UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 3, 2016

MEMORANDUM TO: Bill Von Till, Chief
Uranium Recovery Licensing Branch
Division of Decommissioning, Uranium Recovery
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

FROM: Elise Striz, Project Manager ***/RA/***
Uranium Recovery Licensing Branch
Division of Decommissioning, Uranium Recovery
and Waste Programs
Office of Nuclear Material Safety
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SUBJECT: FEBRUARY 8, 2016 URANIUM ONE, USA PUBLIC MEETING SUMMARY

On February 8, 2016, a Public Meeting was held with Uranium One, USA, at U.S. Nuclear Regulatory Commission Headquarters. The purpose of the meeting was to discuss open issues which require resolution for the Ludeman Amendment Application Environmental Assessment (EA) and Safety Evaluation Report (SER). A summary of the meeting is enclosed.

Enclosure: Meeting Summary

cc: Meeting Attendees (via email)

CONTACT: Elise Striz, NMSS/DUWP
(301) 415-0708

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NAME	EStriz	SAchten	KJamerson	EStriz
DATE	03/03/16	03/01/16	03/02/16	03/03/16

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MEETING REPORT

DATE: February 8, 2016

TIME: 9:00 a.m. to 4:00 p.m.

PLACE: U.S. Nuclear Regulatory Commission
Two White Flint North, Rockville, Maryland
Room T8C5

PURPOSE: The purpose of the meeting was to discuss open issues which require resolution for the Ludeman Application Amendment Environmental Assessment (EA) and the Safety Evaluation Report (SER).

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ATTENDEES:

See Attendees List (Attachment 1).

BACKGROUND:

Uranium One, USA, provided partial responses to the request for additional information (RAI) for the Ludeman In Situ Recovery (ISR) application on June 14, 2013. Staff found the response to the safety RAIs to be incomplete. Uranium One submitted additional RAI response information on November 4, 2013. Staff found many of these remaining safety RAI responses to still be incomplete. On December 18, 2014, NRC sent a letter to Uranium with targeted RAIs to address deficiencies in several of the responses. In April 2015, Uranium One requested a public meeting to receive guidance from NRC on how to respond to these targeted RAIs. Staff received a response to the targeted RAIs on June 8, 2015. After thorough review of the RAI responses by staff, many open issues were found which require resolution to complete the environmental review and safety review of the Ludeman application. Therefore, staff requested this public meeting to discuss these open issues with Uranium One.

DISCUSSION:

NRC staff read the opening statement for the meeting. Attendees of the meeting were asked to provide brief introductions and sign the attendance sheet (Attachment 1). NRC staff provided a list of the open issues to be discussed at the meeting, which can be found in the agenda (Attachment 2).

NRC staff began the meeting in the morning session by going sequentially through the open issues. The waste disposal options were discussed in detail to ensure that staff and Uranium One were clear that the action under consideration was the use of evaporation and permeate ponds with no deep disposal wells. The alternative would be evaporation and permeate ponds with up to four deep disposal wells. Once that issue was clarified, staff and Uranium One discussed waste and water balances for the proposed action and the need for yearly consumptive water use estimates based on those balances. Staff also indicated that updated

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project schedules would be needed based on the clarification. Next, staff discussed the need to be clear on volumes of solid waste to be generated at the facility and disposal capacity at nearby 11e(2) solid waste facilities. Staff moved on to request any available information that Uranium One could provide on pre-construction activities and the potential impacts from these activities. Staff indicated this information, although not mandatory, would help in the cumulative impacts analysis. Uranium One indicated it would provide a brief description of pre-construction activities in the environmental report. Next the staff and Uranium One discussed the need to obtain the available on-site meteorological data for the environmental and safety review. Staff also requested the methods used by Uranium One to develop the reported evaporation rates. Finally, staff and Uranium One discussed the need to provide an air emissions inventory for the required minor source air quality permit. Based on the air emissions inventory, Uranium One will also need to provide an assessment of air quality impacts and proposed mitigation.

