



Matt Mead, Governor

# Department of Environmental Quality

To protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations.



Todd Parfitt, Director

March 28, 2014

Mr. John Cash  
Lost Creek ISR, LLC  
5880 Enterprise Drive, Suite 200  
Casper, WY 82609

**Re: Summary of March 2014 Inspection, Lost Creek ISR Project, Permit #788**

Dear Mr. Cash:

Enclosed is WDEQ/LQD's summary of the March 2014 Inspection conducted at the Lost Creek Project on March 26, 2014. The resulting Inspection Report is provided in the attached eight-page Memorandum. Based on this Inspection, there are now nine (9) outstanding Action Items for the site.

- 1) Pump water out of the ponds to ensure they have at least 3 feet of freeboard (**deadline is immediate**),
- 2) Finalize the clean-up of materials in informal laydown area north of ponds (**deadline April 30, 2014**),
- 3) Install delineation posts around the south end of the plant site's diversion channel (**deadline April 30, 2014**),
- 4) Raise the surface casing for monitoring well MO-113 (**deadline April 30, 2014**),
- 5) Construct a v-ditch at the base of the temporary topsoil stockpile in HH 1-4 (**deadline May 28, 2014**),
- 6) Install a silt fence on the west side of topsoil stockpile TS-7 (**deadline May 28, 2014**),
- 7) Delineate the turn-around areas at all of the header houses (**deadline May 28, 2014**),
- 8) Clean out the site's culverts (**deadline May 28, 2014**), and
- 9) Formally address the site's disposal capacity given the current, actual disposal capacity (**deadline May 28, 2014**).

The first four action items in the list above will be checked during the next Inspection which is scheduled for April 30, 2014. If you have any questions regarding this correspondence, please contact Melissa Bautz in the Lander Land Quality Division office at (307) 335-6943.

Sincerely,

Melissa L. Bautz, P.G.  
Natural Resources Analyst  
Land Quality Division - Lander

Enclosure      Inspection Memorandum for March 2014 Inspection - Permit 788 (8 pages)

cc: Mark Newman – BLM, P. O. Box 2407, Rawlins, WY 82301(w/encl)  
John Saxton – US Nuclear Regulatory Commission (w/encl)  
Tanya King - WDEQ-LQD, District II Supervisor→Pt. 788 Inspection File (w/encl)  
Ramona Christensen - Cheyenne LQD Records Specialist→ Pt. 788 Inspection File (w/encl)  
Chron (w/encl, minus photos)

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**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: March 26, 2014

Date of Report: March 27, 2014 

Participants: Michael Gaither, Lost Creek ISR/Ur-Energy  
Eric Stonaker, Lost Creek ISR/Ur-Energy  
Melissa Bautz, WDEQ-Land Quality Division

Report Prepared by: Melissa Bautz – WDEQ-Land Quality Division

Subject: Monthly Inspection

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**Introduction**

On March 26, 2014, the monthly Inspection of the Lost Creek ISR (LCI) site was conducted. The last site Inspection was conducted on February 28, 2014 (see Report dated March 6, 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 February 2014 monthly), the following eight (8) action items were indicated as remaining to be addressed:

- 1) Pick up trash around the site (**deadline March 26, 2014**),
- 2) Install a berm around topsoil stockpile in HH 1-4 (**deadline April 30, 2014**),
- 3) Install silt fence on west side of topsoil stockpile TS-7 (**deadline April 30, 2014**),
- 4) Delineate turn-around areas at header houses (**deadline May 28, 2014**),
- 5) Clean out site's culverts 7 (**deadline April 30, 2014**),
- 6) Develop SOP for trash pick-up 7 (**deadline March 26, 2014**),
- 7) Finish clean-up in laydown area north of ponds (**deadline March 26, 2014**), and
- 8) Submit written report on the HH 1-4 vertical excursion (**deadline March 17, 2014**).

The highlighted deadlines in the list above were for the date of this Inspection and were, consequently, focal points of this Inspection. This review will show that Action items 1, 6, and 8 in the above list have been addressed since the last Inspection.

### **Pre-Inspection Meeting**

Prior to the field inspection, LCI's Michael Gaither and Eric Stonaker met with LQD's Melissa Bautz in the conference room.

### ***NSR for Bleed language in Permit***

During this meeting Mr. Gaither hand-delivered a non-significant revision (NSR) package for the modification of text in the Operations Plan pertaining to the bleed rate. That package was later hand-stamped as received at the WDEQ/LQD Lander office and is under review.

