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TR or ER	Section Number	Nature of Comment : Please provide	Actions/Status	Response Date
ER	2.5	**Reasonable Alternatives** The National Environmental Policy Act and Council on Environmental Quality require that federally prepared environmental documents develop and evaluate a reasonable *range of alternatives to the proposed action, including* the No Action Alternative. Alternatives that were considered but deemed unreasonable can be eliminated from further study (i.e., conventional mining, heap leach, and open pit mining). However, reasonable alternatives, related to the ISR process and the No Action Alternative, must be considered in full throughout the document and impacts assessed as they would be for the proposed action. *To comparatively evaluate impacts among alternatives please* provide:		
	1	Information on other sites that were evaluated prior to picking the site where the project is to be accomplished. Also include information on the footprint, such as alternative plant locations, routes for roads, and building locations.	Complete	Submitted June 19
	2	*More physical details (size, location, operations) or other information (cost,* logistics, technology, etc.) on the three liquid effluent disposal alternatives (overland application, evaporation ponds, and deep well injection).	Complete	Submitted June 19
	3	Information on other lixiviants considered, as well as other technologies for underground uranium recovery.	Complete	Submitted June 19
	4	Quantitative and qualitative support for the assessments that are made in Table 2.6-1.	Complete	Submitted June 19
ER	3.2	**Transportation** The ER does not provide a description of the condition of the roads used to route trucks to the site (State Highways 59, 50, and 387). Please address the following:		
	1	Provide a description including the surface (asphalt, gravel, or dirt) and condition (average, hazardous, etc.) which will allow for a complete evaluation of the impacts of ISR facility operation.	Complete	Submitted June 19
	2	Please distinguish between the routes proposed during construction, regular operation, aquifer restoration, and decommissioning.	Complete	Submitted June 19
	3	What will be the final destination of the radioactive waste, mixed waste, and nonradioactive waste? If this has not yet been decided, provide information on the most likely disposal sites and the proposed transportation routes to these sites.	Complete	Submitted June 19
	4	Please specify which new or upgraded roads will not be subject to decommissioning. This information is needed to determine future land use impacts.	Complete	Submitted June 19
	5	There will be an impact to wildlife due to a potential increase in vehicle collisions; what is the anticipated increase in traffic? What will be the estimated increase in traffic from current activities at the site to traffic during construction and also during operation?	Complete	Submitted June 19
ER	4.2.2	**Traffic Impacts** The ER states that the increase in traffic attributable to the workforce during normal operation would be negligible. Additional information is required to adequately assess the impacts of the proposed project. Please provide the following information:		
	1	An assessment of the increase in truck traffic transporting yellowcake	Complete	Submitted June 19
	2	Given the increase in traffic caused by the proposed ISR operation, the type of maintenance that is proposed for on-site roads.	Complete	Submitted June 19