In the afternoon session, staff proceeded sequentially through the agenda items. Staff requested that Uranium One provide updates for estimates of land disturbance and mineral ownership based on proposed revisions to the land area to be included in the license area. Staff also requested that the geological description of the Fox Hills and Fort Union formation across the license area be clarified. Staff then requested that specific information be provided on the type and depth of oil and gas well completions across the license area. Staff informed Uranium One that there were still errors in the location of the ore zones in specific wellfields that required correction. Specifically in Wellfield 2, Uranium One had stated that the target ore body was in the 70 sand, when staff identified it to be in the 60 sand. Uranium One agreed that the ore body in Wellfield 2 was in the 60 sand. Staff informed Uranium One this correction will require updates to the overlying and underlying aquifers as well as the need for Uranium One to provide aquifer information and water quality sampling in the newly identified underlying 50 sand. Uranium One agreed to provide this information.

The discussion then moved on to the description of soils on the provided soil maps, disturbance by soil unit and estimates of soil removal and compaction. Uranium One agreed to improve the soil map identifiers and description in the soil map and provide updated estimates of soil disturbance and compaction. A lengthy discussion of surface water features and surface water behavior in the license area followed. Uranium One agreed to provide information on specific water features and their behavior. Uranium One stated it had conducted additional surface water sampling and could provide this information. Uranium One indicated it was unaware of any Wyoming Pollution Discharge Elimination System (WYPDES) existing permits in the license area, but would verify this information with the state. Uranium One stated it could provide a description of the 70 sand across the license area and any available information it had on the depth to surficial aquifers across the license area. Uranium One could also provide any available information on monitoring of underlying and overlying aquifers and groundwater flow properties across the license area. Staff agreed to provide tables which would indicate the information needed. Staff was not able to address the final four afternoon agenda items (22-25) due to a lack of time. It was agreed they would be addressed in another public meeting.

Numerous action items were generated from the morning and afternoon session discussion which are listed below.

At the end of the meeting there were 2 questions from one member of the public which were answered by staff.

ACTION ITEMS

During the meeting, numerous action items were initiated which are listed below:

MORNING SESSION ACTION ITEMS

1) Agenda Item 1 – Proposed waste water disposal options and alternative disposal options
   a) Uranium One will add description of surface water discharge permit for restoration sweep reverse osmosis (RO) permeate to Table 1-1 in Environmental Report (updated in RAI-GEN-2 Response).
   b) Uranium One will provide proposed location of surface water discharge point(s), land area it would impact and any surface drainage(s) the discharge could reach on Figure 1 in Pond Design RAI response.
   c) Uranium One will provide estimate of flow rate and timing (continuous, intermittent) of surface water discharge of restoration sweep RO permeate for each year of operation, restoration and decommissioning.
   d) Uranium One will provide estimate of total cumulative volume of surface water discharge of restoration sweep RO permeate for life of operations.
   e) Uranium One will provide statement clarifying action and alternative for waste water disposal to include:
      i) Action
         (1) Evaporation Ponds sized to hold all potential liquid process waste from Ludeman facility
         (2) Permeate Ponds sized to hold all restoration groundwater sweep RO permeate
         (3) Surface water discharge of water from RO permeate ponds
         (4) No deep disposal wells (DDW)
      ii) Alternative
         (1) Evaporation Ponds sized to hold liquid process wastes not disposed in deep disposal wells
         (2) Permeate ponds sized to hold all restoration groundwater sweep RO permeate
         (3) Surface water discharge of water from RO permeate ponds
         (4) Two to six deep disposal wells, with preferred option to install the two DDW nearest to the Leuenberger Satellite facility.
   f) Uranium One will provide location of two preferred DDW locations near Leuenberger on map (if possible please add to Figure 1 in Pond Design RAI response).
   g) Uranium One will provide estimate of DDW anticipated waste disposal rates for each year of facility life.
   h) Uranium One will confirm DDW target formations to potentially include the Teckla, Teapot, Parkman and Lance.
   i) Uranium One will provide updated land disturbance estimates for all activities at Ludeman facility and waste disposal action (i) and alternative (ii) in Table 1 on page 13 of the June 2015 Environmental Report (ER) RAI response. Please include statement that a 1 acre mud pit is to be left open for each DDW workover and power line disturbances in the table.
2) Agenda Item 2 – Water and waste balances for all phases from construction to decommissioning.

a) Uranium One will provide a table with details of water and waste flow rates for each year for the life of the facility. The table should show mine unit in operation, restoration or decommissioning for each year. This table should include production rate, production and/or restoration bleed rate, RO treatment rate, rate of flow to evaporation ponds, DDW rate, rate of flow to permeate ponds, surface discharge rate, etc. for each year. Provide solid waste volumes by type of waste for each phase for the life of the facility, and include an estimate of disposition of solid 11(e)2 material generated from the evaporation ponds. Table should be sufficient for staff to determine there is sufficient waste treatment and waste disposal capacity for each year for the life of the facility. Please note, applicant stated this table was already in development.

