ADDENDUM 1-A NRC PRE-SUBMISSION APPLICATION AUDIT MATRIX

	NRC Comment	Comment Response	Comment Location
Technical Report			
TR Section 1.0	Discussion of ISR process needs to be site-specific, as opposed to generic.	The language in TR Section 1.7 has been revised to reflect site-specific ISR processes.	TR Section 1.7 begins on p. 1-6.
	Language on 11,000 gallons per minute (gpm) flow rate is vague. AUC needs to specifically state which flow rate is being requested in the license.	Section 1.8 specifies a maximum flow rate of 11,000 gpm.	TR Section 1.8 begins on p. 1-9.
	The Gantt chart presented in the application only addresses the first mine unit. Please provide a general sequence for all mine unit develop, understanding that such sequences are subject to change	TR Figure 1-3 (Gantt chart) now reflects the entire proposed life cycle of the Proposed Project.	TR figure 1-3 is located at the end of Section 1.
	AUC does not discuss the surety, decommissioning plan, or groundwater restoration	A brief summary of financial assurance, decommissioning and groundwater restoration is included in TR Section 1. More detailed discussions regarding each of these subjects can be found in TR Section 6 and TR addendum 6-A (Restoration Action Plan).	Financial assurance in Sec. 1.13 on p. 1-13; decommissioning in Sec. 1.13 on p. 1-13 and groundwater restoration in Sec. 1.11 on p. 1-12.
TR Section 2.0	Figure 2.1.3. The deep disposal well is shown outside of the proposed license area in Section 34.	TR figure 2.1-3 now reflects correct locations for each of the proposed deep disposal wells. TR figure 3-1 depicts the proposed location of the relocated DDW. A written explanation can be found in TR Section 4.3.6.2.2.	TR Figure 2.1-3 is located at the end of Section 2.1 while figure 3-1 is at the end of Section 3. TR Section 4.3.6.2.2 begins on p. 4-18.
	Section 2.2.1, page 2.2-3. AUC does not describe the extent of oil production. During the site tour, staff observed an oil rig drilling within or near the license area (see NUREG-1569 Section 2.6.3 (5)).	A brief summary listing other natural resources being recovered in the Proposed Project area is found in TR Section 2.2.1 with more detailed discussion in ER Section 3.1.8.	TR Section 2.2.1 begins on p. 2.2-1; ER Section 3.1.8 begins on p. 3.1-7.
	The application says no residences are in the proposed license area. Please ensure that the status of residences within the proposed license area remains consistent during the application review period and during operations. NRC staff must be notified of changes in the status of residences during both the application review and operational periods.	The following language is now in the document: "There currently is one residence (the Taffner homestead) located within the Proposed Project boundary. AUC will acquire the Taffner property prior to construction and it will not thereafter be used as a residence. The domestic water well located at the Taffner residence will be plugged in accordance with all WDEQ Rules and Regulations and will not be used for consumption once construction begins."	This language is found in several places in the document including TR Sec. 2.2 (p. 2.2-2) and ER Sec. 3.1.5 (p. 3.1-4).
	Site location and layout map should contain plant outline, pond locations and outline, ore body locations, wellfield locations, and general monitoring well ring locations.	Several figures including TR figures 2.1-3, 3-1 and 3-3 located at the end of their respective sections display each of these features.	TR Figures 2.1-3, 3-1 and 3-3.
	Restricted areas and fence lines should be identified on a site plan.	TR figure 3-1 depicts these features.	TR Figure 3-1 is located at the end of Section 3.
	AUC should provide a map locating nuclear facilities within 50 miles of the site	ER Figure 3.1-6 depicts these facilities.	ER Figure 3.1-6 is located at the end of Section 3.1.
TR Section 2.5	The Year Round Summary data for the regional met data did not appear to reflect the 12 month data. For example, one particular data set showed all the monthly data to be positive values. However, the Year Round Summary was a negative value.	The data in question in both TR Section 2.5 and ER Section 3.6 has been updated.	The tables reflecting these revisions are located in the back of both sections.
	The staff suggests that AUC include the calibration records of meteorological equipment to demonstrate that the quality of the data is adequate for the staff's review.	TR Addendum 2.5-A (The Meteorological System Audit Report with the applicable calibration records) is now included in the application.	TR Addendum 2.5-A is located at the end of Section 2.5.
TR Section 2.6	Figures 2.6a-1 through 2.6a-6. Cross sections are provided on a very large scale (e.g. A- A' is approximately 20,000 feet long and defined with 8 boreholes/wells). Some of the points used to define the cross sections are more than 1 mile apart. Please provide individual cross sections along the major axis of each of the six separate ore bodies using closely spaced well/borehole data that is available. Densely defined cross sections at the local scale of each ore body will enable the staff to analyze the continuity and thickness of aquifers and aquitards to facilitate the review (NUREG-1569 Section 2.6.3 (2)). These higher resolution cross sections should include water levels of the production zone aquifer (PZA), if possible.	Cross sections on a larger project scale are provided as Figures 2.6A-12 to 2.6A-16. Smaller scale cross sections that run through the major ore bodies are shown in plan view on Figure 2.6A-17 location map, and provided as Figures 2.6A-18 to 2.6A-23. These also include the potentiometric elevation surface of the production zone aquifer.	TR Addendum figures 2.6A-11 through 2.6A-23 include structural cross sections including the ore body areas and begin on p. 2.6A-16.
