November 9, 2009

Mr. Wayne W. Heili
President
Lost Creek ISR, LLC
5880 Enterprise Drive, Suite 200
Casper, WY 82609

SUBJECT: LOST CREEK ISR, LLC, LOST CREEK IN SITU RECOVERY FACILITY, SWEETWATER COUNTY, WYOMING, SUMMARY OF SEPTEMBER 25, 2009 TELECONFERENCE - LOST CREEK ISR, LLC (TAC NO. J00559)

Dear Mr. Heili:

On September 25, 2009, a public conference call between the U.S. Nuclear Regulatory Commission (NRC) staff and representatives of Lost Creek ISR, LLC (LCI) was held to discuss LCI's application for a license to construct and operate a uranium *in situ* recovery facility (ISR) in Wyoming. The NRC staff has completed a significant portion of its review of LCI's application and prepared an internal draft of the Safety Evaluation Report (SER). The conference call was held to discuss open issues that NRC staff identified in preparing the draft SER. A summary of the meeting is enclosed.

Within 30 days of receipt of this letter, please either provide the information identified in the meeting summary or inform us of the date you expect to provide the information. Note that a delay in providing information may result in a delay in NRC staff's review of your application. If you have any questions regarding this letter or the enclosed meeting summary, please contact me at (301) 415-6142, or by email at tanya.oxenberg@nrc.gov.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders," a copy of this letter will be available electronically for

public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's document system Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html.

Sincerely,

/RA/

Tanya Palmateer Oxenberg, Ph.D.
Project Manager
Uranium Recovery Licensing Branch
Decommissioning and Uranium Recovery
Licensing Directorate
Division of Waste Management
and Environmental Protection
Office of Federal and State Materials
and Environmental Management Programs

Docket No.: 040-09068

Enclosure: Meeting Summary

cc: Meeting Attendees

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MEETING REPORT

DATE: September 25, 2009

TIME: 10:00 a.m. – 12:00 p.m.

PLACE: U.S. Nuclear Regulatory Commission
Two White Flint North, Rockville, Maryland
Room T3C1

PURPOSE: Teleconference to discuss radiological, hydro-geological, and miscellaneous open/confirmatory issues relating to the Lost Creek ISR license application.

ATTENDEES: See Attached Attendee List

BACKGROUND:

The teleconference was held to discuss Lost Creek ISR, LLC's (LCI's or applicant) application to construct and operate an *in situ* recovery (ISR) uranium facility at its Lost Creek site in Wyoming. The U.S. Nuclear Regulatory Commission (NRC) staff had completed its review of the radiological, hydrogeological, and geotechnical aspects of LCI's application and prepared an internal draft of the Safety Evaluation Report (SER). The teleconference was held to discuss open issues that NRC staff identified in preparing the radiological and miscellaneous sections of the draft SER.

DISCUSSION:

The teleconference began at 10:00 a.m. EST. Mr. Stephen J. Cohen, NRC Team Leader, stated that the meeting was open to the public and that members of the public would be allowed to ask questions or make comments at the end of the meeting. Several members of the public listened in on the conference call. The NRC staff discussed the status of its review. The staff indicated that the meeting addresses several health physics, hydrogeology, and geotechnical sections of the draft SER. However, certain hydrogeology, geotechnical, and health physics issues were discussed. The NRC staff determined that the health physics issues will be discussed again along with hydrogeologic issues at a second teleconference to be scheduled later.

The following open/confirmatory issues were then discussed.

METEOROLOGY OPEN ISSUES

Draft SER (DSER) 2.2 (Agenda item 1.)
Applicant did not demonstrate that meteorological data from Lost Soldier is representative of the Lost Creek Permit Area.