3) Agenda Item 3-Consumptive water use for all phases from construction to decommissioning
   a) Using the information in the table requested in 2a above, Uranium One will provide a table with a separate consumptive water flow rate for each year of the life of the facility (e.g. DDW waste flow rate + flow rate to evaporation pond+ flow rate to permeate pond + any additional consumptive water use).
   b) Uranium One will provide the source of water for the construction phase drilling (e.g. wells, stock ponds, etc.). If a well, Uranium One will provide well name, target aquifer and gallons /well drilled.
   c) Uranium One will provide a description of management of drilling fluids and cuttings during well construction (e.g. volumes and pit size/well drilled).
   d) Uranium One will provide an update on public water supply (PWS) permit, well location, well rates and target aquifer (e.g. 50 sand) for facility. Per discussion of probable ore zone in 60 sand in Wellfield 2, please advise if target aquifer for PWS will change.
4) Agenda Item 4 -Project schedules for all phases from construction to decommissioning.
   a) Uranium One will provide an updated schedule for each phase of operation for the life of the facility separately for the waste disposal action and alternative, clarifying the activities of construction.
   b) Uranium One will add a sentence that if there are stacked zones in a wellfield they will be developed concurrently over 24-36 months and restored concurrently (e.g. Wellfield 1 80 and 90 sands)
   c) Please add decommissioning to Figure 2 in Pond Design RAI response.
5) Agenda Item 5- Solid Waste Management
   a) Uranium One will provide volume of solid waste capacity and expected lifetime of the Shirley Basin 11e(2) byproduct material facility.
   b) Uranium One will provide volume of solid waste capacity and expected lifetime of the Glenrock solid waste 11e(2) byproduct material facility
6) Agenda Item 6- Cumulative Impacts of Pre-Construction Activities
   a) Uranium One will provide water sources for drilling (e.g. stock ponds, wells, etc.) including aquifer source if appropriate.
   b) Uranium One will provide a brief text description of pre-construction activities including conclusion on their effect on the overall cumulative impacts of facility (e.g., planned preconstruction activities, areas of disturbance and impacts, timeframe of activities).
7) Agenda Item 7- Update to Vehicle Trips for Each Phase of Operations
   a) Uranium One will provide an update to vehicle trips for each phase of operations.

8) Agenda Item 8- Types and Availability of Site Meteorological Data
   a) Uranium One will provide updated meteorological (MET) data from on-site station.
9) Agenda Item 9- Description of Evaporation Rates
   a) Uranium One will provide a reference for pan evaporation rates if not site specific measurements.
10) Agenda Item 10-Air Quality Permits
   a) Uranium One will provide an update to all air quality permits to include required minor source permit
11) Agenda Item 11-Cumulative Air Quality Impacts
   a) Uranium One will provide a cumulative air quality impacts assessment based on site air emission inventory, air quality impacts and mitigation.
   b) Uranium One will provide an alternate document information source for evaluating regional air quality effects in the Powder River Basin (PRB) (e.g., alternative to the PRB Coal Review per response to ER RAI CI-1D [June 2015]).
12) Agenda Item 12- Air Emissions Inventory
   a) Uranium One will provide a site-specific air emission inventory for Ludeman. The emission inventory should:
      i) Identify the activities and sources of emissions.
      ii) Account for criteria pollutants (not just PM10), hazardous air pollutants, greenhouse gas emissions, and onsite bulk chemicals.
      iii) Provide estimates for the various phases and place the emission in context of the project schedule for a peak year assessment.
      iv) Provide preconstruction estimates.
      v) Distinguish appropriately between emissions for the various waste options (deep well only, surface pond only, mixed) as well as w and w/o surface discharge.
      vi) Account for combustion emissions from transportation of shipments in addition to number of trips.
      vii) Provide all the details (not just summary tables).
      viii) Note- a good example of a complete emission inventory may be found in the Reno Creek RAI response document for the Reno Creek project (AUC, 2014 - ADAMS accession number ML15002A082). Within this document is Appendix C: Ambient Air Quality Modeling Protocol and Results. The sections of the Ambient Air Quality Modeling Protocol and Results containing the emission inventory information is in Appendix A and Chapter 2.
13) Agenda Item 13-Air Quality Impacts Assessment
   a) Uranium One will provide an impact assessment for Ludeman that:
      i) Uses an appropriate emission inventory for Ludeman.
      ii) Assesses impacts of all criteria pollutants, hazardous air pollutants, greenhouse gases, and bulk chemical stored onsite.
      iii) Considers site specific conditions such as proximity of emission sources to receptors (e.g., residences and class I sites).
      iv) Follows EPA guidance on determining in the analysis a more quantitative approach than just the emission inventory (see EPA letters on Moore, Nichols and Lost Creek).
14) Agenda Item 14- Air Quality Impacts Mitigation
   a) Uranium One will provide a description of mitigation for any air quality impacts which should:

i) Identify any mitigation incorporated into the inventory.
ii) Describe the efficiency of any proposed mitigation and the basis for the efficiency. Identify any commitments to implementing mitigations.

AFTERNOON SESSION ACTION ITEMS

1) Agenda Item 1- Update of estimated land disturbance for waste water disposal options
   a) No action is required as addressed in Morning Session Agenda Item 1.
2) Agenda Item 2- Update of mineral ownership license area based on updated land area
   a) Uranium One will provide updated mineral ownership by acreage and percent of total license area acreage.
3) Agenda Item 3- Description of Fox Hills Formation stratigraphy across license area
   a) Uranium One will provide information on depth and thickness of Fox Hills formation across license area.
4) Agenda Item 4- Description of Ft. Union Formation stratigraphy across license area
   a) Uranium One will provide missing and correct highlighted information as available for the table below

Fort Union Formation Stratigraphy at the Ludeman ISR Project Site				
Sand or Shale	Thickness (ft)		Notes	Mineralization
	Mean	Range		
120		0 – 147	Significantly Eroded	
120/110		0 – 82	Significantly Eroded	
110 (O_2)	65	0 – 140	Significantly Eroded	
110/100		~~4~~ 0 – 119	Occasionally Eroded	
100 (O_1)	45	0 – 176	Occasionally Eroded	Trace
100/90		~~5~~ 0 – 145	Occasionally Eroded	
90 (N)	90	0 – 160	Discontinuous	Economically viable
90/80		5 – 166		
80 (M)	40	0 – 161	Discontinuous	Economically viable
80/70		5 – 137		
70	50	13 – 164	Laterally Continuous	Economically viable
70/60		2 – 99		
60	35	0 – 160	Discontinuous	Economically viable ~~Trace~~
60/50		4 – 113		
50		10 – 158		Trace
50/40		9 – 123		
40		11 – 146		Trace
Sources: Uranium One, 2011|ER & TR, 2013a|RAI responses| 2016| expected response to 2/8/2016 public meeting; Teton, 1980				

5) Agenda Item 5- Oil and gas well completions across the license area
   a) Uranium One will provide clarification on responses to TR RAI-10 and ER RAI LU-3, which were in regard to oil (and gas) wells in the Ludeman project vicinity specifically:
      i) Please clarify whether or not all oil (and gas) wells in the vicinity of the Ludeman project site are conventional vertical wells. If there are known lateral wells, please identify them and the direction and length of the lateral.

ii) Please confirm whether the NRC-identified wells (API Nos. 922889, 928353, 928414, 928566) are completed or were properly plugged and abandoned. Uranium One will provide documentation, if applicable, of elevation, formation screened, oil producer/abandoned for each of these wells. If the wells were intentionally not included in the TR RAI-10 response, Uranium One will provide the reason for not including them.