	Addendum 2.6b. Please provide isopachs or other appropriate graphics of underlying or overlying sandstones/aquifers. These would be helpful to demonstrate the continuity of these sandstones/aquifers.	Based on the available site hydrogeologic data, the Overlying Aquifer is not continuous across the Project (see TR Section 2.6.2.2.1 and 2.7.2.3). The overlying aquifer appears continuous on a local scale within the PZM well clusters, but the specific units present in each of the well clusters do not correlate with each other over the greater distances across Proposed Project. Therefore, it would be misleading and inappropriate to construct an isopach of a series of discontinuous sand intervals that compose the Overlying Aquifer .Based on the available site data, the Underlying Unit does not meet the characteristics of an aquifer (see TR Section 2.7.2.3). The underlying unit is also a discontinuous unit across the project, and therefore not appropriate for the construction of an isopach for this unit. Cross-sections provided in Figures 2.6A-12 to 2.6A-16 and 2.6A-18 to 2.6A-23 help to illustrate the lack of continuity of the Overlying Aquifer and Underlying Unit across the Project.	TR Section 2.6.2.2.1 begins on p. 2.6-8 and Section 2.7.2.3 begins on p. 2.7-27. The Addendum figures noted begin on p. 2.6A-16.

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	Coal bed methane (CBM) and deep well injection zones are not indicated on any cross sections (NUREG-1569 section 2.6.3 (3)). Please provide one cross section showing these zones.	Figure 2.6A-4 is a type log in the area that shows the stratigraphic relationship of the PZA, the local CBM production zone in the Big George Coal, and proposed deep well injection targets.	TR Figure 2.6A-4 is located in Addendum 2.6-A on p. 2.6A-9.
	A borehole log or cross section showing location of Ft Union aquifers relative to production zone would help the NRC staff evaluate water supply resources relative to production zone aquifers (NUREG-1569, Section 2.6.3 (3)).	Figure 2.6A-4 also shows the stratigraphic location of the Fort Union aquifer (water supply for Wright), in relation to the PZA, local CBM production, and the proposed deep well injection zone.	TR Figure 2.6A-4 is located in Addendum 2.6-A on p. 2.6A-9.
TR Section 2.7	Please provide surface water reservoirs (Table 2.7a-10) and CBM impoundments within license area on surface water features map (Figure 2.7-3A) (NUREG-1569 Section 2.7.3(1)).	The map (TR figure 2.7A-7) depicting these items has been inserted into the document.	Figure 2.7A-7 in TR Addendum 2.7A.
	Please provide a description of CBM impoundment monitoring wells, if any, which may be required by the State of Wyoming.	A discussion describing the CBM groundwater studies and monitoring well network in the area begins in TR Section 2.7.2.6.	TR Section 2.7.2.6 begins on p. 2.7-61
	Please provide maps showing potential flooding around drainages or in/near planned wellfields/production units. These maps should include those for the 25-, 50-, and 100-year return interval (NUREG-1569 Section 2.7.3(2)).	The description of the flood inundation study begins in TR Section 2.7.1.5 and includes the table/figure references for this comment.	TR Section 2.7.1.5 begins on p. 2.7-9; Each of these flood inundation tables are found in TR Addendum 2.7-A; figures 2.7A-4 and 2.7A-5 are also found in TR Addendum 2.7-A.
	Please provide a discussion of erosion protection for wellfields/production unit infrastructure that may be located in any areas subject to flooding from a 25-, 50- or 100-year event (NUREG-1569 Section 2.7.3(2)).	Brief discussions of erosion control regarding flooding is in TR Sections 2.7.1.5.2 and 2.7.1.7.	TR Section 2.7.1.5.2 begins on p. 2.7-10 and 2.7.1.7 on p. 2.7-12.
	Figure 2.7a-6 would be enhanced if the WYPDES sample locations were shown relative to drainages and surface water sampling locations.	TR figure 2.7A-7 displays WYPDES locations.	Figure 2.7A-7 is located in TR Addendum 2.7-A.
	In Section 2.7.1.8, some surface water samples show wide swings in iron, manganese, conductivity, TDS, sodium, sulfate, alkalinity, chloride and other constituents between quarters. Please include an analysis to determine if these variations are a consequence of the impact from CBM produced water on surface water quality or some other source.	TR Section 2.7.1.9 analyzes surface water quality in the Proposed Project area including the impacts of CBM produced water in Section 2.7.1.9.2.	TR Section 2.7.1.9 begins on p. 2.7-12.
	Please add ground surface elevations, top of casing elevations, and UTM coordinates of all wells to Table 2.7.2-1 (NUREG-1569 Section 2.7.3(3)).	TR Tables 2.7B-1 and 2.7B-2 include this information.	Both tables are located in TR Addendum 2.7-B.
	Please confirm whether or not the shallow monitoring (SM) unit meets the definition of an aquifer in 10 CFR Part 40, Appendix A.	Discussion of the SM Unit and its definition is in TR Section 2.7.2.2.2.	The SM Unit discussion in TR Section 2.7.2.2.2 begins on p. 2.7-28.
	If the SM unit is not an aquifer, the overlying aquifer would be the surficial aquifer. Please provide the depth to water in the overlying aquifer across the license area. Depth to water would be helpful to evaluate if leaks at the surface or in wellfield trunklines/piping would contaminate the overlying aquifer.	Updated discussions of the overlying aquifer are found throughout TR Section 2.7 especially Section 2.7.2.3 and ER Section 3.4. More discussions can be found in the Groundwater Numerical Model Report in TR Addendum 2.7-C. TR Addendum 2.7-B includes Figure 2.7B-8 (Overlying Aquifer Water Level Elevations) and Table 2.7B-4 which lists depth to water in AUC's seven overlying aquifer monitor wells.	The Overlying Aquifer discussion in Section 2.7.2.3 begins on p. 2.7-28; the various tables and figures are found in TR Addendum 2.7-B.