The applicant installed a meteorological station within the Permit Area in May 2007 to collect onsite data. This station is known as the Lost Creek Station. However, the applicant did not use the Lost Creek Station to describe onsite meteorological conditions. Instead the applicant proposed using data from a nearby meteorological station installed near Bairoil in 2006. This station is known as the Lost Soldier Station and is located approximately 12 miles northeast

from the Permit Area (see Figure 2.2-1). The applicant did not provide sufficient data to establish that the data from the Lost Soldier station adequately represents the conditions for the Lost Creek Permit Area. **This is an open issue.**

Draft SER (DSER) 2.2 (Agenda item 2.)
Applicant did not compare concurrent data from NWS station to demonstrate that data taken for Permit Area is representative of long-term meteorological data.

To determine whether the period that meteorological data was collected is representational of long-term meteorological conditions in the site vicinity, Regulatory Guide 3.63 recommends comparing a concurrent period of meteorological data from a National Weather Service (NWS) station with the long-term meteorological data from that NWS station. The NWS station selected for this comparison should be in a similar geographical and topographical location and be reasonably close (preferably within 50 miles to the site).

For this comparison, the applicant chose the NWS station in Muddy Gap, Wyoming (see Figure 2.2-1). This NWS station is located 28 miles northwest of the Permit Area and data has been collected since 1949. According to the applicant, only data through 2005 were available for the Muddy Gap station when they submitted information related to this application. The applicant did not compare concurrent meteorological data from the Muddy Gap station during the timeframe of collecting Permit Area meteorological data and compare it to the long-term meteorological data from the Muddy Gap station to demonstrate that the data obtained for the Permit Area is representative of long-term meteorological conditions. **This is an open issue.**

Draft SER (DSER) 2.2 (Agenda item 3.)
Specify the height at which the data was collected (2 meters or at other heights). Also, no joint frequency distribution data was provided.

In Section 2.5 of the Technical Report, the applicant stated that all data were measured at a height of 6.6 feet (two meters). However, in Section 2.5.4 of the Technical Report and in its December 12, 2008 response to NRC staff's request for additional information dated November 6, 2008, the applicant stated that wind and other measurements were made at various other heights. Regulatory Guide 3.63 recommends that for atmospheric dispersion assessments, wind speed and wind direction be monitored at approximately 10 meters (33 feet) above the ground. **This is an open issue.**

The joint frequency distribution shows how frequently each stability class occurs over a given time period. The joint frequency distribution is developed from wind speed and wind direction. The stability class will determine how well a released contaminant will disperse in the atmosphere and it is used to determine the concentration of the contaminant at some receptor point away from the facility. The stability class can vary from extremely unstable to extremely stable and can be determined by temperature differences between two heights or the fluctuation of horizontal wind direction at a given height.

The applicant stated that atmospheric stability was classified according to Pasquill. According to the applicant, calculations were made using wind speed and solar radiation. Regulatory Guide 3.63 suggests a suitable format for data compilation and reporting purposes for the joint frequency data. The applicant did not provide joint frequency data. **This is an open issue.**

Draft SER (DSER) 2.2 (Agenda item 4.)
NRC staff can not determine when the wind data was collected.

The applicant reported that the annual average wind speed between April 2006 and April 2007, was 23 feet per second (7.0 meters per second) at the Lost soldier Station. However, Figure 2.5-3 of the Technical Report and Section 3.7.1.4 of the Environmental Report indicate that wind data was collected between May 2006 and April 2007. The prevailing monthly wind direction is from the west-northwest and west for most of the year. See Figure 2.2-3. **NRC staff cannot determine when the wind data was collected. This is a confirmatory item.**

Draft SER (DSER) 2.2 (Agenda item 4.)
NRC staff cannot determine if mixing height data is representative of the Lost Creek site.

The mixing height is the height to which the air near the earth's surface is well mixed due to turbulence caused by the interaction between the surface and the atmosphere. Mixing height, also known as inversion, are data parameters used in atmospheric dispersion models to calculate the concentration of the contaminant and the radiation dose at a receptor point that is not near the facility. In its December 12, 2008 response to NRC staff's request for additional information dated November 6, 2008, the applicant stated that data for mixing height was collected for Lander/Riverton, Wyoming. The data reported by the applicant indicates that the average annual mixing height is 348 meters in the morning and 2300 meters in the afternoon. LCI did not provide sufficient justification that the mixing height in Lander/Riverton is representative of the Lost Creek site. **This is an open issue.**

Draft SER (DSER) 2.2 (Agenda item 5.)
No calibration or maintenance data for meteorological instruments. No specific recovery data for wind and stability measurements.

