The highest exposure rates found on the Site were observed in a small area in the southern section, visible in Figure 11. Strata staff noted during our survey that this area exhibits unusual characteristics, perhaps including natural materials that may have concentrated uranium-bearing materials.

Other areas of note in Figure11 are discussed below:

- 1. The low density of scanning performed in an area in the SE corner of the site was the result of interactions with the property owner. This area was cut for hay during our site work; windrows were in place for drying, and access was discouraged by the owner. Data that were collected in that portion of the site indicate a likelihood of low exposure rates throughout the segment.
- 2. Collection of scan data in the area west of the reservoir was restricted by steep slopes, marshland and a stream. Similarly, access to the area east of the reservoir was restricted by marshland and streambed.
- 3. A section of land just south of the widest portion of the reservoir (the east end) is of interest, showing, upon careful inspection, low gamma exposure rates relative to adjacent sections immediately east and west. The lower-exposure-rate section is Bureau of Land Management (BLM) land, fenced and presumably untouched in terms of ranching operations for perhaps a century or more. Several other adjacent areas on site show notable differences in exposure rate, but without such apparent differences in their history or use characteristics.
- 4. The segment of the main roads on site, forming the base of the "Y" that includes CR 193, shows a significantly lower exposure rate than CR 193. Material used to construct that portion of the road must have origins different from material used to construct the upper two segments.
- 5. The narrow, elongated area of higher exposure rates seen slightly to the west of southcenter of Figure 11 may be associated with pre-ISR test project activities performed at this site by previous lease holders. The area adjacent to that location and to the east, said to have contained a pond associated with the historical activities at this site, does not show similar higher exposure rates.

3.2 Soil Radium-226 Concentrations: Correlation With Gamma Radiation Results

As discussed previously, soil samples were composited at 10 locations selected to cover the range of exposure rates found on site. Correlation locations are shown in Figures 12 and 13, and Table 1 summarizes the contract laboratory's soil analysis results, included in Appendix C. At most other pre-licensing uranium ISR sites where we have performed similar correlation work, the range of soil radium concentrations and related gamma radiation exposure rates was significantly larger than found at this site. Other sites also allowed the collection of soil samples at locations spread reasonably uniformly over the range of measured exposure rates. The Ross site offered few sample locations at higher exposure rates.







Figure 13. Correlation site locations overlaid on a gamma exposure rate plot

Soil Correlation ID	Ra-226 Soil Concentration (pCi/g)	Ra-226 Results Standard Deviation (+/-)	Gamma Radiation Exposure Rate (µR/hr)
ROSS-CORR1	1.15	0.37	10
ROSS-CORR2	1.96	0.48	10.7
ROSS-CORR3	1.97	0.36	10.2
ROSS-CORR4	1.81	0.43	11.9
ROSS-CORR5	14.3	1.9	19.1
ROSS-CORR6	1.18	0.32	9
ROSS-CORR7	0.93	0.25	9.8
ROSS-CORR8	1.60	0.40	12.5
ROSS-CORR9	1.44	0.41	10.7
ROSS-CORR10	1.53	0.42	12.6

Table 1. Radium-226 soil correlation plot data

A regression analysis performed on the 10 Ross site data pairs results in a power function relationship with an R^2 (coefficient of determination) of 0.80 (Figure 14). Figure 14 indicates that the relationship is significantly influenced by the single, high data point (ROSS-CORR5).



Figure 14. Radium-226 concentrations vs. gamma radiation exposure rates

Soil sample analysis results from ALS Laboratory identified no quality control flags or analytical problems.

Except for correlation sample ROSS-CORR5, the Ross site radium-226 soil concentration values are at or near typical natural background levels (~1 pCi/g). At these concentrations, gamma radiation exposure rates are driven by a combination of influences including radium-226 decay products, but are strongly influenced by thorium-232 and potassium-40 soil concentrations as well. In our experience scanning similar sites, a strong correlation of gamma exposure rate with radium-226 soil concentrations is unlikely until soil values approach 3 to 5 pCi/g radium-226,

where radium decay products begin to drive the exposure rate. (Note: neither the Ludlum 44-10 Nal detector nor the Bicron® micro-rem detector is sensitive to cosmic ray particulate radiation, although both will detect photon radiation associated with cosmic ray spallation events.) Although the Ross site correlation data do not provide a strong relationship between exposure rate and soil radium concentrations, the relationship is useable. For the purposes of this report, we have developed a radium-226 soil concentration estimate map (Figure 15), using the Figure 14 correlation equation.





3.3 Gamma Radiation Exposure Rate vs. Dose Rate: Correlation Results

As discussed earlier, at the same 10 by 10 m plots from which soil radium-226 vs. Nal gamma radiation exposure rate correlations were developed, a Bicron® micro-rem meter was used to record dose rates averaged over each plot. Results of the gamma radiation exposure and dose rate correlation analysis are presented in Figure 16 and Table 2.



Gamma Exposure Rate (µR/hr)

Figure 16. Bicron dose rates vs. Ludlum exposure rates

An R² value of 0.93 was calculated for the dose rate to gamma radiation exposure rate correlation. The equation developed in Figure 16 can be used to estimate dose rate values throughout the Site.

