Enclosure No.7

7-10-2009 A MMD Compilation of Agency Reviews for the Roca Honda April 2009 SAP-MK025RN

Enclosure to July 13, 2009 letter to John DeJoia—Review and Comments on Sampling and Analysis Plan, RHR, LLC, Roca Honda Mine, Permit No. MK025RN

7-10-2009 A MMD Compilation of Agency Reviews and Comments for the Roca Honda Resources Sample an Analysis Plan in support of Permit No. MK025RN

The following set of tables is a compilation of review comments generated from agency reviews of Roca Honda Resources' April 2009 Sample and Analysis Plan. The reviewing agencies are; NM Mining and Minerals Division, NM Environmental Division, NM Department of Game and Fish, NM Department of Cultural Affairs, NM State Forestry Division, and the NM Office of the State Engineer. Each agency reviewed those specific sections relevant to their agency subject-matter expertise and purview. Formal transmittal letters from each reviewing agency to MMD, with their respective comments, has been provided to you in this transmittal package.

			Rev. April 2009
Agency:	MMD		Review Date: July 10, 2009
Item #	Section/Page (or general) Section 2	Topic	Comment
1.	General	Maps	 Please put elevations on contour lines. Please put elevations on plateaus, peaks, and proposed discharge points. Please label all monitoring wells and elevations on all maps.
2.	General	Shape Files	Please provide shape files (GIS/GPS coordinates in UTM coordinates, NAD 83, Zone 13) for wells, arch sites, proposed mine foot print and lay-out(s), and all <u>existing</u> and proposed exploration boreholes.

Section 1 Introduction

	Review o	of Strathmore SA	AP Document for the Roca Ho Rev. April 2009	nda Uranium Mine Site, Section 1	
Reviewe	r:			Review Date:	
NMED S	SWQB Comments			May 29, 2009	
Agency:					
N	IMED				
Item #	Section/Page	Topic	Comment		
	(or general)				
	Section 2				
3.	Section 1.2	Discharge water	Section 1.2 does not indicate whether, where, or how much water would be discharged to		
		to surface	surface watercourses. This is address	ssed elsewhere, but it should be clarified here (such as by	
		watercourses	indicating the arroyo to receive the	se waters	

Section 2 Meteorology and Air Quality

			Rev. April 2009		
Reviewe	r:		Review Date:		
NMED S	SWQB Comments		May 29, 2009		
Agency:	NMED				
Item #	Section/Page	Topic	Comment		
1.	Section 2.1	Location of SOPs	SWQB was unable to locate the SOPs described in Section 2.1 and Appendix A.		
2.	Section 2.5	Editorial—use of word "expedient".	"The samples will be shipped via the most expedient means available." A definition of "expedient" is "a means to an end; not necessarily a principled or ethical one". Please substitute "expeditious".		

	Review of Strathmore SAP Document for the Roca Honda Uranium Mine Site, Section 2 Rev. April 2009					
Reviewer: NMED SWQB Comments Agency: NMED		Review Date: May 29, 2009	Nev. April 2003			
Item #	Section/Page	Topic	Comment			
1.	General	Other Meteorological Data	Baseline meteorological data should include historical meterologial data collected for more than a one year from stations within the vicinity of the permit area. Data collected should have assurance that the instrumentation and data recorder meet the criteria of either NOAA or WRCC guidelines.			
2.	Sections 2.4.2 and 2.4.3	Radon Detectors	The collection and methodology for radiation data described in Sections 2.4.2 and 2.4.3 need to be moved to Section 10.			
3.	Section 2.1	Precipitation	It needs to be stated that the meteorological data collected will include average daily and annual daily precipitation, standard deviations, highs, lows, and years and times when these measurements were or will be taken. This provides a background as to time-frame of (and expected and outlier values) for extremes, highs, lows, and daily and seasonal averages.			
			Also, seasonal averages and extremes within the vicinity should be obtained via NOAA and WRCC data sets to corroborate local meteorological and assess differences between local and regional data.			
			NOAA data may be downloaded at the following site http://www.weather.gov/climate/xmacis.php?wfo=abq			
			WRRC data may be downloaded at the following site http://www.wrcc.dri.edu/			
4.	Section 2.1	Pan Evaporation values needed	In order to get an estimate of expected evaporation in the Roca Honda area, the parameter used should be 'pan evaporation'. Pan evaporation integrates evaporation affected by temperature, humidity, solar radiation (which can be affected by air particulates), and wind. For the southwest there are months when pan evaporation			

	Review of Strathmore SAP Document for the Roca Honda Uranium Mine Site, Section 2 Rev. April 2009						
Reviewer: NMED SWQB Comments		Review Date: May 29, 2009	New April 2003				
Agency :	MED						
Item #	Section/Page	Topic	Comment				
			is very high, accounting for most of the annual pan evaporation. If there are no pan evaporation measurements within the vicinity of the proposed site, then a 'Class A' pan evaporation needs to be installed as part of your suite of meteorological station instruments.				
			Because pan evaporation rates are actually generally higher than what is achieved in natural evaporative environments, standard practice is to use between 50% and 70% of the pan evaporation rate for design of retention facilities. Additionally, what is needed is to apply reference evaporation rates based on geographic similarities.				
5.	Section 2.1	Wind-speed	Background information for wind-speed information should be cited.				
			The wind-speed data to be collected needs to provide the high, low, average daily values and principle directions. This provides a background as to time-of-day and season when expected and directional extremes will occur.				
6.	Section 2.1	Air quality	In the background information please provide what is meant by EPA's classification of the area as an 'attainment' area.				
7.	Section 2.2	Sampling Objectives	 In the meteorological section the obvious sampling objective is to collect relevant and accurate <u>baseline</u> meteorological data, temperature, precipitation, wind-speed, RH, etc This is not stated in the sampling objective; please include these parameters in your sampling objectives. Background radiological conditions - The radiological discussion and sampling protocols need to be moved to Section 10, Radiological Survey Plan. 				
8.	Section 2.3	'Data needs'	In the first sentence you cite, 'data needs were identified for meteorology data (Baseline Data Summary, Section 2.0, and "Climatology")'. There is no such section in this report. Please correct.				
9.	Section 2.4	Methods of	As stated in EPA 2000 (see references at the end of this section), the user should				

	Review of St	rathmore SAP Docu	ment for the Roca Honda Uranium Mine Site, Section 2 Rev. April 2009
Reviewer: NMED SV	WQB Comments	Review Date: May 29, 2009	- P
Agency: NMED			
Item #	Section/Page	Topic	Comment
		Collection	acquire enough meteorological data and at discrete time intervals to ensure worst-case meteorological conditions are adequately represented. It is these worse case scenarios that can cause maximal impacts on topography, vegetation, and air quality. Meteorological stations should be set-up meeting NOAA's SOP. Additionally, per standard NOAA data collection methodology, all meteorological data should be collected in 15-minute intervals.
10.	Section 2.4	Air Quality Monitoring	The passage 'Data from the Gulf Mt. Taylor Environmental Report (1979-drafted for the proposed uranium mill) indicated ambient particulate matter in the San Mateo Valley above ambient standards. Radiological data results were not reported and the trace metals were below limits.' needs a citable reference. This information needs to be included in Section 13.
11.	Section 2.4	Air Quality Monitoring	The Hi-Vol sampler installation locations and calibration needs to be part of this SAP. Please include.
12.	Section 2.4.1	Air Particle Pump	Suspended air particles data needs to be identified as one of the parameters to be collected in Table 2-1.
13.	Section 2.4.3	Use of TLD and placement	(Note, the Thermoluminescent Dosimeters (TLDs) information needs to needs to also be addressed in Section 10 TLD detectors located at ~1-m above ground level are meant to monitor 'exposure' at chest level of alpha emitting radiation. Because there has been past uranium mining in the area, and the area has high NORM values, there may be elevated radiation due to erosional or wind-born NORM or TENORM material. To assure you have pre-mining baseline and background radon levels measured RHR needs have radon detectors located at the planned waste-rock storage locations, ore storage