The applicant provided a description of the types and specifications for the meteorological instrumentation in its December 12, 2008, response to NRC staff's request for additional information dated November 6, 2008. The applicant did not provide threshold information for wind direction and wind speed instruments. This information is needed to determine whether this wind direction and speed information is consistent with Regulatory Guide 3.63. **This is an open issue.**

Regulatory Guide 3.63 provides recommendations on meteorological systems calibration and maintenance to ensure recommended system accuracies are met. The applicant did not provide any data on systems calibration or maintenance. This information is needed to determine if the system accuracies recommended by Regulatory Guide 3.63 were met over the time period used to describe onsite meteorological conditions. **This is an open issue.**

Regarding data recovery, the applicant reported only that all data had "a recovery rate of over 90 percent." Regulatory Guide 3.63 recommends at least 90% annual recovery for each individual parameter measured with at least an annual 75% joint data recovery for wind speed, wind direction, and atmospheric stability. This information is needed to determine if the data is consistent with Regulatory Guide 3.63. **This is an open issue.**

GEOTECHNICAL OPEN/CONFIRMATORY ISSUES

Draft SER (DSER) 3.2 (Agenda item 21.)
Shipment and processing of third party ion exchange resins from other LC satellites or other producers.

In its application, LCI indicated that it plans to accept ion exchange resins from other satellite facilities operated by LCI or other producers. The application does not appear to include a discussion of transportation related accidents associated with the shipping of resins or how the resins will be handled. LCI has not provided the information necessary for the NRC staff to evaluate the safety and aspects of this activity. The staff indicated that if this is not addressed in the application, LCI might need to obtain an amendment to be able to receive and process third party ion exchange resin from other satellites or producers. **This is an open issue.**

LCI indicated that they cannot determine a location where resins would be shipped from at this time, so they would prefer to address this issue once they have obtained a license for the facility. The NRC staff stated that procedures would need to be in place to move resins from the well fields to the central processing plant if public roads are used to ensure compliance with Department of Transportation (DOT) regulations. 10 CFR 71.5 requires licensed material transported on public highways or licensees who deliver licensed material to a carrier for transport, shall comply with requirements of the DOT regulations in 49 CFR Parts 107, 171 through 180, and 390 through 397. LCI requested the staff provide the regulatory reference requiring compliance. The information that follows was not discussed in the meeting, but is provided in accordance with the applicant's request.

49 CFR 171.1 states the regulations apply to each person who offers radioactive material for transportation, causes a radioactive material to be transported, or transports radioactive material, and who performs or is responsible for performing a pre-transportation function. 49 CFR 171.1 includes the following as pre-transportation functions:

- *Determining the hazard class.*
- *Selecting packaging.*
- *Filling a package (container).*
- *Securing a closure on a filled or partially filled package or container.*
- *Marking a package to indicate that it contains radioactive material.*
- *Labeling a package to indicate that it contains radioactive material.*
- *Preparing a shipping paper.*
- *Providing and maintaining emergency response information.*
- *Reviewing a shipping paper to verify compliance with the DOT regulations.*

- *Certifying that radioactive material is in proper condition for transportation in conformance with the DOT requirements.*

- *Loading, blocking, and bracing a radioactive materials package in a container or transport vehicle.*

- *Segregating a radioactive materials package in a freight container or transport vehicle from incompatible cargo.*
- *Selecting, providing, or affixing placards for a transport vehicle to indicate that it contains radioactive material.*

According to 49 CFR 171(c), transportation of radioactive material begins when a carrier takes physical possession of the material for transporting it and continues until the package containing the radioactive material is delivered to the destination indicated on the shipping document. Transportation includes the following:

- *Movement of radioactive material by rail car, aircraft, or motor vehicle.*

- *Loading of packaged or containerized radioactive material onto a transport vehicle or for transporting it, including blocking and bracing a package in a transport vehicle.*

- *Removing a package or containerized radioactive material from a transport vehicle.*

Additionally, 49 CFR 172 subpart H requires an employer, e.g. the licensee, to ensure each hazmat employees is trained in the requirements prescribed in the subpart, that an employee may not perform functions associated with hazmat unless trained, and that each hazmat employee is tested by appropriate means on the training subjects covered in 49 CFR 172.704. The training must include the following:

- *General awareness/familiarization training with the requirements of subpart H and to enable the employee to recognize and identify hazardous materials consistent with the hazard communication standards of subpart H.*

- *Function-specific training concerning requirements of subpart H related to functions performed by the employee.*

- *Safety training, to include: (1) emergency response information required by part 172 subpart G; (2) protective measures from the hazards associated with materials to which they may be exposed in the work place, and (3) accident avoidance.*

- *Security awareness training.*

- *In-depth security training of the security plan and implementation if a plan is required in accordance with subpart I of part 172.*

49 CFR 172.704(b) states that training conducted to comply with hazard communication programs required by OSHA (29 CFR 1910.1200) and/or EPA (40 CFR 311.1) or to

meet security requirements, can be used to meet the DOT requirements if the training addresses the training components specified in 49 CFR 172.704(a).

DSER 3.3 (Agenda item 22.)
Instrumentation and controls related to radiation safety monitoring.

The applicant does not appear to have addressed instrumentation and controls related to radiation safety monitoring in Section 3 of the report. This information should be provided so the NRC staff can evaluate the ability of the proposed instrumentation and control techniques to identify potential radiological issues such as elevated radon in the CPP.

LCI indicated that Table 5.7-2 lists every instrument that will be used in the facility. LCI has indicated that they have included significant discussions on instrumentation and controls in Section 5.7. The staff agrees that instrumentation and controls are described in section 5.7.6 and in their responses dated December 12, 2008 and August 5, 2009 to the NRC's requests for additional information.

DSER 4.2 (Agenda item 23.)
Baseline groundwater monitoring for storage ponds.

Lost Creek does not appear to have adequately characterized the baseline groundwater quality in the vicinity of the storage ponds as no groundwater samples of the uppermost aquifer have been obtained. Additionally, the groundwater monitoring wells for the storage ponds may not have been completed at a depth that would allow for the detection of leaks. Note that section 5.3.2.3 of the application identifies that the shallowest aquifer is isolated from the storage ponds by aquitards and that two monitoring wells will be completed immediately above the "shallowest aquitard downgradient of the storage ponds." The location of the screened interval of the monitoring wells with respect to the location of the aquitards is not well described in the application. Note that section 4.2.5.4 indicates that four groundwater monitoring wells will be installed and quarterly samples will be obtained before the pond is put into use. **This is an open issue.**

Lost Creek indicated that this issue is described in Section 4.2.5.4 of the technical report. LCI indicated that they have drilled four wells and that no surface aquifer was encountered before hitting the aquitard.

DSER 4.2 (Agenda item 24.)
Plan view and cross section view of storage pond not consistent grade. Cannot verify freeboard requirement and ability to transfer liquids back and forth in the event of a leak.

The staff noted that the cross section view drawing of the storage ponds does not appear to accurately reflect the plan view. The cross sections show the top of the embankments at 6,975 ft and just under 6,972 ft above mean sea level (MSL), but the plan view shows the pond embankment elevations at 6,970 ft. This discrepancy should be corrected so that the availability of freeboard can be verified and so that sufficient pond capacity is available to be able to transfer the contents of one pond to another should a pond be found to be leaking. **This is an open issue.**

LCI agreed with the NRC staff that the drawings are not always clear and easy to read. LCI indicated that these drawings have been revised and will be sent to the NRC staff to address this issue.