	Please provide an evaluation of overlying aquifer interaction with any surface drainage	A detailed discussion of the Proposed Project's surface drainage is found in TR Section 2.7.1. Based on geologic and hydrologic data at the Project, the Overlying Aquifer is considered isolated from surficial drainages. A brief summary regarding the overlying aquifer is found in Section 2.7.2.3.	TR Section 2.7.1 begins on p. 2.7-2; the brief summary begins on p. 2.7-28.
	Please confirm whether or not the underlying aquifer (UA) meets the definition of an aquifer in 10 CFR Part 40, Appendix A.	The Underlying Unit does not meet the characteristics of an aquifer. A discussion of the underlying aquifer including definition begins in TR Section 2.7.2.3 and ER Section 3.4.2.3.	The Underlying Unit discussion in TR Section 2.7.2.3 begins on p. 2.7-31; ER Section 3.4.2.3 begins on p. 3.4-27
	Please provide a map showing measured level data at individual wells for the overlying and underlying aquifer (see NUREG-1569 2.7.3 (3)).	Figures 2.7B-8 and 2.7B-9 present maps of measured water level elevations for the Overlying Aquifer and the Underlying Unit, respectively. Due to the discontinuous nature of both of these stratigraphic units across the project, a potentiometric elevation contour map was not constructed.	TR addendum figures 2.7B-8 and 2.7B-9 are located on pages 2.7B-86 and 87.
	PZM-1 and PZM-3 pumping tests indicate large drawdown response at pumping wells PZM 1 and PZM 3. Please address whether these drawdowns may lead to dewatering of production wells at proposed operating rates.	The large drawdown responses observed in the pumping wells at the PZM1 and PZM3 pump tests are the result of relatively inefficient wells, as the drawdowns observed in the wellbores do not accurately represent water level conditions in the aquifer away from the well completion.	PZM1 pump test discussion begins in TR Section 2.7.2.7.1 on p. 2.7-43. PZM3 pump test discussion begins on p. 2.7-46.

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	Page 2.7-45. The UA aquifer test at 1.9 gallons per minute (gpm) for 27 minutes, indicated 104 feet (ft) of drawdown. Data in Table 2.7.2-29 are not at a time scale where the response curve can be evaluated. Please provide more of a description of the underlying aquifer.	Due to the very low well yield observed in most of the tests conducted in the overlying aquifer, water table unit, and the underlying unit, the drawdown observed during pumping in most of the wells is defined by casing storage, with little aquifer input. For these wells, the drawdown was of no use in analysis, and the recovery data was used for aquifer properties. A description of the underlying unit, which does not meet the characteristics of an aquifer is provided in TR Section 2.7.2.3. A detailed discussion can also be found in TR Addendum 2.7-D (Pumping Test Report).	The underlying unit discussion is found in TR Section 2.7.2.3 beginning on p. 2.7-31; Section 2.7.2.7 begins on p. 2.7-42.
	Global comment – the time scale of the pumping tests is not at a resolution to assess early, middle and late time response for specific effects.	Figures depicting early to middle time hydrographs of the two tests conducted in the partially saturated areas (PZM1 and PZM3) illustrate the earlier time response observed in these pumping wells. Detailed discussions and accompanying figures/tables regarding these pumping tests can be found in TR Section 2.7.2.7, and TR addenda 2.7-B (Groundwater Tables/Figures), 2.7-C (Groundwater Flow Model Report) and 2.7-D (Pumping Test Report.	TR Section 2.7.2.7 begins on p. 2.7-42, all addenda can be found at the end of TR Section 2.7.
	Please provide Stiff and Piper diagrams of pre-operational ground water quality.	Stiff and Piper diagram analysis is discussed in TR Section 2.7.2.8.2 with diagrams in Addendum 2.7-B.	The Stiff /Piper discussion is in TR Section 2.7.2.8.2 and begins on p. 2.7-66. Various Stiff and Piper diagrams are located in TR Addendum 2.7-B beginning with Figure 2.7B- 60.
	Please check the SM water quality data to evaluate if this water is of the same quality as CBM-produced water.	A discussion describing ground water quality including the differences between the SM Unit and CBM samples begins in TR Section 2.7.2.8.2.	TR Section 2.7.2.8.2 begins on p. 2.7-66 and continues through p. 2.7-71.
	Please provide an inventory and completion description of oil/gas wells located within 3 miles of the license area similar to the groundwater and CBM wells shown in Figures 2.7.2-50 and 2.7.2-51.	TR Figure 2.6A-5 and ER Figure 3.1-5 display these wells; ER Tables 3.1-5 and 3.1-6 include additional information.	Figure 2.6A-5 is located in TR Addendum 2.6-A; ER Figure 3.1-5, and Tables 3.1-5 and 3.1-6 are at the end of ER Section 3.1
	Please provide discussions of all private wells in the proposed license area in the TR similar to discussion in Environmental Report (ER) Section 3.4.2.7 (e.g., number of wells, use, yield and aquifer completion). Please describe how these wells in the PZA and OA will be addressed during operations in the TR (like ER 4.4.2.1.). Will these private wells be plugged, recompleted in other zones, etc?	More detailed discussions regarding private wells are now included in both TR Section 2.7.2.7 and ER Section 3.4.2.7. Groundwater impact assessments are located in TR Sections 7.2.8.1 and 7.2.8.2, and ER Sections 4.4.2.1 and 4.4.2.2.	TR Section 2.7.2.7 begins on p. 2.7-62, TR Section 7.2.8.1 begins on p. 7-27, ER Section 3.4.2.7 begins on p. 3.4-63, and ER Section 4.4.2.1 begins on p. 4-20.