	Review of Strathmore SAP Document for the Roca Honda Uranium Mine Site, Section 2 Rev. April 2009					
Reviewer: NMED SWQB Comments		Review Date: May 29, 2009				
Agency: N	MED					
Item #	Section/Page	Topic	Comment			
			facilities, vents, shafts, canyon apexes, stream banks downstream from the mining, sites of existing exploration boreholes, locations where mine water is discharged. Therefore numerous TLDs need to be placed around the site.			
14.	Section 2.4.2	Radon Detectors	(Note, the information on radon TLD detectors needs to also be addressed in Section 10 Because there has been past uranium mining in the area, there may be elevated radiation due to erosional or wind-born NORM or TENORM material. In order to evaluate baseline alpha radiation, alpha-emitting radiation needs to be measured at ground level throughout the site. Therefore, RHR needs take baseline measurements of alpha radiation using air- or gas-proportional detectors. Measurements need to be taken at the planned waste-rock storage locations, ore storage facilities, vents, shafts, canyon apexes, stream banks downstream from the mining, sites of existing exploration boreholes, and locations where mine water is discharged. The intention is to detect whether the RHR mining activity has introduced elevated values of alpha emitting particles to the surface when similar measurements are taken during and after mining ceases.			
	Sections 2.4.2 and 2.4.3	Radon Detectors	The text describing the installation of the alpha and gamma dosimeters needs to be put in a separate QA/QC procedural section. (Again, all of text on radiation needs to be moved to section 10.)			
	Section 2.8.1	Meteorological Station – Instrument ranges and sensitivities	There are no instrument specifications, operating ranges and sensitivities in this section. Please include.			
	Section 2.8.1	Meteorological Station - units	To be 'defensible' and consistent with other sanctioned weather station data, the meteorological data needs to be collected, verified, and monitored per NOAA sanctioned guidelines. Standardized SI units for recording data need to be specified as listed below.			

	Review of Strathmore SAP Document for the Roca Honda Uranium Mine Site, Section 2 Rev. April 2009						
Reviewer: NMED SWQB Comments		Review Date: May 29, 2009		•			
Agency:	IMED						
ltem #	Section/Page	Topic	Cor	nment			
			Para	meter	Short Name	Units	Format
			(1)	DateTimeStamp	DateTimeStamp	m/d/yyyy h:mm	
			(2)	Record	Record		
			(3)	Average Air Temperature	ATemp	°C	00.0
			(4)	Average Relative Humidity	RH	0/0	000
			(5)	Average Barometric Pressure	ВР	mb	0000
			(6)	Average Wind Speed	WSpd	m/s	00.0
			(7)	Average Wind Direction	Wdir	0	000
			(8)	Maximum Wind Speed	MaxWspd	m/s	00.0
			(9)	Maximum Wind Speed Time	MaxWspdT	hh:mm	hh:mm
			(10)	Wind Direction Standard Deviation	SDWDir	sd	000
			(11)	Total Precipitation (recorded in 15 minute intervals)	TotPrcp	mm	00.0
			(12)	Average Battery Voltage	AvgVolt	volts	00.0
			(13)	Cumulative Precipitation (24 hour period)	CumPrcp	mm	0.00
	Section 2.8.1	Meteorological	Ger	neral – The plan needs to specifica	llv state all the re	equired QA/OC o	hecks (item by
		Station – general	iter	n) are performed per the <i>Campbel</i> cedures (SOP) for the Meteorolog	Il Scientific CR100	00 standard ope	
	Section 2.8.1	Meteorological Station – wind- speed	Me	asuring wind-speed –There should ors are avoided.			a collection

Reviewe	r:	Review Date:	·			
NMED SWQB Comments Agency: NMED		May 29, 2009				
Item #	Section/Page	Topic	Comment			
			It should be stated that a weekly orientation check is performed to ensure the wind speed indicator is always pointing true north.			
			Where is the anemometer located above the ground surface, 2-, 5-, or 10-m? The plan must specify the location.			
	Section 2.8.1	Meteorological Station –	Measuring Precipitation - There should be assurance that common data collection errors are avoided.			
			It should be stated that the tipping bucket rain gauges are functioning properly. (These tend to jam up. Common problems arise due to roosting birds 'tampering' with the instrument causing it to clog, get stuck, or become off-balance.) A weekly check for these types of malfunctions needs to be specified in the SOP. RHR states they are using a Campbell Scientific meteorological station.			
	2.10	EPA references	The EPA 2007 references are not adequately identified. Please provide a full citation in the reference section.			

Agency: MMD			Review Date
Item #	Section/Page	Topic	Comment
1.	Section 2.4.2 and 2.4.3	Measurement of alpha radiation	The collection and methodology for radiation data described in Sections 2.4.2 and 2.4.3 need to be moved to Section 10.
2.	Section 2.1	Precipitation	It needs to be stated that the meteorological data collected will include average daily and annual daily precipitation, standard deviations, highs, lows, and years and times when these measurements were or will be taken. This provides a background as to time-frame of (and expected and outlier values) for extremes, highs, lows, and daily and seasonal averages.
3.	Section 2.1	Lake evaporation not appropriate for arid environment	The value of a 'lake evaporation' cited for typical evaporation values in this area is not appropriate. Lake evaporation measurements are interrelated with, and affected by, the large water body of the 'lake'. The lake, or large water body, will affect the parameter values that go into a 'lake evaporation' measurement and can be extremely different than what controls evaporation in arid environments (such as Roca Honda). Inputs to lake evaporation, such as relative humidity, the heat storage capacity of a large water body (which includes depth, turbidity, surface area) and the outgoing short- and long-wave radiation (also affected by large water bodies) and air temperature just above the water surface, wind (both affected by the lake surface area and depth) are very different than that in an arid environment. Please take out any reference to lake evaporation values
4.	Section 2.1	Pan Evaporation values needed	In order to get an estimate of expected evaporation in the Roca Honda area, the parameter used should be 'pan evaporation'. Pan evaporation integrates evaporation affected by temperature, humidity, solar radiation (which can be affected by air particulates), and wind. For the southwest there are months when pan evaporation is very high, accounting for most of the annual pan evaporation. If there are no pan evaporation measurements within the vicinity of the proposed site, then a 'Class A' pan evaporation needs to be installed as part of your suite of meteorological station instruments.
5.	Section 2.1	Wind-speed	Background information for wind-speed information should be cited. The wind-speed data to be collected needs to provide the high, low, average daily values and principle directions. This provides a background as to time-of-day and season when expected and directional extremes will occur.
6.	Section 2.1	Air quality	In the background information please provide what is meant by EPA's classification of the area as an 'attainment' area.

			Rev. April 2009		
Agency: MMD			Review Date		
Item #	Section/Page	Topic	Comment		
7.	Section 2.2	Sampling Objectives	 In the meteorological section the obvious sampling objective is to collect meteorological data, temperature, precipitation, wind-speed, RH, etc This is not stated in the sampling objective; please include these parameters in your sampling objectives. Background radiological conditions - The radiological discussion and sampling protocols need to be moved to Section 10, Radiological Survey Plan. 		
8.	Section 2.3	'Data needs'	In the first sentence you cite, 'data needs were identified for meteorology data (Baseline Data Summary, Section 2.0, and "Climatology")'. There is no such section in this report. Please correct.		
9.	Section 2.4	Location of met stations.	Due to the variability in topography and land orientation there will be multiple and variable micro-climates in the proposed mining area. This variability will affect transport of dust, dust collection and dust accumulation points. Depending on orientation and area (i.e., north or south facing slopes, within a small canyon or open mesa) there will be variable diurnal wind speed and direction and temperatures and relatively high or low pan evaporation within the mine site. Therefore, there needs to be more than one meteorological station installed to collect site-wide meteorological variability. A meteorological station, or a 'mini'- stations, should be installed on high ridges, north facing and south facing valleys and coves, open lower and upper plateaus, proposed haul roads, along the flatter areas of the stream banks.		
10.	Section 2.4	Methods of Collection	As stated in EPA 2000, the user should acquire enough meteorological data and at discrete time intervals to ensure worst-case meteorological conditions are adequately represented. It is these worse case scenarios that can cause maximal impacts on topography, vegetation, and air quality. Meteorological stations should be set-up meeting NOAA's SOP. Additionally, per standard NOAA data collection methodology, all meteorological data should be collected in 15-minute intervals.		
11.	Section 2.4	Air Quality Monitoring	The passage 'Data from the Gulf Mt. Taylor Environmental Report (1979-drafted for the proposed uranium mill) indicated ambient particulate matter in the San Mateo Valley above ambient standards.		