DSER 4.2 (Agenda item 25.)
Chemical compatibility between synthetic liner and pond liquids.

The applicant does not appear to have addressed the chemical compatibility between the polypropylene liner and the liquids that will be stored in the ponds. This issue was raised in RAI section 4.2, number 3d. This information is necessary to verify that the geosynthetic will be able to fulfill its intended function in a potentially harsh environment. **This is an open issue.**

> *LCI indicated that a Professional Engineer with experience in pond design selected the liner material. LCI has contacted the liner manufacturer and requested confirmation on the chemical compatibility of the liner and pond liquids. LCI will send the NRC staff the results of the chemical compatibility issue.*

DSER 4.2 (Agenda item 26.)
Daily vs. weekly leak detection system inspections.

LCI has proposed performing weekly inspections of the storage pond leak detection system. The NRC staff's experience has indicated that daily inspections of the leak detection system provide operators an adequate ability to detect problems with the liner system. This is discussed in the November 2008 version of NRC Regulatory Guide 3.11 "Design, Construction, and Inspection of Embankment Retention Systems at Uranium Recovery Facilities." The applicant should provide justification for the reduced frequency at the LCI site, or propose conducting daily inspections of the leak detection system. **This is an open issue.**

> *Lost Creek indicated that they reviewed the practices at other facilities and used that as a basis for the inspection frequency.*

DSER 4.2 (Agenda item 27.)
Evaluation parameters for leak detection system liquids and groundwater monitoring.

Sections 4.2.5.5 and 5.3.2.3 of the application discuss the evaluation parameters for the leak detection system and groundwater monitoring. For leak detection monitoring, the applicant proposes testing for specific conductance, chloride, alkalinity, sodium, and sulfate. For the storage pond groundwater monitoring wells, the applicant proposes monitoring for natural uranium, pH, chloride, bicarbonate, and conductivity. It appears that the applicant will be testing for different parameters in the leak detection water and groundwater monitoring wells. Ideally, these parameters should be the same to allow for a direct comparison of the leak detection liquids and surrounding groundwater, if a leak does occur. **This is an open issue.**

> *LCI indicated that the chemistry of the water located in the storage ponds is dramatically different from what would be encountered in the groundwater. LCI reiterated that no groundwater was encountered during the installation of the four groundwater monitoring wells for the storage ponds. LCI indicated they chose the parameters based on practices at other ISR facilities.*

DSER 4.2 (Agenda item 28.) Subgrade preparation techniques.

The applicant does not appear to address the subgrade preparation techniques that will be used for the foundation soils beneath the liner system. Proper preparation of the subgrade is critical to maintaining the performance characteristics of the geomembrane. Items such as the largest particle size allowed and the compaction requirements in the soil layer that will be in contact with the geomembrane should be discussed. Given the information provided, the staff cannot be assured that the storage ponds will be protective of public health once constructed. **This is an open issue.**

LCI indicated that they would address this issue in a submittal to the NRC.

DSER 4.2 (Agenda item 29.)
Number of storage ponds that will be constructed.

The applicant appears to have included two sets of drawings related to storage ponds at the facility. One set of drawings immediately follows the specifications and shows two ponds located adjacent to the Central Processing Plant (CPP) building. The second set of drawings is located at the end of the binder containing Volume 2 of January 16 responses to NRC questions and there is no clear location of these two ponds. The topography and grading plans in both sets of drawings does not appear to match and the CPP is not shown in both sets of drawings. Additionally, Figure 3.2-5 appears to show more than one set of storage ponds. **This is an open issue.**

LCI confirmed that only two storage ponds are proposed for the facility and that they will be located adjacent to the CPP. LCI indicated that Figure 3.2-5 does not reflect the proposed pond locations; that figure is schematic flow diagram.

DSER 4.2 (Agenda item 30.)
Quality assurance plan for soil and liner installation.

