



Tucson Office
3031 West Ina Road
Tucson, AZ 85741
Tel 520.297.7723 Fax 520.297.7724
www.tetrattech.com

Technical Memorandum

To:	Kathy Arnold	From:	David Krizek
Company:	Rosemont Copper Company	Date:	March 16, 2011
Re:	Rosemont Additional Tailings Analysis	Doc #:	059/11-320877-5.3
CC:	Mark Williamson, Amy Hudson (Tetra Tech)		

1.0 Introduction

The Technical Memorandum titled *Rosemont Tailings Geochemistry Sample Sources* (Tetra Tech, 2010) was prepared in response to the April 14, 2010 *Comprehensive Request for Additional Information* from the Arizona Department of Environmental Quality (ADEQ) to Rosemont Copper Company (Rosemont). This request was with regard to the aquifer protection permit (APP) application submitted to ADEQ in 2009 (Tetra Tech, 2009) for the Rosemont Copper Project (Project). Specifically, Tetra Tech (2010) provided analytical results from six (6) additional tailings samples prepared and analyzed in 2010.

- 4-7 Year Composite
- Escabrosa
- Horquilla
- Colina
- Epitaph
- Earp

Analytical results from these 2010 tailings samples, as well as previous sample results, have been updated and summarized in Attachment 1. The table in Attachment 1 supersedes the original Attachment D table provided in Tetra Tech (2010) titled *Summary of Geochemical Data for Tailings Samples*.

In a letter titled *Incomplete Response to Technical Deficiencies* (dated December 3, 2010) from ADEQ, additional information of the tailings samples was requested. Additional ADEQ's comment #3, on page 13 of 34 of the December 3, 2010 letter, is as follows along with responses provided by Rosemont in a letter titled *Response to ADEQ December 3, 2010 Correspondence* (dated February 11, 2011).

Additional ADEQ's Comment #3

ADEQ: *Rosemont mine life of the sulfide ore production is expected to last some 20 years plus. However, the geochemical characterization of the ore samples is conducted up to 7 years of production. In order to characterize and make determination of geochemical properties of the sulfide ore material in the pit, please provide geochemical analysis of the currently delineated mineable ore to depth.*

Rosemont: Tailings samples were physically prepared to represent production years 0-3 and years 4-7. A mixing model was used to prepare a representative tailings "sample" for production years 8-21. Geochemical analysis results for the major rock types making up production years 8-21 were used. Please refer to the Tetra Tech Technical Memorandum titled *RCC Preliminary Geochemistry Review Response to Comments* (dated November 23, 2010). This memo, along with a CD, was provided to ADEQ at the January 5, 2011 meeting.

ADEQ: *Please provide justification for not measuring a particular constituent in all the samples tested and using higher detection limit for some of the constituents in characterizing the geochemical behavior of the dry stack tailings as listed below:*

- *Be was not measured in 8 of 10 samples;*
- *Ni was not measured in 7 of 10 samples, and the detection limit is too high in 1 of 10 samples;*
- *Sb detection limit is too high (higher than AWQS);*
- *Tl was not measured in 8 of 10 samples, and the detection limit exceeds the AWQS in the 2 of 10 samples.*

Rosemont: The reported detection limits for antimony, nickel and thallium in the tailing samples were an oversight and not noticed until ADEQ's comment above. Rosemont is currently discussing the issue with the laboratory to see what measures can be taken to address this issue. Based on the discussions with the laboratory, a full response will be provided to ADEQ under separate cover by the end of February 2011.

In addition to retrieving previous analysis results from SVL Analytical (SVL) in Kellogg, Idaho (via stored data), and performing data QC checks, tailings samples were also retrieved from AMEC Earth & Environmental (AMEC). The tailings samples prepared in 2010 were sent to AMEC for physical testing and to SVL for geochemical analysis. Tailings samples retrieved from AMEC that were not moisture conditioned were used to perform whole rock, SPLP, and MWMP analyses in order to obtain results for Thallium at a detection limit of 0.0002 (AWQS) and also for Uranium.

In summary, the following changes/additions are noted:

- For Tailings Sample 022807, the Nickel value for the SPLP analysis was modified from <1 to <0.1 based on records review.
- For Horquilla (2010), the pH End value for the MWMP analysis was modified from 8.2 to 7.82 based on records review.