### ***SOP for trash pick-up***

Also during this meeting, Mr. Gaither and Mr. Stonaker showed Ms. Bautz the Standard Operating Procedure (SOP) for waste management at the site. This SOP, recently updated, includes the protocol for handling trash pick-up around the site. The LCI staff person who is responsible for conducting the weekly SWPPP site inspections will also inspect the site for windblown trash. That individual will report the trash pick-up needs to a supervisor who will, in turn, ensure the trash is picked up. **This SOP satisfies Action Item #6 in the above list.**

### ***March 20, 2014 Spill (Spill #7)***

During this Inspection, the spill that occurred on March 20, 2014 was briefly discussed. This spill occurred in the ponds area while water from the plant was being piped to one of the ponds. Mr. Gaither indicated he was in the final stages of assembling the spill report for this spill, as the report is due on March 27, 2014.

### ***March 25, 2014 Spill (Spill #8)***

A spill in HH 1-5 occurred the day before this inspection. It appears to have been derived from a broken buried trunk line. During this Inspection, LCI personnel were in the process of recovering fluids from this spill and delineating it. Mr. Gaither indicated he was planning to call in this spill to the WQD Spill Hotline after this Inspection.

### ***Freeboard in ponds***

Upon ocular inspection of the ponds (from the conference room window) it was discernable that the ponds were quite full. A review of the most recent pond inspections (provided by Mr. Gaither) indicated the ponds' freeboard is currently at 1.5 feet. The permit requirement for the ponds' freeboard is three (3) feet.

LCI will be emptying the ponds promptly in light of this. It was noted that the about 90% of the ponds' surfaces are still covered with ice, so wave action is not yet a concern. However, the spring thaw is forthcoming and the ice will not remain much longer. **The need to reduce the water levels in the ponds is a new top-priority action item whose deadline is immediate.** LCI personnel are asked to inform LQD when the ponds' freeboard has been brought back to three (3) feet. This can be done electronically (via e-mail) with an accompanying copy of a pond inspection report.

## **Inspection**

### *Bleed rate*

The instantaneous bleed rate was checked in the Plant's control room during this Inspection. It was found to be 0.75%. This is within an acceptable range, as the Permit commitment is between 0.5 and 1.5%. During this Inspection, both deep disposal wells (LCDWs 1 and 4) were being used. LCDW-1 was receiving the bleed on the well field, while LCDW-4 was some bleed water and water used for cleaning various pieces of equipment within the Plant. LCDW-4 was receiving water at a rate of 23 gallons per minute (gpm) during this Inspection while LCDW-1 was receiving 6 gpm.

During this Inspection LCI Plant staff person, **Gary, did an excellent job of explaining how he oversees the bleed rate.** Gary showed me the "Plant Operations Checklist" among other charts and tables that he utilizes to ensure the bleed rate stays between 0.5 % and 1.5%. Gary was able to toggle between two displays on the computer and demonstrate injection volume, production (PC) volume, and bleed rate instantaneously. Gary also took the time to show me the previous two days' paperwork, both of which showed appropriate bleed rates. **It is obvious the plant staff are well aware of the bleed requirements for the operation.** LQD will continue to spot-check the instantaneous bleed rate during future inspections.

Ms. Bautz asked whether a histogram of flow rates and bleed rates could be easily generated for inspection. While a histogram with that information could be generated, LCI's Mike Gaither suggested that it may be more helpful to LQD if the quarterly reports could be augmented to include a column for displaying the bleed rates in the same table that production rates are presented. Ms. Bautz indicated this would be a helpful, welcome addition to the quarterly reports. **If it is amenable to LCI, LQD would like to see a column for bleed rate added to the production tables in the quarterly reports.**

### *Disposal capacity topics*

The flow rates (injection and production) in Mine Unit 1 (MU1) have increased since the last inspection. This is not surprising given that 1) HH 1-4 south of the fault is now in production again (it was off during the February 2014 inspection) and 2) HH 1-5 is now operational. However, **it is alarming to see that the ponds are beyond their full capacity** (as discussed above in the pre-inspection meeting section of this report).