The applicant does not appear to present a quality assurance plan addressing installation of soil and geomembrane components of the storage ponds. A quality assurance plan for soil and geomembrane installation would identify testing frequencies for items such as: in-place density, maximum dry density, geosynthetic seams, and submission of geosynthetic manufacturer quality control data. Given the information provided, the staff cannot be assured that the storage ponds will be protective of public health once constructed. **This is an open issue.**

These issues are addressed in the report and will be forwarded to the NRC staff for review.

DSER 5.2 (Agenda item 31.)
Reporting of leaks, spills, excursions to NRC

The applicant does not appear to have addressed notification procedures for spills in wellfields, header houses, pipelines, or buildings. Section 5.7.6.6 identifies reports and records that will be maintained for the life of the license. Table 5.2-1 identifies a list of internal and external reports, the responsibility for preparing the report and the applicable regulations. Excursions do not

appear to be identified in Section 5.7.6.6 or in Table 5.2-1. The technical report identifies that a spill assessment will be prepared, but it does not appear that this will be submitted to the NRC. **This is an open issue.**

LCI indicated that the NRC staff should review section 5.7.6.6 and Table 5.2-1 of the technical report. LCI also indicated that as well as regulations contained in 10 CFR 20.2202 to 2203, and 10 CFR 40.65 apply.

DSER 5.2 (Agenda item 32.)
Meeting requirements of 20 CFR 1902(e).

The applicant does not appear to have provided a discussion related to the requirements of 20 CFR 1902(e). This regulation addresses posting requirements at licensed facilities.

LCI indicated that it would comply with the requirements of 20 CFR 1902(e).

DSER 5.2 (Agenda item 33.)
Submittal of reports to NRC (ALARA, semi annual effluent monitoring, etc.); reporting of leaks, spills, excursions to NRC.

The applicant has not completely identified which reports will be submitted to the NRC. The licensee should submit the ALARA audit report, land use survey, monitoring data, corrective action program report, semi-annual effluent monitoring reports, and the SERP information to the NRC on an annual basis. **This is an open issue.**

LCI indicated that these reports have been identified in Table 5.2-1. However, land use surveys as described in 5.2.3 are not listed in Table 5.2.-1.

DSER 5.3(Agenda item 34.)
Qualifications of RSO designee who will perform daily walk through inspections.

Lost Creek plans on performing a series of inspections related to radiation safety and the storage ponds. In addition, Lost Creek will perform an annual audit of the radiation safety and ALARA programs. Daily walk through inspections of the facility will be performed by the RSO, a health physics technician, or by a qualified person designated by the RSO. The purpose of this inspection is to observe radiation safety practices, SOPs, and to identify the need for corrective actions. The Lost Creek RSO will conduct a weekly inspection (with the Operations Manager) of all facility areas where radioactive materials or radiation levels above background may exist. The RSO will prepare a monthly written summary of the daily and weekly inspections, with a focus on the personnel exposure data at Lost Creek. The monthly summary will include an evaluation of trends related to the ALARA program along with recommendations for corrective actions and improvements. The applicant has not identified the criteria for a qualified person designated by the RSO to perform the daily walk through inspections. **This is an open issue.**

LCI indicated that they would address this issue.

HYDROGEOLOGY OPEN/CONFIRMATORY ISSUES

DSER 2.3 (Agenda item 7.)
Inconsistencies in the site-specific geologic mapping (isopach, cross-sections, faults).

NRC staff indicated that the geologic information in the application and other submittals contained apparent discrepancies. For example, cross-section H-H has traces of three faults, but the isopach mapping (map view) depicts only the Lost Creek Fault, the potentiometric surface contour map for the DE Horizon depicts a splay off of the Lost Creek fault which differs from faulting on the isopach mapping, and the structural contour mapping for the bottom elevation of the Lost Creek Shale (LCS) was above the elevation of the top of the LCS in at least one location. **This is an open issue.**

LCI proposed discussing this issue with the staff on a separate call with more specific information on which figures/mapping are at issue. The issue stems from the fact that the geologic interpretations by the applicant have evolved during the application process as additional information is gathered. LC and NRC staff agreed that a date should be established that completes the data gathering for purposes of the application.