			Rev. April 2009
Agency: MMD			Review Date
Item #	Section/Page	Topic	Comment
			Radiological data results were not reported and the trace metals were below limits.' needs a citable reference. This information needs to be included in Section 13.
12.	Section 2.4	Air Quality Monitoring	The Hi-Vol sampler installation locations and calibration needs to be part of this SAP. Please include.
13.	Section 2.4.1	Air Particle Pump	Suspended air particles data needs to be identified as one of the parameters to be collected in Table 2-1.
14.	Section 2.4.2	Use of TLD and placement	Note, the Thermoluminescent Dosimeters (TLDs) information needs to needs to also be addressed in Section 10
15.	Section 2.4.2	Radon Detectors	Note, the information on radon detectors needs to also be addressed in Section 10
16.	Sections 2.4.2 and 2.4.3	Radon Detectors	The text describing the installation of the alpha and gamma dosimeters needs to be put in a separate QA/QC procedural section. (Again, all of text on radiation needs to be moved to section 10.)
17.	Section 2.8.1	Meteorological Station – Instrument ranges and sensitivities	There are no instrument specifications, operating ranges and sensitivities in this section. Please include.
18.	Section 2.8.1	Meteorological Station - units	To be 'defensible' and consistent with other sanctioned weather station data, the meteorological data needs to be collected, verified, and monitored per NOAA sanctioned guidelines. Standardized SI units for recording data need to be specified as listed below. Parameter Short Name Units Format

			Rev. April 2009			
Agency: MMD				Review Date		
Item #	Section/Page	Topic	Comment			
		•	(15) Record	Record		
			(16) Average Air Temperature	ATemp	°C	00.0
			(17) Average Relative Humidity	RH	9/0	000
			(18) Average Barometric Pressure	BP	mb	0000
			(19) Average Wind Speed	WSpd	m/s	00.0
			(20) Average Wind Direction	Wdir	0	000
			(21) Maximum Wind Speed	MaxWspd	m/s	00.0
			(22) Maximum Wind Speed Time	MaxWspdT	hh:mm	hh:mm
			(23) Wind Direction Standard Deviation	SDWDir	sd	000
			(24) Total Precipitation	TotPrcp	mm	00.0
			(recorded in 15 minute intervals)			
			(25) Average Battery Voltage	AvgVolt	volts	00.0
			(26) Cumulative Precipitation (24 hour peri	od) CumPrcp	mm	00.0
19.	Section 2.8.1	Meteorological Station – general	General – The plan needs to specif performed per the <i>Campbell Scien</i> Meteorological Monitoring Station	tific CR1000 stand	•	•
20.	Section 2.8.1	Meteorological Station – wind- speed	Measuring wind-speed –There sho avoided.			
			It should be stated that a weekly of indicator is always pointing true no		s performed to	o ensure the wind speed
			Where is the anemometer located	above the ground	d surface, 2-, 5-	-, or 10-m? The plan must
			specify the location.			

Agency:		Review Date
MMD		

Item #	Section/Page	Topic	Comment
21.	Section 2.8.1	Meteorological Station –	Measuring Precipitation - There should be assurance that common data collection errors are avoided.
			<u>It should be stated that</u> the tipping bucket rain gauges are functioning properly. (These tend to jam up. Common problems arise due to roosting birds 'tampering' with the instrument causing it to clog, get stuck, or become off-balance.) A weekly check for these types of malfunctions needs to be specified in the SOP.
22.	2.10	EPA references	The EPA 2007 references are not adequately identified. Please provide more specific identification for the EPA 2007 references.

References:

EPA, 2000. Meteorological Monitoring Guidance for Regulatory Modeling Applications EPA-454/R-99-005

Section 3 Topography

			Rev. April 2009
Agency:			Review Date:
	MMD		July 10, 2009
Item#	Section/Page	Topic	Comment
	Figure 3-1	Contour	Please put elevations on the contour lines.
		elevations	
Figure 3-1 Observation Please label observation wells		Observation	Please label observation wells on map and include elevations.
		well - labels	
	Figure 3-1	Road labels	Please provide labeling of all paved and dirt roads.
	Figure 3-1	Projected	Data collection that should be associated with proposed building locations. Consequently,
		mine	please provide a general lay-out of mine operations: buildings, ponds, vents, waste piles,
		operations	burrow locations, mine discharge pipes, parking, and sidewalks etc., etc., such that this layout
		and buildings	will minimally impact canyon and arroyo up-cutting gouges and erosion. Additionally, it should
			be mentioned that the footprint of the mine and mine operations, because of data collection, as
			describe in the SAP, will may be modified due to knowledge, inferences and conclusions that the
			data will provide.

Reviewer:
NMED SWQB Comments
Agency:
NMED
NMED

Item #	Section/Page	Topic	Comment
1.	Section 3.4	Stream-channel survey	From Section 3.4, "Stream-bed contours will be prepared using aerial photographs for the area immediately adjacent to the permit area and ground level surveys for areas further downgradient (as described in Section 8 of this SAP)." The pre-mining stream channel morphology should be better defined, including channel plan, profile, and cross-section. These conventional surveys should be sufficient in number and location to characterize pre-mining channel morphology. These pre-mining data should be used to design reclamation channels that are naturally stable. (This appears to be at least partially addressed in Section 8.5.1.8.)

Section 4 Vegetation

			Rev. April 2009
Agency: MMD			Review Date 5/26/09
Item #	Section/Page	Topic	Comment
1.	Section 4.1	Introduction and Background	Copies of Wood 2006a & 2006b should be provided for our review.
2.	Figures 4-1 thru 4-3	Maps	All maps need to show elevations and/or contour intervals.
3.	4.3, pg. 4-3	List of Data to be Collected	Provide rationale for transect & exclosure locations and reference area chosen.
4.	u u	u u	Discussion needed on pre-mining impacts from livestock grazing. (see 17. below)
5.	Fig. 4-2	Vegetation Transect Line	Explain what the symbol "Pool" represents.
		Locations and	
		Enclosure	
		Locations	
6.	Fig. 4-3	Transect Line	Explain why no arroyo transects are proposed in the reference area.
	8	Locations and	
		Enclosure	
		Locations	
7.	Section 4.4.1.3	Invasive and	Which list of noxious weeds will be used (e.g., NM Dept. of Ag.)?
		Non- Native	
		Species	
8.	Section 4.4.2	Vegetation	Veg. cover, total grd. Cover, etc. will be documented for reference area, too?
		Descriptions	
9.	Section 4.4.2.2	Data Collect	What is the purpose of arroyo transects & how will they be taken?
10.	<i>u u</i>	и и	Are all six veg. types found in the reference area?

			Rev. April 2009
Agency: MMD			Review Date 5/26/09
Item #	Section/Page	Topic	Comment
11.	u u	u u	For point-intercept method, 15 transects minimum are required (MMD Guidelines).
12.	u u	u u	For belt transects, 15 transects minimum are required (MMD Guidelines).
13.	u u	u u	Insert the word herbaceous in the following, "All herbaceous plant material".
14.	Section 4.9	Brief Discussion	Explain how ocular estimates of relative abundance will mitigate shortcomings of point
		Supporting	intercept
		Proposal	
15.	Section 4.10	References	Were NRCS rangeland conditions reviewed and considered?

Review of Strathmore SAP Document for the Roca Honda Uranium Mine Site, Section 4 Rev. April 2009 **Review Date:** Reviewer: **NMED SWQB Comments** May 29, 2009 Agency: NMED Section/Page Topic Item # Comment This section makes reference to "potential impacts of high water volume discharge in an Section 4.3 1. native riparian/wetland unnamed arroyo draining to San Mateo Creek". Associated data should support reclamation vegetation along that includes the use of native woody riparian and/or wetland species in areas that support unnamed arroyo such vegetation -- whether or not those areas supported such vegetation before the discharge.

Agency:	Review Date:
NM Department of Game and Fish	May 21, 2009

Item #	Section/Page	Topic	Comment
1.	Section 4	Vegetation	Introduction and Background. NMDGF is in possession of the Wood et al. 2006 report regarding the special status plant species survey of Section 16. We do not have a copy of the report for the Sections 9 and 10 surveys conducted that same year. Please provide NMDGF with a copy of that report.
2.	Figure 4.3	Transect Line Locations in the Reference Area	We advise that vegetation types be indicated on the reference area map that corresponds to those delineated for the project area. Also, we suggest that the number of transects be identified in each vegetation type per location (project area and reference). Also, productivity exclosures in the reference area should be added or an explanation provided for their absence.
3.	4.4.2.2	Data Collection and Analysis of Cover	How will overlapping hits on the line intercept transects be recorded and interpreted? Also, in addition to height, we recommend that diameter at ground level be recorded for juniper and pinon trees. The project area supports a large number of old trees and for these species; diameter is a better index than height to approximate the age of the tree. Given the importance of large diameter pinon and juniper trees for bat roost needs, particularly summer maternity roosts, we recommend that cores are collected from a subset of measured trees and that site-specific correlation of diameter with age is performed as well (for the purpose of documenting the extent of mature woodland, as opposed to recent brush encroachment).
4.	4.8	Laboratory and Field Quality Assurance Plan.	The personnel section of the QAP has been cut and pasted from the Wildlife section. The wildlife biologist qualifications need to be replaced with qualifications specific to botany personnel.