TR Section 2.9	There was no discussion regarding fish, livestock, or crop sampling. If no such sampling was performed, please provide a justification. Staff also suggests providing a more complete description of the vegetation types.	The sampling of vegetation and fish is discussed in TR Section 2.9.10 with further habitat discussion in TR Section 2.8. Vegetation is discussed in TR Section 2.8.4.1 and ER Section 3.5.4.1. ER Addenda 3.5-A through 3.5-G include vegetation discussions. As noted in Section TR 2.9.1, no crop farming activities occur within the project area.	TR Section 2.8.4.1 begins on p. 2.8-3; TR Section 2.9.10 begins on p. 2.9-16; ER Section 3.5.4.1 begins on p. 3.5-3; the ER Addenda are located at the end of ER Section 3.5.
	The staff suggests that AUC produce one map with all the environmental sampling points on the map. If possible superimpose a sector diagram on the map. This will allow the reviewer to see if sampling locations are in the proper sector. Also, please provide a table to include each sampling location, sector, and distance from the central processing plant or other designated centroid.	TR Figure 2.9-1 includes sampling locations and CPP location.	This figure is located at the end of TR Section 2.9.
	Section 2.9. Regulatory Guide 4.14 recommends quarterly water quality sampling for total uranium, radium 226, thorium 230, lead 210, and polonium 210 in all private wells that could be used for drinking water or livestock within 2 kilometers (km) of the license boundary. Tables 2.9-16 through 2.9-20 only show that 1 quarter of sampling performed for a limited number of private wells in fall 2010. Please conduct this quarterly sampling for all private wells within 2 km.	Four quarters of sampling have been conducted for the stock/domestic wells and results are reflected in upated groundwater tables in TR Addendum 2.7-B. Groundwater quality discussion begins in TR Section 2.7.2.8.2.	The updated tables begin with TR Addendum Table 2.7B-38 through 2.7B-40. TR Section 2.7.2.8.2 begins on p. 2.7-66.
	Please provide a table describing the private well completions and map (update 2.7.2- 50?) of all private wells within 2 km of the license area that would be part of this quarterly sampling.	TR Figure 2.7B-58 includes locatons of all domestic/stock wells within 2 km of the proposed license area. Table 2.7B- 18 includes all known non-CBM well completions within 2 km while Table 2.7B-37 includes just the Stock/Domestic Wells.	Figure 2.7B-58 (p. 136), Table 2.7B-18 (begins on p. 36) and Table 2.7B-37 (p. 70) are all located in TR Addendum 2.7-B.
	Please note that Figure 2.9-25 is missing.	The missing figure in question is now included in the document as TR Figure 2.9-20.	Figure 2.9-20 is located at the end of TR Section 2.9.
TR Section 3.0	Please provide a commitment to maintain an inward gradient in all production areas until restoration stability monitoring begins. Please provide a discussion of the concentration of dissolved oxygen of the lixiviant. What is the concentration to be injected in the production area in the partially saturated aquifer?	The inward gradient commitment is discussed in TR Section 3.1.5. A lixiviant discussion regarding DO and the partially saturated aquifer can be found in TR Section 3.1.4.1.	TR Section 3.1.5 begins on p. 3-15. Section 3.1.4.1 begins on p. 3-13.
	Please state if hydrogen peroxide will or will not be used in the lixiviant.	The discussion of the precipitation system and hydrogen peroxide begins in TR Section 3.2.1.3 A lixiviant discussion regarding hydrogen peroxide can be found in TR Section 3.1.4.1.	Section 3.2.1.3 begins on p. 3-28. Section 3.1.4.1 begins on p. 3-13.

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Please provide a discussion of the anticipated operating head in the partially saturated portions of the production areas. Is this head sufficient to maintain the dissolved oxygen concentration in the lixiviant in solution at the injection wells?	A lixiviant discussion regarding DO and the partially saturated aquifer can be found in TR Section 3.1.4.1.	Section 3.1.4.1 begins on p. 3-13.
Will injectivity be lost if oxygen comes out of solution in the injection wells in partially saturated portions of the production area? Please address how injectivity loss will be addressed if it occurs.	A lixiviant discussion regarding DO and the partially saturated aquifer can be found in TR Section 3.1.4.1.	Section 3.1.4.1 begins on p. 3-13
Please provide a comprehensive analysis of waste disposal capacity. The application provides the predicted maximum waste disposal rate for the deep disposal wells during operation (115 gallons per minute (gpm)), operation/restoration (183 gpm) and restoration (104 gpm). However, the application does not state what the expected actual rates would be for each disposal well, which often differ from the permitted rates. Based on this expected rate, will four disposal wells meet and exceed this maximum waste disposal rate of 183 gpm? Is excess capacity available if any of the disposal wells goes out of operation (e.g. surge ponds)?	Expanded discussions on wastewater disposal capacity and backup pond(s) are found in TR Sections 3.1.8 and 4.3.	TR Section 3.1.8 begins on p. 3-22 while Section 4.3 begins on p. 4-7.
Please provide an analysis to assess the maximum extraction (production well) rate that can be achieved in partially saturated production areas without dewatering.	The observed pumping well drawdown observed in the partially saturated pump test areas (PZM1 and PZM3) are misleading and are the result of relatively inefficient well completions in the pumping wells. The apparent steepness of the drawdown cone out to additional observation wells from these pump tests does not reflect actual aquifer conditions away from the completion zone in these pumping wells. Significant aquifer dewatering at the proposed design rates for the Project in the partially saturated areas (20 GPM) is not a concern for this Project. This question is addressed in TR Addendum 2.7-C (Groundwater Flow Model Report).	TR addendum 2.7-C is located at the end of TR Section 2.7.
