

April 22, 2015

Mr. Scott Schierman
Senior Health, Safety and
Environment Specialist
Uranium One Americas, Inc.
907 N Poplar, Suite 260
Casper, WY 82601

SUBJECT: NUCLEAR REGULATORY COMMISSION STAFF REVIEW, URANIUM ONE USA, INC., WILLOW CREEK PROJECT, SEMI-ANNUAL EFFLUENT AND ENVIRONMENTAL MONITORING REPORT FOR THE REPORTING PERIOD JANUARY 1, 2014 THROUGH JUNE 30, 2014, MATERIALS LICENSE SUA-1341, DOCKET NO. 040-08502 (TAC J00741)

Dear Mr. Schierman:

Uranium One USA, Inc., (Uranium One or the licensee), submitted to the U.S. Nuclear Regulatory Commission (NRC), the Semi-Annual Effluent and Environmental Monitoring Report for the Willow Creek Project, January 1, 2014 to June 30, 2014, dated August 28, 2014. The licensee also submitted the 2013 Annual Radiation Protection and ALARA [as low as reasonably achievable] Audit for Willow Creek Operations along with the Semi-Annual Report. The Semi-Annual Effluent and Environmental Monitoring Report was revised in correspondence dated October 23, 2014 and January 28, 2015. These documents are available in the Agencywide Documents Access and Management System (ADAMS). The documents were reviewed by NRC staff for information pertaining to the semi-annual reporting period January 1, 2014, through June 30, 2014 and the calendar year 2013.

The NRC staff review is contained in the enclosed NRC Staff Review Report. The NRC Staff Review Report contains recommendations to the licensee on the Semi-Annual Effluent and Environmental Monitoring Report and the 2013 Annual Radiation Protection and ALARA Audit. The licensee is not required to revise the Semi-Annual Effluent and Environmental Monitoring Report or the 2013 Annual Radiation Protection and ALARA Audit but should consider the recommendations when developing future reports. NRC staff may follow up on the recommendations in this NRC Staff Review Report during future inspections.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," 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 ADAMS. ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

If you have any questions regarding this action, please contact me at 301-415-7777, or by e-mail at Ron.Linton@nrc.gov.

Sincerely,

/RA/

Ron C. Linton, Project Manager
Uranium Recovery and Licensing Branch
Division of Decommissioning, Uranium Recovery,
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

Docket No.: 040-08502
License No.: SUA-1341

cc: Luke McMahan, PG. (WDEQ)

Enclosure: NRC Staff Review Report

S. Schierman

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If you have any questions regarding this action, please contact me at 301-415-7777, or by e-mail at Ron.Linton@nrc.gov.

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Ron C. Linton, Project Manager
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Enclosure: NRC Staff Review Report

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**NRC STAFF REVIEW REPORT
REVIEW OF SEMI-ANNUAL EFFLUENT AND ENVIRONMENTAL MONITORING
REPORT, JANUARY 1, 2014, TO JUNE 30, 2014, AND
2013 ANNUAL ALARA AUDIT
URANIUM ONE USA, INC., WILLOW CREEK PROJECT**

DATE: April 22, 2015

DOCKET NO.: 040-08502

LICENSEE: Uranium One USA, Inc.

SITE: Willow Creek Project, Wyoming

PROJECT MANAGER: Ron C. Linton

TECHNICAL REVIEWERS: David Brown, Ron Linton

Introduction

Uranium One USA, Inc., (Uranium One or the licensee), submitted to the U.S. Nuclear Regulatory Commission (NRC), the January 1, 2014 to June 30, 2014, Semi-Annual Effluent and Environmental Monitoring Report for the Willow Creek Project dated August 28, 2014. The licensee also submitted the 2013 Annual Radiation Protection and ALARA [as low as reasonably achievable] Audit for Willow Creek Operations along with the Semi-Annual Report. These documents are available in the Agencywide Documents Access and Management System (ADAMS) as stated below. The documents were reviewed for information pertaining to the semi-annual reporting period January 1, 2014, through June 30, 2014 and the calendar year 2013. The NRC staff's review is contained in this NRC Staff Review Report.