Section 5 Wildlife

	Review of Strathmore SAP Document for the Roca Honda Uranium Mine Site, Section 5						
Agency: NM Dep	partment of Game	e and Fish	Review Date: May 21, 2009				
Item #	Section/Page	Topic	Comment				
1.	Section 5	Permits	NMDGF recommends that the project consultants obtain a scientific take permit from the state. While permits are not strictly required for this type of activity, if a state threatened or endangered species is inadvertently destroyed during the survey work, in the absence of a permit, the take would be a violation of state law. Permit application forms can be found at http://www.wildlife.state.nm.us/conservation/documentsLwildlifeforscientificeducation.pdf .				
2.	Section 5	Introduction and Background.	NMDGF is in possession of the Wood et a1. 2006 report for the Section 16 special status wildlife species survey. We do not have a copy of the report for the Section 9 and 10 surveys conducted that same year, and request that a copy be provided to us. Only those species with federal status were included in the 2006 report. However, there are a number of state listed and sensitive species that are not included in the survey, notably the state threatened gray vireo and spotted bat, for which habitat may be present on the project area. We have enclosed a list of special status species known to occur in McKinley and/or Cibola County, and request that targeted surveys be conducted for state protected species without federal status, especially the gray vireo and spotted bat. *Existing Habitat.* Scientific binomial designations for plant species should be used when				
			discussing them for the first time in the document. Also note that Colorado rubberweed, <i>Hymenoxys richardsonii</i> , is a perennial sub-shrub, not an annual as described in the SAP.				
3.	Figure 5-1	Wildlife Habitat Types.	We recommend that the SAP depicts the "potential wetland riparian areas within and below the permit area," referred to on Table 5-1, and to briefly describe these areas in the text. Also, depict the "intermittent/topographic" habitat types (rock/ cliffside and arroyo/ drainages) as referred to in 5.4.2.2 Sampling Design, and describe their extent and nature in the text.				
4.	5.4.1	Wildlife Species Inventory	The surveys conducted in 2006 on Section 16 do not provide full baseline data regarding comprehensive lists of species and habitat types and associations. Surveys were conducted only in the fall and winter and habitat associations are reported only for species with federal special				

	Review of Strathmore SAP Document for the Roca Honda Uranium Mine Site, Section 5							
Agency:			Review Date:					
NM Dep	artment of Game	and Fish	May 21, 2009					
Item #	Section/Page	Topic	Comment					
			status. We request that similar transect surveys be conducted in the spring and summer seasons and habitat associations be reported for all species observed. As noted above, we are not in possession of survey reports from Sections 9 and 10.					
5.	5.4.2.3	Field Methodology.	We recommend that you provide detailed survey protocols for all species groups listed. Use federal or state standard protocols for special status species where available (NMDGF can provide specific protocols for burrowing owl, raptors and gray vireo). Also, we recommend that the SAP describe and identify the location of standing water where bat netting will take place as well as other wildlife-available waters on or near the permit area. Due to the potential presence of a number of sensitive bat species, and one threatened species, the apparent presence of good roosting habitat (older junipers with dead branches and loose bark and deeply creviced, vertical rock faces) and the limited availability of appropriate netting locations, NMDGF recommends that netting surveys be supplemented with acoustic inventory techniques.					
6.	Figure 5-2	Wildlife Survey and Transect Locations.	We recommend that survey stations for medium-large mammals and herpeto/faunal small mammals in Section 10 be added, or that an explanation is provided for why no survey stations are located in that section.					

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1.	Section 6 General		The term "topsoil" is usually restricted to A-horizons. In semi-arid climates good suitable materials may be salvaged from A+B+C and even some - materials. A better term for salvageable materials should be referred to as "suitable topdressing," "suitable soils" or similar.		
			Not all materials identified as "high quality" will be salvageable. There may be good quality resources on slopes too steep to salvage or within areas to avoid. Calculations of salvage volumes should consider these limitations. RHR should also allow for some loss during handling/storage, and higher post-reclamation compaction, collectively estimated as 10-15% loss by many operators.		
			MMD recommends that steep slopes be reclaimed with materials containing high proportions (up to 60%, depending on matrix texture) of gravel or rock. RHR should plan to identify and handle these materials separately.		
			Depending upon the variability of soils in the mine design limits, soil quality and intensity of sampling in this effort, RHR may be required to do additional mapping and sampling before mine facilities are constructed.		
			Saline and sodic soils may be acceptable for salvage, depending upon the degree of effect, texture, slope position and other factors at the time of reclamation.		
2.	Section 6.4	Methods	RHR can easily misjudge salvageable topsoil with inaccurate information, with expensive consequences. The lack of alignment between USFS and NRCS map units (Fig. 6-2) is		

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			disconcerting and should be resolved. A soil scientist with a good deal of experience in "local" soils should be used to characterize soil resources for RHR. Many characteristics such as salinity can be extremely difficult to determine in the field without a keen eye and a "feel" for appropriate laboratory sampling.		
3.	Section 6.4	Composite sampling	MMD will not accept composite sampling for soil character. Soils in the area transition from one type to another in ways that do not always equate to topographic or vegetation changes.		
			An arbitrary number of samples should not be determined beforehand. Each common soil component (not unit!) should be sampled at least once within each unit and fully exposed by backhoe for a thorough view/characterization of the profile.		
			The field soil scientist should have some leeway if field checks reveal more or less variability than is indicated in higher-order maps. Again, MMD stresses that an experienced soil mapper at the beginning can prevent expensive mistakes at the end of the salvage/storage/reclaim cycle.		
4.	Section 6.4	Depth-wise sampling	Soils in the area will have well defined strata that will not correspond with arbitrary sampling depth intervals such as 0"-6". RHR should NOT sample from specified depth intervals but attempt to define individual horizons at a sampling location and the depth of "breaks" or transition zones between them. By locating breaks, a more accurate salvage volume can be estimated for a particular area without mixing horizons of different character.		
			See item 2 above: A soil scientist may randomly or (better) locate sampling points within chrono- or toposequences to better characterize an "average" and "deviation" of soils from existing maps for an area. Each location may be described by changes in texture, color, etc. from location to location, though sampling for laboratory tests from a single "representative" type-profile may suffice for an area of similar soil.		
			Unless buried soils are encountered or expected, RHR should limit sampling to materials above		

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			Ck horizons that have >10% carbonates or any induration.		
5.	Table 6-3	Parameters	The field soil scientist should be prepared to and frequently perform analysis of soils for pH and electrical conductivity in order to "field-calibrate" for these important parameters and judge sampling needs. In addition to a hydrometer texture, please sieve for the break between medium, fine and very fine sands (#60 and #140 sieves). Sieve data should be proportioned to total sample mass (from hydrometer data). This will enable better RUSLE or SedCad modeling later. Rather than test for macro- and micronutrients RHR should instead test samples for soluble B, hot-water soluble Se, and total U, Ra (or gross alpha and beta in lieu of U, Ra). N-P-K testing may be helpful immediately before reclamation, tested from stockpiled materials, though N and P values will be reliably below any agronomic values. Please add inorganic carbon testing to the parameter suite. (to the nearest 0.1% CaCO3 equiv. Soil SAR (sodicity) data should include component parameters of paste Ca, Mg and Na in units of me/L		

Section 7 Geology

	Review of	Strathmore SA	P Document for the Roca Hon Rev. April 2009	nda Uranium Mine Site, Section 7
11000			Review Date: July 10, 2009	
Item #	Section/Page (or general)	Topic	Comment	
1.	Section 7/ page 18	Geology	General comment: the thickness of the Dilco Coal is probably less than five feet thick.	
2.	Section 7/ Page 12	Geology	Include a set of the recent borehole logs from 2007 with the tops marked and target ore zones indicated as RHR interprets them.	