Please provide evidence that an excursion can be captured in the partially saturated production areas without dewatering or "chasing an excursion" with numerous extraction wells. The application presents cones of dewatering that are deep and tight based on pumping test results, which produce smaller capture radii than that of a confined, saturated aquifer.	This question is addressed in TR Addendum 2.7-C (Groundwater Flow Model Report).	TR addendum 2.7-C is located at the end of TR Section 2.7.
Section 3.1.5. Please provide evidence that an inward gradient can be achieved and maintained in the partially saturated production areas. Will the proposed bleed of 0.5-1.5% also be sufficient in the partially saturated zones?	Based on the results of modeling provided in TR Addendum 2.7-C (Groundwater Model Report), an inward gradient can be maintained in the partially saturated areas. A horizontal flare determination was conducted on Production Unit 6 in the partially saturated area of the Project, and a 2 year simulation was conducted at proposed design rates. Groundwater flow particles placed at the production unit perimeter remain within hydraulic control of this production unit at a 1% modeled bleed. Additional discussion is found in TR Section 3.1.5.	TR addendum 2.7-C is located at the end of TR Section 2.7. TR Section 3.1.5 begins on p. 3-15.
Please provide actual drawdown analysis and maps of anticipated drawdown within and outside the license area to determine the extent of the drawdown based on maximum consumptive use in the TR. Page 3-14 only states that the pumping tests indicate negligible drawdown outside the wellfield area.	Detailed discussions, analysis, model projections and accompanying figures/tables of pumping tests can be found in TR Section 2.7.2, and TR addenda 2.7-B (Groundwater Tables and Figures), 2.7-C (Groundwater Flow Model Report) and 2.7-D (Regional Hydrologic Test Report).	TR Section 2.7.2 begins on p. 2.7-17; the addenda can be found at the end of TR Section 2.7
Please provide a commitment to determine if any new private well completions are added within 2 km of the license area during the application review and license periods. Please also provide a commitment to evaluate the impact of ISR operation on any new well completions or if any new well will impact hydraulic control of ISR production areas.	TR Section 7.2.8.2 and ER Section 4.4.2.2 include these discussions.	TR Section 7.2.8.2 begins on p. 7-27 and ER Section 4.4.2.2 begins on p. 4-21.
AUC should specify the flow rate being requested in the license application	A water balance discussion including flow rates can be found in TR Section 3.1.7.	Section 3.1.7 begins on p. 3-19.
Discussions of roll fronts are too generic; these should be more site-specific.	TR Section 2.6.2.6 discusses roll fronts accompanied by Figure 2.6A-27 which is site specific.	TR Section 2.6.2.6 begins on p. 2.6-15 while Figure 2.6A-27 is located at the end of TR Addendum 2.6A.
Discussion of well construction methods is confusing. It appears that either there is no Method 1, or Method 1 is incorrectly labeled.	Four well completion methods and accompanying Figure 3-2 are discussed in TR Section 3.1.3.	TR Section 3.1.3 begins on p. 3-4.
Model results regarding offsite water quantity/quality impacts should be provided.	This discussion can be found in TR Addendum 2.7-C (Groundwater Flow Model). A groundwater impact discussion can also be found in ER Section 4.4.2	TR Addendum 2.7-C is located at the end of TR Section 2.7; ER Section 4.4.2 begins on p. 4-19.
Model justifications should also be provided regarding flare, ability to recover excursions, and ability to detect excursions.	Horizontal flare demonstrate and demonstration of excursion recovery is discussed in TR Addendum 2.7-C (Groundwater Flow Model).	TR Addendum 2.7-C is located at the end of TR Section 2.7.
It appears that some confusion exists regarding which stream will be treated by operational RO. Will it be the bleed or a portion of barren lixiviant?	Water balance is discussed in detail in TR Section 3.1.7.	Section 3.1.7 begins on p. 3-19.

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	Please provide more detail on tank secondary containment and the volume of tanks vs.volume of containment. Also, please discuss the fate of spilled liquids or method offrecovery.	CPP liquid containment discussions are found in TR Section 3.2.3.2. More discussions regarding spills and containment can be found in ER Sections 6.4.1.3 and 6.10.2.	TR Section 3.2.3.2 begins on p. 3-39. ER Section 6.4.1.3 begins on p. 6-23 and Section 6.10.1 begins on p. 6-42.
	Please provide a diagram showing the manner in which pressure and flow meters are monitored by AUC staff. Do these meters connect to computers at the main plant?	TR Section 3.4 provides discussion of instrumentation and control while Figure 3-9 is a flow diagram.	Section 3.4 begins on p. 3-40 while Figure 3-9 can be found at the end of the section.
	Please provide descriptions of dryer monitoring equipment and a statement that hourly measurements of system performance will be made per Criterion 8.	A discussion of yellowcake drying systems including hourly checks begins in TR Section 3.4.3.	TR Section 3.4.3 begins on p. 3-41.
	Please provide waste volume estimates.	Byproduct volume discussions are found in TR Section 3.4.5 and in ER Section 4.13.	TR Section 3.4.5 begins on p. 3-42; ER Section 4.13 begins on p. 4-80.