Documents Reviewed

- Uranium One USA, Inc., Willow Creek Project, Annual Report for WYDEQ [Wyoming Department of Environmental Quality] Permit to Mine No. 478, for July 1, 2013 to June 30, 2014, ADAMS Accession No. ML14287A473.
- Willow Creek Project, Semi-Annual Effluent and Environmental Monitoring Report and ALARA Audit, publicly available in ADAMS September 15, 2014, ADAMS package no. ML14251A209, containing the following reports:
 - Willow Creek Project, Semi-Annual Effluent and Environmental Monitoring Report for January-June 2014, August, 28, 2014, ADAMS Accession No. ML14251A305.

Enclosure

- 2013 Annual Radiation Protection and ALARA Audit for Willow Creek Operations, June 25, 2014, ADAMS Accession No. ML14251A317.
- Uranium One USA, Inc., Willow Creek Project, Updated January - June 2014 Semi-Annual Effluent and Environmental Monitoring Report, October 23, 2014, ADAMS Accession No. ML14296A667.
- Uranium One USA, Inc., Willow Creek Project, Updated January - June 2014 Semi-Annual Effluent and Environmental Monitoring Report, submitted via electronic submission, January 28, 2015, ADAMS Accession No. ML15034A549.

Applicable Requirements

The Semi-Annual Report is required by License Condition (LC) 12.1, and 10 CFR 40.65. License Condition 12.1 states:

Effluent and environmental monitoring program results provided in the semi-annual report and in accordance with 10 CFR 40.65, "Effluent monitoring reporting requirements," shall be reported in the format shown in Table 3 of Regulatory Guide 4.14, (Rev. 1) entitled, "Sample Format for Reporting Monitoring Data." The report shall also include injection rates, recovery rates and injection manifold pressure, status of well fields in operation (including last date of lixiviant injection), status of well fields in restoration and restoration progress, status of any long term excursions, and a summary of mechanical integrity tests during the reporting period.

The Semi-Annual Report was reviewed by the NRC Uranium Recovery Licensing Branch (URLB), project manager and hydrogeologist for the Nichols Ranch Project and URLB staff health physicist. The WYDEQ Annual Report was not reviewed in total, but was reviewed in part to supplement and compare data reported in the Semi-Annual Report.

The Annual ALARA Audit Report is required by LC 12.3 that states:

An annual report will be submitted to the NRC in accordance with License Condition 9.2, that includes the ALARA audit report, land use survey, monitoring data, and the SERP information required under License Condition 9.4(d). The report shall include a summary of the daily walk-through inspections.

The Annual ALARA Audit Report was reviewed by the NRC URLB staff health physicist.

Semi-Annual Effluent and Environmental Monitoring Report

Operational Status

- Uranium One reports it continues to recover uranium from five Mine Units, 5-2, 7, 8, 10A, and 10B, and produce uranium loaded resins at the Christensen Ranch (CR) Satellite facility. Uranium resins are transported to Irigaray (IR) Central Processing Plant for

elution and production of yellowcake. The licensee reports no well fields are currently undergoing restoration and there are no wells in excursion status.

- Uranium One reported that a total of 1,527,943,203 gallons were injected and 1,548,233,250 gallons were recovered from operational mine units with an overall wellfield bleed of 1.3 percent during this reporting period. The licensee did not report initially its production figures in Appendix 1, Table 1 of the Semi-Annual Report (ADAMS Accession No. ML14251A305) or of the October 23, 2014, updated report (ADAMS Accession No. ML14296A667). The submissions were missing Table 1. However, NRC staff reviewed the Annual Report for WYDEQ (ADAMS Accession No. ML14287A473) that contained monthly production, injection, and bleed rates for the year from July 2013 through June 2014, which covers this Semi-Annual Report reporting period. Subsequently, the licensee provided Appendix 1, Table 1, in the January 28, 2015, updated Semi-Annual Report (ADAMS Accession No. ML15034A549). NRC staff reviewed the January 28, 2015, updated Semi-Annual Report and the WYDEQ Annual Report and notes the licensee reported different production and injection values in Table 1 for Mine Unit 5-2, March and April 2014, of the in the WYDEQ Annual Report (ADAMS Accession No. ML14287A473) when compared to the values in Appendix 1, Table 1, from the second updated Semi-Annual Report (ADAMS Accession No. ML15034A549).
- Individual bleed rates for each well field from January 2014 through June 2014, were calculated by NRC staff using monthly injection and production rates in the Annual Report to the WYDEQ, as follows:

Mine Unit	Production (gallons)	Injection (gallons)	Bleed (gallons)	Percent Bleed
Mine Unit 5-2	51,530,638	49,796,433	1,734,205	3.4 percent
Mine Unit 7	388,667,100	382,869,551	5,797,549	1.5 percent
Mine Unit 8	485,840,140	482,572,971	3,267,169	0.7 percent
Mine Unit 10A	227,742,163	224,865,634	2,876,529	1.3 percent
Mine Unit 10B	394,453,209	387,838,586	6,614,623	1.7 percent
Overall	1,548,233,250	1,527,943,175	20,290,075	1.3 percent

- NRC Staff calculated that an overall 1.3 percent bleed was maintained during the reporting period. This bleed rate is in consistent with commitments made in the Licensee Renewal Application, Section 3.3.3.4 (ADAMS Accession No. ML120820095) that an approximately one-percent bleed will be maintained and as tied down in LC 9.3.
- Mine Unit 5-2. A negative bleed (over injection) was reported for the month of June 2014 (-0.1 percent) in the Semi-Annual Report (ADAMS Accession No. ML15034A549).

- Mine Unit 8. No negative bleeds were reported in the Semi-Annual Report (ADAMS Accession No. ML15034A549). However, a negative bleed (over injection) was reported for the month of March 2014 (-0.1 percent) in the WYDEQ Annual Report (ADAMS Accession No. ML14287A473).
- Mine Unit 10A. No negative bleeds were reported in the Semi-Annual Report (ADAMS Accession No. ML15034A549). A negative bleed (over injection) was reported for the month of March 2014 (-0.1 percent) in the WYDEQ Annual Report (ADAMS Accession No. ML14287A473).
- Appendix A, Table 2, of the Semi-Annual Report, shows weekly maximum injection pressures. The licensee identified 13 occasions when the 140 psi pressure limit was exceeded and provided explanations for the pressure spikes. The licensee stated that twelve of the spikes were 150 psi or less, with the highest spike in injection pressure being 160 psi in Module 10-4 on March 29, 2014. NRC staff notes that all injection and recovery wells at the Christensen site are tested for integrity using the maximum operational pressure of 140 psi, plus a 20 percent engineering safety factor (a total of 168 psi at Christensen) as discussed in the License Renewal Application section 3.3.3.4 (ADAMS Accession No. ML120820095) and tied down in LC 9.3. NRC staff notes that the licensee identified that the 140 psi limit was exceeded on 13 separate occasions, but the licensee only discussed 12 in its narrative in Section 2.4 of the Semi-Annual Report. NRC staff notes that an injection pressure reading of 165 psi was reported by the licensee in Appendix A, Table 2, in Module 10-4 the week ending May, 25, 2014, and was again exceeded the week ending June 1, 2014, at 160 psi. These two pressures are not shown in bold on Table 2, and neither the 165 psi nor the 160 psi is discussed by the licensee. NRC staff notes that an injection pressure reading of 142 psi was reported by the licensee in Table 2, Module 10-5, for the week ending June 22, 2014. This pressure exceedance is not shown in bold on Table 2 and is not discussed by the licensee.
- The licensee stated that mechanical integrity tests (MIT) were completed for 72 wells in Mine Units 7, 8, 10A and 10B. Two well failed MIT in Mine Unit 8. The licensee plans to repair the wells and retest them during the 3rd quarter of 2014. Additional MIT were performed on deep disposal wells 1 and 18-3. Well 18-2 failed its MIT and Well 1 failed to maintain annulus pressures and required maintenance to mitigate the problem. Well 1 subsequently passed another MIT and has been put back into production. The status of deep disposal well 18-2 was not further discussed by the licensee in the Semi-Annual Report.
- The licensee stated that three reportable spills (greater than 420 gallons) occurred during this report period. The licensee indicated the spills were reported to the NRC and WYDEQ.
- The licensee stated that no active groundwater restoration took place during the reporting period.

