



# Department of Environmental Quality

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



Matthew H. Mead, Governor

Todd Parfitt, Director

March 16, 2016

Mr. Scott Schierman  
Uranium One Americas, Inc.  
907 N. Poplar Street, Suite 260  
Casper, WY 82601

**RE: LQD 2014-2015 Annual Inspection Report, Uranium One, Willow Creek ISR Project, Permit No. 478**

Dear Mr. Schierman:

Enclosed is a copy of the Annual Inspection Report conducted on December 29, 2015, at the Willow Creek ISR Project, Permit No. 478. This inspection was conducted with your assistance and the assistance of Mr. Kevin Filbert of Uranium One.

A copy of this report will be placed in the permanent inspection file for Permit No. 478, Willow Creek ISR Project, as will any written comments you may have.

In summary, no compliance issues were noted. However, as discussed in the attached inspection report, Uranium One is reminded to continue implementing BMP's to control erosion in disturbed areas as soon as possible following disturbance.

If you have any questions or comments, please contact me at 307-675-5619 or at [luke.mcmahan@wyo.gov](mailto:luke.mcmahan@wyo.gov).

Regards,

Luke McMahan, P.G.  
Project Geologist  
WDEQ-LQD District 3

Attachment: 2014-2015 Annual Inspection Report

cc: Mr. Ron Linton, US Nuclear Regulatory Commission, Mail Stop T-8F5,  
11545 Rockville Pike, Rockville, MD 20852 w/attach.



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# IN SITU MINE INSPECTION REPORT

Wyoming Department of Environmental Quality, Land Quality Division  
2100 West 5th Street Sheridan, WY 82801  
Phone: (307) 673-9337 FAX: (307) 672-2213



<b>Permit Number:</b>	PT0478	<b>Permittee:</b>	URANIUM ONE USA INC
<b>Inspection Date:</b>	12/29/2015	<b>Inspector(s):</b>	Luke McMahan
<b>Report Date:</b>	3/16/2016	<b>Participant(s):</b>	Scott Schierman, Kevin Filbert
<b>Last Inspection:</b>	10/23/2014	<b>Current Bond:</b>	\$21,672,638
<b>Inspection Reason(s):</b>	Annual	<b>Field Conditions:</b>	Calm, intermittent snow fall, light snow cover, ~10° F, all areas accessible
		<b>Approval Date:</b>	4/18/1978

<b>Status:</b>	Active	<b>Approved Acreage:</b>	14986.38
<b>County:</b>	Johnson	<b>Mineral:</b>	Uranium

## Opening Comments

The annual inspection for Uranium One's Willow Creek Mine was conducted by LQD District 3 Project Geologist Luke McMahan on December 29, 2015. The inspection was conducted with the assistance of Mr. Scott Schierman and Mr. Kevin Filbert of Uranium One. The inspection consisted of a records review which was conducted at the Christensen Ranch field office and a field inspection which was conducted at Willow Creek's Christensen Ranch Site and Irigaray Site. The Christensen Ranch Site currently consists of eight (8) mine units and a satellite plant. The Irigaray Site consists of nine (9) mine units and a plant facility. At the time of the inspection, both plant facilities were operational, however, the Irigaray Site wellfields are no longer in operation. Further discussion regarding the approved groundwater restoration and current decommissioning and surface reclamation at the Irigaray Site is provided under the applicable sections of this inspection report. No new wellfield development or facility construction occurred at Willow Creek Mine during the reporting period.

## Records Review:

Mechanical Integrity Testing (MIT) - Individual MIT records are on file with the associated well file at the Christensen Ranch office. MIT testing is reported to LQD with each quarterly report.

Spill Records and Reporting - hard copy spill records and reporting files on-site (through 2014). As discussed in the Annual Report, there were four (4) reportable spills during the 2014-2015 reporting period. Plant solution and wellfield solution spill SOP on site. SWPPP on-site with inspection records.

Quarterly and Annual Reports - Quarterly and Annual Reports are kept on-site at the Christensen Ranch office.

