**Wyoming Department of Environmental Quality (WDEQ)- Land Quality Division (LQD)**
**Inspection Memorandum**

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| File: | Lost Creek ISR, LLC – Permit 788 |
| Date of Inspection: | February 28, 2014 |
| Date of Report: | March 6, 2014 |
| Participants: | Steve Loose, Lost Creek ISR/Ur-Energy<br>Melissa Bautz, WDEQ-Land Quality Division |
| Report Prepared by: | Melissa Bautz – WDEQ-Land Quality Division |
| Subject: | Monthly Inspection |

***Introduction***

On February 28, 2014, the monthly Inspection of the Lost Creek ISR (LCI) site was conducted. The last site Inspection was conducted on January 22, 2014 (see Report dated January 23, 2014). ISR mining commenced at the Lost Creek ISR Project on August 2, 2013 and has continued since that start-up date, with LCI seeing good results and success.

At the end of the last Inspection (the January 2014 monthly), the following six (6) action items were indicated as remaining to be addressed:

1. Installation of silt fence on west side of TS-7,
2. Control of laydown yard "creep" north of MU1,
3. Delineation of header house turn-around areas,
4. Cleaning out of site's culverts,
5. Development of SOP for trash pick-up, and
6. Finalization of the removal of equipment from Plant Site's diversion channel.

In addition to addressing the status of the tasks in the above list, the bulk of this Inspection was spent addressing the recent discovery of mining fluids on the ground surface at abandoned drill hole LC-254 in Mine Unit 1.

***Pre-Inspection Meeting***

Prior to the field inspection, LCI's Steve Loose and LQD's Melissa Bautz briefly discussed the status of LCI's investigation of mining fluids that appeared on the ground surface at LC-254. Mr. Loose indicated that LCI staff was conducting Mechanical Integrity Testing (MIT) on the eight (8) injection wells within 100 feet of LC-254. LQD considers this occurrence to be a vertical excursion, a thorough discussion of which is provided below.

***Inspection***

This Inspection Report is divided into the following five main sections: 1) Status of the outstanding action items, 2) Bleed rate in MU1, 3) Records review for HH 1-5 Well Completion Notice, 4) Summary of vertical excursion in HH 1-4, and 5) Other observations made during this Inspection.

***Status of the outstanding action items***

As indicated in the "Introduction" section of this Report (above), there were six (6) outstanding action items identified at the end of the January 2014 Inspection. Based on today's Inspection, their statuses are indicated below.

1) Topsoil Stockpile TS-7 silt fence
   Construction of a silt fence on the west edge of TS-7 **should be completed by April 30, 2014**.

2) Laydown Yard "creep" north of MU1
   The materials that have "crept" southward from the site's main laydown yard north of MU1 has been "reigned in" since the last inspection (see Photo Addendum). The only remaining portion of this task is to clearly delineate (with fencing) the southern boundary of this laydown yard.

3) Delineation of header house turn-around areas in MU1
   Better delineation of the turn-around routes surrounding header houses in MU1 will be accomplished as soon as possible, depending upon the ground conditions. However, **this task should be completed no later than May 28, 2014.**

4) Cleaning out of site's culverts
   The cleaning of the site's culverts is still a work-in-progress and is not yet completed. However, with spring runoff imminent it is imperative that the culverts are cleaned out soon. **The cleaning out of the site's culverts will need to be accomplished by the April 30, 2014 Inspection.**

5) Development of SOP for trash pick-up
   A Standard Operating Procedure (SOP) for trash pick-up at the site is still being crafted. **This SOP will need to be finalized and demonstrated to LQD by the March 26, 2014 Inspection.**

6) Removal of equipment stored in Plant Site diversion channel
   The large pieces of equipment stored in this area had been removed as of the January 2014 Inspection (see report dated January 23, 2014); however, the smaller items were noted at that time as being frozen into the ground. Because of that, it was acknowledged that the smaller items would not be picked up until the ground conditions allowed it. During this Inspection, the ground was slushy at the surface (not frozen). **All of the smaller items in the informal laydown area north of the ponds must be picked up by the March 26, 2014 Inspection.** The installation of delineation posts around that area (to prevent its use as a laydown area in the future) may be deferred until warmer months.

Summary of maintenance tasks (action items)
Based on the observations made during this Inspection, Table 1 (Summary of outstanding action items) has been updated below.

**Table 1. Summary of outstanding action items**

| Action Item Description | *Status of action item |
|---|---|
| Installation of silt fence on west side of TS-7 | Task deferred until ground thaws. **Deadline set for April 30, 2014.** |
| Control of laydown yard "creep" north of MU1 | Task accomplished. |
| Delineation of header house turn-arounds | Task deferred until ground thaws. **Deadline set for May 28, 2014.** |
| Cleaning culverts | Task in progress. **Deadline set for April 30, 2014 Inspection.** |
| Development of SOP for trash pick-up | Task in progress. **Deadline set for March 26, 2014 Inspection.** |
| Removal of equipment from Plant Site's diversion channel | Task in progress. **Deadline set for March 26, 2014 Inspection.** |

*Status indicated in this table is based upon the February 28, 2014 site Inspection.

