refer to Section 4.7.1.1 of the SEIS.
- Meteorological, Climatological, and Air Quality Impacts for Construction, Alternative 2 should refer to Section 4.7.2 of the SEIS.
- Meteorological, Climatological, and Air Quality Impacts for Operations, Alternative 1 should refer to Section 4.7.1.2 of the SEIS.
- Meteorological, Climatological, and Air Quality Impacts for Aquifer Restoration, Alternative 1 should refer to Section 4.7.1.3 of the SEIS.
- Meteorological, Climatological, and Air Quality Impacts for Decommissioning, Alternative 1 should refer to Section 4.7.1.4 of the SEIS.

Page 2-31, Table 2-3 (continued):

- Socioeconomics Impacts (Demographics) for all four phases, Alternative 2 should refer to Section 4.11.2 of the SEIS.
- Socioeconomics Impacts (Income) for all four phases, Alternative 2 should refer to Section 4.11.2 of the SEIS.

Page 2-32, Table 2-3 (continued):

- Socioeconomics Impacts (Housing, Employment Structure, Local Finance, and Education) for all four phases, Alternative 2 should refer to Section 4.11.2 of the SEIS.

Page 2-33, Table 2-3 (continued):

- Socioeconomics Impacts (Health and Social Services) for all four phases, Alternative 2 should refer to Section 4.11.2 of the SEIS.
- Waste Management Impacts for Construction, Alternative 1 should refer to Section 4.14.1.1 of the SEIS.
- Waste Management Impacts for Operations, Alternative 1 should refer to Section 4.14.1.2 of the SEIS.
- Waste Management Impacts for Aquifer Restoration, Alternative 1 should refer to Section 4.14.1.3 of the SEIS.
- Waste Management Impacts for Decommissioning, Alternative 1 should refer to Section 4.14.1.4 of the SEIS.

Page 2-33, Line 3: As discussed in the comment on Page xxvi, Line 1 above, the NRC preliminary recommendation seems to be a weak endorsement of the analysis completed in this SEIS.

Page 2-35, Line 31: Uranium One notes that the two references, Uranium One 2009a and Uranium One 2009b refer to the same RAI response submitted to NRC on July 11, 2009. Uranium One assumes that one of these references should be to the Uranium One RAI response submitted in September 2009.

SECTION 3 AFFECTED ENVIRONMENT

- Page 3-1, Line 26: This sections states that the Moore Ranch Project is, in part, located in Section 1 of Township 41 North, Range 75 West. It should state that the project is located in portions of Section 1 of Township 41 North, Range 75 West.
- Page 3-1, Line 30: The reference “NRC, 2009A” should be “NRC, 2009a” (emphasis added).
- Page 3-3, Line 2: The text refers the reader to Figure 2-1 of the SEIS. Uranium One notes that this figure is the site layout drawing and does not show the entire license area or the location of SR 387. Reference to Figure 3-1 or 3-2 may provide more useful for the reader.
- Page 3-5, Line 43: The reference to NRC, 2003 should be to Uranium One, 2009b.
- Page 3-6, Line 2: The sources noted at the bottom of table 3-1 are incorrect. The reference to NRC, 2003a should be to Uranium One 2009b.
- Page 3-9, Line 12: The sentence states: “A coal layer, referred to as the E Coal that ranges in thickness from 0.3 to 9 m (1 to 3 ft) typically occurs a few feet above the top of the 70 Sand”. Uranium One believes that 9 meters should be 0.9 meters.
- Page 3-14, Line 6: Delete the comma between “streams” and “collect”.
- Page 3-14, Line 15: Replace “designated” with “designations”.
- Page 3-16, Line 39: Insert the words “as a” between “Antelope Creek” and “Class 3B”.
- Page 3-18, Line 1: Uranium One suggests moving the hanging text in Lines 1 and 2 to Page 3-20 following Figure 3-10.
- Page 3-26, Line 19: The sentence states: “The applicant conducted a number of ecological studies have been conducted at the proposed Moore Ranch Project to accomplish the objectives specified in NUREG-1569, Standard Review Plan for In situ Leach Uranium Extraction License Applications, and to meet the applicable State of Wyoming requirements” Uranium One suggests deleting the words “have been conducted” from this sentence.
- Page 3-27, Line 5: The acreage areas listed in the column for the proposed license area show minor differences from those submitted in Table 3.5-1 of the Environmental Report.

- Page 3-28, Line 19: The two references University of Wyoming, 2004 and 2008 do not appear to be listed in Section 3.14 of the SEIS. Note that they are listed in Section 4.15.
- Page 3-30, Line 11: The phrase “sensitive species” is followed by a 1, indicating a footnote, but none is present.
- Page 3-31, Line 27: This section discusses the swift fox and the sentence that begins on Line 27 states that the species was not noted during *vegetation* surveys. The surveys for swift fox would be wildlife surveys.
- Page 3-31, Line 29: It appears that “Species of Concern” should be the beginning of a new section.
- Page 3-35, Line 24: The sentence states: “The Moore Ranch Project area is located at 43°33'29.17" N latitude, 105°55'18.54" W longitude in the south-central portion of the Powder River Basin”. In the response to Safety Evaluation Report Open Issue Non-hydrology Number 3 from the May 11, 2009 teleconference, Uranium One provided NRC with corrected coordinates of 43°34'12.83" N latitude, 105°50'18.54" W longitude. NRC should confirm the coordinates in the SEIS.
- Page 3-39, Line 4: The sentence states: “The closest resident is approximately 4.5 km (2.8 mi) east of the proposed Moore Ranch Project”. From previous comments (Page xxi, Line 37), NRC should clarify that this distance is from the license boundary.
- Page 3-40, Line 6: Delete the word “also” between the words “would” and “generate”.
- Page 3-42, Line 11: The word “on” between the words “remains” and “an” should be changed to “of”.
- Page 3-42, Line 27: The sentence states: “The former encompasses about 11,000 years between 12,000 B.P. (before present; A.D. 1950) and 250 B.P. (about A.D. 1700)”. Uranium One believes that “A.D. 1950” should be deleted.
- Page 3-42, Line 41: The sentence states: “The Archaic period (8500 to 1800 B.P.) in eastern and northeastern Wyoming is broken into three subperiods: Early (8500 to 5000 B.P.), Middle (5000 to 3000 B.P.), and Late (3000 to 1500 B.P.)”. The ending years of the Archaic period (1800 B.P.) and Late subperiod (1500 B.P.) should agree.
- Page 3-43, Line 43: NRC references the draft EIS for the Moore Ranch Uranium Project published in 1982. This draft EIS was actually published for the Sand Rock Mill proposed by Conoco at the same location as the Moore Ranch project.