Air Effluent Monitoring

- The licensee estimated Irigaray project dryer stack emissions for the period January to June 2014 based on a single survey on May 22, 2014. These values (tabulated below) were provided for the first time as semiannual release quantities, instead of concentrations, and the licensee did not have historical values to compare against to evaluate trends. However, the licensee did provide trend charts comparing measured concentrations of these radionuclides against past measurements and the results are comparable. NRC staff verified that the radiological measurement of 4.2 mCi of natural uranium (Nat. U) corresponds to the estimated 13.9 lbs. Nat. U, not U_3O_8 .

Nat. U (lbs. U_3O_8)	Nat. U, mCi	Th-230, mCi	Ra-226, mCi	Pb-210, mCi
13.9	4.2	0.00372 ± 0.00213	0.0178 ± 0.00326	0.464 ± 0.0462

- Uranium One did not provide estimates of radon-222 stack emissions because NRC has not approved the methodology to comply with LC 11.3. By letter dated November 12, 2014, the NRC staff did not accept for formal review the licensee's July 3, 2014 and September 25, 2013, submittals of information required by LC 11.3 (ADAMS Accession No. ML14295A668).

Environmental Monitoring

Air Sampling

- Environmental air sampling results for radon-222 show that net radon-222 concentrations, after subtracting background concentrations, did not exceed 10 CFR Part 20 Appendix B, Table 2 effluent concentration limits for radon and its progeny. Also, all environmental air sampling results for particulate radionuclides at Irigaray Ranch air sampling stations were within 15 percent of 10 CFR Part 20, Appendix B, Table 2 effluent concentration limits.

Soil Monitoring

- Uranium One provided soil sampling results for five locations at Irigaray Project and four locations at Christensen Project and did not observe abnormal or upward trends.

Vegetation Monitoring

- Uranium One sampled vegetation at five locations at the Irigaray Project and four locations at the Christensen Project. Uranium One did not have results for vegetation sampling because it is awaiting results from its analytical laboratory. The licensee stated the values will be reported in the July 2014 through December 2014 Semi-Annual Effluent Report.

Groundwater Monitoring

- No excursions were reported by the licensee during the reporting period.
- Uranium One provided environmental monitoring results for regional ranch wells in Table 3 of the Semi-Annual Report. Uranium One reported that results were at or near minimum detectable concentrations and Uranium One observed no upward trends. However, NRC evaluated the data in Table 3 and determined that dissolved uranium concentrations are 55 and 60 times the lower limits of detection (LLD) in wells Christensen Ranch House #3 and Christensen Ranch Middle Artesian, respectively. Staff does not agree that results were at or near minimum detectable concentrations. Staff notes the values observed are below the 10 CFR 20 Appendix B Table 2 values. Staff notes well CR GS-03 was 63 percent of the effluent concentration for the 2nd quarter which does appear to be an upward trend in this well for this quarter. Other wells do not show any upward trends.

Surface Water Monitoring

- Uranium One surface water sample results for Willow Creek were within effluent concentration limits at all locations.
- Uranium One observed a slight increase in dissolved uranium at surface water sample point Christensen GS-03. The 2nd quarter 2014 result was 1.9E-07 $\mu\text{Ci/mL}$, or about 63 percent of the effluent concentration limits found in 10 CFR 20 Appendix B Table 2.
- Results for a Powder River surface water sample and all vegetation samples were not available during this reporting period. The licensee stated the values will be reported in the July 2014 through December 2014 Semi-Annual Effluent Report

Environmental Gamma Radiation Monitoring

- Uranium One observed that measured dose rate for the control dosimeter was 57.9 mrem per quarter during the second quarter of 2014, which is higher than typically reported, and has undertaken an investigation into what the licensee believes is an anomalous result. NRC staff observed that the 1st quarter 2014 result of 34 mrem/quarter is also elevated, for a control dosimeter.

Uranium One did not describe any trends in the data. However, NRC staff observed that “downwind” measured dose rates at location IR-1 have trended from about 40 mrem per quarter in 2010, to 11 mrem per quarter in the second quarter of 2013, to -0.4 mrem per quarter over the subsequent four quarters.