***Bleed rate***
The instantaneous bleed rate was checked in the Plant's control room during this Inspection. It was found to be between 0.6 and 0.8%. This is within an acceptable range, as the Permit commitment is between 0.5 and 1.5%. During this Inspection, both deep disposal wells (DDWs 1 and 4) were being used. DDW-1 was receiving the actual bleed on the well field, while DDW-4 was receiving water used for cleaning various pieces of equipment within the Plant. DDW-4 was receiving water at a rate of 27 gallons per minute (gpm) during this Inspection.

DDW-4 Surface Spill
That DDW-4 was in use during this inspection is noteworthy because earlier in the week (on February 25, 2014) a leak in the DDW-4 pump house resulted in a reportable spill. This spill was documented in a formal spill report submitted by LCI to the WQD of WDEQ and the NRC. The electronic mail correspondence subsequent to LCI's submittal of the formal spill report indicated that injection into DDW-4 was discontinued (i.e. the well was "shut off") while repairs were made to the well. The electronic mail from LCI's Health Physicist, Chris Pedersen, indicated that "The studs in the triplex pump broke off resulting in the spill". While DDW-4 was shut off, DDW-1 was able to accommodate all of the bleed required to remain within the permit-prescribed bleed rate of 0.5 – 1.5%. By the time of today's Inspection, DDW-4 had been repaired and was fully functional.

***Records review for HH 1-5 Well Completion Notice***
During this Inspection LCI's Steve Loose hand-delivered the HH 1-5 Well Completion Notice. The Notice involved 52 Class 3 UIC wells in Header House 5 of Mine Unit 1. After the field

inspection, LQD's Melissa Bautz inspected all the records associated with the Notice and found them to be satisfactory.
In the Well Casing Reports, well 1I028 was noted as only having a cement weight of 12.5 pounds per gallon (ppg). This is lower than the required cement weight of 13.5 – 15.0 ppg. However, the well passed MIT so it can be considered adequate. **LCI is reminded that the required cement weight for well installation is 13.5 – 15.0 ppg**.

Several completion reports did not have screen specifications filled in on the forms when inspected. However, LCI's Mr. Loose corrected those forms and sent a PDF file of them to Ms. Bautz on March 3, 2014. The PDF computer file depicted the corrected forms were burned onto a CD and are filed with the HH 1-5 Well Completion Notice Package in the Well Completion Notice Binder for Permit 788.

All MIT's for the wells in HH 1-5 were within permit specifications of a <5% drop in pressure during testing at 160 psi.

Based on the above records review as well as observations of the HH 1-5 well heads in the field, **LQD approved injection into HH 1-5 via letter dated March 5, 2014.**

***Summary of vertical excursion in HH 1-4***
The crux of today's Inspection was to investigate the presence of mining fluids at the ground surface at LC-254. On the morning of February 24, 2014 a LCI well field worker discovered considerable "moisture" in the ground around an older (circa 2008) delineation drill hole in MU1. The delineation hole was LC-254. LC-254 is located in Header House 4, about 20 feet south of the Lost Creek Fault which trends generally east-west. At the time of the discovery of the "moisture" (or water) around LC-254, Header House 4 in MU1 (HH 4-1) had been operational for about two weeks.

LCI's John Cash reported the discovery of the water at LC-254 to LQD's Melissa Bautz via a telephone call the morning of February 24, 2014. During that phone call, Mr. Cash indicated that LCI field personnel took the following measures after discovery of the water:

- All injectors south of the fault in HH 1-4 were shut off,
- Pumping wells in HH 1-4 were left on to maintain a bleed,
- The top of LC-254 was excavated to discern the extent of the surface moisture,
- A grab sample of the water at LC-254 was collected and analyzed in the Plant's lab and was found to have 48 ppm uranium.

For the remainder of the week of February 24 – 28, 2014 LCI staff have been reviewing the facts surrounding this incident (e.g. the LC-254 drilling log, identifying the injection wells within 100 feet of LC-254, etc…). LCI's Steve Loose indicated during today's Inspection that the eight (8) injection wells within a 100 foot radius around LC-254 that were running when the water was discovered at the ground surface were currently undergoing Mechanical Integrity Testing (MIT) during the Inspection. Mr. Loose further indicated that LCI personnel were planning to do the following during the week of March 3 – 7, 2014:

- Verify passing MIT results for each injection well tested the previous week,
- Turn on injector wells one by one for a couple hours, observe the response in LC-254; and
- Convert LC-254 into a monitoring well.