Current Mine Plan - A copy of the current Mine Plan is kept on-site at the Christensen Ranch office.

Excursion Records - Electronic excursion records are accessible at the Christensen Ranch office. As discussed in the Annual Report, two (2) wells were on excursion status during the 2014-2015 reporting period. Both wells had been taken off excursion status prior to the annual inspection.

Well Completion Certifications - Hard copies and electronic files of well completion certifications are kept on-site at the Christensen Ranch office.

Monitoring Well Data - Monitoring well data is kept at the Christensen Ranch office and provided to LQD in each quarterly report.

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**Bond** - The set bond amount for Permit No.478 is \$21,672,638.00 as indicated in the LQD Director's Bond Letter dated July 1, 2015. This amount is bonded under Lexon Insurance Company Bond No. 1118572 increase rider.

### Compliance Assessment

Inspection Topic	In Compliance
Drill Holes	N/A
<p>As discussed in the 2014-2015 Annual Report, there were no drilling or well completions that occurred at the Willow Creek Project during the reporting period. In July of 2013 LQD authorized Willow Creek Mine to temporarily cap 200 pilot holes in Mine Unit 10B (Modules 10-7 and 10-8) at the Christensen Ranch Site. Inspection of these boreholes was discussed in the 2012-2013 and 2013-2014 Annual Inspection Reports. The initial authorization required Willow Creek Mine to re-enter the temporarily surface capped holes on or before January 1, 2015 to complete permanent reclamation or complete the wells as mine production or injection wells. In December of 2014, Uranium One requested LQD to authorize an extension of the January 1, 2015 completion date. The request was denied in LQD's response letter dated January 14, 2015. Following LQD's denial of the extension, LQD and Uranium One held a meeting to discuss the status of the subject drill holes and concluded that Uranium One may delay the reclamation and/or well completion of the drill holes until August 1, 2016 under the following conditions: Uranium One must provide information demonstrating that the drill holes were partially plugged with plug gel after drilling and that the current reclamation status does not present a risk to the aquifers intersected by the drill holes, and that Uranium One shall randomly select ten (10) drill holes in the month of September 2015 and May 2016 to verify that the plug gel has not settled below the subsurface elevation of shallow groundwater in the area. A written report shall be submitted to LQD within 30 days of each verification event. To date, Uranium One has provided the required information to delay completion of the drill holes until August 1, 2016. As a result, the maintenance item from the previous annual report which required these drill holes to be plugged or completed as wells by January 2, 2015 has been marked as resolved.</p>	
General	N/A
• Deep Disposal Wells	Yes
<p>Two Class I injection wells are installed at Willow Creek Mine, Christensen Ranch DW No.1 and Christensen Ranch 18-3. Both wells had operational issues during the reporting period which are discussed in the 2014-2015 Annual Report. These issues were resolved during the reporting period and the wells deemed suitable for operation by WDEQ-WQD.</p>	