- Page 3-44, Line 5: Similar comment to Page 3-43, Line 43 above. The earlier studies referenced in Brunette, 2007 were conducted for the Sand Rock Mill proposed by Conoco.
- Page 3-47, Line 7: The sentence states: "In addition to the highway, the project area is currently used for pastureland, rangeland, and for various types of CBM and coal and gas extraction (See Section 3.2, Land Use)". The project area is not currently used for the extraction of coal.
- Page 3-49, Line 10: The sentence that begins "With the global recession..." is unclear and needs to be restated.
- Page 3-49, Line 44: Insert the word "County" after the word "Campbell".
- Page 3-50, Line 19: The sentence states: "There are a variety of various trade and occupational schools located in Gillette as well". Uranium One recommends that the word "various" be deleted.
- Page 3-52, Line 6: The sentence states: "As shown in Section 6.1.2 of the Environmental Report, the average results for measure gamma radiation are within the range of concentrations typically measured in this region of Wyoming". This sentence is unclear and needs to be revised. The word "measure" should be "measured". Additionally, gamma radiation levels are not usually referred to as "concentrations"; perhaps "range of gamma radiation levels" would be more precise.
- Page 3-52, Lines 15, 21, 32, and 43: Addendum 2.9A is from the Technical Report. For the purposes of the SEIS, the correct reference would be Addendum 6.1A. This section should also reference that it is consistent with the conclusions in the GEIS.
- Page 3-53, Lines 2, 4, 6, and 8: The units for air particulate results did not print correctly. The "□" symbols should be a "μ" for micro.
- Page 3-53, Line 16: Section "6.18" should be "Section 6.1.8".
- Page 3-53, Line 17: Addendum 2.9A is from the Technical Report. For the purposes of the SEIS, the correct reference would be Addendum 6.1A.
- Page 3-53, Line 34: The units for uranium in drinking water did not print correctly. The "□" symbol should be a "μ" for micro.
- Page 3-54, Line 34: NRC should include in the introduction on occupational health and safety that Uranium One proposes the use of process mitigation, technology, and best management practices and standard operating procedures to minimize

these impacts. This would include the use of downflow IX columns to reduce radon gas emissions and vacuum drying technology to reduce radioactive air particulate emissions.

Page 3-54, line 42: The sentence states: "Industrial safety aspects associated with the use of hazardous chemicals at the proposed Moore Ranch Project would be regulated by the Wyoming Division of Mine Inspection and Safety (Wyoming, Title 30-Mines and Minerals, Chapter 2- Mining Operations, Article 2-Inspector of Mines)". This is incorrect. The Occupational Safety and Health Administration (OSHA) regulates industrial safety (including chemical safety) at ISR mines in Wyoming.

SECTION 4 ENVIRONMENTAL IMPACTS AND MITIGATIVE ACTIONS

General Comments

General Comment 1: Throughout this section NRC concludes the analysis of impacts for each resource area and life cycle phase of the project by noting that "...the NRC staff concludes that the site-specific conditions...would be comparable to those described in the GEIS". It would be helpful for the public if the NRC cited the specific section of the GEIS that was used for the analysis performed by NRC.

General Comments 2: In many instances in Section 4, NRC uses the term "would" when referring to potential impacts. Since these are potential impacts that may not occur, NRC should use the term "could" and not "would".

Specific Comments

Page 4-3, Line 28: The sentence states: "Since the two well fields would not be mined simultaneously, active operations would shift from one well field to the next, thus limiting the impact to land and opening up the decommissioned well field for other uses such as grazing". This is incorrect; land surface within the wellfields will not be returned to existing use until after license termination. Please see Section 5.1 of the Environmental Report, which states that the land will be withdrawn for the life of the project. This is also recognized in the SEIS on Page 4-4, line 24.

Page 4-4, Line 43: Based on the format used in the other subsections of Section 4, Uranium One recommends that the paragraph that begins on this line should be moved to the end of Section 4.2.1.4.

Page 4-6, Line 35: Reference is made in this line to Uranium One, 2009a. Note that there is no Uranium One, 2009b listed in Section 4.15, References.

Page 4-7, Line 8: The second footnote to Table 4-1 states: "***Travel Direction for Traffic Volume (I=increasing Mile Markers, B=Decreasing mile markers)". Note that this footnote was from Table 4.2-1 submitted by Uranium One in response to an Environmental Report RAI. The data that is referenced in the Table 4.2-1 submitted by Uranium One is not included in Table 4-1 of the SEIS and this footnote should be removed.

A similar comment applies to Table 4-2 (page 4-9), Table 4-3 (page 4-11), and Table 4-4 (page 4-12).

Page 4-7, Line 28: Reference to "Section 4.3.1.1" should be corrected to "Section 4.3.2.1".

Page 4-8, Line 30: The sentence states: “The annual production rate of yellowcake at the proposed Moore Ranch Project, the annual production rate for yellowcake was estimated at 40,000 pounds per year which would result in a total maximum of 100 shipments per year or an average of one shipment every 3.6 days (Uranium One, 2009a)”. This sentence needs to be revised. In the response submitted by Uranium One to NRC for Environmental Report RAI item 4.2, Uranium One stated that the transportation impacts were based on a production rate of 4 million pounds per year. The estimated 40,000 pounds per shipment resulted in 100 shipments per year (or one every 3.6 days).