iii) The licensee indicates that API well No. 928283 is associated with the Niobrara Formation; however, the well is screened at a depth deeper than the Niobrara Formation. Please clarify if this is a typographical error and confirm the correct depth and formation of this oil well.

iv) The information provided in TR RAI-10 response Table 2 notes buffer areas with radii of 2 km [1.2 mi], but the associated Figure 3 shows a 3.2 km [2 mi] review boundary. Please clarify on Figure 3 which of these two distances was intended.

v) Please confirm API Nos. 928394, 928474, 928554 are screened in the Niobrara Formation.

b) Uranium One will provide missing and correct highlighted information as available to the table below:

Permitted Oil Wells Located Within 3.2 km [2 mi] of the Ludeman ISR Project Site (this table includes only the questioned entries; other wells were intentionally left off the list to help focus the discussion)

Company	API No.	Elevation (m) [ft]	Depth (m) [ft]	Formation	Well Class	Status
General Atlantic	922889	?	3,117 [10,226]	?	?	Abandoned ?
Chesapeake Operating Inc.	928283	1,608 [5,276]	5,855 [19,210]	Niobrara?	Oil	Oil Producing
	928353	?	3,817 [12,523]	Niobrara	?	Abandoned ?
	928394	1,628 [5,341]	3,932 [12,900]	Niobrara?	Oil	Permit to Drill
	928414	?	3,737 [12,260]	Niobrara	?	Abandoned ?
	928474	1,538 [5,046]	3,659 [12,005]	Niobrara?	Oil	Oil Producing
	928554	1,543 [5,062]	3,688 [12,100]	Niobrara?	Oil	Permit to Drill
	928566	?	3,938 (1,200)	Niobrara	?	Abandoned ?

Sources: Uranium One, 2013a|TR RAI 10 (Table 2) and ER RAI LU-3 Responses [Uranium One, 2016| expected response to 2/8/2016 public meeting]

6) Agenda Item 6 – Location and description of ore zones in specific wellfields

a) Uranium One will provide a full reference for Conoco 1982 or other supporting information on ore bearing sands at Leuenberger site (Wellfields 1 and 2).

b) Please verify and update text/tables where necessary that 60 sands will be mined (table does not match the cross section P-P'). Please verify there will be an underlying well in Wellfield 2, but that has not been constructed yet to determine water quality.
c) Please correct the highlighted and provide missing information as available in the table below:

Ludeman ISR Project Site Economically Viable Ore Zones			
Host Sand (Wellfield)	Thickness (ft)	Percent U_3O_8	Mean Depth/Range (ft)
Northwest (Leuenberger Wellfields 1 and 2)			
90(1)	8.3	0.090	219/194 – 345
80(1)	9.5	0.130	352/295 – 450
60(2)	?	?	?/~~695 – 747~~
Central (North Platte Wellfields 3 and 4)			
70(3)	10.6	0.074	557/470 – 690
70(4)			557/480 – 590
Southeast (Peterson Wellfields 5 and 6)			
70(5)	4.6	0.093	?/303 – 550
80(5)			?/224 – 383
90(6)			191/53 – 271
Sources: Uranium One, 2011|ER, 2015|RAI Responses, Table 5 [Uranium One, 2016| expected response to 2/8/2016 public meeting]			

7) Agenda Item 7 – Cross Section Index Map and Cross Sections Identifiers
   a) Uranium One will clarify that Wellfield 3 has been incorporated into Wellfield 1.
   b) Uranium One will clarify that extraction of any ore trend that extends outside the license boundary at the Leuenberger site, specifically within Section 14, will not be included under this amendment.
   c) Uranium One will clarify that extraction of the ores zones in sections 23, 25 and 26 in the Peterson area as shown in Cross Section E-E' will not be included under this amendment.
8) Agenda Item 8- Soil Map and Soil Identifiers
   a) Uranium One will provide a replacement soils map (ER Figure 3.5-34) that more clearly identifies soils and wellfield details (e.g., wellfield outlines and outlines of the major site facility components, such as buildings and ponds). The map should be plotted with alpha identifiers and unique colors that will enable a thorough and rapid staff review of the information presented.
9) Agenda Item 9- Soil Disturbance by soil map unit
   a) Uranium One will provide a new map including infrastructure and topsoil staging areas overlying mapped soil units.
   b) Uranium One will update ER Table 3.3-2 to account for removal of federal land from the project area.
   c) Uranium One will update ER Table 3.3-2 to include soil unit disturbances for the proposed action and each alternative.
10) Agenda Item 10- Soil removal and compaction