Inspection Topic	In Compliance
● Facilities	Yes
<p><u>Christensen Ranch Site</u>  The construction shop area was viewed during the inspection to verify existing buildings for reclamation bond review. Two steel buildings and two 'trailer house' buildings (Photo #3) are located at the maintenance/construction shop area. Inspection of the site identified that the trailers were not set on a foundation and therefore would not require demolition and disposal of foundation materials. Two steel buildings were identified at the site and are applicable to demolition and surface reclamation requirements. No compliance issues were noted when observing this area. The fuel island was noted to have secondary containment with an earthen berm and no spills were observed (Photo #4).</p> <p><u>Irigaray Ranch Site</u>  Uranium One's operations to redry Honeymoon, Australia dried yellowcake at the Irigaray Site were completed between March and April of 2015.</p> <p>The former 'restoration building' remains on-site and was viewed in passing while inspecting the former Irigaray mine units. Per the Final Status Decommissioning Report, this building was used historically as a wellfield control building for Mine Units 1-5, then a wellfield restoration building, and since completion of wellfield restoration activities, for general storage along with an associated shed. These buildings are located in the former Mine Unit 2 area and approximately 1,700 feet from the southeast corner of the main plant. Uranium One proposes to leave this building and associated shed as post mining features. Report B: Final Status Surveys for Buildings, included with the Final Status Decommissioning Report, documents the results of a release survey of these buildings. The Final Status Decommissioning Report for the Irigaray ISR Site was submitted to NRC in August of 2015 and was in review with NRC at the time of this inspection.</p> <p>The Irigaray Plant was viewed in passing, no issues such as spills around the fuel island, were observed. The fuel island was noted to have secondary containment with an earthen berm.</p>	
● Ponds	Yes
<p><u>Christensen Ranch Site</u>  Ponds CR-1, CR-2, CR-3, CR-4 and the Permeate Pond are all currently being utilized. CR-Ponds 1-4 are lined and have leak detection systems. The Permeate Pond is not lined. A discussion of any leaks identified and subsequent actions taken is provided in the 2014-2015 Annual Report.</p> <p><u>Irigaray Site</u>  The status and construction of the ponds located at the Irigaray Site were discussed during the inspection. Irigaray Ponds A, C, and E are in restoration and the liners and leak detection systems removed, radiation survey completed, and contaminated soil removed. As indicated in previous annual reports, decommissioning of these ponds started in 2003. Active ponds at the Irigaray Site, Ponds B, D, RA &amp; RB are lined and have leak detection systems. A discussion regarding leaks identified during the reporting period in Pond D and Pond RA and actions taken to find and repair the leaks is provided in the 2014-2015 Annual Report.</p>	

Inspection Topic	In Compliance
● Roads	Yes
During the inspection, road repair work was viewed where flood waters washed out the road embankment where it crosses North Prong Willow Creek in the SE Quarter of Section 8, T44N, R76W (north of MU5 and west of MU7). Although within the permit area, the location of the washout is not within an area of mining activity. The repair of the washed out road embankment was performed by the landowner (was not a mine project) and consists of the rebuilt embankment and a new culvert (Photo #6).	
● Signs	Yes
Mine Identification signs were observed posted at both the Irigaray Site (Photo #1) and the Christensen Ranch Site. Both signs indicated that Donna Wichers is the Agent (i.e. contact person). LQD understands that Donna Wichers is no longer in this position with Uranium One. Therefore, the signs will need to be updated with the current agent/contact person information. Otherwise, the sign was posted with the appropriate information. The address and phone number on the sign remains current for contacting the Uranium One Casper, WY office. Communications with Uranium One following the inspection have indicated that the Mine has arranged to have these signs updated. Multiple access control and radiation safety signs (Photo #5) were also viewed throughout the mine site.	
● Surface Water Control	Yes
No WYPDES discharge was occurring at the Willow Creek Mine.	
● Topsoil Stockpiles	Yes
Multiple topsoil stockpiles were viewed in passing. The stockpiles were observed to be well vegetated and stable with no significant erosional effects evident. All topsoil stockpiles observed had topsoil identification signs posted. A view of Topsoil Stockpile #3 is presented in the photo log, Photo #2.	
● Vegetation	Yes
Interim vegetation in CR Mine Units 7, 8 and 10 was observed to be well established (Photo #7 & #8).	