Page 4-9, Line 1: Table 4-2 contains several values that do not match those provided by Uranium One in the response to the Environmental Report RAI (contained in Table 4.2-1). Specifically:

- The % increase in truck traffic at Mile Route Sign 118.726 should be 0.3, not 0.2.
- The % increase in auto traffic at Mile Route Sign 149.24 should be 4.1, not 4.2.
- The % increase in auto traffic at Mile Route Sign 131.793 should be 6.7, not 7.2.
- The % increase in auto traffic at Mile Route Sign 137.12 should be 6.6, not 7.1.

These comments also apply to Table 4-3 on page 4-11.

Page 4-10, Line 22: The sentence states: “Aquifer restoration-related transportation activities would primarily be limited to supply shipments, chemical waste shipments, onsite transportation and employee commuting”. There are no chemical waste shipments associated with the Moore Ranch project.

Page 4-13, Line 7: The reference to “Section 4.3.3” should be “Section 4.3.3.1”.

Page 4-14, Line 9: The line contains a reference to Uranium One, 2009b. This reference is not included in Section 4.15, References.

Page 4-15, Line 24: Delete the words “to program” from the sentence that begins “The program...”

Page 4-17, Line 7: NRC needs to note that the license application included a detailed discussion of decommissioning and decontamination planning for NRC review prior to license issuance.

- Page 4-17, Line 30: The sentence that begins on this line states that "...the impacts to geology and soils during construction..." This section of the SEIS is analyzing impacts from decommissioning, so the word "construction" should be replaced with the word "decommissioning".
- Page 4-19, Line 28: The sentence states: "For a well located in an intermittent channel, pumped water released directly into the channel would be expected to be quickly absorbed into the soil when the channel was dry". This paragraph is discussing the placement of mining wells, which will not release pumped water directly into the channel.
- Page 4-19, Line 46: The sentence states: "If an accidental spill were to occur during the construction phase of the proposed Moore Ranch Project it would be promptly mitigated in accordance with the site-specific emergency response plan". Uranium One notes that during the construction phase, there are no radioactive or chemical materials present that could be spilled. The only potential spills could be very site specific leaks of petroleum products from drill rigs, vehicles, and heavy equipment.
- Page 4-22, Line 5: The sentence states: "The stockpiled topsoil would be returned to the disturbed areas, graded to pre-disturbance contours, and seeded/mulched as part of an erosion and sedimentation control plan to be approved by the WDEQ". Uranium One did not propose an "erosion and sedimentation control plan" requiring approval by the WDEQ and is not familiar with standards that require such a plan. In Section 5.3.2 of the Environmental Report, Uranium One committed to soil erosion mitigation in accordance with WDEQ-LQD Rules and Regulations, Chapter 3, Environmental Protection Performance Standards.
- Page 4-22, Line 9: The sentence states: "Areas disturbed during the decommissioning phase would be graded to pre-construction contours and seeded with a native seed mix in accordance with a restoration plan approved by the WDEQ". Uranium One did not propose a "restoration plan" requiring approval by the WDEQ and is not familiar with standards that require such a plan. In Section 5.1 of the Environmental Report, Uranium One committed to contouring and seeding in accordance with referenced WDEQ-LQD Rules and Regulations and guidelines.
- Page 4-22, Line 43: In discussing the no-action alternative, the sentence states: "The CBM production in the proposed license area would continue and the 61 ha (150 ac) that would be restricted from CBM production under the proposed action would be available for production or for other uses". Uranium One notes that the application does not state that CBM production would be excluded from the potentially affected 150 acres. Section 4.14.1.3 discusses CBM development at Moore Ranch and states: "Based on discussions with both CBM operators and experience with concurrent

CBM and uranium recovery development in other locations in the Powder River Basin, EMC believes that these activities can be coordinated to maintain health, safety, and environmental controls”.

- Page 4-23, Line 19: This line includes the term “leaching solutions” The term “lixiviant” is more appropriate to ISR mining and is used almost exclusively in NUREG-1910 and the other sections of this SEIS.
- Page 4-25, Line 34: The sentence states: “All wells would be tested for mechanical integrity every five years to prevent casing leaks”. It would be more accurate to state that mechanical integrity tests would be conducted to detect casing leaks since the test will not prevent them.
- Page 4-26, Line 8: The sentence states: “The wells would be sampled every two weeks for excursion parameters to detect the presence of production fluids”. As previously noted in the comments on Page 2-12, Line 34, Uranium One proposed semimonthly sampling and noted that this frequency is approved in at least one existing ISR license.
- Page 4-27, Line 3: NRC states that “...portions of the 70 Sand in which production operations would occur and typically a buffer zone would be sought to be declared as exempt by EPA”. Uranium One understands that the WDEQ exempts the aquifer based on groundwater classification and that EPA approval is not necessary. NRC noted this in the summary of a meeting held with the Wyoming Department of Environmental Quality in Cheyenne, Wyoming on January 12, 2009 (draft SEIS Appendix A, Page 19).
- Page 4-28, Line 3: The sentence states: “The modeling, which was reviewed and found acceptable by NRC staff, is presented in Appendix B-4 of the applicant's technical report (EMC, 2007b)”. The reference is incorrect. The modeling was performed in 2008 and submitted in response to the Technical Report RAI on October 27, 2008.
- Page 4-28, Line 10: Similar to the previous comment on Page 4-28, Line 3, the reference is incorrect. The modeling was performed in 2008 and submitted in response to the Technical Report RAI on October 27, 2008.
- Page 4-28, Line 21: Similar to the previous comments on Page 4-28, Lines 3 and 10, the reference is incorrect. The modeling was performed in 2008 and submitted in response to the Technical Report RAI on October 27, 2008.
- Page 4-28, Line 41: Similar to the previous comments on Page 4-28, Lines 3, 10, and 21, the reference is incorrect. The modeling was performed in 2008 and submitted in response to the Technical Report RAI on October 27, 2008.