DSER 2.3 (Agenda item 8.)
Adequate abandonment procedures for historic borings.

NRC staff indicated that the April 2009 submittal to the State for the mine permit included documents on the historical (per-1980's) well abandonment procedures by a former owner (TexasGulf). The procedures include filling the screened horizon, which may include the entire Battle Spring Formation, with drilling mud with a density slightly greater than water, and only sealing the upper 25 feet. The staff's concern is the wells being a preferred migration path especially for older wells near a proposed wellfield.

Lost creek replied that the proof would be in the pudding; the pumping tests conducted to date have shown that there is little communication between the overlying and production aquifer. For the pumping test at Mine Unit 1, drawdown in the underlying and overlying is less than 1 percent of the drawdown at the pumping well which was 100 feet, or maximum 10 to 20 percent of the drawdown based on distance from the pumping well. The apparent drawdown did not appear to be point source from a leaky source material. Results of the regional tests are the same as that conducted at Mine Unit 1 where 3 to 4 feet of drawdown was observed at the pumping test rate.

Lost Creek indicated that the pumping test data would be performed on a mine unit scale after the license is issue, which will address this concern.

DSER 2.3 (Agenda item 9.)
UBC or IBC Criterion for Seismology Design.

NRC staff indicated that the application was completed at a time the Wyoming Regulations were based on the UBC criterion but the regulations have adopted the IBC subsequently.

LCI proposed discussing this issue with the staff on a separate call with more specific information on which figures/mapping are at issue. The issue stems from the fact that the geologic interpretations by the applicant have evolved during the application process

as additional information is gathered. LC and NRC staff agreed that a date should be established that completes the data gathering for purposes of the application.

The remaining open issues on the agenda that were not discussed will be addressed in a follow-on meeting.

PUBLIC DISCUSSION:

An individual referenced a study of the geology of a Lost Creek geologic deposit that indicates that background can be very variable and very high. Shallow groundwater can contain high concentrations of uranium in the tens of parts per million (ppm) range. The Sweetwater Uranium Project observed high amounts of uranium, 0.3 percent, which was completely natural. This information would have been helpful to have at Sweetwater Uranium Project site before decommissioning to establish concentrations above background.

NRC staff stated it is important to collect enough samples to establish background conditions before operations begin because clean-up and exposure criteria are based on limits above background radiation.

ACTION ITEMS:

NRC will provide a detailed meeting summary of the issues discussed and will schedule another meeting to discuss the agenda issues not addressed in this meeting.

The meeting and teleconference ended at approximately 12:00 p.m. eastern time.

ATTACHMENTS: Attendee List
Meeting Agenda

MEETING ATTENDEES

Topic: Discuss Lost Creek ISR, LLC's (LCI's) application to construct and operate an in situ recovery (ISR) uranium facility at its Lost Creek site in Wyoming License Application and open issues related to the draft Safety Evaluation Report.

Date: September 25, 2009

NAME	AFFILIATION	PHONE NUMBER	E-MAIL
Wayne Heili*	Lost Creek ISR, LLC	307-265-2373	wayne.heili@ur-energyusa.com
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Doug Mandeville	NRC	301-415-0724	douglas.mandeville@nrc.gov
*Attended by telephone			

Attachment 1

MEETING AGENDA
Lost Creek ISR, LLC
September 25, 2009

MEETING PURPOSE: Teleconference to Discuss Open Issues Resulting From RAI Responses and Draft SER.

MEETING PROCESS:

Time	Topic	Lead
10:00 a.m.	Introductions	All
	Discussion of Open Issues	All
12:00 noon	Lunch (on your own)	
	Discussion of Open Issues (See Attached List)	All
	Summary of Action Items	Moderator
	Public Comment/Questions	Moderator
4:00 p.m.	Adjourn	

Attachment 2

Lost Creek ISR, LLC
Application for a Source Materials License for the
Lost Creek *In Situ* Recovery Facility
List of Open Issues

1. Applicant did not demonstrate that meteorological data from Lost Soldier is representative of the Lost Creek Permit Area.