a) Uranium One will provide updated range estimate of top soil to be stored and used later for reclamation (e.g., from construction of ion exchange facility, evaporation ponds, permeate ponds, roads, and header houses).
b) Uranium One will provide estimates of compacted soil areas around the plant, ponds, and roads; Uranium One will provide the acreage of soil that will be compacted by vehicular traffic and concentrated activities at wellfields, trunklines, and storage areas.

11) Agenda Item 11- Topography at wellfields
a) Uranium One will provide four separate maps (in native electronic format if possible) which show topography extending out 2 km around
i) Wellfields 1 and 2
ii) Wellfield 3
iii) Wellfield 4
iv) Wellfields 5 and 6

12) Agenda Item 12- Surface water feature flooding at Wellfield 5
a) Uranium One will provide a description of the wetland above and within Wellfield 5, with range of time this feature contains water on a yearly basis.
b) Uranium One will provide a description of the Gilbert Lake feature and the range of time this feature contains water on a yearly basis.

13) Agenda item 13- Surface water body locations and features across the license area
a) Uranium One will clarify whether the channel length of the SAGE-20 drainage feature is 2.7 miles (Table 3.4-1) or 3.4 miles (Section 3.4.1.1.1).
b) Uranium One will provide the Running Dutchman Ditch channel length, slope, watershed elevation range and its in-buffer area.
c) Uranium One will provide the in-buffer area of the Little Sand Creek sub-watershed.
d) Uranium One will provide the missing or correct highlighted information as available in the table below:

Surface Water Body Characteristics						
Sub-Watershed/ Sub-Drainage	Drainage Area (km^2)	Channel Length (km)	Elevation Range (m)	Elevation Change (m)	Slope (m/m)	In-Buffer Area (km^2), Wellfields
Watershed Characteristics						
Little Sand Creek/ North Platte	73.3	13.5	1,506–1,646	140	0.010	? NA
Sage Creek	385.4	60.4	1,494–1,798	305	0.005	191.7 Wellfields 3, 6
Running Dutchman Ditch	48.7	?	?	?	?	? Wellfields 4, 6
Sub-Drainage Characteristics						
SAGE-10	9.7	6.8	1,518–1,554	37	0.005	Wellfield 3
SAGE-11	5.1	5.5	1,551–1,615	64	0.015	Wellfield 4
SAGE-12	8.6	5.1	1,554–1,612	58	0.011	NA
SAGE-13	6.1	4.2	1,554–1,609	55	0.013	Wellfield 3
SAGE-20	5.7	2.7/3.4 mi	1,548–1,609	61	0.014	NA

SAND-10	2.1	2.2	1,561–1,597	37	0.017	Wellfield 2
SAND-20	13.4	4.5	1,567–1,609	43	0.009	Wellfields 1, 2
RD-10	8.6	3.1	1,494–1,530	37	0.012	Wellfields 5, 6
Source: Uranium One, 2011, ER [Uranium One, 2016| expected response to 2/8/2016 public meeting]						

14) Agenda Item 14- Runoff estimates using Soil Conservation Service (SCS) peak flow calculations
    a) Uranium One will consistently revise SCS unit hydrograph ER 3.4.1.5.2 and TR 2.7.1.5.2 and TR RAI-13 response (Sand Creek or Little Sand Creek?)
    b) Uranium One willexplain why hydrograph for Sand Creek remained the same and Little Sand Creek changed.
    c) Uranium One will provide the Ludeman site 50 and 100 year return interval storm runoff estimates accounting for any effects related to the newly reduced project area using the SCS unit hydrograph approach for estimating peak flowrates and update table below:

Storm Runoff Estimates for the 7,628 ha [18,850 ac] Ludeman Project Site		
Storm Return Interval (yrs.)	Runoff Depth (in)	Total Runoff Volume (ac·ft)
50	~~0.67~~	~~1,110~~
100	~~0.84~~	~~1,392~~
Source: Uranium One, 2011, ER [Uranium One, 2016| expected response to 2/8/2016 public meeting]		