Section 8 Surface Water

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Item #	Section/Page	Topic	Comment			
1.	Section 8.1.4, page 8-12.	springs	The springs mentioned are dismissed as having any connection to the proposition dewatering. In the final report for the SAP results, please provide a more explanation which formations the spring are emanating from and why that connection to the mine dewatering.	detailed		
2.	Section 8.1.4, page 8-12.	Surface water rights	In the final report for the SAP results, please provide details on surface wa associated with the springs in the vicinity of San Mateo Creek and the prop Mine.	_		

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Agency: MMD				Review Date : May 8, 2009	
Item #	Section/Page (or general)	Topic	Comment		
1.	Sections , 8.1, 8.2, 8.3	General	The plan does a fairly good job of ic	dentifying the data gaps and subsequent data needs.	
2.	Sections. 8.1, 8.2, 8.3	General	The text needs to be clarified throughout by making more consistent and specific reference to laboratory analysis for WQCC water quality standards and constituents instead of "other water quality parameters". This is in addition to all the other parameters (cations/anions, volatiles, semi-volatiles) proposed.		
3.	Section 8.5.1.3	Baseline Water Quality – _division of stream reaches	nowhere is it explained how the rea	3 makes mention of "reaches will be characterized," but aches have been broken out or distinguished. The text of how the drainage system was segmented, and what	
4.	Section 8.5.1.3	Baseline Water Quality – sample populaton	would suffice? It seems a minimun minimally define the variance within	it was determined that a sample population seven samples in sample size of at least 10 would be pursued in order to in the sample population. It should be better described rmined, and what dictates the proposed number of	
			dissolved). What is needed is a san planned volume of the samples col (conductivity, EH, pH, etc.?) are yo	s of measured field parameters and filtration (totals, nple and analysis plan the defines protocols, i.e., the lected, will there be any field parameters taken u going to collect volatiles and semi-volatiles, filtered and will samples be stored at a specific temperature.	

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Item #	Section/Page (or general)	Topic	Comment			
5.	Section 8.5.1.3	Baseline Water Quality – laboratory detection limits		/or description of the method detection limits that will be ethods are all provided but not the respective detection		
6.	Section 8.5.1.4	Sediment Constituents	Document needs a discussion as to and/or point depth composite. How will samples be collected? Wh sample be prepared (sieving) in the Explain if geomorphic features were	what particle size fraction will be collected for lab analysis. the sample types; surface point, transect composite, nat volume of sediment will be collected? How will the field? Compositing? Split samples for QA/QC? e considered when selecting sample locations. Describe active channel, bars, overbanks, etc)		
7.	Section 8.5.1.5	Soluble Constituents in Sediments	The text needs to describe any mod (SPLP) (water/soil ratio, pH adjustm	lification to Synthetic Precipition Leaching Procedure ents?)		

Review of Strathmore SAP Document for the Roca Honda Uranium Mine Site, Section 8 Rev. April 2009 Review Date: May 27, 2009 Section/Page (or general) Comment

	(or general)		
1.	Page 8-3	Inter-relationhip between potentially impacted springs and flora	The surface water hydrology section in the Roca Honda SAP will investigate these springs, but a botanist and hydrologist also should look at them. And will the ground water that supplies these surface springs be diminished or polluted by the mining operation?
			My concerns combine a rare plant species with hydrology. Parish's alkali grass occurs on wet, highly alkaline or salty soils around low elevation springs and seeps – not in the adjacent mountains. Do all the springs and seeps along San Mateo Creek have Parish's alkali grass? I know it occurs in the saltgrass cienega around a spring about 2 miles west of San Mateo (Bridge Spring on SAP map page 8-3) and probably on the adjacent North Spring and South Spring along San Mateo Creek.

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	(or general)					
	Section 2					

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Forestry

Item #

Reviewer:	Review Date:
NMED SWQB Comments	May 29, 2009
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Item #	Section/Page (or general) Section 2	Topic	Comment	
1.	Section 8.1	San Mateo Creek, Rio San Jose, and the Rio Puerco stream types.	Contrary to Section 8.1, San Mateo Creek, the Rio San Jose, and the Rio Puerco may be, at least in reaches, intermittent streams. This is indicated by the presence of woody riparian vegetation that commonly requires water flows beyond mere direct response to storms. Likewise, SWQB disputes that "the drainage and the portions of San Mateo Creek that will be affected directly by discharged water are ephemeral." This comment is supported by the existence of local springs described in Section 8.1.4.	
2.	Section 8.1	Proposed discharge impact on ephemeral streams	Section 8.1 says that "the Roca Honda permit area is drained by ephemeral arroyos" This text should make clear that the proposed discharge would change at least one of those ephemeral streams to a perennial flow regime.	
3.	Section 8.1.2	Impacts of discharge to ephemeral surface waters	Regarding Section 8.1.2, the SWQB asserts that at least some of the ephemeral surface waters will become intermittent or perennial during and after the discharge of pumped ground water.	
4.	Section 8.5.1.1	mapping of woody riparian vegetation	The analysis described in Section 8.5.1.1 should include mapping of woody riparian vegetation, as this can indicate hydrologic conditions such as springs or a non-ephemeral flow regime.	
5.	Section 8.5.1.2	Survey and mapping of intermittent reaches	According to Section 8.5.1.2, "Once the aerial photographic analysis is completed, a ground survey will be conducted to confirm the location of perennial water bodies and the location and use of structures." Intermittent reaches should also be ground-surveyed and mapped, rather than lumped with ephemeral reaches.	
6.	Section 8.5.1.2	Determination	Section 8.5.1.2 says that "The presence or absence of water in the alluvium at the base of the	

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		that arroyo is ephemeral or intermittent	ephemeral or intermittent." This sh	ne if the unnamed arroyo and San Mateo Creek are ould not be the only criterion – woody riparian vegetation the uplands) can also indicate flow regimes beyond
7.	Section 8.5.1.7	Stream bed and channel armoring		d Armoring. This section should acknowledge that to perennial flow, could also affect channel morphology.
8.	Section 8.5.1.9	Stream rating tables	measurements (such as during time reliable rating table. The section sho	cing tables. The SWQB is concerned that insufficient flow is of non-wadeable flows) may preclude development of a buld address modeling a rating table to fill such data gaps. late discharge "break points" with morphological features.
9.	Section 8.8	Representative Water sampling	· -	owing water. This section should discuss methods to samples, specifically integration through the water
10.	Section 8.9	Baseline channel morphology data	Section 8.9 should acknowledge that morphology.	t these data will also help establish "baseline" channel
Referenc	es:	_1	1	

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Item #	Section/Page (or general)	Topic	Comment		
1.	Section 9 Page 5	Ground water	MMD advised the drilling of another Dakota well and Gallup well near the production well to monitor leakance from these formations during the Westwater aquifer test.		
2.	Section 9	Groundwater	General comment: The SAP should indicate that the permit application will provide a discussion on water rights.		
3.	Section 9	Groundwater	General comment: Need construction diagrams of production and monitor wells.		
4.	Section 9 Page 7	Groundwater	Describe the source of drinking water for the community of San Mateo, and explain what monitoring will take place to investigate what effect might the proposed mine dewatering might have on their source of water?		
5.					
6.	Section 9 Page 7	Groundwater	The plan should address obtaining permission from the Lee's to monitor their irrigation well during the aquifer test.		
7.	Section 9 Page 30	Groundwater	Table 9-11 needs to include the Dakota Formation as one of the aquifers to be monitored.		
8.	Section 9 Page 33	Groundwater	Table 9-13, needs to identify whether S1, S3, or S4 is to be the Pumping Well so that the related monitoring wells can be appropriately placed. The placement of the other monitoring wells, then need to be identified.		
9.					
10.					

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Item #	Section/Page	Topic	Comment				
1.	Section 9	General	The NM OSE Hydrology Bureau has reviewed the April 2009 Sampling and Analysis Plan (SAP) for the proposed Roca Honda mine, located in Sections 9, 10 and 16 of Township 13 North and Range 8 West in McKinley County. Amongst other permits, the proposal indentifies two required state permits from NM OSE for mine dewatering and appropriation of underground water permits (Section D.11-permits required, page 10 of the SAP Phase 1 Permit application for MK025RN dated 4-20-09). The SAP will, in part, collect information in support of these permit applications. Overall, the surface and ground water sections of the SAP are adequate. An implementation schedule for the SAP may be useful to the State Agencies. Several specific details should be clarified related to the number, duration of aquifer tests within Westwater Canyon member of the Morrison formation. Also, the timing and number of additional wells relative to these aquifer tests needs clarification. A licensed New Mexico driller must drill and install wells in accordance with 19.27.4 NMAC.				
3.	Section 9.1.3.1, page 9-12	Alluvium water quality values Metal values	Note that the text refers to a wide range of water quality for the alluvium while the corresponding Table 9-1 and 9-2 shows one sample. Also, the well's location and number 131 in Table 9-1 does not seem to correspond with any alluvial well in Section 25 of the Plate 1. It may correspond to well 121 in Section 24. Please check metals values for lead, manganese, aluminum, zinc and copper. These tables				
3.	9-2, page 9-13.	ivietai values		f the less than sign for below the detection limit.			
4.	Section 9.1.3.7, pages 9-22 to 9- 23.	1950 – 1980 mine water discharges to surface waters	(and residual salts) likely contribute and into the Morrison formation.	ents that 1950s-1980s surface discharges of mine water d to the poor water quality recharge through the alluvium As presented, water quality of recharge from the uld not explain the higher TDS values in the Morrison uence with Arroyo del Puerto.			