- Page 4-29, Line 7: This section is entitled Excursions and Groundwater Quality. Uranium One notes that the discussion in this section does not include the potential for a well casing failure to cause a vertical excursion. The section provides an adequate discussion of the potential for vertical excursions caused by lack of confinement but should also discuss well casing leaks. In addition, the discussion should be expanded to include mitigation measures for potential well casing failures, which would include the program of testing the mechanical integrity of injection and production wells. NRC is referred to Section 5.4.2.3.1 of the Environmental Report.
- Page 4-29, Line 9: NRC states: “The portion of the aquifer used for production would be recommended for exemption by WDEQ to EPA as an underground source of drinking water”. Uranium One understands that the WDEQ exempts the aquifer based on groundwater classification and that EPA approval is not necessary. NRC noted this in the summary of a meeting held with the Wyoming Department of Environmental Quality in Cheyenne, Wyoming on January 12, 2009 (draft SEIS Appendix A, Page 19).
- Page 4-29, Line 11: NRC needs to re-write the restoration standards to more accurately reflect the criteria in 10 CFR Part 40 Appendix A as previously discussed in comments in Sections 1 and 2. For instance, the standard is actually baseline or MCLs, *whichever is higher* or ACLs. In addition, ACLs need to be properly defined in the document.
- Page 4-29, Line 35: The ring of monitoring wells is not within the production zone.
- Page 4-30, Line 3: The sentence states: “At Moore Ranch, the 70 Sand aquifer would be designated as an exempt aquifer before production operations began, which means that it neither has nor will it ever be used as a source of drinking water”. Uranium One notes that in the area of coalescing sands in Wellfield 2, the 68 Sand will also be designated as an exempt aquifer.
- Page 4-30, Line 18: Similar to the previous comments on Page 4-28, the reference is incorrect. The modeling was performed in 2008 and submitted in response to the Technical Report RAI on October 27, 2008.
- Page 4-30, Line 20: Similar to the previous comments on Page 4-28 and 4-30, the reference is incorrect. The modeling was performed in 2008 and submitted in response to the Technical Report RAI on October 27, 2008.
- Page 4-30, Line 26: As previously noted in the comments on Page 2-12, Line 34 and Page 4-26, Line 8, Uranium One proposed semimonthly sampling and noted that this frequency is approved in at least one existing ISR license.

- Page 4-30, Line 44: The sentence states: “Pumping tests conducted to date not demonstrated any hydraulic connection between the 70 and 72 Sands”. Please insert the word “have” between the words “date” and “not”.
- Page 4-31, Line 12: The sentence states: “To detect potential vertical excursions at the proposed Moore Ranch Project, the aquifers that overly and underlie the 70 Sand, which include the 72, 68 and 60 Sands, would be monitored by a spacing of one well per four acres”. Uranium One requests that NRC clarify the requirement for monitor wells in the 60 Sand. These monitor wells will only be necessary in the area where the 70 and 68 Sands coalesce in Wellfield 2 as described in the response to the Environmental Report RAI.
- Page 4-32, Line 33: The sentence states: “As discussed in the GEIS, the impacts of consumptive groundwater use during aquifer restoration are generally greater than during ISR operations since a larger volume of groundwater is generally withdrawn if groundwater sweeps are used during the aquifer restoration phase”. Uranium One notes that an equally if not greater source of consumptive groundwater use during aquifer restoration is groundwater treatment using reverse osmosis, which results in a “brine” waste stream (generally 20 to 25 percent of the total treatment flow rate) that must be disposed.
- Page 4-32, Line 39: There is an extra space between the 1 and the 2 in “Section 4.5.2.1.2.2.
- Page 4-32, Line 44: Similar to the previous comments, the reference is incorrect. The modeling was performed in 2008 and submitted in response to the Technical Report RAI on October 27, 2008.
- Page 4-33, Line 5: Similar to the previous comments, the reference is incorrect. The modeling was performed in 2008 and submitted in response to the Technical Report RAI on October 27, 2008.
- Page 4-33, Line 31: In the sentence beginning “The simulation showed...”, there are two typographical errors. “0, 21” should be “0.21” and “0, 68” should be “0.68”.
- Page 4-34, Line 23: Delete the word “are” between “being” and “primarily”.
- Page 4-36, Line 22: In the sentence beginning “The construction phase...”, the word “construct” should be “constructing” and the word “develop” should be “developing”.
- Page 4-37, Line 34: The sentence states that the central plant site will cover approximately 1.6 ha (4 ac). The areal estimate provided by Uranium One in the Environmental Report RAI response on Figure 2.5-1 was 6 acres.

Page 4-38, Line 41: The sentence states: "Fencing preferred by the WGFD should be used (WGFD, 2004)". While Uranium One did not reference this guidance in the application, we agree that it provides a best management approach to providing fencing on the project that will minimize adverse impacts on wildlife. However, Uranium One notes that the guidelines contain numerous fencing methods depending on the purpose. NRC should note that the proposed fencing around the central plant site is for security of the restricted area and that the proposed fencing for the wellfields is intended to control access to the areas by sheep.

Page 4-39, Line 37: The word "not" should be "no".

Page 4-40, Line 1: The sentence states: "Adherence to WGFD and BLM seasonal noise, vehicular traffic, and human proximity guidelines (WGFD, 2009 and BLM, 2008) would help to ensure the continued nesting success of area raptors and maintain a SMALL impact". Page 4-41, Line 6 contains a similar statement regarding impacts to species of concern during the construction phase. Page 4-43, Line 37 contains a similar statement regarding impacts to all vegetation and wildlife during the aquifer restoration phase. Uranium One has a number of concerns with these statements in the SEIS:

The WGFD document is not appropriate for the Moore Ranch Project

The Wyoming Game and Fish Department (WGFD) document (Public Review Draft, "Recommendations for Development of Oil and Gas Resources within Crucial and Important Wildlife Habitats" February, 2009) is a draft document that provides broad recommendations concerning possible mitigation strategies for oil and gas development projects. The recommendations in this document are provided for consideration by oil and gas companies based on the type of habitat that is present at a site. Uranium One questions the applicability of this document to the Moore Ranch project for a number of reasons:

1. The document is a draft that contains recommendations for the oil and gas industry based on the specific impacts that those projects may have on wildlife habitat. NRC should not rely on draft documents that were specifically prepared for an industry with impacts that bear no relation to those posed by ISR uranium mining.
2. The WGFD recommendations are based on the type of habitat that is present in a particular area. An example would be crucial winter habitat for pronghorn. Making a broad statement in the SEIS that the WGFD recommendations should be applied does not consider the site specific characteristics of the Moore Ranch project, which is the purpose of the SEIS. Uranium One believes that NRC has misapplied a conclusion in the GEIS regarding this reference. NUREG-1910 states "Crucial wintering and year-long ranges vital for survival of local populations of big game and sage-grouse leks or breeding ranges are located within the region. If the proposed facility exists within these ranges..." the WGFD guidelines would apply. These ranges do not exist at the Moore Ranch site.