TR or ER	Section Number	Nature of Comment : Please provide	Actions/Status	Response Date
		Surface Waters and Wetlands		
TR	2.2.3.1	**Surface Waters** *The assessment of the character of surface waters needs additional clarification:* The description of surface waters in Land Use Section 2.2.3.1 of the TR refers to streams as being "intermittent," while the ponds are described as occurring on "ephemeral streams." To clear this up, provide a map of each stream channel within the study area and distinguish whether it is an intermittent flow channel or an ephemeral flow channel.	Complete	Submitted August 27
TR	2.8.5.2	**Wetlands** The information on wetlands provides a brief overview of their geophysical condition. However, this section lacks completeness in terms of data needed to document field conditions and to satisfy regulatory requirements. Wetlands were assigned Cowardin classifications, but no map was provided showing the differing wetlands. Please identify on a map the Cowardin classification for each wetland and surface water feature. For purposes of determining impacts, provide an inventory and specify on a map exactly which areas are vegetated wetlands (palustrine emergent wetland) and which areas are un-vegetated (palustrine unconsolidated bottom or palustrine open water) systems.	Under preparation. Necessary to coordinate response with recent submittal to Army Corps of Engineers.	Planned submittal date - first week in September.
TR	2.7.1.2	**Surface Water Runoff** It is unclear which facilities will discharge into either artificially-made or natural wetlands or streams. Please map the locations where there will be a surface discharge from ISR facilities into a stream channel, wetland, or pond. Be sure to label all surface water features as either artificially-made or natural and either intermittent or ephemeral.	Complete	Submitted August 27
TR	2.7.3.1	**Surface Water Quality** Information is incomplete on surface water quality to fully understand existing site conditions.		
	1	The ER states on page 3.4-17 that "no information on surface water was available for sites MRSW-10 and MRSW-11." This information is needed to assess environmental impacts to surface water surrounding the project.	Response provided, surface water tables are being revised and will be provided as separate response as well as part of Environmental Report revision.	Revised surface water tables submittal date - first week in September.
	2	Reference is made in the TR regarding water quality sampling data collected in the third quarter of 2007. Please provide these results with a summary statement.	Response provided, surface water tables are being revised and will be provided as separate response as well as part of Environmental Report revision.	Revised surface water tables submittal date - first week in September.

TR or ER	Section Number	Nature of Comment : Please provide	Actions/Status	Response Date
TR	7.2.9.2.2 and 3.1.3	**Surface Water Impacts and Well Field Design and Operations:** These sections address generalities regarding location of proposed work in relation to surface water features and wetlands. Specific locations or areal descriptions will be needed to determine impacts to jurisdictional wetlands. Please provide a detailed site plan showing proposed well locations, new road work, underground piping, utilities, and processing plants in relation to all channels, wetlands, and ponds. Estimate the number of injection and production wells that will be placed in surface water features. Also, estimate the number of new road crossings, pipe crossings, utility crossings, buildings, storage ponds, etc. that will be placed in surface water features, if any. Please provide justification for the encroachments, and steps taken to avoid, minimize, and mitigate such impacts.	Complete	Submitted August 27

TR or ER	Section Number	Nature of Comment : Please provide	Actions/Status	Response Date
ER	3.4.1.2	**Site Area Groundwater Use**		
	1	Based on information provided by the Wyoming State Engineer's Office, 439 wells with groundwater rights have been indentified within a two-mile radius of the site. The location of these wells are shown on Figure 3.4.1-1 and a description of each well, including depth, use, yield, and depth to water, is provided in Addendum 3.4-A. However, the screen depth and aquifer sands from which groundwater is pumped have not been identified. This information is necessary to assess the potential impacts of the proposed ISR activities on the wells located within the two-mile radius. Provide depth of each well and identify the specific sand layers from which groundwater is withdrawn for each well. Particular attention should be focused on identifying those wells screened in the 72, 70, 68, and 60 sands or those deeper wells potentially impacted by the deep well injection planned for disposal of waste.	Complete	Submitted August 27
	2	Addendum 3.4-A identifies the wells within a two-mile radius of the site that have groundwater rights. No further discussion is provided regarding the nature of the rights granted. The addendum identifies yields for each well, presumably indicating a right to that yield. Verify that the right associated with each well entitles the well to the yield specified in Addendum 3.4-A. Further indicate whether the right also entitles each well to a minimum head (static water level) within the well and if there is a prescribed order of precedence to these rights. Also provide information on whether rights to all available groundwater have been granted in the area of the facility.	Complete	Submitted August 27
ER	3.4.3.2	**Site Hydrogeology** To assist in the evaluation of the impact of potential spills or releases at the surface on shallow groundwater, provide an isopach map depicting the thickness of the unsaturated zone above the shallow water table in the 72 sand throughout the license area.	Complete	Submitted August 27