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5.	<u>Tables 9-1 and</u> <u>9-2, page 9-13</u>	DOE wells	Homestake Mill evaluation for an al	vells that were sampled in this area along with a US NRC lluvial aquifer study along San Mateo Creek. Uranium and e alluvial aquifer at some locations along San Mateo Creek.			
6.	Section 9.5, page 9-33	Well drilling	The SAP indicates that in geologic formations other than Morrison wells will be installed and developed in accordance to standing operating procedures. No standard operation procedures were provided. NM OSE requires that a licensed driller follow 19.27.4 NMAC Regulations to drill and complete wells. Since artesian conditions exist in the area for some aquifers, an artesian well plan of operation may be a required for submittal, review and approval in accordance with 19.27.4.31.A NMAC.				
7.	Section 9.5 and Table 9-14, pages 9-33 and 9-34.	Installation of 'shallow wells'	Please clarify whether the shallower wells will be installed prior to the aquifer tests at wells S1, S3 and S4 in the Westwater Canyon member of the Morrison formation. In Section 9.5 it appears that the wells will be installed prior to the aquifer testing. However, Table 9-14 and the Appendix on aquifer testing procedures indicates more uncertainty about the timing of the well installation for the alluvial, Menefee formation, and Point Lookout sandstone.				
8.	Table 9-15, pages 9-35 and 9-36.	Incomplete metals list	Table 9-15 repeats itself without including a complete list of metals for analysis.				
9.	Section 9.5 and Table 9-14, pages 9-33 and 9-34.	monitoring of existing or new wells in Gallup and Dakota sandstone	monitored while pumping the West whether wells would be installed in	p Sandstone and Dakota sandstone units would be water Canyon member of the Morrison formation and these units. Please clarify whether there will be any screened across the Gallup and Dakota sandstones during			

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10.	Section 9.5, page 9-34.	quantity of discharge water estimations	The SAP states that the data collected will be used to estimate the quantity of water that will be discharged during dewatering activities. The Roca Honda Project likely will need water quantity evaluations on regional and local scales to assess impacts. Please clarify the methodologies that will be used to make such estimates.					
11.	Section 9.5, Table 9-13 and Appendix A.	Time span of aquifer test	Please clarify the specific length of the aquifer tests, which may be 24, 72, or undetermined according to the SAP.					
12.	Section 9.5, page 9-33.	Well inventory	The SAP mentions a well inventory and some field check of wells in comparison to the NM OSE WATERS database. Please include the Water Rights file number, point of diversion (POD) number and well diversion in the tabulated well information.					
13.	<u>Table 9-10</u> .	storativity values	Please add Storativity to Table 9-10 or create a separate table with such information. In the event Storativity values are not available for the Westwater Canyon member of the Morrison Formation, one consideration may be that the aquifer test duration should be long enough, if possible, to generate a drawdown response in an observation well.					
14.	Section 9.1, page 9-1.	Water level data available	Please note that around 2005 the Rio Algom Mining Company in the Ambrosia Lake area evaluated the USGS model (Kernodle, 1996) using more recent water level data since underground mining and leaching have ceased. The information may be useful in preparing a potentiometric map of the area.					
15.	Section 9.9, page 9-38.	Type of GW model?	The SAP mentions that a ground water model will be used to assess impacts. Please clarify the type of model(s) and whether the evaluation can address both local and regional scale impacts.					
16.	Appendix A., Pre-Test	Frequency of Background	Please clarify the time interval of water level measurements for wells prior to the aquifer tests and during the recovery phase. There is mention of hourly barometric readings without a					

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	Activities No. 3 & 4.	water level measurements		level measurements. For background transducer easurement interval (e.g., every 15 minutes) would better water levels.
17.	Appendix A, Constant Rate Test - Introduction; Constant Rate Test No. 13; General Test Guidelines No. 5; Pre-Test No. 9; General Test No. 2 & 8; Constant Rate Test No. 9 & last paragraph; Constant Rate Test, Tables A-1 & A-2; Pre-Test No. 5; and Constant Rate Test No. 8.	Aquifer test procedures	aquifer testing procedures: allow for test and before the constant rate to possibly weeks unit full recovery of without shutting down pump durin position and flow rate even when for tables; and collect more frequent to	nces expands upon for greater emphasis on the following all recovery of water levels to background after the step est; continue measurements during recovery phase for water levels is reached; refuel and maintain the generator g the test; record in the field log all adjustments to valve low checks result in no changes; append field log to data transducer data for early and late time recording because ag regional background trends and indicating equipment
18.	Appendix A, General Test No. 3; and Pre- Test No. 7.	Flow meter	•	for totalizing flow meter placement relative to discharge elbows, valves, diameter changes and the gate valve for

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19.	Appendix A, General Test No. 3; and Constant Rate No. 9.	Orifice meter	•	for correct use of orifice meter and manometer (or orifice eximity to plumbing transition and limitation for
20.	Appendix A, Pre- Test No. 5.	Transducers for water level measurement	tolerance of the device. This would maximum submergence, then having recovery bounce occurs, possibly ex- occur subtly if there is a regional rise	rs, particularly in the pumped well, to avoid exceeding the most likely be an issue with setting the transducer nearing pumping shut off in a transmissive aquifer, where exceeding original static water level vigorously. It might also be in water level over the duration of data collection, and extreme submergence. Transducers provide most accurate

data when operated in the middle of their pressure range.

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Item #	Section/Page (or general)	Topic	Comment
1.	General	Groundwater Permit requirements	Pursuant to the New Mexico Water Quality Control Commission Regulations (WQCC), Roca Honda Resources has submitted a Ground Water Discharge Permit Application for a proposed mine (DP-1717). The above referenced SAP is included as an attachment to this application and detailed review and comment will be an integral part of the technical review of the Discharge Permit Application. As NMED moves forward with the permitting process detailed comments on the SAP will be provided to the applicant and MMD will be copied on all correspondence related to this effort.
			Establishment of existing ground water quality within the permit area, and within areas down gradient of the proposed mine site and discharge locations is outlined within the SAP. The New Mexico Mining Act regulations require the collection of baseline data related to ground water. Detailed characterization of ground water relevant to establishment of baseline conditions will be required as part of the discharge permitting process. Pursuant to the WQCC Regulations, the numerical standards as set forth in Section 20.6.2.3103 are applicable unless the applicant makes a statistically valid demonstration that existing water quality exceeds one or more of those standards. Although this is not discussed within the SAP, this will also be addressed through the Discharge Permit process.
			The SAP mentions collection of additional data not provided within the SAP including, sampling and analysis of existing wells within the general permit area (much of which has been conducted) and installation of additional ground water monitoring wells to collect data from overlying water bearing formations from the target zone. No schedule is provided for installation and sampling of additional monitoring wells, nor

Review of Strathmore SAP Document for the Roca Honda Uranium Mine Site, Related to Section 9 Rev. April 2009 Reviewer: **Review Date: NMED GWQB comments** May 29, 2009 Agengy **NMED** Section/Page Topic Item # Comment (or general) are explicit monitoring well locations proposed. NMED will require a number of additional wells, to both characterize ground water quality within and down gradient of the proposed mine and discharge location(s), as well as for ongoing ground water monitoring during operations. This will also be addressed through the Discharge Permit process. As mentioned above, technical review of the Discharge Permit Application is ongoing, and MMD will be copied on detailed correspondence relative to the SAP and MMD Permit No. MK025RN.