3. NUREG-1910, when discussing the WGFD guidelines, states that “Consultation with the Wyoming Game and Fish Department and a site-specific analysis would help determine impacts from the facility to these species”. In consultations between the NRC and the WGFD that are publicly available in Appendix A of the SEIS, the WGFD made a number of specific recommendations concerning the Moore Ranch project. These recommendations included annual sage grouse lek and raptor nest surveys and were based on the WGFD understanding of the project and the characteristics of the area where Moore Ranch will be located. Consistent with the WGFD recommendations, Uranium One has proposed annual raptor nest surveys as discussed in Section 5.5.4 of the Environmental Report. Annual sage grouse lek surveys were not proposed because, as stated in Sections 4.5.2 and 4.5.6 of the Environmental Report, repeated surveys over multiple, consecutive years in the project area since at least 2003 have documented that greater sage-grouse do not occur in the project area, that suitable habitat is extremely limited, and that the nearest known sage-grouse lek is approximately 3.0 miles northwest of the Moore Ranch Project area. While Uranium One disagrees with the necessity of annual sage grouse surveys at Moore Ranch, the NRC should note that the WGFD did not recommend that the subject document be referenced in the SEIS or included as a condition of issuance of a license to Uranium One.

The BLM document is not appropriate for the Moore Ranch Project

The BLM document (“Proposed Resource Management Plan and Final Environmental Impact Statement for Public Lands Administered by the Bureau of Land Management, Rawlins Field Office, Rawlins, Wyoming” January, 2008) is a proposed plan for the Rawlins BLM office. Uranium One questions the applicability of this document to the Moore Ranch project for a number of reasons:

1. The document is a proposed Resource Management Plan (RMP). NRC should not rely on proposed plans of other agencies that have not been issued in a final form.
2. Even if the document had been approved and issued as a final RMP, the Moore Ranch project is not located on lands administered by the Rawlins BLM office.

NRC has specified adherence to the guidelines in an inconsistent manner

The BLM and WGFD recommendations are specified for the construction phase for protection of raptor nests and species of concern. They are further specified for unidentified vegetation and wildlife during the aquifer restoration phase. This appears to be an inconsistent and imprecise application of the recommendations. If these recommendations are necessary during construction and aquifer restoration, why are they not also necessary during operations and decommissioning since many of the ecological impacts are the same? If they are necessary for raptors and species of concern during construction, why are they not also necessary during the other three phases of the project? How will Uranium One determine which recommendations should be employed during aquifer restoration since specific resources are not identified?

NRC should identify site-specific mitigation measures in the SEIS

Uranium One believes that the mitigation measures proposed in the Environmental Report will be effective in minimizing the impacts of the Moore Ranch project. These mitigation measures were developed based on current mitigation measures employed at existing ISR facilities and Uranium One consultations with local agencies and consulting firms that provided expert assistance during the preparation of the application were based on the characteristics of the Moore Ranch site. If NRC believes that specific additional mitigation measures are necessary for wildlife protection based on site characteristics, they should be detailed in the SEIS. A general reference to the WGFD and BLM documents does not provide the public or Uranium One with adequate information to determine the mitigation measures that will be employed at the project.

Page 4-40, Line 36: Insert the word “radius” between “(1 mi)” and “of”.

Page 4-41, Line 39: The sentence states: “Disturbed areas would be reseeded with WDEQ and BLM approved seed mixtures as soon as conditions allow, to prevent the establishment of competitive weeds”. Uranium One notes that the Moore Ranch project will not impact BLM surface and that WDEQ will approve seed mixtures. The requirement for BLM approval of seed mixtures should be deleted from this sentence.

Page 4-42, Line 12: The sentence states: “During facility operations, spills around well heads and leaks from pipelines could expose wildlife to toxic chemicals”. This is incorrect. Spills could expose wildlife to trace concentrations of radioactive materials and some heavy metals but there are no toxic chemicals present in the lixiviant.

Page 4-42, Line 32: This section states that impacts to reptiles and amphibians during operations would be SMALL, similar to those during construction. However, Section 4.6.1.1.2 of the SEIS, which discusses impacts to reptiles and amphibians during construction, states that there would be no impacts.

Page 4-43, Line 5: The paragraph that begins on this line conflicts with the previous paragraph, which states that there would be no impacts to federally-listed threatened and endangered species since these species have not been identified within the proposed license area. Uranium One also notes that the referenced mitigation measures (i.e., spill procedures and fencing) do not correlate with those proposed for threatened and endangered species in Section 5.5.5 of the Environmental Report.

Page 4-44, Line 6: The reference to Section 4.2.5.4 in this line is incorrect. The correct reference is Section 4.3.5.4.

Page 4-44, Line 40: The sentence states: “As required, the applicant would submit an updated reclamation plan for approval, following review and approval by the

appropriate state and federal agencies". The requirement is that Uranium One submit a decommissioning plan (not a reclamation plan) for NRC review and approval at least 12 months before final decommissioning begins. Approval of the decommissioning plan by other federal and state agencies is not required.

Page 4-45, Line 25: The sentence states: "Other dust emissions may be associated with the suspension of dried spill areas and radon releases from well system relief valves, resin transfer or elution". While Uranium One agrees that radon releases are present for the specified sources (which are discussed in Section 4.13 of the SEIS), we do not agree that emissions may be associated with suspension of dried spill areas. Uranium One notes that NUREG-1910 did not consider this postulated source as impacting air quality at ISR facilities and there is nothing in the site specific characteristics of the Moore Ranch project that would indicate that suspension of dried spill areas would impact air quality. Uranium One suggests that NRC remove this source from the SEIS as a potential air impact.