Soil Correlation ID	Bicron MicroRem Detector (dose rate)	Nal Detector 44-10/2350 (exp. rate)	Dose Rate (µrem/hr)	Exposure Rate (μR/hr)	Latitude	Longitude
ROSS-CORR1	SN#B9904	Rhino Left- MFG-2	5.2	10.0	44.58903	-104.95049
ROSS-CORR2	SN#B9904	Rhino Left- MFG-2	6.9	10.7	44.58188	-104.97256
ROSS-CORR3	SN#B9904	Rhino Left- MFG-2	6.6	10.2	44.56873	-104.96436
ROSS-CORR4	SN#B9904	Rhino Right- MFG-3	6.9	11.9	44.57143	-104.96085
ROSS-CORR5	SN#B9904	Rhino Right- MFG-3	12	19.1	44.56497	-104.95704
ROSS-CORR6	SN#B9904	Rhino Left- MFG-2	4.7	8.96	44.56205	-104.95012
ROSS-CORR7	SN#B9904	Rhino Right- MFG-3	5.0	9.78	44.57092	-104.95032
ROSS-CORR8	SN#B9904	Jeep Left - MFG-16	7.4	12.5	44.57669	-104.94704
ROSS-CORR9	SN#B9904	Jeep Left - MFG-16	5.4	10.7	44.57568	-104.94874
ROSS-CORR10	SN#B9904	Jeep Left - MFG-16	7.3	12.6	44.57862	-104.94298

Table 2. Dose rate vs. exposure rate at correlation plot locations

(Note: Nal detector ID numbers and soil plot latitude/longitude locations also apply to Table 1.)

Using the regression equation shown in Figure 16, gamma radiation exposure rate data were converted to produce a plot of site gamma radiation dose rate (Figure 17).



Figure 17. Ross site dose rate estimates (micro-rem/hr)

4.0 SUMMARY

Tetra Tech field engineers performed a survey of baseline gamma radiation exposure rates on the proposed Ross ISR Site. The survey developed GPS-located gamma radiation exposure rate data. Ludlum Nal detector vs. laboratory-analyzed soil radium correlation data allow estimation of soil radium concentrations over much of the Site. Ludlum sodium-iodide detector vs. Bicron® micro-rem detector cross-calibrations were also developed and used to map dose rate over the Site.

Tetra Tech's survey results highlight the following information:

- Based on the higher exposure rates observed on the CR 193 road segments passing through the northern portion of the site, we conclude that the base material used to develop CR 193 was probably imported from elsewhere. This is not true for the public road segment passing south from CR 193 and exiting the site at the south boundary. Eventual closure and license termination of the Ross ISR site will include evaluations to determine whether site roads were contaminated during uranium transportation activities. This report's record of pre-existing anomalous gamma radiation levels on CR 193 will therefore be important during site closure.
- 2. This report's measured radiation exposure rates are likely to be overestimates, given the response characteristics of sodium iodide detectors in the mixed-energy radiation field associated with the Ross site's predominantly low soil concentrations of gamma-emitting terrestrial radionuclides. The Bicron micro-rem meter vs. Ludlum Nal detector onsite correlation data provide data to correct for this effect.
- 3. While oil and gas extraction activities occurring on the Ross site can result in the concentration of naturally-occurring radioactive materials in, for example, pipe scale, no evidence of this effect was noted during evaluation of the field survey results.
- 4. Based on the data presented here, it is reasonable to conclude that the great majority of the Ross site exhibits relatively low near-surface radium-226 soil concentrations. The data provide a useful record of current site conditions in the context of eventual required evaluations.

These results are provided to meet the intent of specific pre-licensing regulatory guidance related to site radioactive material concentrations. The information should facilitate the eventual assessment of any onsite contamination resulting from ISR activities.

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APPENDIX A INSTRUMENTATION: FACTORY CALIBRATION SHEETS

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Detector # Detector # Detector # Detector # Detector # Detector # Units:0 - T Time Base1 - S Digital Readout	ad1 Gray2 rem3 Seconds1 Minutes2 REFERENCE CAL. POINT 400kcpm 40kcpm 40kcpm standards Organization stem conforms to the reconstruction stem conforms to the reconstru	Sv, 4 R,5 C/Kg? Hours INSTRUME RECEIVED <u>400 87</u> <u>400 4</u> <u>400 4</u> <u>400 4</u> <u>400 4</u> <u>400 4</u> <u>100 500 5000000000000000000000000000000</u>	Disintegrations,- Co NT INSTR METE (a) 44 (b) 44 (c) 44	Duntsβ - Ci/cm sq.9 - R R R AUMENT R R AUMENT R Go \mathfrak{g} 7 (\mathfrak{d}) feo \mathcal{L} \mathcal{L} ards traceable to the Na alues of natural physical N323-1978.] E551 720	7 / 1	O.00000E+00 See INSTRUME RECEIVED M 40 m 40 s and Technology, or to the state of Texas C 2 1131 78 Neutron Am-2	1.000000E+00	mentation, if ap UMENT READING* $4 \downarrow$ LO-1963
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Reviewed By:	ianopelor	Date	23-540-29
FORM C44C 10/15/2008	This certificate shall not be reproduced except in full, without the	written approval of Ludium N	Aeasurements, Inc.

<u>leba</u>

Ross ISR Project

Calibrated By:

22 - Sep - 09

Date

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Designer and Manufacturer of

Scientific and Industrial Instruments CERTIFICATE OF CALIBRATION LUDLUM MEASUREMENTS, INC. POST OFFICE BOX 810 PH. 325-235-5494

 FOST OFFICE BOX 810
 Ph. 325-235-5494

 501 OAK STREET
 FAX NO. 325-235-4672

 SWEETWATER, TEXAS
 79556, U.S.A.