15) Agenda Item 15- Update of wetlands and water bodies based on updated land area
    a) Uranium One will provide a final listing of all wetlands and water bodies in updated land area and an updated map showing their location.
    b) Please explain difference between WB and WL notation.
16) Agenda Item 16-Surface water sampling sites and available surface water quality.
    a) Uranium One will provide any updated samples for surface water and their locations.
    b) Uranium One will update all sampling sties and related text to be consistent.
17) Agenda Item 17- WYPDES permits in license area
    a) Uranium One will provide a listing of any WYPDES permits in the license area and buffer and their locations, permitted flow rates and concentration limits.
18) Agenda Item 18- Description of 70 sand confining layers across license area
    a) No action item- to be addressed in detail in wellfield packages
19) Agenda item 19- Depth to surficial aquifers across license area
    a) Uranium One will review available information on surficial aquifers in the license area and provide any information on hydraulic properties and depth to water information of these aquifers within 2 km of each of the proposed wellfields.
    b) Uranium One will provide any depth to water information on the surficial aquifer below the ion exchange plant, evaporation ponds or permeate ponds.
20) Agenda Item 20- Monitoring of Underlying and Overlying aquifers in wellfields across the license area

a) Uranium One will correct the highlighted sections in the table below (based on Table 5 TR RAI 22 response) for all of the production and overlying/underlying monitoring aquifer sands for each wellfield.

Ludeman Project Site Production and Monitoring Aquifer Sands*							
Well-field	Area (ha) [ac]	Production Sand		Overlying Monitoring Sand		Underlying Monitoring Sand	
		Unit	Depth [ft]	Unit	Depth [ft]	Unit	Depth [ft]
1	37.6 [93]	90	194–345	100 &110	43–128	~~80~~70	~~295–450~~
		80	295–450	~~90~~ 100 &110	194–345	70	414–478
2†	23.5 [58]	60	~~695–747~~	70	~~563–652~~	50	~~704–770~~
3	53.0 [131]	70	470–690	80	352–532	60	538–733
4	42.1 [104]	70	480–590	80	286–463	60	561–694
5	43.3 [107]	80	224–383	90	151–279	~~70~~60	~~303–550~~
		70	303–550	~~80~~90	224–383	60	362–565
6	109.7 [271]	90	53–271	100	41–172	80	122–331

*Uranium One's preliminary data (Uranium One, 2013a, ER RAI Responses) will be replaced by more comprehensive data in a Wellfield Data Package to be submitted to WDEQ/LQD prior to production.
†60 Sand aquifer of Wellfield 2 is being evaluated and information will be updated in the final application.
[Uranium One, 2016| expected response to 2/8/2016 public meeting]

21) Agenda Item 21- Groundwater flow properties in aquifers across the license area
   a) Uranium One will provide hydrologic properties, gradient, etc. of the 50 sand at the Leuenberger site if it is to be used as a source of the PWS well (and underlying aquifer) for the facility. If another aquifer is to be used for the PWS well, please identify it and provide the same information.
   b) Uranium One will provide the source of the porosity value of 25% for the 80 (m) sand and 90 (N) sand at Leuenberger site.
   c) Uranium One will add missing available information in the table below:

Ludeman Flow Unit Properties*					
Sand or Shale	Effective Porosity	Hydraulic Conductivity (m/d)	Storativity	Gradient	Average Flow Direction
120					
120/110					
110 (O_2)				0.0104	
110/100				0.3667†	Down
100 (O_1)				0.0108	ESE

100/90				0.3667†	Up & Down
90 (N)	0.25†	0.13–0.58	5.57–8.3 × 10^{-5}	0.0063–0.0115	SE
90/80				0.0393–0.0592†	Up & Down
80 (M)	0.25†	0.18–0.58	6.5–26 × 10^{-5}	0.0006–0.0055	SE
80/70					Down
70		0.46–0.91	1–12 × 10^{-5}	±0.0015	SSE
70/60					Up
60					
60/50					
50					
*Uranium One, 2013a; to TR RAI-19 response, TR RAI-23 response, and Appendix A-1 (2013) †NRC, 1983 [Uranium One, 2016| expected response to 2/8/2016 public meeting]					

22) Agenda Item 22- not addressed due to lack of time. Action- NRC will schedule public meeting.
23) Agenda Item 23- not addressed due to lack of time. Action- NRC will schedule public meeting.
24) Agenda item 24 – not addressed due to lack of time. Action- NRC will schedule public meeting.
25) Agenda item 25- not addressed due to lack of time. Action- NRC will schedule public meeting.