TR or ER	Section Number	Nature of Comment : Please provide	Actions/Status	Response Date
ER	3.4.3.3	**Groundwater Quality** The ER (pg. 3.4-57) summarizes the baseline groundwater quality monitoring by indicating that "general water quality in the shallow Wasatch aquifers within the Moore Ranch License area commonly exceeds [Wyoming Department of Environmental Quality] WDEQ Class I standards for TDS and SO4." The ER also indicates that the "radionuclides radium-226 and uranium are elevated above [Environmental Protection Agency] EPA [Maximum Contaminant Levels] MCLs in the majority of samples collected from the Production Zone aquifer and underlying aquifer." Based on this summary, it would appear that the 72, 70, and 68 sands do not meet the criteria as Class I waters (domestic use) in Wyoming. The class of use of the shallow Wasatch aquifers in and around the Moore Ranch Project area is important for evaluating any potential impacts to groundwater from the facility. Provide the following additional information regarding the class of use of shallow groundwaters:		
	1	Since the 60 sand is now considered the underlying aquifer to the production zone in areas where the 70 and 68 sands coalesce, all available groundwater quality data for the 60 sand should be provided and discussed. If sufficient data are not available to characterize groundwater quality in the 60 sand in the project area, additional groundwater sampling should be undertaken to provide such data.	Complete	Submitted August 27
	2	Based on available water quality data, the WDEQ class of use for 72, 70, 68, and 60 sands within the project area should be clearly illustrated.	Complete	Submitted August 27
	3	Based on available groundwater quality data, the class of use of the 72, 70, 68, and 60 sands in the project area should also be identified.	Complete	Submitted August 27
	4	Any discrepancies between the WDEQ classification and actual use in and surrounding the license area should be identified, discussed, and reconciled. For example, there appear to be several domestic wells in the vicinity of the project area. However, groundwater quality data from the shallow Wasatch aquifer indicates that shallow aquifers in the area may not meet the criteria for domestic use. The failure of shallow groundwater quality to meet WDEQ Class I criteria appears largely due to the secondary standards of total dissolved solids and sulfates. Secondary standards are set based largely on aesthetic considerations (e.g., taste), and such water may still be used for domestic purposes.	Complete	Submitted August 27

TR or ER	Section Number	Nature of Comment : Please provide	Actions/Status	Response Date
ER	4.4.2	**Groundwater Impacts** The October 27, 2008, response to the NRC Request for Technical Information (4.2.d) indicates that an application for a Class V Underground Injection Control Permit has been submitted to the WDEQ. Previous submittals have indicated that the planned deep disposal wells would be permitted as Class I wells:		
	1	Provide a discussion of the issues that have led to the application for Class V rather than Class I injection wells for use in waste disposal.	Complete	Submitted August 27
	2	In addition, provide a brief description of the disposal wells currently planned, including the strata into which injection is being proposed, the water quality and degree of isolation of those strata, and the potential environmental impacts of the proposed injection into those strata.	Complete	Submitted August 27
	3	Identify and discuss any issues or potential problems that the WDEQ has identified in its review of the application for the proposed Class V underground injection control wells.	Complete	Submitted August 27
	None	The applicant should provide an analysis of the potential impacts to surficial soils and shallow groundwater during facility construction, including well field installation and testing. This analysis should clearly address the potential impacts from drilling operations, including the management of drilling fluids and wastes, on shallow groundwater. The analysis should also address other potential spills that may occur during facility construction, including the release of fuels and lubricants.	Complete	Submitted August 27
	None	Best management practices planned during the construction phase to minimize impacts to groundwater during facility construction should also be identified and discussed.	Complete	Submitted August 27
ER	4.4.2.1	**Groundwater Consumption** Analysis of drawdowns in groundwater levels in the 70 sand have been revised using the enhanced groundwater model presented in Appendix B-4 of the revised September 2008 TR. The enhanced model provides estimates of drawdown during both ISL operation and restoration. The estimates of drawdown during aquifer restoration are based on revised estimates of net losses of groundwater during restoration (50 gpm per well field). The drawdowns resulting from the assumed operation and restoration scenarios have been depicted on figures contained within the modeling report. However, the predicted drawdowns have only been depicted for a limited area immediately surrounding the ISR well fields. Please provide the following:		
	1	A figure depicting predicted drawdowns throughout the model domain should be provided. The location of all wells expected to be screened in the 70 and underlying 68 sands should be superimposed on the figure. Based on this figure, all existing wells in the 70 or 68 sand potentially impacted by drawdown induced by production or restoration pumping should be identified.	Complete	Submitted August 27
	2	The characteristics of these wells should be provided. Please identify the screen depths, available drawdown, the predicted drawdown during both ISR operation and restoration, and likely impact of these drawdowns on the assigned yield for each well.	Complete	Submitted August 27