CUSTOMER		H MFG, INC.				ORDER NO	20150942/	348450
Mfg.	Ludlum Measu	rements, Inc.	Model	2350	-1	Serial No	120630	
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F/S Res	p. check	Reset ch	eck	Vindov	w Operation	t) 4.4 VDC		
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Data Log	g check	V Overload	l check	Scaler	Readout check	Dial R	atio <u>100 =</u>	<i>10</i> mV
Calibrate	d in accordance w	vith LMI SOP 14.8 re	ev 12/05/89.	Calibrat	ed in accordance w	ith LMI SOP 14.9 rev	52/07/97.	
MV F	Readout (2 points)	Ref./Inst.	500	1 498	V Ref./Inst	2000	_'7	<u></u> ۷
COMMENT	TS: Firmwar	re: 37122N21		400/				
I/O Firmware Calibrated w	e# 37123n04 /ith a 39" cable.	Resolu	ition for Cs-137	= 12%	-			
Gamma Calibration	n: GM detectors positione	ed perpendicular to source e	xcept for M 44-9 in which	the front of probe faces so	ource.	Dead Time	Calibration	Linearity
	Model	Serial #	Voltage	Threshold	Time Base	Correction Factor	Constant	±10%*
Detector # 1 l	LMI44-10	PR135847	1000	100	4 / 2	1.603268E-05	5.430998E+10	
Detector # 2	LMI44-10	PR135847	1000	100	7 / 1	1.603268E-05	1.000000E+00	
Detector # 3	CS137PK	662KEV	676	642	7/1	0.000000E+00	1.000000E+00	
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Detector #					cm sa 9 Ba/cm sa			
Units: 0 ra Time Base: 0 S	ad, 1 Gray, 2 rem Seconds, 1 Minutes,	2 Hours	ny, o - Disintegration		sinoqi, o Equinoqi	* See atta	ached detector documentat	ion, if applicable.
	REFERENCE	INSTRUMEN	IT INSTR		REFERENCE			
Digital Readout	CAL. POINT	RECEIVED	107 399	RREADING	400 /	om 40	<u>6</u> <u>4</u>	$\rightarrow \bigcirc$
Reauout	HOK CP	3790	5 37	90 2	40		5 4	<u> </u>
	<u>4K</u>	378	<u> </u>	98 (elibration facilities of	
Ludium Measureme other International 3 The calibration syst	ents, Inc. certifies that th Standards Organization tem conforms to the req	ne above instrument has be members, or have been d uirements of ANSI/NCSL 2	een calibrated by stand erived from accepted v 540-1-1994 and ANSI	ards traceable to the Nati alues of natural physical N323-1978.	constants or have been de	s and Technology, or to the call erived by the ratio type of call State of Texas Ca	bration techniques. Alibration License No. I	LO-1963
Reference Ir	nstruments and	d/or Sources: Cs-	137 Gamma S/N		73410		81 059 28	60646
1162] G112 📋 M565	5105 T1008	T879 E552	E551 720	734 1616	70897Ne	utron Am-241 Be S/N	-304
Alpha	S/N	F0000	_ 📋 Beta S/N			Other <u>Am</u>	83990502	Men .
🖌 m 500	U 5/N		$- \rho$					
Calibrated By:		ha	rles	Aust	2 Date	15 Apr		
Reviewed By:	- the	my Han			Date	124 pr 10		
FORM C44A 03	3/11/2010 Pa	age <u>1</u> of <u>3</u>	This	certificate shall not be rep	produced except in full, wit	hout the written approval of L	udium Measurements, Inc	D.

CUSTOMER Designer and Manufa of Scientific and Indus Instruments	trial CERTIFICATE OF	CALIBRATION	LUDLUM MEASUREMENTS, INC. POST OFFICE BOX 810 PH. 325-235-5494 501 OAK STREET FAX NO. 325-235-4672 SWEETWATER, TEXAS 79556, U.S.A. ORDER NO. 20141568/342736 20141568/342736
Mfg. <u>Ludlarn Measurem</u>	enis, inc. mModel	MICRO REM	Serial No <i>В 990 У</i>
Mfg.	Model		Serial No
Cal. Date <u>30-Sep-C</u>	9 Cal Due Date	<u>30-Sep-10</u> Cal. li	nterval <u>1 Year</u> Meterface <u>0-200µrem</u>
Check mark 🗹 applies to applic	able instr. and/or detector IAW mfg	g. spec. T. <u>74</u> °F	RH53_% Alt697.8_mm Hg
[] New Instrument Instrume	nt Received 🔲 Within Toler. +-109	% 🗗 10-20% 🗌 Out of Tol.	🗌 Requiring Repair 🔲 Other-See comments
 ✓ Mechanical ck. F/S Resp. ck Audio ck. 	 Meter Zeroed Reset ck. Alarm Setting ck. 	 □ Background Subtract □ Window Operation ☑ Batt. ck. (Min. Volt) 	 Input Sens. Linearity Geotropism VDC
Calibrated in accordance w	ith LMI SOP 14.8 rev 12/05/89.	Calibrated in accordan	ce with LMI SOP 14.9 rev 02/07/97.
Instrument Volt Set	V Input Sens mV Det	. Oper V at	mV Dial Ratio
HV Readout (2 points)	Ref./Inst/	V Ref./In	st / V

COMMENTS:

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.