The meeting concluded and adjourned at approximately 3:55 p.m. Eastern time.

Attachments:
1. List of Attendees
2. Meeting Agenda

Meeting Attendees
Date: Monday February 8, 2016
Room TWFN 8C5
9:00 am to 4:00 pm

Topic: Discussion of Uranium One ISR Ludeman Satellite Application Targeted RAIs

NAME	AFFILIATION
Elise Striz	U.S. NRC
Kellee Jamerson	U.S. NRC
Lydia Chang	U.S. NRC
Scott Schierman	Uranium One
Greg Kruse	Uranium One
Marla Morales	CNWRA (contractor to NRC)
Patrick LaPlante	CNWRA (contractor to NRC)
Amy Minor	CNWRA (contractor to NRC)
Cynthia Dimwiddie	CNWRA (contractor to NRC)
Miriam Juckett	CNWRA (contractor to NRC)
Jim Myers	CNWRA (contractor to NRC)
Ray Deluna	TREK (contractor to Uranium One)
Ron Smith	Intermountain Lab (contractor to Uranium One)
Errol Lawrence	Petrotek (contractor to Uranium One)
Ben Schiffer	WWC Engineering (public)

Attachment 1

MEETING AGENDA
Uranium One Ludeman ISR Application February 8, 2016
9:00 a.m. - 4:00 p.m.

NRC Two White Flint North, T8C5
11545 Rockville Pike
Rockville, MD

MEETING PURPOSE: To discuss open issues which require resolution for the Ludeman Application Amendment Environmental Assessment (EA) and Safety Evaluation Report (SER)

MEETING PROCESS:

Time	Topic	Lead
9:00 a.m.	Introductions, Opening Remarks	All
9:00 a.m.	Discussion of Open Issues for EA and SER	ERB/URLB

1. Proposed waste water disposal option and two alternative disposal options
2. Water and waste balances for all phases from construction to decommissioning
3. Consumptive water use for all phases from construction to decommissioning
4. Project schedules for all phases from construction to decommissioning
5. Solid waste management
6. Cumulative impacts of pre-construction activities
7. Update to vehicle trips for each phase of operations
8. Types and availability of site meteorological data
9. Description of evaporation rates
10. Air quality permits
11. Cumulative air quality impacts
12. Air emissions inventory
13. Air quality impacts assessment
14. Air quality impacts mitigation

12:00 p.m.	Lunch Break	All
1:00 p.m.	Continue discussion of Open Issues for EA and SER	ERB/URLB

Attachment 2

1. Update of estimated land disturbance for waste water disposal options
2. Update of mineral ownership in license area based on updated land area
3. Description of Fox Hills formation across license area
4. Description of Fort Union Formation stratigraphy across license area
5. Oil and gas wells completions across license area
6. Location and description of ore zones in specific wellfields
7. Cross section index map and cross sections descriptions
8. Soil map and soil identifiers
9. Soil disturbances by soil map unit
10. Soil removal and compaction
11. Topography at wellfields
12. Surface water feature flooding at Wellfield 5
13. Surface water body locations and features across license area
14. Runoff estimates using SCS peak flow calculations
15. Update of wetlands and water bodies based on updated land area
16. Surface water sampling sites and available surface water quality
17. WYDES permits in license area
18. Description of 70 sand confining layers across license area
19. Depth to surficial aquifers across license area
20. Monitoring of underlying and overlying aquifers in wellfields across license area
21. Groundwater flow properties in aquifers across license area
22. Private well completion intervals
23. Presence and description of springs across the license area
24. Vertical gradients in aquifers in Peterson area wellfields
25. Description of private, monitoring and characterization wells in and near the license area

3:30 p.m.	Public Comments	Public
3:55 p.m.	Closing Remarks, Adjourn	NRC