Inspection Topic	In Compliance
Well Fields	N/A
<p>Uranium One has indicated that it has reached its budgeted amount of uranium production for 2015 and therefore all mining solution being injected into the mining zones has ceased since the 2nd Quarter of 2015. At the time of the inspection, injection had not resumed. However, based on communications with Uranium One following the annual inspection, Uranium One was planning to begin injection operations again during the 1st Quarter of 2016.</p> <p><u>Christensen Ranch Mine Units 2, 3, 4, and 6</u>  These mine units in post restoration mode were viewed in passing with no notable concerns. Revegetation of disturbed areas is strong and no significant erosion was observed. Because the aquifer restoration has not been approved by NRC and LQD for these mine units, the wells and associated infrastructure remain. Decommissioning of these wellfields will not be initiated until groundwater restoration is deemed complete.</p> <p><u>Christensen Ranch Mine Unit 5</u>  Mine Unit 5 was viewed in passing with no notable concerns. Revegetation of disturbed areas is strong and no significant erosion was observed. Modules 5-1, 5-3 and 5-5 are inactive and remain in post restoration mode. Monitoring wells associated with these modules continue to be sampled quarterly and the sampling results reported to LQD on a quarterly basis. Module 5-2, where mining was resumed in March of 2012, has been in standby mode since May of 2015.</p> <p><u>Christensen Ranch Mine Units 7, 8 and 10</u>  Revegetation of disturbed areas is strong and no significant erosion was observed. A view of interim vegetation and erosion control in Mine Unit 8 is shown in Photo #7.</p> <p><u>Irigaray Mine Units 1 - 9</u>  There is no active mining at the Irigaray Site with groundwater restoration of Mine Units 1 through 9 being approved in November of 2005. Uranium One is actively performing decommissioning and surface reclamation of the mine units. Currently, Uranium One does not plan to re-topsoil Mine Units 6 through 9 where the topsoil was salvaged and stockpiled over 30 years ago. Although LQD has not yet granted approval for an alternate use of the topsoil stockpiles, it appears that the full depth of topsoil was not salvaged from these areas and as a result vegetative regrowth has made significant recovery. The trenches resulting from wellfield piping removal in Mine Unit 7 had been backfilled and seeded (Photo #9). Uranium One submitted the Irigaray Mine Units 1-9 Final Status Decommissioning Report to NRC under cover letter dated August 7, 2015.</p>	

Inspection Topic	In Compliance
<ul style="list-style-type: none"> <li>• <b>Aquifer Restoration</b></li> </ul> <p><u>Christensen Ranch Mine Units 2, 3, 4, and 6</u> Groundwater restoration activities, including stabilization monitoring ended in these mine units on May 30, 2005. These mine units remain in post-restoration mode where the associated monitoring wells continue to be sampled quarterly and the sampling results reported to LQD on a quarterly basis. Under cover letter dated September 11, 2015 Uranium One provided NRC with its response to NRC staff questions presented in the October 23, 2012 Technical Evaluation Report for the Christensen Ranch Mine Units 2 through 6, groundwater restoration report submitted on March 5, 2008. Responses to NRC comments regarding Mine Unit 5 were not addressed in the September 2015 package due to Uranium One returning to Module 5-2 to conduct additional mining activities. The report was accepted by NRC and made publicly available on September 25, 2015. Based on LQD's communications with NRC, LQD understands that NRC staff plans to complete its review or issue a request for additional information, if needed, by July 31, 2016.</p> <p><u>Christensen Ranch Mine Unit 5</u> Modules 5-1, 5-3 and 5-5 are inactive and remain in post restoration mode. Monitoring wells associated with these modules continue to be sampled quarterly and the sampling results reported to LQD on a quarterly basis.</p>	Yes
<ul style="list-style-type: none"> <li>• <b>Erosion Control</b></li> </ul> <p>Willow Creek Mine continues efforts to control erosion in wellfield areas. Interim vegetation has shown good growth providing vegetative erosional control (Photo #8). The vegetative growth is significant in Mine Unit 10 and anticipated to provide enhanced erosion control in those areas identified as needing additional erosion control during the previous inspection. The maintenance item from the previous annual inspection has been marked as resolved. However, Uranium One is reminded that erosion control and maintenance of sediment traps/sumps will need to be continuously addressed to remain in compliance.</p>	Yes
<ul style="list-style-type: none"> <li>• <b>Status</b></li> </ul> <p>As discussed in the 2014-2015 Annual Report, Uranium One shut down production from Mine Units 5-2, MU7, MU8, and MU10 in April of 2015. Required monitoring, mechanical integrity testing and general maintenance continues in these Mine Units and throughout the mine site. At the time this inspection report was prepared, Modules 8-3, 8-4, and 8-5 in Mine Unit 8 had been put back into production and Uranium One was preparing to resume production in Mine Unit 10.</p>	Yes