			REFERENCE		INSTRUMENT REC'D		INSTRU	MENT	
	RANGE/MULTIPLI	ER	CAL. POINT	"As	s found read	DING"	METER	READING*	
	x1000	150	mR/hr		150			150	
	x1000	50	ImR/hr	·····	45			45	
	x10015 mR/hr			145			150		
	x100	5	mR/hr		- 45			50	
	x10	150	0 µR/hr		130			150	
	x10	50	0 µR/hr		40			50	· ·
	x1	15	0 µR/hr		150		/	150	
	x1		<u>) µR/hr</u>		100			100	
	x0.1	1	5 µR/hr		150			150	
	x0.1		·			^	·		
	*Uncertainty within $\pm 10\%$	C.F. within $\pm 20\%$				F	ange(s) (Calibrated Electr	onically
	REFERENCE	INSTRUMENT	INSTRUMENT		REFERENCE	INSTR	JMENT	INSTRUM	ENT
	CAL. POINT	RECEIVED	METER READING*		CAL, POINT	RECE	VED	METER RE	ADING*
Digital				Log					
Readout				Scăle					
	the first constant, the control data and the first of the first of the second second								
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Ludium Meas other Interna The calibratic	surements, Inc. certifies that the tional Standards Organization (on system conforms to the reau	above instrument h members, or have be irements of ANSI/NC:	as been calibrated by standards t sen derived from accepted value SI, 7540-1-1994 and ANSI N323-197	raceable to t s of natural p 8	the National Institute of hysical constants or ho	f Standards and ave been derive State (Technology, ed by the ratio	or to the calibration type of calibration t libration License N	facilities of echniques.
Peferen	ce instruments and/		\$304/1122 VI131	781	050 280				5. 20 1700
Cs-137 Gc	imma S/N 1162 G	112 M565	5105 T1008 T879	E552	E551 720] 734 🔲 16 ⁻	6	Neutron Am-241 E	ie S/N T-304
] Alp	bha S/N		Beta S/N		•] Other 🤰	oluci	# 356/282	A-35
[] m (500 S/N		Oscilloscope S/N] Multimet	ər S/N		
Calibrat	ed By: Werd	W WÌ	Muni		Date	30. Se	p. 0	9	
Reviewe	ed By: Rhow	Hain			Date	30 Sup	09		
This certific FORM C22	ate shall not be reproduced e: A 10/15/2008	xcept in full, without t	he written approval of Ludium Me	asurements,	inc. AC Inst Only	Passed Failed	Dielectric (Hi-Pot) and Contir	uity Test
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APPENDIX B LABORATORY ANALYSIS RESULTS



Environmental Division Fort Collins, Colorado



Gamma Spectroscopy Case Narrative

Tetra Tech MM, Inc.

Work Order Number: 1007308

- 1. The following report consists of analytical results for 10 soil samples received by ALS on 07/27/10.
- 2. These samples were prepared according to procedure SOP739R9. The samples were sealed in steel cans on 07/31/10 and stored for at least 21 days to allow ²²²Rn to approach secular equilibrium with its parent, ²²⁶Ra. The degree of in-growth achieved prior to analysis on 08/21/10 is at least 97.8%. Conservatively assuming a radon emanation efficiency of approximately 50%, the effective radon progeny in-growth for these samples would be greater than 98.9%.
- 3. The samples were analyzed for the presence of gamma emitting radionuclides according to procedure SOP713R11. The analyses were completed on 08/21/10.
- 4. The results for these samples are reported on a "Dry Weight" basis in units of pCi/gram.
- 5. ALS has observed a reproducible low bias in ²²⁶Ra results (about -30% for the geometry in question) when using a mixed gamma source for the calibration of HPGe detectors for solid samples. This bias is eliminated by calibration using a NIST traceable ²²⁶Ra source in the same geometry and configuration as the samples.
- 6. The library used for calibration and analysis employs multiple peaks for the ²²⁶Ra progeny, ²¹⁴Pb (352 and 295 keV) and ²¹⁴Bi (609 and 1120 keV). Using these peaks avoids the use of the problematic ²²⁶Ra photo-peak at 186 keV, which suffers from poorly resolvable interference from ²³⁵U at the same energy. Final activity results for ²²⁶Ra are calculated, using the uncertainty-weighted mean of the activities for the four photo-peaks, by the Seeker gamma spectroscopy software assuming secular equilibrium.
- 7. There are cases where the sample density is less than the associated calibration standard density. Cases that exceed the limit of +/- 15% of the density of the calibration standard are flagged with a 'G', denoting a significant density difference between the sample and calibration standard. Consequently, the results may be biased high for the flagged results in this work order. If requested, ALS can perform a transmission spike in order to estimate a magnitude of this bias. The results are reported without further qualification.



8. No further problems were encountered with either the client samples or the associated quality control samples. All remaining quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Linda Arend Radiochemistry Primar Data Reviewer

Radiochemistry Final Data Reviewer

08/27/10 Date

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 1007308 Client Name: Tetra Tech MM, Inc. Client Project Name: Client Project Number: Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Ross Corr 1	1007308-1		SOIL	22-Jul-10	
Ross Corr 2	1007308-2		SOIL	22-Jul-10	
Ross Corr 3	1007308-3		SOIL	22-Jul-10	
Ross Corr 4	1007308-4		SOIL	22-Jul-10	
Ross Corr 5	1007308-5		SOIL	22-Jul-10	
Ross Corr 6	1007308-6		SOIL	22-Jul-10	
Ross Corr 7	1007308-7		SOIL	22-Jul-10	
Ross Corr 8	1007308-8		SOIL	22-Jul-10	
Ross Corr 9	1007308-9		SOIL	22-Jul-10	
Ross Corr 10	1007308-10		SOIL	22-Jul-10	

Page 1 of 1

Page

COC number (for client tracking)

____ of ___

ALS Laboratory Group

Failure to complete all sections of this form may delay analysis. Please fill in this form LEOIBLY. By the use of this form the user acknowledges and agrees with the terms and conditions as specified on the back of Choin of Custody