In addition, the licensee reported eleven negative values for environmental radiation dose, presumably because the licensee subtracted elevated thermoluminescent dosimeter (TLD) control values from values measured at environmental monitoring locations.

The staff notes that a preliminary draft revision of Regulatory Guide 4.13 is publicly available (ADAMS Accession No. ML14170A215). This draft guide endorses American National Standard American National Standards Institute (ANSI)/ Health Physics Society N13.37-2014, "Environmental Dosimetry – Criteria for System Design and Implementation."

Additional Information

Land Use Survey

- No land use survey is included in this Semi-Annual Report. Uranium One will include a land use survey with the end-of-year Semi-Annual Report. However, Uranium One noted that coal bed methane (CBM) wells are now located within a half mile of Uranium One facilities as a result of additional interest in CBM development since 2001. This is consistent with land use and environmental impacts described in NRC's 2011 and 2013 environmental assessments (ADAMS Accession Nos. ML103270679, ML12289A522).

SERP Summary

- Uranium One completed two safety and environmental evaluation panels (SERP). The purpose of SERP 14-02 was to evaluate whether an individual met the qualifications for a Radiation Safety Technician. The purpose of SERP 14-03 was to determine whether the addition of a spray system to wet the yellowcake scrubber screen can be approved by the SERP committee or requires a license amendment. The summary states that "Uranium One is proposing to add a spray system to investigate if it helps scrubber efficiencies," but does not clearly indicate who will evaluate the proposal and whether Uranium One intends to submit a license amendment.

NRC Recommendations, Semi-Annual Effluent and Environmental Monitoring Report

NRC staff is providing the following recommendations on the Semi-Annual Effluent and Environmental Monitoring Report to the licensee. The licensee is not required to revise the Semi-Annual Effluent and Environmental Monitoring Report but should consider the recommendations when developing future Semi-Annual Effluent and Environmental Monitoring Reports. NRC staff may follow up on the recommendations in this NRC Staff Review Report during future inspections.

1. As previously discussed in this NRC Staff Review Report, the licensee reported different production, injection and bleed values in several instances in Table 1 of the in the WYDEQ Annual Report (ADAMS Accession No. ML14287A473) when compared to the values in Appendix 1, Table 1, from the Semi-Annual Report updated on January 28, 2015 (ADAMS Accession No. ML15034A549). The licensee should ensure the production, injection, and bleed rate values submitted to different regulatory agencies in various future reports are consistent, or explain why there are differences.
2. Uranium One should ensure that wellfield bleed rates are maintained during operations.

3. The licensee should insure weekly maximum injection pressure values that exceed the 140 psi limits are correctly reported and discussed by the licensee in future Semi-Annual Reports.
4. For spills exceeding 420 gallons, the NRC staff requests the licensee list the date of the spill, approximate location, quantity spilled, brief cause, and if waters of the state were impacted in future Semi-Annual Reports.
5. Uranium One should evaluate dissolved uranium concentrations in regional ranch wells Christensen Ranch House #3 and Christensen Ranch Middle Artesian that are 55 and 60 times the lower limits of detection (LLD) respectively, to determine the likely cause of elevated uranium concentrations. This evaluation should be discussed in a future report.
6. Uranium One should continue to investigate the cause of the 1st and 2nd Quarter 2014 elevated radiation dose measurements in the control TLDs used for environmental gamma radiation monitoring and investigate trends in environmental gamma radiation monitoring. This evaluation should be discussed in a future report.
7. Uranium One should clearly describe the results of SERP evaluations, including whether the SERP has if decided a proposed change requires NRC approval.
8. The licensee estimated the Irigaray project dryer stack emissions as 13.9 lbs. U_3O_8 . In future reports, dryer stack emissions should be reported as U, not U_3O_8 .
9. Uranium One should not compare air sampler results to Appendix B values because the air sampling stations are not located at the boundary of the unrestricted area, as required by 10 CFR 20.1302(b)(2).
10. Uranium One should report error estimates associated with radiological analyses of samples, in accordance with Regulatory Guide 4.14, Regulatory Positions 6.1, 7.1.4, and 7.3.
11. Control dosimeters should be managed in accordance with guidance contained in Regulatory Guide 4.13, "Performance, Testing, and Procedural Specifications for Thermoluminescence Dosimetry: Environmental Applications," which endorses ANSI N515-1975, "Performance, Testing, and Procedural Specifications for Thermoluminescence Dosimetry (Environmental Applications)" with additional provisions and qualifications.
12. The licensee should investigate and explain trends in environmental gamma radiation monitoring. For example, NRC staff observed that "downwind" measured dose rates at location IR-1 have trended from about 40 mrem per quarter in 2010, to 11 mrem per quarter in the second quarter of 2013 to -0.4 mrem per quarter over the subsequent four quarters. The licensee did not discuss this apparent trend. This evaluation should be discussed in a future report.
13. The licensee reported eleven negative values for environmental radiation dose,