LCI staff are reminded that reliance on the ponds for achieving the required bleed is not authorized as standard operating procedure at the site; however, it appears ponds are being utilized in this manner. Section 2.9.4 of the Operations Plan addresses the purpose and role of the site's ponds. The following sentences are from Section 2.9.4 of the Operations Plan:

*"The primary purpose of the ponds is to allow for shut down of the UIC Class 1 wells for maintenance, such as Mechanical Integrity Tests (MITs), or repair while the Plant remains in operation."*

*“The purpose of two ponds is to allow for complete removal of fluid from one pond to the other in the event of a leaking liner.”*

That both ponds are beyond capacity is contrary to Section 2.9.4 of the Operations Plan. LCI is asked to review the Permit commitments in Section 2.9.4 of the Operations Plan to ensure adherence to this section of the Permit.

Discussions with plant staff during this inspection indicated that the RO units are being overhauled so they can process the water stored in the ponds. The thought is that once the RO units are running again, the disposal capacity issues will be alleviated. LQD is concerned that reliance on running the RO units to take up “slack” in the disposal stream of plant water, a task for which they were not designed, is also contrary to the Permit. **Given these concerns, LCI is asked to formally address the site’s disposal capacity given the actual disposal capacity of the site’s two deep disposal wells.** LQD anticipates that LCI’s response to this is accomplished by one of the two following options:

- 1) Provide a timeline for the installation of a third deep disposal well at the site, or
- 2) Submit a revision to the language in the Permit’s Operations Plan to reflect the actual disposal capacity being achieved in the site’s two current deep disposal wells and the actual production needs. This revision will also need to address the use of the RO units for taking up “slack” in the plant’s waste water disposal stream.

### *Spills*

Two spills occurred at the site since the last Inspection; one on March 20, 2014 and another on March 25, 2014. LCI staff are in the process of submitting the spill report for the March 20<sup>th</sup> spill and were in the process of delineating and cleaning the spill that occurred on March 25<sup>th</sup>. LCI has handled spill reporting in accordance with the Permit to date and there are no concerns with LCI’s handling of the current spills. As of the mailing of this Inspection report, the spill report for the March 20<sup>th</sup> spill was submitted electronically to LQD by LCI’s Mike Gaither.

### *Monitoring Well LC-0254*

In response to the discovery of production fluids in the borehole of abandoned exploration hole LC-254, LCI submitted a report summarizing the incident. The report, dated March 21, 2014, has been received at the WDEQ/LQD Lander office and is currently under review. **The submittal of the March 21, 2014 by LCI report fulfills action item #8** on the list of action items on the first page of this Inspection memorandum.

The March 21, 2014 report indicates that LC-0254 was completed as a monitoring well in the FG sand (see Photo Addendum). Since the completion of LC-0254 as a well, injection and production has resumed in HH 1-4 south of the fault. This was verified by an inspection of the totalizers and valves in the HH 1-4 building during this Inspection. There are no concerns with the resumption of injection and production in HH 1-4 south of the fault in the vicinity of LC-0254 given LCI’s stated plans in the above-referenced report to collect weekly samples from LC-0254 for at least a month. A review (by WDEQ) of the March 21, 2014 report will be sent under separate cover and is expected to be sent in mid-April 2014.

*Other observations*

Monitoring well MO-113 was noted in the February Inspection as being too low to the ground. **MO-113's surface casing needs to be raised.** This will be added to the action item list with a deadline of April 30, 2014. Additionally, trash around the site had been picked up, **satisfying Action Item #1 from the list of action items from the February 2014 Inspection.**

*Laydown area north of ponds*

Clean-up of the informal laydown area north of the ponds is not yet completed. However, the debris has been removed from the diversion channel. The remaining items should be picked up as soon as possible. LCI's Eric Stonaker indicated that the area will be utilized as an overflow parking area once it is cleared. That use will be acceptable, provided there is ample delineation of the south edge of the diversion channel so that vehicles don't inadvertently drive in the diversion channel. Mr. Stonaker acknowledged the need for delineations posts to prevent traffic on the channel. The installation of delineation posts along the south edge of the diversion channel will be added to the action item list with a deadline of April 30, 2014.

*Diversion channel in plant site*

The above discussion at the laydown yard led to a discussion about the location of the "headwaters" of the designed diversion channel. That is, the diversion channel, as built, appears to taper off into a driveway just north of the propane tanks. A review of Plate OP-2 in the Permit's Operations Plan indicates the start of the diversion channel, indeed, is intended to begin at its approximate current location. Therefore, there is no need for any change to the diversion channel. However, it is imperative that it be delineated and protected from traffic so that vegetation may take hold in it. **The channel's stability is dependent upon protecting its reclamation in its first two growing seasons.**

*Summary of Action Items*

Based on the observations made during this Inspection, Table 1 has been updated below.