TR or ER	Section Number	Nature of Comment : Please provide	Actions/Status	Response Date
ER	4.4.2.3.2	**Wellfield Spills** While the ER discusses the measures that will be taken in an effort to minimize the potential for a wellfield spill or other unintended release, analysis of the potential impact of any such release on shallow groundwater quality has not been provided. An analysis of the potential impact of a release at the surface on shallow groundwater should be provided. This analysis should include considerations such as depth to the water table, the permeability of the materials in the unsaturated zone, the potential adsorption of constituents in unsaturated zone materials, and the volume of any potential releases.	An unsaturated flow model is being developed to address this comment.	*Planned submittal date -* first week in September.

TR or ER	Section Number	Nature of Comment : Please provide	Actions/Status	Response Date
ER	3.5.5	**Ecology**		
	1	*Section 3.5.5 of the ER states that 35.29 acres of wetlands were found during the wetland survey. The wetlands are recommended to be non-jurisdictional; however, final determination lies with the U.S. Army Corps of Engineers. If applicable, provide documentation supporting the non-jurisdictional status of the wetlands (e.g., description of vegetation, soils, etc.). If any of these wetlands are determined to be jurisdictional, what mitigation methods will be applied?*	Complete	Submitted August 27
	2	Provide information on the impact of exploratory or delineation borings on local ecology	Complete	Submitted August 27
	3	Will overhead power lines be constructed? If so, describe the mitigation measures to reduce impacts to raptors.	Complete	Submitted August 27
	4	Describe mitigation measures to reduce impacts to wildlife in the vicinity of the mud pits, even if it is only during the construction phase.	Complete	Submitted August 27
ER	3.7	**Noise** The ER states existing ambient noise in vicinity of the Moore Ranch Project area is dominated by traffic noise from State Highway 387, surrounding oil and gas operations, and on-site coal bed methane operations. However, it does not provide existing ambient background sound levels. Additional information is required to adequately characterize the existing environment.		
	1	Please provide any sound level measurement data to determine background existing sound levels.	Complete	Submitted June 19
	2	If no field measurements were taken please provide the methodology of how the ambient background sound levels were determined for comparing future noise impacts after the project commences.	Complete	Submitted June 19
ER	4.7	**Noise Impacts** The ER states that impact to noise or congestion is not anticipated within the surrounding two-mile area. However, no projections of sound levels were calculated to determine the severity of noise impact within the two-mile area. Additional information is required to adequately assess the noise impacts of this project.		
	1	Please provide existing daily or peak hour traffic volumes and truck percentages on any of the local roadways to be utilized by daily activities at the proposed facility.	Complete	Submitted June 19
	2	Please provide any future projections of traffic volumes and the percentage of trucks on these roadways.	Complete	Submitted June 19
ER	7.1.5	**Noise Impacts of Construction** The ER, again, states that there will be no noise or congestion impacts within a two-mile area. However, it does not provide any projections due to construction activities associated with the proposed project. Additional information is required to adequately assess the noise impact of the project.		
	1	Please provide projections of typical machinery to be used at the project and the reference sound levels associated with construction activities.	Complete	Submitted June 19
	2	Please provide projected truck traffic associated with construction on the roadways leading to the proposed facility.	Complete	Submitted June 19