	Please provide a map of all wellfields with monitoring wells in the ring and overlying/underlying aquifers.	TR Figure 2.1-3 displays the proposed infrastructure with monitor well rings; Isopach Figures 2.6A-24, 25 and 26 display the aquifers.	TR Figure 2.1-3 is located at the end of Section 2.1; Isopach Figures 2.6A-24, 25 and 26 can be found in TR Addendum 2.6A (p. 29-31)
	The restricted area boundary needs to be delineated, approximate locations of air samplers and radon detectors should be provided. Include a statement that locations are subject to change based on operational needs.	TR Figure 3-1 displays some of these features; TR Section 5.7.3 discusses air sampling, radon detection and possible monitor location changes; initial monitor locations are found on TR Figure 5-2.	TR Figure 3-1 can be found at the end of Section 3; TR Section 5.7.3 begins on p. 5-31 with Figure 5-2 located at the end of the section.
	Please provide information regarding backup systems. What happens when either important components fail or in the event of sustained power outages? The staff is particularly concerned with dryer filtration systems and automatic shutoff valves.	TR Sections 3.2.1.4 and 3.2.1.7 discuss these concerns.	TR Section 3.2.1.4 begins on p. 3-29; 3.2.1.7 is located on p. 3-33.
TR Section 4.0	Please substantiate the claim that 99% of radon will be recycled.	The language in Section 4.1 has been expanded to clarify these concerns.	This section begins on p. 4-1.
	Please substantiate the claim that the vacuum dryer system is zero emissions.Manufacturer's information could be used for this purpose. Also provide more specificson the dryer monitoring systems and the manner in which emissions removal efficiencycan be confirmed.	TR Section 4.2.1 discusses air particulate effluents.	TR Section 4.2.1 begins on page 4-3.
	Please provide AUC's strategy for addressing 10 CFR 40.65 reporting requirements. If modeling or calculations are to be used then provide more specifics on input data.	This discussion can be found in TR Section 4.2.2	TR Section 4.2.2 begins on page 4-5.
	Surge ponds. Please confirm the purpose of these ponds because the ER and TR state different functions. Also provide slope stability analyses, embankment designs, and locations of monitoring wells around the ponds.	Detailed discussions regarding the backup storage pond system can be found in TR Sections 3.1.8 and 4.3.5, and ER Section 6.4.2.2.7.	TR Section 3.1.8 begins on p. 3-22; 4.3.5 begins on p. 4-11; ER Section 6.4.2.2.7 begins on p. 6-31.
	Please provide a 10 CFR 20.2002 analysis for disposal wells.	Expanded discussions on DDWs are found in TR Sections 3.1.8 and 4.3.6.2.	TR section 3.1.8 begins on p. 3-22; 4.3.6.2 begins on p. 4-16.
TR Section 5.0	The QA manager should be included in Figure 5-1 along with a brief discussion of this person's duties and responsibilities.	The figure in question has been updated. The discussion can be found in TR Section 5.1.4.	TR Section 5.1.4 is on p. 5-3; Figure 5-1 is on p. 5-69.
	Figure 5.7-5 was referenced in the technical report, but no Figure 5.7-5 was found in the report.	The correct figure is Figure 5-2.	TR Figure 5-2 can be found at the end of TR Section 5.
	Please provide one table that includes all of the radiation detectors. The table should also include the a priori lower limit of detection. The equation for the lower limit of detection can be found in RG 8.30. Other information should include model number, type of detector (GM, NaI, etc), and range.	Table 5-1 lists these detectors.	TR Table 5-1 can be found on p. 5-65.
	Please demonstrate the manner in which AUC will determine radon daughter concentrations.	This discussion can be found in TR Sections 5.7.3.2.	TR Section 5.7.3.2 begins on p. 5-35.
	Please provide more details regarding the respiratory protection program, particularly how AUC will use the respirators and if sanitation will be available	A brief summary of this subject is found in TR Section 5.7.3.3	TR Section 5.7.3.3 is on p. 5-36.
	Please identify the restricted and control areas at the proposed Reno Creek facility.	A discussion on restricted and controlled areas is found in TR Section 5.6 Security fencing can be viewed on TR Figure 3-1.	TR Section 5.6 begins on p. 5-20 TR Figure 3-1 can be found at the end of TR Section 3.
	Section 5.7.7 for radon requires some clarification. This section appears to contain information more appropriate for particulate uranium.	TR Section 5.7.7 discusses radon with references to TR Section 2.9 for additional details.	TR Section 5.7.7 begins on p. 5-50.

	NRC Comment	Comment Response	Comment Location
	The applicant should review Section 5.7.7 and compare statements from Section 5.7.7 with those in Section 2.9. There appears to be some discrepancies between the two sections and these two sections should be consistent. For example, Section 5.7.7 discusses fish sampling, but fish sampling was not discussed in Section 2.9. If the applicant is making a decision to not sample for fish during the preoperation phase, this should be stated and explained. The applicant should not be silent on a particular sampling medium for the pre-operation phase and then discuss the same sampling medium in the operation phase.	TR Section 2.9.10.4 clarifies and references this concern.	TR Section 2.9.10.4 can be found on p. 2.9-16.
	Section 5.7.7 regarding fish sampling references a Section 2.8.5.5. No Section 2.8.5.5 was found in the report.	The previous incorrect reference has been changed to the correct reference of TR Section 2.8.4.2.6.	
	It is not clear if the applicant plans to sample surface water.	TR Section 5.7.8 clarifies this concern.	TR Section 5.7.8 begins on p. 5-53.
TR Section 5.7.8	Section 5.7.8.1.2. Please commit to sample ore zone baseline ground water quality at wells four times and at least 2 weeks apart for all constituents of concern to establish baseline water quality. Typically, if a constituent is non-detect (ND) in the first two samples, it is not necessary for it to be measured in the 3rd and 4th sampling events.	TR Section 5.7.8.1.2 now includes this commitment.	TR Section 5.7.8.1.2 begins on p. 5-53.