#### Actions Required

Inspection Topic	Inspection Date	Proposed Resolution Date
<b>Signs</b>  Update Mine Identification signs at Christensen Ranch and Irigaray with the current agent/contact person.	12/29/2015	12/31/2016

#### Actions Completed Since Last Inspection

Inspection Topic	Inspection Date	Proposed Resolution Date	Resolution Date
<b>Drill Holes</b>  Reenter temporarily surface capped holes in Mine Unit 10B, Modules 10-7 and 10-8 in order to complete permanent reclamation or to complete as mine production or injection wells; or obtain approval from LQD that Uranium One may postpone reentering the holes until a later date.	10/23/2014	1/2/2015	12/29/2015
<b>Erosion Control</b>  Shore up sediment control in Mine Unit 10B drainage (Photos #5 & #6). Reposition wattles controlling erosion next to the well access road (10-448) so that surface flow does not undercut the wattle. Clean sump to provide capacity for sediment control and shore-up silt fence around sump.	10/23/2014	5/31/2015	12/29/2015

**Inspection Summary Comments**

No violations were issued as a result of this inspection. No new maintenance items were generated as a result of this inspections. Willow Creek Mine is reminded to continue to closely watch, and reinforce sediment control measures as needed in areas of recent disturbance such as Mine Units 8 and 10.