TR or ER	Section Number	Nature of Comment : Please provide	Actions/Status	Response Date
ER	3.8	**Historic and Cultural Resources** Please provide the following:		
	1	Information on missing pages from page 21 to the end of Appendix B; it appears that the section continues beyond page 21. If this section of Appendix B does not contain descriptions of the previously reported sites, please provide these descriptions as well.	Complete	Submitted June 19
	2	Confirmation in the form of field maps, field notes, or identification of report sections, that a cultural resources assessment was completed for the access roads proposed for use during construction and for the permanent routes that will be used to access the facilities.	Complete	Submitted June 19
	3	A map that shows all previously surveyed land blocks and the locations of all sites and isolated finds. The survey maps presented in Appendix B on pages 6 and 7 are not adequate, as they only display those areas surveyed in the 2007 study.	Complete	Submitted June 19
	4	Complete descriptions of all structures present within the boundaries of Site 48CA146. Also, the results of any visual assessment completed for these buildings (if present) relative to the facilities proposed for the project.	Complete	Submitted June 19
	5	Complete descriptions of all structures within the boundaries of Site 48CA3400. Also, the results of any visual assessment completed for these buildings (if present) relative to the facilities proposed for the project.	Complete	Submitted June 19
	6	Complete descriptions of all structures within the boundaries of Site 48CA6173. Also, the results of any visual assessments completed for these buildings (if present), relative to the facilities proposed for the project.	Complete	Submitted June 19
	7	A discussion of why 60 acres located in Sections 26 and 27, T42N, R75W were omitted in the archaeological survey report. Information is needed for this tract of land.	Complete	Submitted June 19
	8	How the archaeological and historical resources were identified within and near the proposed license area, and subsequently marked and protected.	Complete	Submitted June 19

TR or ER	Section Number	Nature of Comment : Please provide	Actions/Status	Response Date
Both	See Comment	**Public and Occupational Health**		
	1	The descriptions of the facility design (TR Section 3), controls (TR Section 4), and operation (TR Section 5) are not well defined. Although there is a general process flow *diagram (TR Figure* 3.5-1, ER 2.2-5), facility layout drawings (TR 3.2-1 and -2, ER 2.3-1 and -2), and general descriptions of control measures, there are few details to actually evaluate the effectiveness of an integrated design and operation. Specifically, information on facility design and operational controls for radioactive waste collection, processing, and storage should be provided.	Complete	Submitted August 27
	2	There is no evaluation of the anticipated occupational doses (maximum individual and collective) as needed for demonstrating facility design and planned operation that is as low as is reasonably achievable (ALARA). Please provide this data.	Complete	Submitted August 27
ER	3.11.1	**Background Exposure to Ionizing Radiation** This section describes an elevated level of natural background radiation in Wyoming because of higher levels of cosmic radiation at higher altitudes and elevated uranium soil level. However, the subsequent evaluation for the site area background radiation is based on the average United States levels and not area-specific information reflecting the identified elevated levels. Provide additional information on the area-specific background radiation levels.	Complete	Submitted August 27
ER	3.11.2	**Occupational Health and Safety** This section presents information on the incident rates of non-fatal occupational injuries and illnesses for Wyoming for 2005, including a reference to Addendum 3.11A. However, the evaluation presented in 3.11.2 is incomplete; it fails to provide an overall estimate of injury and illnesses for the facility operations. Provide information on the anticipated total hours worked by facility personnel as needed for a collective health and safety impact assessment.	Complete	Submitted August 27