- For Escabrosa (2010), the Potassium value for the SPLP analysis was modified from 1.05 to 0.86 based on records review.
- For the 2010 tailings samples, results for Antimony were modified based on records review.
- For the 2010 tailings samples, results for Beryllium, Molybdenum, and Nickel were added based on previous unrecorded analysis.
- Values that were previously included in the table for Chloride, Fluoride, Nitrogen, and Sulfate under the Whole Rock analysis columns were removed and recorded as Not Applicable (NA). Whole Rock analyses are not applicable for these constituents.
- Thallium results were added to table based on a lower detection limit.
- Uranium results were added to the table.

Attachment 2 provides the 2011 analytical data received from the lab.



References

- Tetra Tech (2009). *Aquifer Protection Permit Application*. Prepared for Rosemont Copper Company. Report Dated April 2009.
- Tetra Tech, Dieckhaus, M. (2010). *Rosemont Tailings Geochemistry Sample Sources*. Technical Memorandum to Kathy Arnold (Rosemont Copper Company). Technical Memorandum Dated August 30, 2010.

Attachment 1
Updated Attachment D Table
in reference to
Tetra Tech (2010)
titled
Summary of Geochemical Data
for Tailings Samples

Attachment D
Summary of Geochemical Data for Tailings Samples
Rosemont Copper Project
Updated March 2011