Section 10 Radiological Survey

			Rev. April 2009
Agency: MMD			Review Date July 10, 2009
Item #	Section/Page (or general)	Topic	Comment
1.	General	Radon Survey	Note - The TLD radon 'survey' needs to be in Section 10 not Section 2.
2.	General	Survey details	The proposed mining activity may introduce elevated ionizing radiation levels to the proposed mining area. Ionizing radiation levels will be heavily scrutinized during the mining operation and when mining ceases. Therefore, there needs to be a traceable and defensible pre-mining data collection that characterizes pre-mining radiation levels, specifically gamma radiation levels.
3.	General	Data Quality Objectives	There needs to be a clearly stated Data Quality Objective. The objective needs to include the purpose of the survey and the 3 types of surveys needing to be performed. Collecting radiological data is a two-part process in which the intended data will be used in the years following mining commencement. The collected data is meant to ascertain 'background' or 'baseline' radiological levels prior to mining. The background data will be used as baseline values to determine whether there may be elevated gamma, as a result of RHR mining activities. Therefore, the survey should be composed of 3 types of measurements as described in (EPA et. al., 2000, MARSSIM Section 2.2 page 2-3) data collection; 1) the scanning (of which you have described), 2) soil sampling, and 3) direct measurement using the NaI scintillation counter.
4.	Section 10.3	Direct	As part of the survey RHR needs to include numerous direct radiological sampling (not to

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		Radiological Sampling	measurement' sampling is defined samples obtained by placing a deradioactivity level directly from the Furthermore, the guidance for the 2000, Section 6, Page 10) is as foll Direct measurements are taken by above the surface, taking a discretor 10 s, 60 s, etc.), and recording the practical field survey procedure for MARSSIM (EPA et. al., 2000, Section second count for expected low-ent not specified, and without this times.	e stationary count time provided by MARSSIM (EPA et. al., lows, y placing the instrument at the appropriate distance te measurement for a pre-determined time interval (e.g., e reading. A one minute integrated count technique is a	
5.	Section 10.4.2	Survey design	response to gamma-rays. It needs ground conditions at the time of su	sture, humidity, dust, will affect the Nal scintillation to be specified in your survey design the weather and urvey. There needs to be stated what weather conditions ing the survey to be postponed and resumed when more	
6.	Section 10.4.1 - general	Probe elevation	the collecting instrument (in this casurface or no more the 6 cm above	or baseline radiation levels of the soil and rock formations, ase the NaI scintillation probe) position should be at ground the ground surfaces (MARSSIM, EPA et. al., 2000, 6.4.2.1., be is not specified in the SAP, please specify the elevation	

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			of the probe relative to the ground surface, and assure that it will be placed within 6-cm of the surface
7.	Section 10	Shield on Nal Probe	In order to screen-out (as much as possible) gamma-ray <i>shine</i> the NaI probe needs to be shielded to assure you are obtaining gamma-ray readings at a specific location (minimally influenced by 'shine'). Additionally, the dimensions of the shield need to be stated, as different shield dimensions will screen and block different gamma-ray quantities. It is not stated whether the NaI probe is shielded or unshielded and the shield dimensions. The probe needs to be shielded in minimize shine and shield dimensions need to be specified.
8.	Section 10.4.2.1	Scan Area	RHR needs to include baseline more detailed radiological sample measurements (discrete 10-second counts) along the proposed and existing roads (along Highway 605 in Sections 16, 9, and 10). These baseline values are important in order to determine whether there will be U-bearing ore spilled on roadways as it is hauled off the site.
9.	Section 10.4.2.1	Check source	Per guidance from NUREG/CR 5879 - Section 5.3 - Instrument Calibration should be traceable to NIST (national institute of standards and technololgy) standards
10.	Section 10.4.2.1	Calibration	 RHR needs to include calibration process specifics. Such as; The instrument should have a 'response records' taken at the DOE calibration pads located on Highway 605 in order to derive the correlation between set counts/minute to an known ²²⁶Ra concentration (at each pad). This allows cross-checks when future surveys are is performed with different instruments. From MARSSIM (Section 6.5., Page 22) and NUREG (Section NUREG/CR 5849 - Section 5.3) Nal probes should be calibrated against a pressurized ion chamber (PIC). To assure different probes accurately measure radiation levels at different times

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			during mine operations the	above guidance needs to be followed.
11.	Section 10.4.2.2	Procedure	comply with the appropriate regularies Provide the procedures and make or professional standards and requirements.	ence that the listed procedures have been developed to llatory and peer reviewed standards and requirements. It is sure they comply with requirements given regulatory irements such as EPA QA/R-5 (EPA 1994), ASME (ISO 1987), (IAEA). 1971 or similar regulatory
12.				

References:

ASME NQA-1 (ASME 1989) - DOE Order 5700.6c (DOE 1991c)MIL-Q-9858A (DOD 1963) ISO 9000 (ISO 1987)

EPA. 1994. EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations. EPA QA/R-5, EPA, Draft Interim Final, Quality Assurance Management Staff, Washington, D.C.

EPA et. al., 2000. MARSSIM (EPA 402-R-97-016 REV1, NUREG-1575 REV1, DOE/EH 1624 REV1)

EPA 1980. *Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans*. QAMS-005/80, EPA, Washington, D.C. International Organization for Standardization (ISO). 1987.

IAEA. 1971. Handbook on Calibration of Radiation Protection Monitoring Instruments. IAEA, Technical Report Series 133, Vienna.

ISO 9000/ASQC Q9000 Series. American Society for Quality Control, Milwaukee, Wisconsin.

ISO 9000-1, Quality Management and Quality Assurance Standards - Guidelines for Selection and Use.

ISO 9001-1, Quality Systems - Model for Quality Assurance in Design/Development, Production, Installation and Servicing.

ISO 9002, Quality Systems - Model for Quality Assurance in Production and Installation, and Servicing.

ISO 9003, Quality Systems - Model for Quality Assurance in Final Inspection and Test.

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ISO 9004-1, Quality Management and Quality System Elements - Guidelines.

NUREG -1507, Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Contaminants and Field Conditions. June 1998.

Section 11 Historical Places and Cultural Properties

	Cultural Affairs		Rev. April 2009 Review Date: May 26, 2009
Item #	Section/Page	Topic	Comment
1.	Section 11	Sites on- or eligible for listing -on either the National Register of Historic Places and/or the State Register of Cultural Properties	According to 19.10.6.602 NMAC, a sampling and analysis plan shall include a list and accompanying map indicating all sites on or eligible for listing on either the National Registe of Historic Places and/or the State Register of Cultural Properties and known cemeteries and human burials within the proposed permit area, along with a description of effects the proposed mining operations may have on these sites and any proposed mitigation measures. Although such a list was not provided, to satisfy this requirement, two cultural resource surveports were submitted: one for the Cibola National Forest Land in Township 13 North, Range 8 West, Sections 9 and 10; and one for the State Trust land in Township 13 North, Range 8 West, Section 16. These surveys were conducted in 2006 although this office just received the reports as part of the sampling and analysis plan. In addition, Section II, Historic Places and Cultural Properties were submitted as part of the sampling and analysis plan.
2.	Section 11	Disparity between number of recorded arch sites survey and those listed in reported.	Section 11 does not indicate whether there are cultural properties listed on or eligible for listing on either the National Register of Historic Places and/or the State Registers of Cultural Properties. However, 148 archaeological sites were recorded with the permit area during the cultural resource surveys. Please note that this number was generated from a review of the reports, the section 11 sampling and analysis plan has a slightly different total. The cultural resource survey reports recommend that 74 archaeological sites are eligible for listing to the National Register and 62 sites are of undetermined eligibility for listing. The remainder of the sites is recommended as not eligible for listing.

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Item #	Section/Page	Topic	Comment
3.	Section 11	Mount Taylor TCP encompasses the a portion of the permit area	In addition to the above archaeological sites, the Mount Taylor Traditional Cultural Property (TCP) encompasses the portion of the permit area that includes the Cibola National Forest land. The Mount Taylor TCP was added to the State Register of Cultural Properties on June 14,2008 on a temporary basis and was determined to be eligible for listing to the National Register of Historic Places on March 14,2008. On June 5, 2009, a decision will be made on whether the Mount Taylor TCP will 'be listed on the State Register on a permanent basis. The portion of the permit area that lies on State Trust land in Township 13 North, Range 8 West, Section 16 is located just outside the boundaries of the TCP.
4.	Section 11	No discussion of proposed mitigation measures.	Section 11 also did not include a discussion of the potential effects or any proposed mitigation measures; however, Strathmore's April 13, 2009 letter responding to MMD comments on an earlier draft of the sampling and analysis plan states that the mitigation measures for any archaeological sites either eligible for listing or of undetermined eligibility for listing on either the National Register of Historic Places or State Register of Cultural Properties is avoidance. The Historic Preservation Division (HPD) concurs that avoidance is the best option at this time for activities that will be conducted as part of the sampling and analysis plan. However, it is not clear how Strathmore will ensure that archaeological sites will be avoided. Some of the quality-related work activities in the Field Quality Assurance Plan (FQAP) will include ground disturbance and thus there needs to be a plan in place to ensure avoidance and protection of all of the archaeological sites regardless of whether they are eligible or not. While maps are provided showing the location of each activity proposed under the sampling and analysis plan, to ensure avoidance and protection of sites it would be best to have a single map that shows the locations of archaeological sites in relation to each proposed activity.
5.	Section 11	Revise Section 11 that will	HPD would like to see a revised Section 11, one that accurately summarizes the number of

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		accurately summarize # of arch sites and relation to TCP.	archaeological sites that were recorded during the cultural resources surveys, identifies the presence of the Mt. Taylor TCP, provides a map showing the location of archaeological site relation to the proposed activities that will be carried out under the sampling and analysis plan, and provides a plan for avoidance of all archaeological sites. As you know, the map showing the locations of archaeological sites will have to be made confidential, and should only be provided to this office for review. Upon receipt of this revised plan we can review to information and determine if the proposed sampling and analysis plan will have an effect of cultural resources.	es in d the
6.	Section 11	Review needed by Cibola National Forest and State Land office.	Lastly, the Cibola National Forest and the State Land Office must be given the opportunity review and consult on the sampling and analysis plan. These agencies must also review the cultural resource survey reports and provide their determinations of eligibility for our concurrence. They may or may not agree with the archaeological consultant's determination addition to providing determinations of eligibility for each archaeological site, the Cibola National Forest must consider the effects on cultural resources under their jurisdiction pursuant to Section 106 of the National Historic Preservation Act.	e ons.