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

<u>Action Item #</u>	<u>Action Item Description</u>	<u>*Status</u>
1	Pump water out of the ponds to ensure 3' freeboard.	Needs immediate attention.
2	Finalize clean-up of laydown area north of ponds.	Deadline April 30, 2014
3	Install delineation posts around plant site diversion channel	Deadline April 30, 2014
4	Raise the surface casing for well MO-113.	Deadline April 30, 2014
5	Construct a v-ditch or berm around south edge of short-term topsoil stockpile at south edge of HH 1-4.	Deadline May 28, 2014
6	Install a silt fence on west side of topsoil stockpile TS-7.	Deadline May 28, 2014.
7	Delineate the turn-around areas at all header houses.	Deadline May 28, 2014
8	Clean out the site's culverts.	Deadline May 28, 2014
9	Formally address disposal capacity.	Deadline May 28, 2014

\*Status indicated in this table is based upon the March 26, 2014 site Inspection. Deadlines for select Action Items may have changed (been extended) since the last Inspection Report.



### **Conclusion**

LCI has responded in accordance with excursion protocol to the LC-0254 event from last month. LQD will provide a formal written review of the report submitted by LCI about the LC-0254 event within the next several weeks.

The water levels in the ponds need to be lowered immediately to stay in compliance with the Permit. LQD encourages LCI staff to provide interim communication about the ponds' water levels before the next Inspection. An electronic mail correspondence accompanied by a scan of the recent pond inspection reports would be a useful means of interim communication.

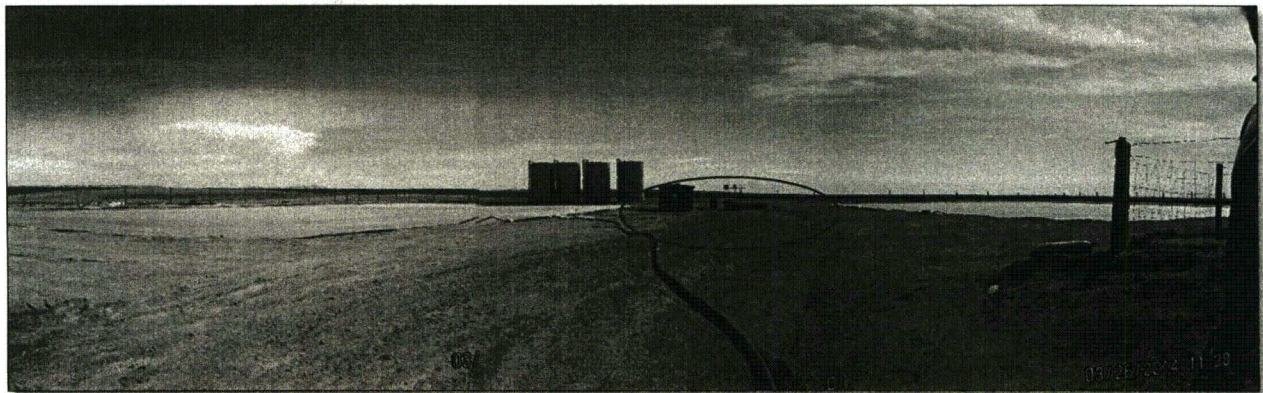
Lastly, the high pond water levels appear to speak to disposal capacity limitations at the site. LCI is asked to formally address the disposal capacity at the project, given the actual disposal capacity of the site's deep disposal wells.

**The next site Inspection is planned to occur on April 30, 2014, Wednesday, at 10am.** The first four (4) Action Items in the above table 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 - 8)

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



**Photo Number 1:** This is a panoramic view of the site's two ponds, looking toward the east. The HDPE pipe in the foreground, and heading to the north pond (the pond on the left) is coming from the plant. Normally this water is sent to the pond via buried pipe, however there was some trouble with freezing pipes, so the water was moved via this pipe. Upon insertion of this pipe into the pond, it was placed under a ledge of ice on the water's surface. When the pipe slipped out from under that ice, the pipe released water onto the ground between the two ponds. This is the ground that occupies the center of this panoramic. This release of water onto the ground occurred on March 20, 2014 and is referred to as Spill #7. A Spill Report for Spill #7 was sent via electronic mail to LQD on March 27, 2014. This is within the required seven (7) days for spill reporting. The approximate location of the area affected by the spill is indicated in a red oval.