Page 4-46, Line 9: The word "to" should be "at".

Page 4-46, Line 40: The sentence states: "The GEIS also states that other potential non-radiological emissions during operations include fugitive dust and fuel from equipment, maintenance, transport trucks, and other vehicles". Uranium One notes that NUREG-1910 discusses vehicle emissions, not fuel.

Page 4-47, Line 1: The sentence states: "Finally, the GEIS notes that radiological impacts can result from dust releases from drying of lixiviant pipeline spills, radon releases from well system relief valves, resin transfer or elution, and gaseous/particulate emissions from yellowcake dryers". The paragraph then proceeds to include a discussion of spill controls. As previously noted, Uranium One cannot find any reference in NUREG-1910 to air impacts caused by suspension of dried lixiviant spills.

In addition, NRC needs to include a discussion of how down-flow IX columns and vacuum dryers are beneficial to protecting public health and safety.

Page 4-47, Line 25: The sentence that begins on this line has two references to "fuel" emissions. This should be changed to "vehicle" emissions.

Page 4-53, Line 23: NRC should note that the licensee "would be required" (rather than "would likely be required") to stop work and assess any identified resources prior to continuing with the construction phase by license condition.

- Page 4-53, Line 35: The sentence states: “NRC believes these sites are ineligible; however, the SHPO will make the final determination.” As an update, on November 3, 2009, the Wyoming SHPO made the final determination that the sites are ineligible (ADAMS accession number ML093170805).
- Page 4-55, Line 39: The sentence starts with the word “one” (not capitalized). Uranium One believes that this word should be “None”.
- Page 4-56, Line 14: Delete duplicate letter “a” in the sentence.
- Page 4-57, Line 8: The sentence states: “Wellfield development would occur sequentially, with reclamation in the Wellfield 1 concurrent with construction and operations in Wellfield 2”. This is incorrect. Wellfield development will begin in Wellfield 2 and aquifer restoration will be concurrent with operations in Wellfield 1.
- Page 4-57, Line 39: Uranium One suggests that the word “landscaping” be replaced with “revegetation”.
- Page 4-58, Line 12: The word mile should be followed by a closed parenthesis.
- Page 4-59, Line 14: The phrase “...an approved site reclamation plan...” should be replaced by the phrase “an NRC-approved decommissioning plan...”
- Page 4-59, Line 19: The sentence states: “Once project operations cease (the life of the Moore Ranch Project is estimated at 10 to 12 years), the central plant and support structures would be decommissioned and removed”. The application notes the possibility that some structures could be decontaminated and released if desired by the landowner and approved by the NRC.
- Page 4-59, Line 23: The sentence states: “Uranium One would submit a site reclamation plan to NRC in accordance with 10 CFR Part 40 before the license was terminated”. In accordance with 10 CFR 40, Uranium One would submit a decommissioning plan to NRC 12 months before final site decommissioning is begun.
- Page 4-59, Line 45: The sentence states: “The pipelines, well fields, and utility lines in place within the project area from existing CBM and coal and gas extraction activities would remain and would be considered to cause a small to moderate amount of disturbance to the landscape”. Uranium One notes that there are no coal extraction activities on the Moore Ranch site.
- Page 4-60, Line 15: Socioeconomic impacts need to be divided into “positive” and “negative” impacts.

- Page 4-61, Line 9: NRC should provide specific examples of what types of industrial activities are larger in scale than an ISR project to provide a point of reference for interested stakeholders.
- Page 4-61, Line 16: The sentence states: “The proposed Moore Ranch Project would be expected to employ 40-60 workers during the construction phase of the proposed action (EMC, 2007a)”. Section 4.10.1 of the Environmental Report and Section 4.11.1.1.3 of the SEIS note that the staff level estimated for the construction phase is 50 workers.
- Page 4-62, Line 35: Replace the word “though” with the word “through”.
- Page 4-63, Line 44: The correct reference is NRC, 2009a.
- Page 4-64, Line 19: The sentence states: “The operations staff to support the proposed Moore Ranch Project would be similar to the number of construction staff;” In Section 4.10.2 of the Environmental Report, the operations staff is estimated at 40 to 60 workers.
- Page 4-66, Line 12: In other sections of the SEIS, the NRC conclusions are followed by a statement that the conclusion are consistent with the GEIS and no new or significant information was identified by NRC staff. That statement is missing from Section 4.11.1.2.
- Page 4-66, Line 21: The sentence beginning “There could be a demand...” is incomplete.
- Page 4-70, Line 27: The sentence refers to “...NRC regulations at 10 CFR Part 20 as noted above”. There is no reference to 10 CFR Part 20 in the previous text in this section.
- Page 4-71, Line 1: In this section NRC needs to mention downflow IX columns and vacuum dryers and discuss why they contribute to minimizing potential radon gas and radioactive air particulate exposures. NRC should also compare dose assessments to natural background radiation exposures and not just to the 10 CFR Part 20 standards (e.g., 100 mrem/y). Uranium One notes that NRC requested additional information on background radiation exposures specific to the Moore Ranch project in Environmental Report RAI question 3.11.1, which was provided and should be referenced in this discussion.
- Page 4-71, Line 16: The sentence states: “For these operations, doses to potential offsite exposure (human receptor) locations range between 0.004 mSv per year (0.4 mrem per year) for the Crow Butte facility located in New Mexico and 0.32 mSv per year (32 mrem per year) for the Irigaray facility located in Campbell County, both well below the 10 CFR Part 20 annual radiation dose limit of 1 mSv (100 mrem per year) (NRC, 2009a)”. Uranium One

notes that the Crow Butte facility is located in Nebraska and the Irigaray facility is located in Johnson County, Wyoming. In addition, it appears that NRC has reversed the potential offsite exposure numbers between these two sites. See NUREG-1910, Table 4.2-2.