**LCI should be aware that Chapter 11 excursion protocol applies to this vertical excursion.** Given that the lab analysis of the mining fluids confirmed the presence of Uranium in the water on February 25, 2014, that date will be used as the "confirmation" date in the excursion protocol time line.

The next steps to be taken in the excursion protocol are:

1) LCI's submittal of a written report of the "confirmed" excursion and
2) Demonstrate control of the excursion.

LQD acknowledges that the Chapter 11 Section 12 protocol for excursions is tailored to horizontal excursions and the use of the Monitoring Well Ring for various stages of sampling. Because this is a vertical excursion, LQD will invoke a modified interpretation of the time required to generate written report documenting the excursion. Instead of requiring the submittal of the written report within five (5) days of the confirmation of the excursion, a modified deadline of 21 days is proposed. Therefore**, the deadline for the submittal of a written report of the confirmed excursion is set at March 17, 2014.**

***Other Observations made during this Inspection***

The wind was excessive during this Inspection, as a storm front was moving through the region. The winds were close to 30 mph. Consequently, a lot of trash (mainly plastic wrap and bags) was noted in the areas downwind from the lay down yard and Plant Site. **The need for regular trash pick-up is ongoing.**

The short-term **topsoil stockpile at the southern edge of HH 1-4 needs to be protected with a v-ditch or berm** (see Photo Number 3 in the attached Photo Addendum).

***Conclusion***

A total of eight (8) action items resulted from this Inspection. Five of are from the ongoing action item list carried over from the last Inspection, while three are new (from this Inspection):

Current Action Items:

1) Trash around the site needs to be picked up in the wake of the late-February early-March storm front that moved through the area **(deadline March 26, 2014)**,

2) The temporary topsoil stockpile at the south edge of HH 1-4 needs a berm or v-ditch constructed around its base **(deadline April 30, 2014)**,

3) Installation of a silt fence on the west side of topsoil stockpile TS-7 **(deadline April 30, 2014)**,

4) Delineation of turn-around areas at header houses **(deadline May 28, 2014)**,

5) Cleaning out of site's culverts 7 **(deadline April 30, 2014)**,

6) Development of SOP for trash pick-up 7 **(deadline March 26, 2014)**,

7) Finalizing the clean-up of materials in informal laydown area north of ponds **(deadline March 26, 2014)**, and

8) Submittal of a written report on the HH 1-4 vertical excursion **(deadline March 17, 2014)**

**The next site Inspection is planned to occur on March 26, 2014,** Wednesday, at 10am. The three (3) highlighted items in the above list will be checked during that Inspection. Please contact WDEQ/LQD's Melissa Bautz at (307) 335-6943 with any questions regarding this Report.

**********END OF MEMORANDUM**********

W/Photo Addendum (Pages 6 - 9)

**Photo Addendum to accompany the February 2014 Monthly Inspection of Lost Creek ISR's Pt 788**


**Photo Number 1: This is view of the laydown yard north of MU1 looking generally west by northwest. This panoramic view depicts this area as being cleared of the laydown yard "creep" documented at this location in the previous (Jan 2014) Inspection Report. This clean-up adequately addresses the laydown yard "creep" that occurred here. LCI should consider the installation of a fence to prevent the "creep" from occurring again.**

**Photo Addendum to accompany the February 2014 Monthly Inspection of Lost Creek ISR's Pt 788 cont'd…**


**Photo Number 2: This depicts the informal laydown area north of the ponds at the Plant Site looking generally east by northeast. There is still a large amount of small items that must be removed from this area before it can be considered cleaned up. It is imperative that this area be cleared because it is situated atop the Plant Site diversion channel.**


**Photo Number 3: This is a view of the western edge of the temporary topsoil stockpile at the south edge of HH 1-4. Even though this is a temporary stockpile, it needs to be protected from erosion with a berm, at least on the down gradient side. The down gradient side is the south side of the stockpile which is the right side in this photo.**

**Photo Addendum to accompany the February 2014 Monthly Inspection of Lost Creek ISR's Pt 788 cont'd…**


**Photo Number 4: This depicts the excavation at LC-254 in MU1 Header House 4. The MIT truck can be seen in the background in this photo. It is situated upon HH 1-4 injection well 1I212, which is one of the eight injection wells within a 100 foot radius of LC-254.**


**Photo Number 5: This is a view inside the excavation at LC-254. LCI staff indicated that a large chunk of ice was removed from this excavation and place in one of the ponds at the Plant Site.**

**Photo Addendum to accompany the February 2014 Monthly Inspection of Lost Creek ISR's Pt 788 cont'd…**


**Photo Number 6: This depicts the well head at 1I212 (which is depicted from afar with an MIT truck in Photo Number 3 above).**


**Photo Number 7: This depicts the down-casing packer assembly used during MIT in injection well 1I212.**