For labilities only increase only increasing international events in the case only	CODE OR NAM	AE OF ANALYSIS (See Instruction 9)	CLIENT CONTACT AND REPORTING	INFORMATION (See Instruction 1)		
SHIPMENT INFORMATION			= a Company Name Tetis Tech FT	. (all 1 A J		
		Tais Tais	E E Contact Name Kobar TMLyLT			
e e e e e e e e e e e e e e e e e e e		(Internal Andrews)	Change of contacts No V Yes	If yes, we will contact you		
			Contact Phone 7 7 0 123 940	<u> </u>		
CONTACT INFORMATION						
			3501 Buldration Way	Shite ice FI CHINN SUS AS		
customer.support@sisglobal.com			Email 1 m 2 yer x @ minh	spring in m		
www.ategrobal.eu			Email 2 1: phi T. Mayer C T	etisteche com		
PROJECT INFORMATION (See Instructions 3-7)	5 - 3 + -		INVOICE ADDRESS - If other than re	porting adress (See instruction 2)		
Project name	エー・イヨ		Company Name			
Quote number			Contact Name			
Purchase Order (PO)	<u>y</u> <u>t</u> z :		Change of contacts * Nc Yes	If yes, we will contact you		
Sampler ID, sample location	5 7 12		Address			
Seecial archiving conditions			Email			
Express handling? No Standard delivery (7-10 working days)			-			
Yes Express Due date:						
(Eranoas fires will apply see jerrits and conditivity)			MATRIX SANPLING AND CONTAINER INFO			
SAMPLE IDENTIFICATION (See Instruction 8)	CROSS THE REQU	UESTED ANALYSES (See Instruction	(a) Date Time Tot bottles	REMARKS (See instruction 11-15)		
	-		Sect.			
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the mayer	Sealed	Hamen cumit 7/27	HIDILIS			
Client's date and time of completion	Breken	Shipmant condition	Arriving Temperatue	Optional information		
22 July 20,0	Not available			Hours over 8°C		

a) DW (Onniong water), SW (Surface water), GW (Ground water), WW (Waste water), BV (Industrual water). 80 (Soil), SL (Studge) WA (Waste). SE (Sodiment). OS (Other solid material), EM (Emission). IM (Immission, Ambient air)

b) F (Flammable), P (Poisonous) I (Infections) CR (Corrosive) E (Explosive) CN (Contaminated)

of 19

ALS Labora	atory Grou	ip - Fort C	Collins
CONDITION OF SAMPLE UPON RECEIPT FORM			
Client: IEIRA Workorder No: /00	7308		
Project Manager: MP-W Initials: LAS	Date:	7/27	10
1. Does this project require any special handling in addition to standard Paragon procedures?		YES	NO
2. Are custody seals on shipping containers intact?	NONE	YES	NO
3. Are Custody seals on sample containers intact?	NONE	YES	NO ·
4. Is there a COC (Chain-of-Custody) present or other representative documents?		YES	NO
s. Are the COC and bottle labels complete and legible?		YES	NO
4. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		YBS	NÖ
7. Were airbills / shipping documents present and/or removable?	DROP OFF	YES	NO
s. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	MA	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	(N/A)	YES	NO
10. Is there sufficient sample for the requested analyses?	, C	TES	NO
11. Were all samples placed in the proper containers for the requested analyses?		(B)	NO
12. Are all samples within holding times for the requested analyses?		TE	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: < green pea > green pea	N/A	YES	NO
^{15.} Do perchlorate LCMS-MS samples have headspace? (at least 1/3 of container required)	XA	YES	NO
16. Were samples checked for and free from the presence of residual chlorine? (Applicable when PM has indicated samples are from a chlorinated water source; note if field preservation with sodium thiosulfate was not observed.)	NA	YES	NO
17. Were the samples shipped on ice?		YES	(NO
18. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4	ONLY	YES	NO
Cooler #:			
Temperature (°C): Amb			·
No. of custody scals on cooler:			
Burrow/ External µR/hr reading: N/A			
htemation Background µR/hr reading:			
Were external µR/hr readings ≤ two times background and within DOT acceptance oritoria? YES / NO/ NA (If no, se	a Form 008.))	
Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, I	EXCEPT #1	AND #16	
· · · · · · · · · · · · · · · · · · ·			·
		•	
If applicable, was the client contacted? YES / NO / NA Ontact:	Date/Ti	me:	
Project Manager Signature / Date:		N	
*IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002			1
Form 201r22.xis (6/1/09)		Page 1	° 5 of 19

Method Blank Results

Lab Name: ALS Environmental -- FC Work Order Number: 1007308

Client Name: Tetra Tech MM, Inc. ClientProject ID:

Lab ID:	GS100801-1MB
---------	--------------

Library: RA226.LIB

Sample Matrix: SOIL Prep SOP: PAI 739 Rev 10 Date Collected: 31-Jul-10 Date Prepared: 31-Jul-10 Date Analyzed: 21-Aug-10 Prep Batch: GS100801-1 QCBatchID: GS100801-1-1 Run ID: GS100801-1A Count Time: 30 minutes

Abbreviations:

TPU - Total Propagated Uncertainty

BDL - Below Detection Limit

MDC - Minimum Detectable Concentration

Final Aliquot: 134 g Result Units: pCi/g File Name: 101395d01

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.05 +/- 0.25	0.43	1	U

Comments:

Qualifiers/Flags:

- U $\,$ Result is less than the sample specific MDC or less than the associated TPU $\,$
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- M Requested MDC not met.
- B Analyte concentration greater than MDC.
- B3 Analyte concentration greater than MDC but less than Requested MDC.