Parameter	Tailings – May 2006		Tailings 022807		Tailings-05 June2007			Year 0-3 Tailings			4-7 Year Composite			Escabrosa		Horquilla			Colina			Epitaph			Earp		
	Whole Rock (mg/kg)	SPLP (mg/L)	Whole Rock (mg/kg)	SPLP (mg/L)	Whole Rock (mg/kg)	SPLP (mg/L)	MWMP (mg/L)	Whole Rock (mg/kg)	SPLP (mg/L)	MWMP (mg/L)	Whole Rock (mg/kg)	SPLP (mg/L)	MWMP (mg/L)	Whole Rock (mg/kg)	SPLP (mg/L)	Whole Rock (mg/kg)	SPLP (mg/L)	MWMP (mg/L)	Whole Rock (mg/kg)	SPLP (mg/L)	MWMP (mg/L)	Whole Rock (mg/kg)	SPLP (mg/L)	MWMP (mg/L)	Whole Rock (mg/kg)	SPLP (mg/L)	MWMP (mg/L)
pH End	NA	NM	NA	NM	NA	NM	7.43	NA	NM	8.5	NA	8.66	8.20	NA	8.81	NA	9.48	7.82	NA	9.48	8.42	NA	7.85	6.47	NA	8.74	6.86
Alkalinity	NA	NM	NA	NM	NA	NM	NM	NA	8.3	11.5	NA	NM	NM	NA	NM	NA	NM	NM	NA	NM	NM	NA	NM	NM	NA	NM	NM
Aluminum	12000	NM	3910	0.08	6210	0.08	<0.08	5870	<0.08	<0.08	9,180	<0.08	<0.08	7,350	<0.08	7,110	0.7	<0.080	4,870	<0.08	<0.08	5,500	<0.08	<0.080	13,700	<0.08	<0.080
Antimony	<10	NM	2	NM	2.2	<0.02	<0.02	<2	<0.02	<0.02	<0.3	<0.005	<0.005	<0.3	<0.005	<0.3	<0.005	0.006	<0.3	<0.005	0.010	4.6	0.006	0.011	3.3	<0.005	<0.005
Arsenic	5.5	<1	8.6	<0.003	8.2	<0.003	<0.003	22	<0.02	<0.003	8.8	<0.02	<0.025	16.5	<0.02	13.5	<0.02	<0.025	27.6	<0.02	<0.025	28.7	<0.02	<0.025	5.3	<0.02	<0.025
Barium	20	<10	7.7	<0.0020	12.2	0.0032	0.0172	25.6	0.02	0.0229	22.0	0.02	0.0191	15.0	0.02	5.17	0.005	0.0080	12.5	0.02	0.0346	13.6	0.02	0.0266	67.6	0.05	0.0297
Beryllium	NM	NM	0.36	NM	0.58	<0.0020	<0.002	0.537	<0.002	<0.002	0.815	<0.002	<0.0020	1.27	<0.002	0.722	<0.002	<0.0020	0.393	<0.002	<0.0020	<0.200	<0.002	<0.0020	0.709	<0.002	<0.0020
Cadmium	0.9	<0.5	1.51	<0.0020	0.97	<0.0020	<0.002	1.1	<0.002	<0.002	<0.20	<0.002	<0.0020	0.60	<0.002	0.24	<0.002	<0.0020	0.58	<0.002	<0.0020	0.64	<0.002	<0.0020	0.29	<0.002	<0.0020
Calcium	150000	NM	125000	8.8	146000	13	103	126000	15.6	150	99,900	10.5	52.6	163,000	27.1	84,600	9.8	29.4	167,000	193	658	155,000	107	557	62,600	18.4	151
Chloride	NA	NM	N/A	0.36	NA	0.43	5.69	NA	0.55	5.18	NA	0.425	6.27	NA	0.352	NA	<0.200	3.56	NA	0.218	4.14	NA	0.340	<1.00	NA	0.628	3.51
Chromium	14	<1	10.4	<0.0060	21	<0.0060	<0.006	17.7	<0.006	<0.006	23.9	<0.006	<0.0060	36.6	<0.006	14.3	<0.006	<0.0060	11.8	<0.006	<0.0060	11.8	<0.006	<0.0060	30.7	<0.006	<0.0060
Copper	NM	NM	2070	<0.010	1100	<0.010	<0.01	1120	<0.01	<0.01	2,380	<0.01	<0.010	1,120	<0.01	1,030	0.17	<0.010	2,770	<0.01	0.011	1,780	<0.01	0.016	2,250	<0.01	0.010
Fluoride	NA	NM	NA	1.25	NA	1.29	1.02	NA	0.85	1.11	NA	1.12	6.49	NA	1.00	NA	0.694	1.05	NA	0.844	2.76	NA	0.846	0.944	NA	0.630	1.25
Iron	18000	NM	15300	<0.06	23600	<0.06	<0.06	21700	<0.06	<0.06	26,100	<0.06	<0.060	36,800	<0.06	33,800	1.2	<0.060	20,100	<0.06	<0.060	37,700	<0.06	<0.060	25,900	<0.06	<0.060
Lead	7	<1	10.4	NM	13.6	<0.0075	<0.0075	20	<0.0075	<0.008	4.92	<0.0075	<0.008	27.4	<0.0075	30.4	<0.0075	<0.008	2.55	<0.0075	<0.008	11.9	<0.0075	<0.008	14.8	<0.0075	<0.008
Magnesium	8400	NM	4960	0.23	5410	0.17	0.65	8300	0.2	1.91	24,400	2.5	13.8	11,400	1.3	6,010	1.9	0.535	57,900	3.7	15.5	35,800	8.5	148	16,600	1.0	11.4
Manganese	2100	NM	1520	<0.0040	2000	<0.0040	0.019	1670	<0.004	0.0172	1,990	<0.004	0.0081	2,510	0.007	1,950	0.10	<0.0040	1,460	<0.004	<0.0040	1,980	0.01	0.0988	1,720	<0.004	0.0372
Mercury	<0.100	<0.01	0.038	<0.0002	0.042	<0.0002	0.00033	1.77	0.0007	<0.0002	0.058	<0.0002	<0.00020	0.050	<0.0002	0.130	<0.0002	<0.00020	0.057	<0.0002	<0.00020	<0.033	<0.0002	<0.00020	0.053	<0.0002	<0.00020
Molybdenum	NM	NM	90	NM	46	0.075	0.46	13.8	0.06	0.463	109	0.18	0.731	94.8	0.04	53.3	0.03	0.385	112	0.11	0.590	122	0.05	0.424	78.9	0.06	0.679
Nickel	NM	NM	8.8	<0.1	5.5	<0.01	<0.01	11.2	<0.01	<0.01	8.39	<0.01	<0.010	19.9	<0.01	3.34	<0.01	<0.010	3.99	<0.01	<0.010	5.67	<0.01	<0.010	13.3	<0.01	<0.010
NO ₂ +NO ₃ as N	NA	NM	NA	0.04	NA	NM	0.021	NA	NM	NM	NA	0.120	<0.500	NA	<0.100	NA	<0.100	<0.500	NA	<0.100	<0.500	NA	0.111	<0.500	NA	<0.100	<0.500
Potassium	1000	NM	786	0.62	977	0.86	8.33	1040	1.24	11.3	1,120	1.05	11.6	1,040	0.86	435	0.84	4.97	1,130	1.27	5.53	799	1.04	17.9	2,020	1.97	15.0
Selenium	<5	<0.5	<4	<0.50	<4	<0.04	<0.04	<4	<0.04	<0.04	29.2	<0.040	<0.040	52.7	<0.040	5.5	<0.040	<0.040	22.1	<0.040	0.048	<4.0	<0.040	<0.040	<4.0	<0.040	<0.040
Silver	0.8	NM	2.41	<0.0050	0.87	<0.0050	<0.005	1.15	<0.005	<0.005	1.92	<0.005	<0.0050	1.59	<0.005	0.56	<0.005	<0.0050	2.60	<0.005	<0.0050	2.22	<0.005	<0.0050	2.29	<0.005	<0.0050
Sodium	<250	NM	117	2.57	154	2.22	27.6	225	4.1	37.1	262	3.2	33.9	97.5	2.1	102	2.4	19.3	76.1	1.4	15.4	94.2	3.3	32.6	579	3.3	33.9
Sulfate	NA	NM	NA	6.95	NA	20	285	NA	35	441	NA	24.3	264	NA	61.5	NA	6.88	91.1	NA	432	1,560	NA	278	1,960	NA	36.8	435
TDS	NA	NM	NA	13	NA	66	505	NA	NM	NM	NA	NM	NM	NA	NM	NA	NM	NM	NA	NM	NM	NA	NM	NM	NA	NM	NM
Thallium	NM	NM	1.5	NM	2	<0.015	<0.015	<1.5	<0.02	<0.015	<0.100	<0.001	<0.00100	<0.100	<0.001	<0.100	<0.001	<0.00100	0.101	<0.001	<0.00100	<0.100	<0.001	<0.00100	<0.100	<0.001	<0.00100
Uranium	NM	NM	NM	NM	NM	NM	NM	2.89	<0.002	<0.001	2.66	<0.001	<0.00100	3.10	<0.001	3.07	<0.001	0.00181	3.39	<0.001	<0.00100	4.23	<0.001	<0.00100	2.16	0.001	0.0476
Zinc	85	NM	271	NM	118	<0.01	<0.01	108	<0.01	<0.01	146	<0.01	<0.0100	234	<0.01	184	0.05	<0.0100	163	<0.01	<0.0100	141	<0.01	<0.010	140	<0.01	<0.0100