Review of Strathmore SAP Document for the Roca Honda Uranium Mine Site, Section 11 Rev. April 2009				
Agency: MMD			Review Date – May 20, 2009	
Item #	Section/Page	Topic	Comment	
1.	Section 11.1.1	Section 9-10	"The permit area was previously surveyed as part of a larger survey (Koczan and Doleman 1976)" – This is irrelevant to the SAP; the information goes in the actual reports for Sections 9-10 - delete this sentence (1 st paragraph)	
2.	Section 11.1.1	Section 9-10	"No cemeteries or human burials were found during the survey." – This is irrelevant to the SAP - delete this sentence (beginning of 2 nd paragraph)	
3.	Section 11.1.1	Section 9-10	"The report recommended that the "eligible" and "undetermined" sites be avoided while conducting <i>site</i> activities." – replace the word "site" with "ground-disturbing"	
4.				
5.	Section 11.1.2	Sections 16	"The field survey conducted on Section 16 identified <u>54 archaeological sites</u> ; 24 sites <u>are</u> recommended for nomination to the National Register of Historic Places." (make underlined additions)	
6.	Section 11.1.2	Section 16	"If avoidance is not feasible, then testing and <i>full recording</i> of the sites should be performed." Replace "full recording" with "possibly data recovery"	
7.	Section 11.3	List of Date to be Collected	"The entire permit area (1920 acres) will be surveyed for the presence of archaeological and cultural resources of significance" – Delete of significance; all sites are recorded; significance is determined later	
8.	Section 11.4	Methods of Collection	"The file searches were conducted using the legal descriptions of the project area and a 1.6-km radius surrounds the project area. The search areas included Sections 8, 9, 10, 15, 16, 17, 20, 21, and 22 in T13N, R8W. The results of these literature searches are summarized in the cultural resources survey reports for Sections 9 and 10, and Section 16 (LMASI 2006a and 2006b)." — Delete this whole paragraph — it's enough to know that a records review was conducted.	
9.	Section 11.4	Methods of Collection	Following the literature searches, LMASI field personnel conducted a walk- over an archaeological survey of the Roca Honda permit area, evaluating	

Review of Strathmore SAP Document for the Roca Honda Uranium Mine Site, Section 11					
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			existing archaeological sites identified from the literature searches and identifying and evaluating new sites not previously recorded. <u>Transects were spaced mapart (we need to know transect spacing. 15 m?)</u> Delete <i>a walk-over</i>		
10.	Section 11.4	Methods of Collection	"A site can be variable in size and content and range from a cluster of several objects or materials to large areas including structures with associated objects and features. In lieu of State of New Mexico guidelines regarding site definition standards, LMASI used the USFS Region 3 guidelines (NMCRIS No. 101072) to identify cultural sites. Under these guidelines, sites must be greater than fifty years old and have: 1. One or more features 2. One formal tool, if associated with other cultural material, or more than one formal tool 3. An occurrence of cultural material that contains: Three or more types of artifacts or material Two types of artifacts in a density of at least 10 items per 100 square miles Sampling and Analysis Plan Section 11.0- Historic Places and Cultural Properties Roca Honda Mine April 2009 Page 11-3 A single type of artifact in a density of at least 25 items per 100 square miles Isolated occurrences, on the other hand, are cultural remains that do not qualify as sites and generally consist of single artifacts or artifact scatters that		
			are of extremely low density and are widely dispersed, or represent a single activity. Redeposited material that lacks significant locational context may also be determined to be an isolated occurrence." – Delete all of this – not necessary in text		
11.	Section 11.4	Methods of	Last paragraph: "Sites were plotted on USGS quadrangle maps," – was this		

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		Collection	really done in the field? Usually GPS data is downloaded and plotted on a map back in the office		
12.	Section 11.4	Methods of Collection	In the text, "When isolated occurrences were encountered, they were recorded in the field and <i>then</i> their locations plotted on the USGS quadrangle map". Delete <i>then</i>		
13.	Section 11.5	Parameters	Add at beginning: all of Sections 10, 11, and 16 were surveyed.		
14.	Section 11.5	Parameters	"The field surveys <i>identified</i> <u>documented</u> 94 new archaeological sites and 160 isolated occurrences in Sections 9, 10, and 50 to 16." Delete italicized and add underlined.		
15.	Section 11.6	Maps	A map needs to be provided showing the mining footprint overlaid on a map of the archaeological sites. The map must include the "LA #" for each site.		
16.	Section 11.7	Sampling Frequency	"Cultural resources are located and identified during walkover surveys in the field. These surveys have been completed for purposes of a pre-mining assessment." Delete, and replace with One hundred percent of the project area was surveyed.		
17.	Section 11.8	Lab and Field QA	"The Contractor retained to perform the work is certified by the State of New Mexico to perform the historic and cultural surveys. These experienced professionals followed the accepted field procedures to conduct the surveys, mark and map the findings, and report the results." Delete, and replace with The archaeologists are permitted by the State of NM and the USFS (Cibola).		
18.	Section 11.9	Brief Discussion Supporting Proposal	"The objective of the cultural resources surveys are to locate all <u>archaeological</u> sites on or eligible for listing on either the NRHP and /or the State Register of Cultural Properties and known cemeteries and human burials within the proposed permit area" insert archaeological		

Section 12

	Rev. April 2009				
Agency: MMD			Review Date: July 10, 2009		
	Section/Page	Topic	Comment		
1.	General	Exploratory boreholes	An account of when exploration boreholes were drilled needs to be discussed in this section. This needs to include specifics, including, if possible the company that drilled these holes, not a general statement that boreholes were drilled between a certain time frame.		

Section 13 Prior Mining Operations

			Rev. April 2009	
Agency: MMD			Review Date	
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1.	Figure 13-1	Contour elevations	Please put elevations on the contour lines.	
2.	Figure 13-1	Observation well labels	Please label observation wells on the map and their respective elevation	ns.

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3.	Section 13.1	Exploratory boreholes	There needs to be a survey planned that; 1) indentifies all exploratory boreholes and provides there UTM NAD-83 GPS/GIS coordinates (these should be include in shape files provided in the report)in the proposed mining sections, 2) depth of these boreholes, 3) diameter of the exploratory boreholes, and 4) type of plugging.	
4.	Section 13.2	Mt. Taylor dewatering	It is acknowledged that Mt. Taylor mine has been in operation from the mid-1970s to early 1980s. The mine had extensive dewatering and discharge to San Mateo creek. As a surrogate to proposed RHR mining activities, the SAP should discuss the process by which RHR will acquire and analyze data related to dewatering activities and aquifer recovery at the Mr. Taylor Mine. The SAP should also discuss the process by which RHR will acquire and analyze data that would provide information related to the impacts of Mt. Taylor discharge water to surface stream water quality, and precipitates in the alluvium.	
5.	Section 13.2	Lee Ranch Mine shaft	The SAP should indicate that details of the Lee Ranch mine shaft which is located approximately 0.5 miles west of Section 16 will be addressed in the permit application. The following questions need to be addressed; 1) How deep is the shaft? 2) Is it open? 3) How is the shaft currently being used? 4) Does the shaft serve as a ground water sink? 5) Has the shaft construction affected water in the Dakota, Gallup, or Westwater Sandstones within the vicinity of the proposed mine operations (Sections 9, 10, and 16)? 6) Is the shaft is currently being used as a water well? 7) Is there going to be monitoring of this 'shaft/well'	