Data Package ID: GSS1007308-1

Date Printed: Friday, August 27, 2010

ALS Environmental -- FC

LIMS Version: 6.395A

Page 1 of 1

Gamma Spectroscopy Results

PAI 713 Rev 11

Laboratory Control Sample(s)

Lab Name: ALS Environmental -- FC

Work Order Number: 1007308 Client Name: Tetra Tech MM, Inc. ClientProject ID:

Lab ID:	GS100801-1LCS
---------	---------------

Library: RA226.LIB

Sample Matrix: SOIL Prep SOP: PAI 739 Rev 10 Date Collected: 31-Jul-10 Date Prepared: 31-Jul-10 Date Analyzed: 21-Aug-10 Prep Batch: GS100801-1 QCBatchID: GS100801-1-1 Run ID: GS100801-1A Count Time: 30 minutes Final Aliquot: 215 g Result Units: pCi/g File Name: 101465d04

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13982-63-3	Ra-226	458 +/- 54	3	470	97.5	85 - 115	P,M3

Comments:

Qualifiers/Flags: Abbreviations: U - Result is less than the sample specific MDC or less than the associated TPU TPU - Total Propagated Uncertainty LT - Result is less than Requested MDC, greater than sample specific MDC. MDC - Minimum Detectable Concentration Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed. Y2 - Chemical Yield outside default limits. SQ - Spectral quality prevents accurate quantitation. L - LCS Recovery below lower control limit. SI - Nuclide identification and/or quantitation is tentative. H - LCS Recovery above upper control limit. TI - Nuclide identification is tentative. P - LCS Recovery within control limits. R - Nuclide has exceeded 8 halflives M - The requested MDC was not met. M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC. Data Package ID: GSS1007308-1

Date Printed: Friday, August 27, 2010

ALS Environmental -- FC LIMS Version: 6.395A Page 1 of 1

Gamma Spectroscopy Results

PAI 713 Rev 11 Duplicate Sample Results (DER)

Lab Name: ALS Environmental -- FC

Work Order Number: 1007308 Client Name: Tetra Tech MM, Inc. ClientProject ID:

Ra-226

1.53 +/- 0.42

Field ID: Ro Lab ID: 10 Libr	DSS Corr 10 007308-10DUP rary: RA226.LIB	Sample Matrix: SOIL Prep SOP: PAI 739 Rev 10 Date Collected: 22-Jul-10 Date Prepared: 31-Jul-10 Date Analyzed: 21-Aug-10	Prep Batch: GS100801-1 QCBatchID: GS100801-1- Run ID: GS100801-1A Count Time: 30 minutes Report Basis: Dry Weight	Final Aliquot: 138 g Prep Basis: Dry Weig Moisture(%): NA Result Units: pCi/g File Name: 101212d(ht 08	
CASNO	Analyte	Sample Result +/- 2 s TPU MDC	Flags Result +/- 2 s	Duplicate s TPU MDC Flags	DER	DER Lim

G

1.71 +/- 0.40

0.74

Comments:

13982-63-3

Duplicate Qualifiers/Flags:		Abbreviations:
U - Result is less than the sample specific MDC.		TPU - Total Propagated Uncertainty
$\ensuremath{Y1}$ - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.		DER - Duplicate Error Ratio
Y2 - Chemical Yield outside default limits.		BDL - Below Detection Limit
W - DER is greater than Warning Limit of 1.42		NP. Not Perperted
D - DER is greater than Control Limit of 2.13		NK - Not Reported
LT - Result is less than Request MDC, greater than sample specific MDC		
M - Requested MDC not met.		
M3 - The requested MDC was not met, but the reported	SQ - Spectral quality prevents accurate quantitation.	
Activity is greater than the reported MDC.	SI - Nuclide identification and/or quantitation is tentative.	
	TL- Nuclide identification is tentative	
LCS Netriv Spike Bessyop within control limits		
P - LCS, Maurix Spike Recovery within control limits.	R - Nuclide has exceeded 8 halfilves.	
N - Matrix Spike Recovery outside control limits	G - Sample density differs by more than 15% of LCS density.	

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0.63

0.303

G

2.13

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1007308 Client Name: Tetra Tech MM, Inc. ClientProject ID:

Field ID: Ross of Lab ID: 100730 Library	Corr 1 08-1 : RA226.LIB	Sample Matrix: SOIL Prep SOP: PAI 739 Rev 10 Date Collected: 22-Jul-10 Date Prepared: 31-Jul-10 Date Active 21 Aug 10	Prep Batch: GS10 QCBatchID: GS10 Run ID: GS10 Count Time: 30 min	0801-1 0801-1-1 0801-1A nutes (sight	Final Aliquo Prep Basi Moisture(% Result Unit Eilo Nam	s: 138 g s: Dry Weight ₀): NA s: pCi/g c: 101616d03
		Date Analyzeu. 21-Aug-10	Report Basis. Dry W	veignt		e. 101010003
CASNO	Toward Nuclida					Lah Ovalifian

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.15 +/- 0.37	0.70	1	G

Comments:

Qualifiers/Flags:

U $\,$ - Result is less than the sample specific MDC or less than the associated TPU $\,$

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

- M3 The requested MDC was not met, but the reported
- activity is greater than the reported MDC. M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

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SQ - Spectral quality prevents accurate quantitation. SI - Nuclide identification and/or quantitation is tentative.

G - Sample density differs by more than 15% of LCS density.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

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Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1007308 Client Name: Tetra Tech MM, Inc. ClientProject ID:

Field ID: Ross Corr 2 Lab ID: 1007308-2	Sample Matrix: SOIL	Prep Batch: GS100801-1	Final Aliquot: 109 g
	Prep SOP: PAI 739 Rev 10	QCBatchID: GS100801-1-1	Prep Basis: Dry Weight
	Date Collected: 22-Jul-10	Run ID: GS100801-1A	Moisture(%): NA
Library: RA226.LIB	Date Prepared: 31-Jul-10	Count Time: 30 minutes	Result Units: pCi/g
	Date Analyzed: 21-Aug-10	Report Basis: Dry Weight	File Name: 101210d08

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.96 +/- 0.48	0.69	1	G

Comments:

Qualifiers/Flags:

 ${\sf U}~$ - Result is less than the sample specific MDC or less than the associated TPU

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

- M3 The requested MDC was not met, but the reported
- activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

- TPU Total Propagated Uncertainty
- MDC Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1007308-1

Date Printed: Friday, August 27, 2010

ALS Environmental -- FC LIMS Version: 6.395A

SQ - Spectral quality prevents accurate quantitation. SI - Nuclide identification and/or quantitation is tentative.