Page 4-72, Line 25: 90 person-rem per year in this line is incorrect. The correct dose is 0.09 person-rem. See Table 4.12-5 of the Environmental Report.

Page 4-72, Line 34: The reference to EMC, 2007a is incorrect. The data concerning potential nonfatal occupational injuries was provided in response to an Environmental Report RAI submitted on August 27, 2009.

Page 4-73, Line 11: The sentence states: "As discussed, a radiological hazard assessment (Mackin et al., 2001) considered four types of accidents, representing the sources containing the higher levels of radioactivity for all aspect of operation:" Uranium One notes that NUREG\CR-6733 discusses three types of accidents (not four), consistent with the list that follows this sentence. In addition, the sentence should state "aspects of operations".

Page 4-73, Line 23: The sentence states: "The accident scenario evaluated in the GEIS assumed a tank or pipe leak that releases 20 percent of the thickener inside and outside of the processing building". Actually, the scenario considered in 4.2.1 of NUREG\CR-6733 assumed that 20 percent of the thickener contents were spilled outside the building, with an additional unquantified amount spilled inside the building. NRC also needs to use the terms "primary" and "secondary" containment when discussing mitigation measures. The tank itself, with all appropriate safety mechanisms such as safety valves, is the "primary" containment and the bermed or curbed pad is the "secondary" containment. This demonstrates additional levels of protection.

Page 4-73, Line 29: NRC needs to indicate whether the dose discussed is from airborne particulate radioactivity (i.e., natural uranium). If so, the dose must be considered in relation to the 40 CFR Part 190 annual limit of 25 mrem.

Page 4-76, Line 2: The section that begins on this line discusses anhydrous ammonia at Moore Ranch. As discussed in the response to Environmental Report RAI 4.12.1.2, Number 3 submitted on August 27, 2009, Uranium One has decided that anhydrous ammonia will not be used at Moore Ranch and requests that this paragraph be deleted.

In addition, the same RAI response noted that Uranium One may use sulfuric acid or hydrochloric acid and provided the necessary information concerning hydrochloric acid. Uranium One requests that hydrochloric acid be included in the analysis in this section.

Page 4-76, Line 17: The National Fire Protection Association document referenced in this line is not included in Section 4.15 of the SEIS.

Page 4-76, Line 42: As previously noted, the Wyoming State Mine Inspector no longer regulates industrial safety at ISR mines in Wyoming. Industrial safety is regulated by OSHA.

Page 4-77, Line 13: Same as previous comment concerning the Wyoming State Mine Inspector.

Page 4-79, Line 35: The language in this sentence is unclear.

Page 4-80, Line 19: NRC should state that the requirement for a disposal agreement to be in place will be pursuant to a license condition.

Page 4-80, Line 34: Rather than using the term “radioactive waste”, to be more specific this statement should be revised to state that no “11e.(2) byproduct material” will be generated during construction.

Page 4-81, Line 16: The phrase “highly contaminated” is subjective but arguably does not apply to the liquid waste typically produced at an ISR facility. Typical contaminant concentrations for deep well injection were provided to NRC in response to an RAI on the Technical Report submitted in September 2008 and were included in an Environmental Report RAI. Uranium One requests that NRC review this data and reconsider the use of this term.

Page 4-81, Line 21: Insert the word “liquid” between 11e.(2) and waste. This discussion should address occupational exposure at such a well site per NRC’s recent policies and statements on Part 40.32(e) pre-licensing site construction authorizations. NRC Staff has stated that drilling and casing of a proposed deep disposal well is not permitted under a pre-licensing site construction exemption as it has a nexus to public health and safety due to the required 10 CRR §20.2002 dose assessments.

Page 4-81, Line 28: There are a number of errors in the sentence that begins with “Based on an average flow rate...”

- “170 gallons” should be 105 gallons per minute;
- “9 years” should be 12.5 years;
- “1,015 kg (2,238 lb)” should be 26.5 Curies; and
- “4.6 Ci” should be 7.83 Ci.

NRC is referred to Environmental Report RAI response 4.13 Number 1 submitted on June 16, 2009.

Page 4-81, Line 33: At this point, the discussion of waste classification gets muddy. NRC should adopt the format espoused in the Generic Environmental Report (GER) submitted by the National Mining Association (NMA) as public comments during the original scoping for NUREG-1910. The GER (page 2-55) used a format with radiological and non-radiological 11e.(2) byproduct material and liquid and solid 11e.(2) byproduct material.

Page 4-83. Line 7: The sentence states: "The applicant has committed to having an agreement for disposal of 11e.(2) byproduct waste materials in-place before construction of the Moore Ranch Project commences". This sentence is incorrect. In response to RAI Number 4.3 from the Technical Report submitted to NRC on July 11, 2008, Uranium One committed to having an agreement for disposal in place before *operations* of the Moore Ranch project commenced. This is consistent with previous ISR licenses issued by NRC and assures NRC that a disposal agreement is in place before the production of 11e.(2) byproduct material begins. No byproduct material will be produced during initial site construction.

In addition, this is consistent with Section 4.14 of the SEIS, where NRC states "Before *operations* could begin, NRC requires an ISR facility to have an agreement in place with a licensed disposal facility to accept 11e.(2) byproduct material (emphasis added).

SECTION 5

CUMULATIVE IMPACTS

- Page 5-1, Line 24: The sentence states: “There are several ISR and conventional uranium projects within the vicinity of the proposed Moore Ranch Project that are either in the pre-licensing stage or decommissioning”. As a point of clarification, as shown in Table 5-1, all conventional sites are disposal or decommissioning sites. ISR sites include preoperational and operational sites.
- Page 5-2, Line 8: It should be clarified that the Smith Ranch/Highland Uranium Project is in operations and is not an exploration project.
- Page 5-6, Line 16: The phrase “...pipelines to transport gas high-pressure transmission pipelines...” needs to be clarified.
- Page 5-6, Line 32: The phrase “in-palace” should be “in-place”.
- Page 5-10, Line 35: The reference “EMC, 2007” is incorrect. The data referred to in this discussion was provided in response to Technical Report RAI Number 2.8a by letter to NRC dated July 11, 2008.