TR or ER	Section Number	Nature of Comment : Please provide	Actions/Status	Response Date
ER	4.12	**Public and Occupational Health Impacts**		
	1	In response to NRC's Safety RAI 5-5, it has been proposed that monitoring of radioactive releases from the operation (well field and plant) will be accomplished through the use of Track-Etch radon detectors; monitoring of releases is not considered practicable. Provide an evaluation that demonstrates the proposed method provides adequate detection level for all potential releases, radon as well as particulate radioactive materials, sufficient for demonstrating compliance with the dose limits for members of the public.	Complete	Submitted August 27
	2	An evaluation of the anticipated occupational dose to workers at the facility is required for assessing individual and collective impact, as well as ensuring a design and proposed operation for compliance with occupational dose limits, including the principle of ALARA. Provide an evaluation of the maximum individual and the collective occupational annual dose, including all applicable exposure sources such as radon, uranium inhalation, and direct exposure.	Complete	Submitted August 27
	3	ER Section 4.12.1.2, Occupational Health Impacts, states, "The proposed Moore Ranch facilities are consistent with the operating assumptions, site features, and designs examined in the NRC analysis in NUREG/CR-6733." This correlation serves as the basis for the evaluation of occupational health impacts, including accidents. However, specific details/bases are not presented for establishing the validity of the correlation. Provide additional information that compares the Moore Ranch processing designs (processing volumes, inventories and waste projections) with those assumed in NUREG/CR-6733, where this information is needed for substantiating this correlation.	Complete	Submitted August 27
	4	ER Section 4.12.2.4, Potential Radiological Accidents, includes a general discussion for the potential accident of a yellowcake thickener with a correlation to the results as presented in NUREG/CR-6733 for consequences. As evaluated in NUREG/CR-6733, this accident poses a potential dose to an unprotected worker in excess of the 10 CFR 20 annual occupational dose limit of 5 rem. The discussion in the ER identified what was considered an unrealistic assumption for this dose analysis (i.e., no timely mitigation measures), but no additional analysis is provided to show how the applicant intends to prevent such consequences. Provide additional information (assumptions and/or protective measures) applicable to ensuring that doses from this potential accident remain small (i.e., below the occupational dose limits).	Complete	Submitted August 27
	5	ER Section 4.12.2, Equation 4 under Definitions, has a conversion factor as 3.65E-12, where the correct factor as shown in the equation is 3.65E-10. Provide a corrected value in the definitions.	Complete	Submitted August 27

TR or ER	Section Number	Nature of Comment : Please provide	Actions/Status	Response Date
ER	4.13	**Waste Management Impacts**		
	1	It is proposed that liquid wastes for the most part will be disposed by deep well injection. Provide an evaluation of potential radiological impact for such disposal, addressing proposed total radioactivity, and potential radiological dose to members of the public for any feasible exposure pathways.	Complete	Submitted August 27
	2	Provide information showing that there is sufficient capacity at the proposed waste disposal sites to be used for hazardous, mixed, and radioactive wastes.	Complete	Submitted August 27
ER	5.1.6	**Procedures for Removing and Disposing of Structures and Equipment** The drilling of the injection and extraction wells has the potential to result in residual surface soils with elevated levels of radioactivity from cuttings where drilling encounters the uranium/radium bearing ore. Provide information on how these soils will be monitored and controlled to ensure residual levels do not exceed acceptable limits.	Complete	Submitted August 27
ER	6.1	**Radiological Monitoring Environmental Measurements and Monitoring Program** ER Section 6.1 includes an in-depth evaluation of data from the baseline radiological environmental monitoring program. However, it is not clear as to the specific program (sampling locations and media, frequency, and analysis) that is intended to be continued as the operational program. Provide details for the proposed operational program, including sampling media, locations (with an accompanying map), frequency of sampling, type analyses, detection levels, and quality control measures.	Complete	Submitted August 27
ER		**Land Use** Please provide more information regarding the proximity of the planned project *facilities and infrastructure in relation to the Bozeman trail, and how recreational uses* related to the Bozeman trail may be affected by the proposed facility.	Complete	Submitted August 27