G - Sample density differs by more than 15% of LCS density.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1007308 Client Name: Tetra Tech MM, Inc. ClientProject ID:

Field ID:Ross Corr 3Lab ID:1007308-3	Sample Matrix: SOIL	Prep Batch: GS100801-1	Final Aliquot: 130 g
	Prep SOP: PAI 739 Rev 10	QCBatchID: GS100801-1-1	Prep Basis: Dry Weight
	Date Collected: 22-Jul-10	Run ID: GS100801-1A	Moisture(%): NA
Library: RA226.LIB	Date Prepared: 31-Jul-10	Count Time: 30 minutes	Result Units: pCi/g
	Date Analyzed: 21-Aug-10	Report Basis: Dry Weight	File Name: 101393d01

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.97 +/- 0.36	0.53	1	G

Comments:

Qualifiers/Flags:

 ${\sf U}~$ - Result is less than the sample specific MDC or less than the associated TPU

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported

activity is greater than the reported MDC. M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1007308-1

Date Printed: Friday, August 27, 2010

ALS Environmental -- FC LIMS Version: 6.395A

SQ - Spectral quality prevents accurate quantitation. SI - Nuclide identification and/or quantitation is tentative.

G - Sample density differs by more than 15% of LCS density.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

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Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1007308 Client Name: Tetra Tech MM, Inc. ClientProject ID:

Field ID:Ross Corr 4Lab ID:1007308-4	Sample Matrix: SOIL Prep SOP: PAI 739 Rev 10 Date Collected: 22-Jul-10	nple Matrix: SOIL Prep Batch: GS100801-1 Prep SOP: PAI 739 Rev 10 QCBatchID: GS100801-1-1 Collected: 22-Jul-10 Run ID: GS100801-1A	
Library: RA226.LIB	Date Prepared: 31-Jul-10 Date Analyzed: 21-Aug-10	Count Time: 30 minutes Report Basis: Dry Weight	Result Units: pCi/g File Name: 101463d04

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.81 +/- 0.43	0.67	1	G

Comments:

Qualifiers/Flags:

 ${\sf U}~$ - Result is less than the sample specific MDC or less than the associated TPU

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported

activity is greater than the reported MDC. M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1007308-1

Date Printed: Friday, August 27, 2010

ALS Environmental -- FC LIMS Version: 6.395A

SQ - Spectral quality prevents accurate quantitation. SI - Nuclide identification and/or quantitation is tentative.

G - Sample density differs by more than 15% of LCS density.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

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Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1007308 Client Name: Tetra Tech MM, Inc. ClientProject ID:

Field ID: Ross Corr 5 Lab ID: 1007308-5 Library: RA226.LIB		Sample Matrix: SOIL Prep SOP: PAI 739 Rev 10 Date Collected: 22-Jul-10	Prep Batch: GS100801-1 QCBatchID: GS100801-1-1 Run ID: GS100801-1A	Final Aliquot: 136 g Prep Basis: Dry Weight Moisture(%): NA Result Units: pCi/g File Name: 101617d03	
		Date Prepared: 31-Jul-10 Date Analyzed: 21-Aug-10	Count Time: 30 minutes Report Basis: Dry Weight		
CASNO			мро	Description	Lah Qualifiar

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	14.3 +/- 1.9	1.0	1	G

Comments:

Qualifiers/Flags:

 ${\sf U}~$ - Result is less than the sample specific MDC or less than the associated TPU

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported

activity is greater than the reported MDC. M - The requested MDC was not met.

IN - The requested MDC was not in

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1007308-1

Date Printed: Friday, August 27, 2010

ALS Environmental -- FC LIMS Version: 6.395A

SQ - Spectral quality prevents accurate quantitation. SI - Nuclide identification and/or quantitation is tentative.

G - Sample density differs by more than 15% of LCS density.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

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Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1007308 Client Name: Tetra Tech MM, Inc. ClientProject ID:

Field ID:Ross Corr 6Lab ID:1007308-6	Sample Matrix: SOIL Prep Batch: GS10080 Prep SOP: PAI 739 Rev 10 Date Collected: 22-Jul-10 Run ID: GS10080		Final Aliquot: 142 g Prep Basis: Dry Weight Moisture(%): NA
Library: RA226.LIB	Date Prepared: 31-Jul-10 Date Analyzed: 21-Aug-10	Count Time: 30 minutes Report Basis: Dry Weight	Result Units: pCi/g File Name: 101211d08

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.18 +/- 0.32	0.54	1	G

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

- M3 The requested MDC was not met, but the reported
- activity is greater than the reported MDC. M - The requested MDC was not met.

... The requested WDC was 10

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1007308-1

Date Printed: Friday, August 27, 2010

ALS Environmental -- FC LIMS Version: 6.395A

SQ - Spectral quality prevents accurate quantitation. SI - Nuclide identification and/or quantitation is tentative.

G - Sample density differs by more than 15% of LCS density.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

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Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1007308 Client Name: Tetra Tech MM, Inc. ClientProject ID:

Field ID:Ross Corr 7Lab ID:1007308-7	Sample Matrix: SOIL	Prep Batch: GS100801-1	Final Aliquot: 140 g
	Prep SOP: PAI 739 Rev 10	QCBatchID: GS100801-1-1	Prep Basis: Dry Weight
	Date Collected: 22-Jul-10	Run ID: GS100801-1A	Moisture(%): NA
Library: RA226.LIB	Date Prepared: 31-Jul-10	Count Time: 30 minutes	Result Units: pCi/g
	Date Analyzed: 21-Aug-10	Report Basis: Dry Weight	File Name: 101394d01

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.93 +/- 0.25	0.47	1	LT,G

Comments:

Qualifiers/Flags:

 ${\sf U}~$ - Result is less than the sample specific MDC or less than the associated TPU

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

- M3 The requested MDC was not met, but the reported
- activity is greater than the reported MDC. M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1007308-1

Date Printed: Friday, August 27, 2010

ALS Environmental -- FC LIMS Version: 6.395A

SQ - Spectral quality prevents accurate quantitation. SI - Nuclide identification and/or quantitation is tentative.