SECTION 6 ENVIRONMENTAL MEASUREMENTS AND MONITORING PROGRAM

- Page 6-2, Line 10: Uranium One did not propose to analyze air particulate samples for U-234, U-235, and U-238. The proposed monitoring program includes analysis for U-nat in accordance with Regulatory Guide 4.14. Additionally, there is no reason to perform isotopic analysis of uranium at an ISR facility.
- Page 6-2, Line 23: Uranium One did not propose to analyze soil samples for U-234, U-235, and U-238. The proposed monitoring program includes analysis for U-nat in accordance with Regulatory Guide 4.14. Additionally, there is no reason to perform isotopic analysis of uranium at an ISR facility.
- Page 6-3, Line 22: Uranium One did not propose to analyze surface water samples for U-234, U-235, and U-238. The proposed monitoring program includes analysis for U-nat in accordance with Regulatory Guide 4.14. Additionally, there is no reason to perform isotopic analysis of uranium at an ISR facility.
- Page 6-3, Line 26: The phrase "...outside of the proposed license area..." is imprecise. Uranium One has proposed sampling all private wells within 1 km of the boundary of an operating wellfield in accordance with the guidance contained in Regulatory Guide 4.14, which may or may not include wells outside the license area. NRC also needs to emphasize that the primary purpose of this monitoring is to provide an early warning system for potential impacts from ISR operations.
- Page 6-3, Line 31: The sentence states: "The sampling would be conducted in accordance with a standard operating procedure reviewed by the NRC staff". A detailed discussion of sampling procedures was provided to NRC in response to Technical Report RAI Item 5.12f on July 11, 2008. No additional information regarding these procedures was requested as an Open Issue for the Safety Evaluation Report. Although standard operating procedures are always available for NRC review on site during inspections, this statement implies that NRC would review and approve licensee standard operating procedures.
- Page 6-3, Line 35: This comment should be two-fold: (1) ISR processes affect groundwater quality in the production zone during operations which is exempted under an aquifer exemption meaning that it cannot now nor ever in the future serve as a source of public drinking water and restoration is designed to reduce such impacts and (2) monitoring allows protection of production zone versus adjacent, non-exempt aquifers or portions thereof.
- Page 6-4, Line 26: Reference to "monitoring" wells is not the proper nomenclature. Baseline water quality in the ore zone is determined by production zone (injection

or production) wells as discussed in Section 6.3.2.2 of the Environmental Report.

- Page 6-4, Line 29: Following the phrase "...Technical Report...", NRC should add "for the first and second sampling events..." to make it clear that analysis of full Guideline 8 parameters is only required for these first two sample events.
- Page 6-5, Line 2: NRC should make it clear that monitor wells in the 60 sand will only be required in the area of Wellfield 2 where the 70 and 68 Sands coalesce.
- Page 6-5, Line 4: The term "upper concentration limit" should be revised to "upper control limit" in accordance with industry use and the list of abbreviations.
- Page 6-5, Line 8: To clarify this requirement, please add "Guideline 8" after "WDEQ".
- Page 6-5, Line 11: The reference "EMC 2007b" is incorrect. This information was submitted to NRC in response to a Technical Report RAI by letter dated July 11, 2008.
- Page 6-5, Line 13: The sentence states: "Section 8.3.1.2 of the GEIS discussed the placement of monitoring wells around the perimeter of the well fields, in the aquifers overlying and underlying the ore-bearing production aquifers, and within the well fields to provide early detection of potential horizontal and vertical leachate excursions during production operations". Uranium One notes that (with the exception of overlying and underlying monitor wells, which are already mentioned) monitor wells are not placed "within the wellfields" to provide detection of excursion.
- Page 6-6, Line 14: At the beginning of this sentence, NRC should add "Under WDEQ requirements..." The requirement to show interconnection between monitor wells and the production patterns comes from WDEQ requirements and is not specified by NRC in any guidance.
- Page 6-6, Line 17: The phrase "...typical pump tests used for a confined aquifer are ineffective." is incorrect. Pump tests in an unconfined aquifer can be an effective method of showing interconnection between monitor wells and production patterns. As discussed in the license application, it is expected that more intensive pump testing will be necessary under unconfined conditions.
- Page 6-6, Line 30: NRC needs to clarify its approach to wellfield package review and approval as the new policies are inconsistent with performance-based licensing and the manner in which ISR operations were licensed in the past. Specifically, NRC staff has stated that new licensees would be required to submit some initial wellfield Hydrologic Data Packages until the staff developed a level of comfort with the licensee.

- Page 6-7, Line 9: Insert “and/or” in between the phrase “high and low pressure...” and “flow alarms...”
- Page 6-7, Line 19: replace the phrase “...have a monitoring device that sounds an alarm...” with “...be monitored to sound an alarm...”
- Page 6-7, Line 20: Insert “and/or” in between the words “flow” and “pressure”.
- Page 6-8: NRC needs to reference the fact that ongoing monitoring and protection of historic and cultural resources will be required under a license condition.

SECTION 8 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Page 8-4, Table 8-1: Under short term impacts for land use, CBM and oil and gas exploration would not be limited over the life of the project. As previously noted, ISR mining and CBM operations can coexist.

Page 8-5, Table 8-1: Under long term impacts for geology and soils, the discussion of groundwater levels would apply to water resources impacts.

Page 8-6, Table 8-1: Under Unavoidable Adverse Environmental Impacts for water resources, if the impact is unavoidable, NRC cannot say that surface water “could” potentially be impacted by an increase in sediment yield.

Page 8-7, Table 8-1: Under Irreversible and Irretrievable Commitment of Resources for water resources (groundwater), there are several typographical errors in this discussion.

Page 8-8, Table 8-1: Under Unavoidable Adverse Environmental Impacts for ecology, there will not be a loss of vegetation over the entire 57 acres of wellfield.

Page 8-10, Table 8-1: Under Short term impacts for historical and cultural resources, as noted in the previous comment on Page xxii, Line 13, Uranium One has not proposed the preparation of an Unanticipated Discovery Plan.