2. Applicant did not compare concurrent data from NWS station to demonstrate that data taken for Permit Area is representative of long-term meteorological data.

3. Specify the height at which the data was collected (2 meters or at other heights). Also, no joint frequency distribution data was provided.

4. When was wind data collected? Is mixing height data representative of the Lost Creek site?

5. No calibration or maintenance data for meteorological instruments. No specific recovery data for wind and stability measurements.

6. Effects of water bodies on meteorological measurements, and also threshold information on wind speed and direction instruments.

7. Inconsistencies in the site-specific geologic mapping (isopach, cross-sections, faults).

8. Adequate abandonment procedures for historic borings.

9. UBC or IBC Criterion for Seismology Design.

10. Less than 12 months of radon sampling. Criteria for placement of preoperational radon monitors. Criteria for placement of preoperational air particulate monitors.

11. Vegetation sampling program using radon daughters as a basis.

12. Beef sampling not submitted to NRC yet. No preoperational sampling for game animals.

13. Criteria for placement of preoperational TLDs associated with particulate air samples.

14. No surface soil samples associated with air particulate stations. No subsurface soil samples.

15. Offsite sediment sampling and sampling in BLM stock ponds.

16. Sediment sampling in drainages not submitted to NRC yet.

17. Offsite surface water sampling, BLM Stock ponds, missing dissolved Ra-226 from runoff samples (onsite surface water).

18. Sediment sampling in drainages not submitted to NRC yet.

19. Offsite surface water sampling.

20. Missing dissolved Ra-226 from runoff samples (onsite surface water).

21. Shipment and processing of third party ion exchange resins from other LC satellites or other producers.

22. Instrumentation and controls related to radiation safety monitoring.

23. Baseline groundwater monitoring for storage ponds.

24. Plan view and cross section view of storage pond not consistent grade. Cannot verify freeboard requirement and ability to transfer liquids back and forth in the event of a leak.

25. Chemical compatibility between synthetic liner and pond liquids.

26. Daily vs. weekly leak detection system inspections.

27. Evaluation parameters for leak detection system liquids and groundwater monitoring.

28. Subgrade preparation techniques.

29. Number of storage ponds that will be constructed.

30. Quality assurance plan for soil and liner installation.

31. Reporting of leaks, spills, excursions to NRC

32. Meeting requirements of 20 CFR 1902(e).

33. Submittal of reports to NRC (ALARA, semi annual effluent monitoring, etc.); reporting of leaks, spills, excursions to NRC.

34. Qualifications of RSO designee who will perform daily walk through inspections.

35. Lacking details for radiation safety program content and worker instructions.

36. No justification for urinalysis as only bioassay technique. Frequency of specimen collection and evaluation not specified.

37. No action levels tied to worker dose calculations.

38. No description of how bioassay data is converted to dose.

39. Application needs a discussion of the actions the applicant will take when personnel contamination above background.

40. Applicant does not account for other alpha emitters for personnel contamination.

41. How is beta-gamma contamination for personnel contamination incorporated into HP program?

42. What are contamination levels in restricted areas?

43 Contamination control in parts of plant where work with uranium is not performed is not consistent and does not address other alpha emitters.

44. Release of potentially contaminated items from the facility does not address other alpha emitters.

45. Survey equipment LLDs not sufficient for detecting other alpha emitters.
No radon effluent monitoring program.

46. Air particulate sampling program insufficient.

47. Criteria for placement of radon monitors.

48. No soil cleanup criteria for uranium and other radionuclides.

49. No soil sampling for Pb-210.

50. Submittal of quality control plan for NRC staff to review

51. Identification of surety mechanism.

52. Groundwater restoration timeframe.