G - Sample density differs by more than 15% of LCS density.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

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Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1007308 Client Name: Tetra Tech MM, Inc. ClientProject ID:

Field ID: Ross Corr 8 Lab ID: 1007308-8	Sample Matrix: SOIL	Prep Batch: GS100801-1	Final Aliquot: 135 g
	Prep SOP: PAI 739 Rev 10	QCBatchID: GS100801-1-1	Prep Basis: Dry Weight
	Date Collected: 22-Jul-10	Run ID: GS100801-1A	Moisture(%): NA
Library: RA226.LIB	Date Prepared: 31-Jul-10	Count Time: 30 minutes	Result Units: pCi/g
	Date Analyzed: 21-Aug-10	Report Basis: Dry Weight	File Name: 101464d04

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.60 +/- 0.40	0.62	1	G

Comments:

Qualifiers/Flags:

U $\,$ - Result is less than the sample specific MDC or less than the associated TPU $\,$

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

- M3 The requested MDC was not met, but the reported
- activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1007308-1

Date Printed: Friday, August 27, 2010

ALS Environmental -- FC LIMS Version: 6.395A

SQ - Spectral quality prevents accurate quantitation. SI - Nuclide identification and/or quantitation is tentative.

G - Sample density differs by more than 15% of LCS density.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1007308 Client Name: Tetra Tech MM, Inc. ClientProject ID:

Field ID: Ross Corr 9 Lab ID: 1007308-9	Sample Matrix: SOIL	Prep Batch: GS100801-1	Final Aliquot: 141 g
	Prep SOP: PAI 739 Rev 10	QCBatchID: GS100801-1-1	Prep Basis: Dry Weight
	Date Collected: 22-Jul-10	Run ID: GS100801-1A	Moisture(%): NA
Library: RA226.LIB	Date Prepared: 31-Jul-10	Count Time: 30 minutes	Result Units: pCi/g
	Date Analyzed: 21-Aug-10	Report Basis: Dry Weight	File Name: 101079d10

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.44 +/- 0.41	0.72	1	G

Comments:

Qualifiers/Flags:

U $\,$ - Result is less than the sample specific MDC or less than the associated TPU $\,$

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported

activity is greater than the reported MDC. M - The requested MDC was not met.

in the requested inde was in

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1007308-1

Date Printed: Friday, August 27, 2010

ALS Environmental -- FC LIMS Version: 6.395A

SQ - Spectral quality prevents accurate quantitation. SI - Nuclide identification and/or quantitation is tentative.

G - Sample density differs by more than 15% of LCS density.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

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Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1007308 Client Name: Tetra Tech MM, Inc. ClientProject ID:

Field ID: Ross Corr 10 Lab ID: 1007308-10 Library: RA226.LIB		Sample Matrix: SOIL Prep SOP: PAI 739 Rev 10 Date Collected: 22-Jul-10 Date Prepared: 31-Jul-10	Prep Batch: GS100801-1 QCBatchID: GS100801-1-1 Run ID: GS100801-1A Count Time: 30 minutes	Final Aliquo Prep Basi Moisture(% Result Unit	bt: 136 g s: Dry Weight 6): NA s: pCi/g
		Date Analyzed: 21-Aug-10	Report Basis: Dry Weight	File Name: 101618d03	
CASNO	Tarrat Nuclida		МРО	Dec. and all	Lah Qualifian

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.53 +/- 0.42	0.74	1	G

Comments:

Qualifiers/Flags:

U $\,$ - Result is less than the sample specific MDC or less than the associated TPU $\,$

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported

activity is greater than the reported MDC. M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1007308-1

Date Printed: Friday, August 27, 2010

ALS Environmental -- FC LIMS Version: 6.395A

SQ - Spectral quality prevents accurate quantitation. SI - Nuclide identification and/or quantitation is tentative.

G - Sample density differs by more than 15% of LCS density.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

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Gamma Spectroscopy Results

PAI 713 Rev 11

Sample Duplicate Results

Lab Name: ALS Environmental -- FC

Ra-226

Work Order Number: 1007308 Client Name: Tetra Tech MM, Inc. ClientProject ID:

Field ID: Ross Corr 10 Lab ID: 1007308-10DUP Library: RA226.LIB		Sample Matrix: SOIL	Prep Batch: GS100801-1		Final Aliquot: 138 g	
		Prep SOP: PAI 739 Rev 10	QCBatchID: GS100801-1-1		Prep Basis: Dry Weight	
		Date Collected: 22-Jul-10	Run ID: GS100801-1A		Moisture(%): NA	
		Date Prepared: 31-Jul-10	Count Time: 30 minutes		Result Units: pCi/g	
		Date Analyzed: 21-Aug-10	Report Basis: Dry Weight		File Name: 101212d08	
CASNO	Target Nuclide	Result +/- 2 s TPU		MDC	Requested MDC	Lab Qualifier

1.71 +/- 0.40

Comments:

13982-63-3

Qualifiers/Flags:

- U Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M The requested MDC was not met.
- M3 The requested MDC was not met, but thereported activity is greater than the reported MDC.
- W DER is greater than Warning Limit of 1.42
- D DER is greater than Control Limit of 2.13

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1007308-1

Date Printed: Friday, August 27, 2010

ALS Environmental -- FC LIMS Version: 6.395A

SQ - Spectral quality prevents accurate quantitation.

- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.

0.63

- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

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G

1