	Section 5.7.8.1.3. Please commit that all overlying, underlying aquifer and perimeter ring monitoring wells will be sampled four times at least 2 weeks apart for all constituents to establish baseline water quality for these wells in case they require restoration. As stated above, if a constituent is ND in the first two samples, it is not necessary for it to be evaluated in the 3rd and 4th samples.	TR Section 5.7.8.1.3 now includes this commitment.	TR Section 5.7.8.1.3 begins on p. 5-54.
	Please provide an approach to distinguish a monitoring well (MW) excursion or surface water impact that may result from coal bed methane produced water from an excursion caused by ISR licensed activities.	A comparison and analysis of CBM disharge water with lixiviant is discussed in TR Section 2.7.2.8.2	TR Section 2.7.2.8.2 begins on p. 2.7-66; the CBM discussion begins on p. 2.7-70.
TR Section 6.1	Section 6.1.3. Please provide a commitment to conduct excursion monitoring until a production unit/wellfield restoration is approved. Applicant can propose a different excursion sampling frequency after restoration stability monitoring is completed.	This commitment is now included in the last paragraph of TR Section 6.1.3.	TR Section 6.1.3 begins on p. 6-4.
	Section 6.1.4.4. Please ensure that NRC restoration standards have been achieved when the applicant requests the start of stability monitoring, from the State of Wyoming. Applicant should also note that NRC regulations require that groundwater concentrations must be ALARA if the applicant did not achieve NRC-approved background or drinking water standards, as required by 10 CFR Part 40 Appendix A Criterion 5B(6).	TR Section 6.1.5 now addresses this concern.	TR Section 6.1.5 can be found on p. 6-9.
	Please provide a discussion of how pore volume or flare is to be determined in the saturated or partially saturated portions of the license area.	At least two discussions can be found regarding pore volumes in the TR: one is in Section 3.1.9 and another in Section 6.1.5.1.	TR Section 3.1.9 begins on p. 3-23; Section 6.1.5.1 begins on p. 6-11.
	Please provide a discussion of how restoration will be modified to ensure sweep of all portions of the partially saturated aquifer which have been exposed to lixiviant (e.g. flipping production/injection wells).	TR Section 6.1.4 discusses this comment.	TR Section 6.1.4 begins on p. 6-5.
	Need to discuss the manner in which spills will be documented and that spill records will be maintained whether or not reporting is required by regulation.	TR Section 5.2.6 addresses this comment.	TR Section 5.2.6 begins on p. 5-12.
	No decommissioning cost estimate provided.	Decommissioning cost estimates can be found in TR Addendum 6-A, the Restoration Action Plan (RAP).	TR Addendum 6-A is located at the end of Section 6.
<i>TR Sections 6.3 &</i> 6.4	Is the residential farmer scenario applicable? If so, why? Why only the external and plant ingestion pathways? What about the other pathways?	TR Sections 6.4.1.2 and 6.4.1.3, and TR Addendum 6-B (RESRAD) discuss and depict this scenario.	TR Section 6.4.1.2 begins on p. 6-26; Addendum 6-B is located at the end of Section 6.
	AUC references RESRAD calculations in Appendix C. However, the staff did not find an Appendix C during the review.	TR Addendum 6-B (RESRAD) is now in the document.	TR Addendum 6-B is located at the end of Section 6.
	Section 6.4.4.1. Please provide a commitment to continue stability monitoring until four consecutive quarters show no statistically significant increasing trends in the constituents of concern.	This commitment is now included in TR Section 6.1.3 with further discussion in Section 6.1.5.	TR Section 6.1.3 begins on p. 6-4; Section 6.1.5 begins on p. 6-9.

	NRC Comment	Comment Response	Comment Location
	Environmental Report		
General Observations	NRC will use the Environmental Report (ER) as a starting point for preparing its environmental review. Figures in the SEIS will be published in black and white. The figures in the ER are in color. Consider making certain figures available in black and white to support the NRC review.	Upon request, AUC will provide to the NRC any black and white figures essential to the development of the SEIS.	
	Provide a copy of the UIC permit application, if available.	A copy of this application is now in the document.	TR Addendum 4B includes the UIC permit application.
	Provide any feasibility studies conducted to support the determination to use Class I disposal wells for management of liquid effluent.	A discussion regarding this comment can be found in ER Section 2.1.7 and accompanying Table 2-1.	ER Section 2.1.7 begins on p. 2-8; Table 2-1 can be found at the end of the same section.
Key Observations	Consider providing a stand-alone chapter on the analysis of cumulative impacts. The analysis of cumulative impacts needs to consider past, present, and reasonably foreseeable future activities. Previous cumulative impacts analyses considered future activities out to about 20 years (license term and one renewal). The analysis needs to be conducted on a resource by resource area (e.g. air, water, etc.) and the geographic area to consider will vary by resource.	The Cumulative Impacts section is now a stand-alone section in the ER as Section 5.	
	Consider providing a site-specific analysis of air quality impacts. The existing discussion tiers from the GEIS. The GEIS noted that the primary nonradiological emissions from in-situ recovery facilities include diesel combustion emissions from construction equipment (including drilling rigs) and fugitive dust emissions from vehicle travel on unpaved road. A site-specific analysis of fugitive dust emissions, well drilling emissions, construction equipment emissions, and reclamation equipment emissions should be conducted.	The site-specific analysis of air quality impacts can be found in ER Section 4.6 with accompanying figures and tables. Related discussions can be found in TR Sections 7.1.5, 7.2.5, 7.3.4.	ER Section 4.6 begins on page 4-39; TR Section 7.1.5 begins on p. 7-7.