**Inspection Recipient and Attachment Information**

Recipient	Email	Address/Notes
Operator	No	URANIUM ONE USA INC

**Attachment Types:** ☒ Photo Addendum ☐ Map(s) ☐ Table(s) ☐ Other

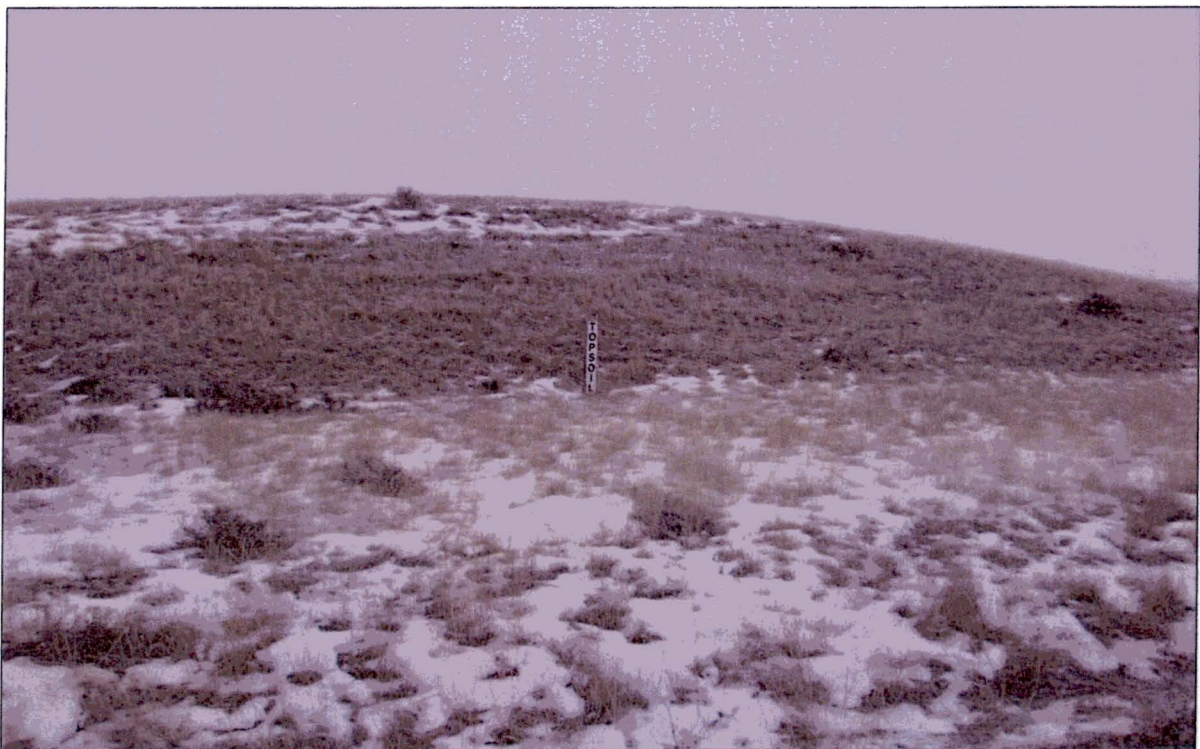
**Attachment Notes**

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Type	FileName	Size (MB)	# Pages
Cover Letter	PT478_Annual_IR_cvr.ltr_03.16.16LM.pdf	0.06	1
Photos	PT478_Annual_IR_Photo Log_12.29.15LM.pdf	1.35	5



**Photo #1:** Irigaray Site project sign.



**Photo #2:** View of typical topsoil pile identification (Topsoil Stockpile #3).



**Photo #3:** View of 'trailer house' building located in maintenance area of CR Site.



**Photo #4:** View of fuel island located in CR maintenance area, tanks bermed for secondary containment.





**Photo #5:** View of typical access control/radiation safety sign.

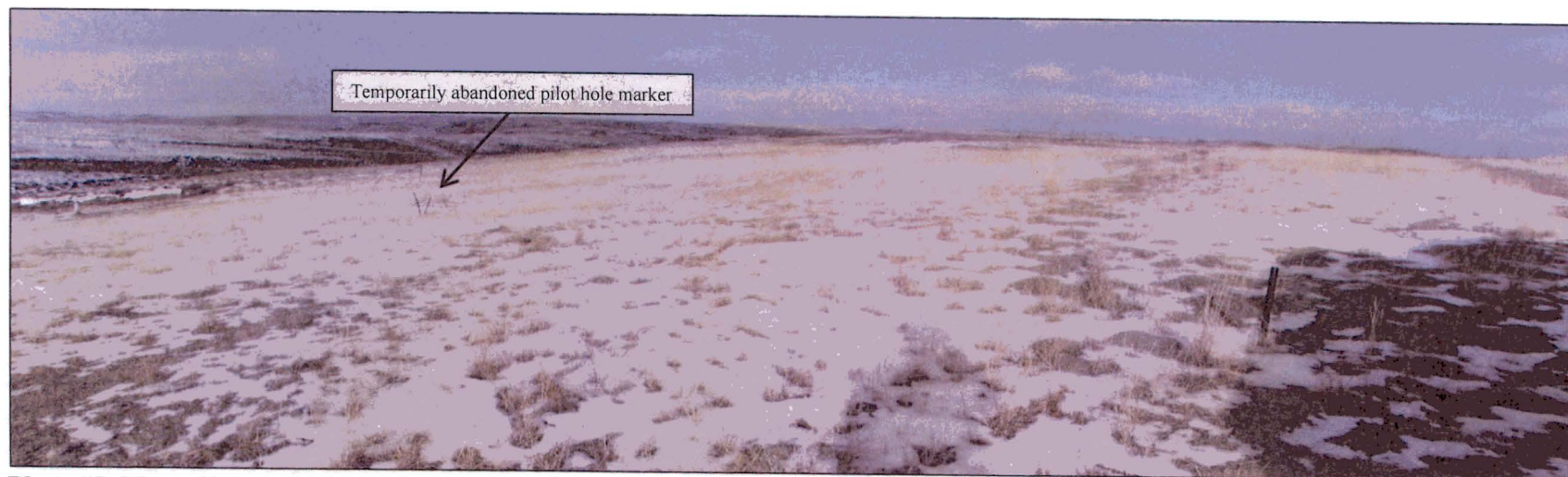


**Photo #6:** View of road and culvert repair constructed by landowner across North Prong Willow Creek, SE Section 8, T44N, R76W.



**Photo #7:** View of Mine Unit 8 interim vegetation and sediment control structures.





**Photo #8:** View of interim vegetation and temporarily plugged holes in Mine Unit 10.



**Photo #9:** View of backfilled trenches at Irigaray Mine Unit 7.