presumably because the licensee subtracted elevated TLD control values from values measured at environmental monitoring locations. Negative values for TLD measurements of environmental gamma radiation dose are not valid and should be corrected in future reports.

14. NRC staff also observed the following:

- a. Section 5.1, paragraph 1 incorrectly cites Table 6 instead of Table 7
- b. The word “concentration” should be removed from column headings in Table 7
- c. The figure in Table 7 should be clarified by including y-axis labels
- d. The acronym EFF is not defined in the Semi-Annual Report.

Previous NRC Recommendations, Semi-Annual Effluent and Environmental Monitoring Report:

NRC staff evaluated the previous recommendations made for follow up items in the Willow Creek Semi-Annual Effluent and Environmental Monitoring Report, July 1, 2013 to December 31, 2013 (ADAMS Accession No. ML14198A108) to determine if they were addressed by the licensee.

Recommendation 1. Table 4, the line or row stating "Reporting Limit" for radionuclides. These values are not reporting limits, they are LLD's. The LLD is not a reporting limit. Uranium One should to correct this term in future reports for the radionuclides.

This item has corrected in the January 2014 – June 2014 Semi-Annual Report as suggested in the recommendation.

Recommendation 2. Table 7, page 1 of 3 and page 3 of 3. The radionuclides are reported as a concentration and not a quantity as required by 10 CFR 40.65. Uranium One should measure a flow rate to be used to compute the release rate in Curies per unit time and then multiply by the time to get quantity (expressed in Curies per year) See Regulatory Guide 4.14, Table 3 for the next reporting period.

This item has been partially corrected in Table 7, page 1 of 3. Radionuclides in Table 7, page 1 of 3 are reported a Curies (Ci) for the semi-annual period from Jan – Jun 2014. However, stack samples are still not reported as outlined in Regulatory Guide 4.14, Table 3, #1, that should include the concentration, error estimate, release rate, error estimate, LLD, and percent maximum permissible concentration. Radionuclides on page titled, “YC Dryer Stack Radionuclide Emissions” is still reported in concentration (uCi/ml) and not in quantity such as Curies per year or Curies per semi-annual period. (NRC staff notes that Regulatory Guide 4.14, Table 3, #1 show quantities reported under release rate as Ci/qr.

Recommendation 3. Table 7, Uranium One should include Radon in Table 7 in Curies per year in future reports. Uranium One did not include Radon quantities released.

This item has been partially corrected in Table 7, page 1 of 3. Radionuclides in Table 7, page 1 of 3 are reported in Curies (Ci) for the semi-annual period from Jan – Jun 2014.

Recommendation 4. Table 9, direct radiation measurements taken for location AS-7. These measurements are very low relative to the other measurements. Uranium One should review the low values (compared to IR-13) in the next reporting period.

This item has not been corrected in the current report. As previously stated, the licensee reported eleven negative values for environmental radiation dose (Table 9), presumably because the licensee subtracted elevated TLD control values from values measured at environmental monitoring locations. Negative values for TLD measurements of environmental gamma radiation dose are not valid.

Recommendation 5. Table 10, page 1 of 4, See AS-7 4th Qtr. for background. Uranium One reported in Table 10, 7.0 E-10 uCi/ml for the background value, whereas Table 6 reports 4.0 E-10 uCi/ml for the background value. Uranium One should have changed 7.0 E-10 uCi/ml to 4.0 E-10 uCi/ml and recomputed the dose for radon. Uranium One should review this for the next reporting cycle.