	Consider environmental justice in the ER. Executive Order 12898 requires Federal agencies to consider environmental justice in their NEPA reviews and NRC conducts such an analysis if an environmental impact statement is being prepared. To conduct such an analysis, the applicant needs to understand the distribution of minority and low income populations within the area to assess whether there would be a disproportionately high and adverse impact to these populations.	A discussion regarding Environmental Justice can be found in ER Section 3.10.4	ER Section 3.10.4 begins on page 3.10-9.
	Consider the initiation of Traditional Cultural Property (TCP) surveys.	A discussion regarding TCPs can be found in ER Section 3.8.4.	ER Section 3.8.4 begins on page 3.8-7.
Other Observations	Please provide a schedule that shows the development of individual wellfields or production areas over time. To assess the environmental impact, NRC staff needs to understand the footprint of the activities that will occur since this will drive the impact analyses.	The discussion in ER Section 1.3 and accompanying figure 1-6 (Gantt Chart) addresses this comment.	ER Section 1.3 begins on p. 1-15; ER Figure 1-6 can be found at the end of ER Section 1.
	Please provide a map that shows the detailed infrastructure (i.e., headerhouses, access roads, overhead lines, wellfields, central processing plant, storage areas etc.) and a table that summarizes the area(s) potentially disturbed (e.g., how many miles of new access road would be constructed and where would it be located?)	ER Figure 1-5 addresses this comment along with ER Table 1-3.	Both the figure and table can be found at the end of ER Section 1.
	How and where will chemicals be stored? How much will be stored at any given time?	ER Section 1.4.8, and TR Section 3.2.2 with accompanying Table 3-2 address this comment.	ER Section 1.4.8 begins on page 1-21; TR Section 3.2.2 begins on page 3-33; Table 3-2 is located at the end of TR Section 3.
	Please clarify the use of the surge ponds (i.e., will they also be used for evaporation?) and ensure their location is shown on a map.	Detailed discussions regarding the backup storage pond system can be found in TR Sections 3.1.8 and 4.3.5, and ER Section 6.4.2.2.7.	TR Section 3.1.8 begins on p. 3-22; 4.3.5 begins on p. 4-11; ER Section 6.4.2.2.7 begins on p. 6-31
	AUC discusses the potential use of wastewater tanks. Please show the proposed location and size of these tanks.	ER Figure 1-8 displays these tanks with additional information in TR Table 3-2. The water balance discussion in TR Section 3.1.7 briefly refers to these tanks.	The figure is located at the end of ER Section 1 while table can be found at the end of TR Section 3; TR Section 3.1.7 begins on p. 3-19.
	The ER describes various facilities that could be used for disposal of anticipated byproduct material and other waste types. If the anticipated location is known, please provide it. Otherwise, NRC staff will select the most conservative location (e.g., the farthest away) to estimate impacts.	This comment is addressed in ER Section 3.2.2 with accompanying Figure 3.2-3 and Table 3.2-7.	ER Section 3.2.2 begins on page 3.2-2; both the figure and table are located at the end of ER Section 3.2.

License Application, Environmental Report

	NRC Comment	Comment Response	Comment Location
	Table 2-2 is a comparison of alternatives considered, but eliminated from detailed analysis. Quantify the impacts to the extent practicable based on site-specific information.	AUC believes the existing tables and impact discussons located throughtout the TR and ER answer this concern.	Alternatives discussions are located in TR Section 8 and ER Section 2. Various impact discussions are found in TR Section 7, and ER Sections 4 and 5.
	The site encompasses part of the Thunder Basin National Grassland. Please ensure that AUC, LLC understands the implications of undertaking activities in such a designated area.	ER Table 3.1-4 includes the following statement: Although the Thunder Basin National Grassland exists within the Proposed Project area, all lands encompassed by the Grassland are Private. Therefore, none of the mentioned activities are allowed within, nor near, the Proposed Project area.	ER Table 3.1-4 can be found at the end of ER Section 3.1.
	Please ensure the transportation analysis also considers the volume and frequency of chemical supply shipments.	Chemical shipments are considered in ER Section 3.2.2.	ER Section 3.2.2 begins on page 3.2-2.
	Please provide the official wetlands determination from the U.S. Army Corps of Engineers (USACE) once it is received.	ER Section 3.5.4.2.4 discusses wetlands determination; ER Addendum 3.5-G includes USACE letter.	ER Section 3.5.4.2.4 begins on page 3.5-13
Editorial Observations	This SEIS tiers from the GEIS. Please ensure the correct geographic region from the GEIS is referenced (Wyoming East Uranium Milling Region).		
	Please clarify whether the Belle Fourche River is classified as perennial.	ER Section 3.5.4.2.3 notes the Belle Fourche River is classified as an ephemeral channel.	ER Section 3.5.4.2.3 begins on page 3.5-13.
	Please confirm the location of the nearest resident and make sure that it is consistent throughout the document.	This comment is addressed by a similar comment in TR Section 2 regarding nearest resident. Language throughout the TR and ER has been changed accordingly.	ER Section 3.1.5 begins on p. 3.1-4.
	Please ensure that byproduct material is referenced correctly.	This comment has been addressed extensively throughout the TR and ER. Examples are TR Section 4.3 and ER Section 3.12.	TR Section 4.3- begins on p. 4-7 while ER Section 3.12 is a stand-alone section.
	Please clarify whether two or four deep disposal wells are proposed for management of liquid effluent.	TR Section 1 confirms the Proposed Project will consist of up to four DDWs.	TR Section 1- begins on page 1-1.