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



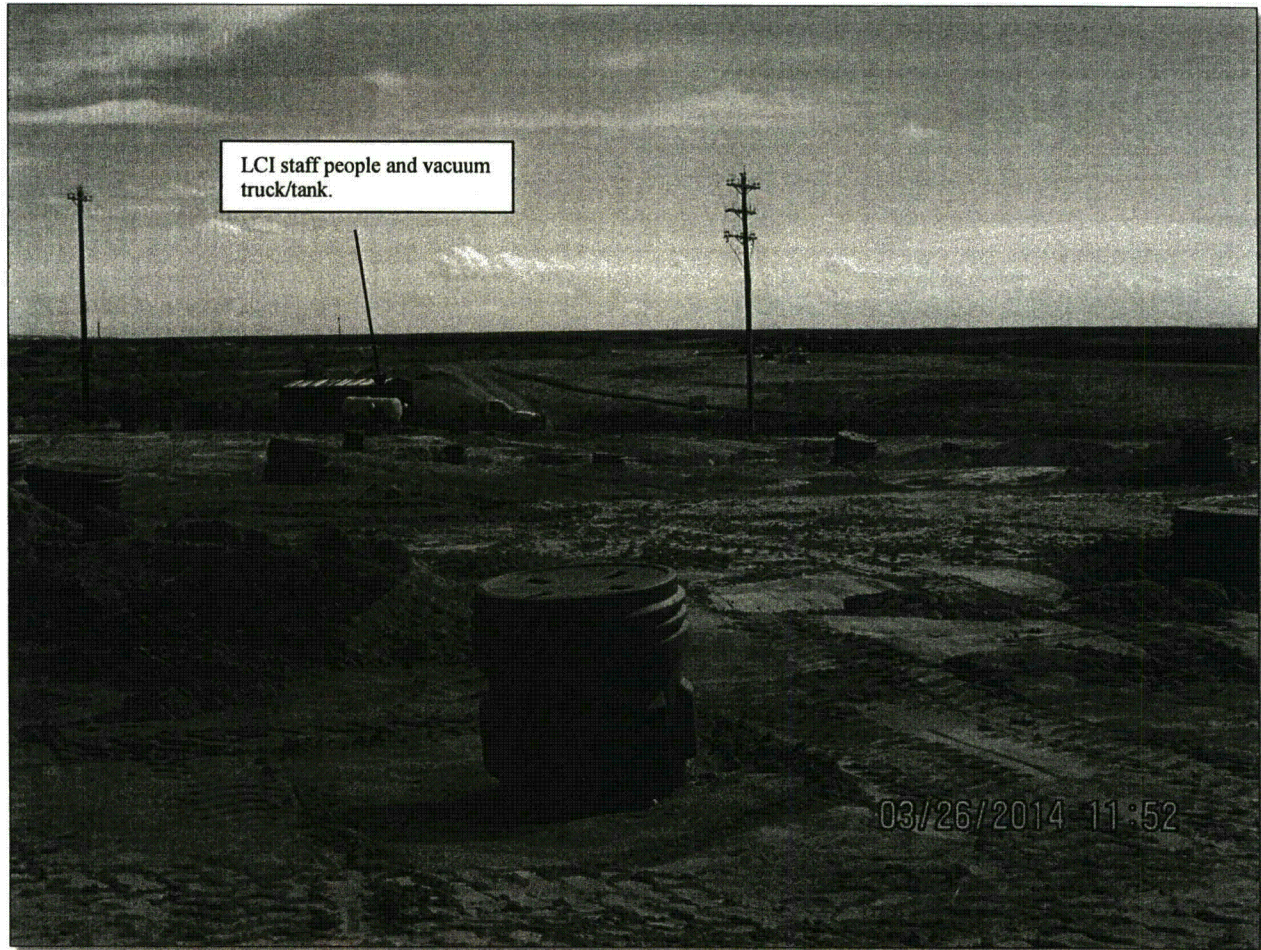
**Photo Number 2: This is a panoramic view looking generally west across the former location of the excavation around LC-0254. The surface casing for the newly-constructed monitoring well, LC-0254, is indicated by the red arrow. This photo's vantage point is comparable to the vantage point of Photo Number 4 in the February 2014 Inspection Report (dated March 6, 2014).**



**Photo Number 3: This is a close up of the surface casing for LC-0254.**



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



**Photo Number 4: This depicts a look toward the east across HH 1-5 where a new spill (Spill #8) was being cleaned and delineated by LCI staff. Not visible in this photo, but present during this inspection, were red delineation flags in the ground indicating the extent of the spill and/or sampling points.**