Table 10 is not included in the January - June Semi-Annual Report; staff assumes this is because the radon public dose amounts are reported for the year. Staff expects the next Semi-Annual Report will include this table for a yearly radon public dose.

Recommendation 6. Table 10, page 2 of 4. See recommendation 4 above when computing the dose for gamma in future reports.

Table 10 is not included in the January - June Semi-Annual Report; staff assumes this is because the radon public dose amounts are reported for the year. Staff expects the next Semi-Annual Report will include this table for a yearly radon public dose.

Recommendation 7. Table 10, page 4 of 4, 2013 Public Dose Summary. After correcting for radon and gamma doses, the dose summary should have been recomputed. Uranium One should review this for the future reporting period.

Table 10 is not included in the January - June Semi-Annual Report; staff assumes this is because the radon public dose amounts are reported for the year. Staff expects the next Semi-Annual Report will include this table for a yearly radon public dose.

Recommendation 8. Uranium One should ensure bleed rates are maintained at all times during operations.

As noted above, some of the monthly production/injection rates reported in the Annual Report to the WYDEQ are different than those reported in the Semi-Annual Report. Three of the monthly rates in the WYDEQ Annual Report show monthly negative bleeds (over injection).

Annual ALARA Audit Report

The NRC staff evaluated the 2013 ALARA audit report to ensure it included the data identified in Section 2.3.3 of Regulatory Guide 8.31, plus the results of a land use survey, monitoring data, and the SERP information required under License Condition 9.4(d), as required by LC 12.3. The staff finds that the 2013 ALARA audit report contains the data identified in Section 2.3.3 of Regulatory Guide 8.31 and a list of SERP actions. A summary of the Land Use Survey will be provided in the end-of-year Semi-Annual Report (ADAMS Accession No. ML14251A305). A detailed summary of SERP evaluations for the period January 1 through June 30 is provided in Table 10 of the semi-annual effluent and environmental report (ADAMS Accession No. ML14251A305).

With regard to employee exposure records, the licensee provided summarized results for external radiation and deep dose equivalent, external beta radiation dose, airborne exposures and total effective dose equivalent. All doses are well below regulatory limits. The staff notes that over half the collective worker dose is received by wellfield workers, in which the average dose was 224 mrem, as compared to the average of all other worker groups of less than 100 mrem. The licensee stated that the radiation safety officer (RSO) continues to evaluate how these wellfield worker dose can be reduced. In section 3.1.3.2, the licensee stated that radon daughters exceeded 0.08 working levels (WL) on three occasions. Given the guidance in Regulatory Guide 8.30, Table 3, is to increase sampling frequency from monthly to weekly if levels exceed 0.08 WL.

The licensee also summarized the use of radiation work permits (RWPs). The licensee stated that it has collected two years of RWP data for scrubber maintenance activities and recommended evaluating whether a site operating procedure, rather than an RWP, is appropriate for these tasks.

The licensee reported two out of 597 bioassay samples exceeded the action level of 15 µg/L. The licensee stated that both samples were contaminated during sample collection and did not indicate actual uptakes.

The licensee did not have significant findings from daily, weekly and monthly inspections; training activities; and reports on overexposures of workers.

The 2013 ALARA audit report did not summarize Radiation Safety Meeting reports, but states that meetings are documented and records are maintained onsite.

With regard to personnel and equipment radiation surveys, the licensee reported that it did not evaluate two of three incidents of surface contamination above the action level. A recommendation stemming from the audit is that the RSO be informed when action levels are exceeded so that clean up and re-survey is completed in a timely manner.

With regard to reviews of operating procedures, the licensee discovered that operating procedures had not been reviewed by the RSO.

NRC recommendations, Annual ALARA Audit Report

1. In section 3.1.3.2, the licensee stated that radon daughters exceeded 0.08 WL on three occasions. Given the guidance in Regulatory Guide 8.30, Table 3, is to increase sampling frequency from monthly to weekly if levels exceed 0.08 WL. The licensee should change sample frequency in response to these events as recommended in Regulatory Guide 8.30.