NA = Not applicable NM = Not measured

Attachment 2
Laboratory Analytical Data



One Government Gulch - PO Box 929

Kellogg ID 83837-0929

(208) 784-1258

Fax (208) 783-0891

Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W1B0493**
Reported: 11-Mar-11 14:43

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
ESCABROSA	W1B0493-01	Soil	—	23-Feb-2011
4-7 YEAR COMPOSITE	W1B0493-02	Soil	—	23-Feb-2011
COLINA	W1B0493-03	Soil	—	23-Feb-2011
HORQUILLA	W1B0493-04	Soil	—	23-Feb-2011
EPITAPH	W1B0493-05	Soil	—	23-Feb-2011
EARP	W1B0493-06	Soil	—	23-Feb-2011

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.

Sample preparation is defined by the client as per their Data Quality Objectives.

This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.

The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

Case Narrative

03/09/2011 KG....Meteoric Water Mobility Extractions were performed a second time to obtain enough volume for gross alpha and total radium testing.



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W1B0493**
Reported: 11-Mar-11 14:43

Client Sample ID: **ESCABROSA**
SVL Sample ID: **W1B0493-01 (Soil)**

Sample Report Page 1 of 1

Sampled: —
Received: 23-Feb-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 6020	Thallium	< 0.100	mg/kg	0.100	0.002	5	W109270	DG	02/28/11 10:03	
EPA 6020	Uranium	3.10	mg/kg	0.050	0.002	5	W109270	DG	02/28/11 10:03	

Meteoric Water Mobility Extraction Parameters

ASTM E2242-02	Extraction Fluid pH	5.31	pH Units				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Extraction Fluid pH	5.36	pH Units				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Extraction Time	24.0	Hrs				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Extraction Time	24.0	Hrs				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Extraction Type	Rotation					W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Extraction Type	Rotation					W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Feed Moisture	0.680	%				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Feed Moisture	0.680	%				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Final Fluid pH	6.45	pH Units				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Final Fluid pH	7.91	pH Units				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Sample Weight	1000	g				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Sample Weight	5000	g				W110225	ESB	03/09/11 13:20	

Meteoric Water Mobility Leachates (Metals by 200 Series)

EPA 200.8	Thallium	< 0.00100	mg/L Extract	0.00100	0.000018		W110097	DG	03/01/11 11:26	
EPA 200.8	Uranium	0.00135	mg/L Extract	0.00100	0.0000087		W110097	DG	03/01/11 11:26	

SPLP Extraction Parameters

SW-846 1312	Final Fluid pH	8.77	pH Units				W109284	ESB	02/26/11 07:00	
SW-846 1312	Final Fluid pH	7.54	pH Units				W110226	ESB	03/09/11 07:20	

SPLP Leachates (Metals)

EPA 6020	Thallium	< 0.001	mg/L Extract	0.001	0.00002		W110098	DG	03/02/11 11:31	
EPA 6020	Uranium	< 0.001	mg/L Extract	0.001	0.000009		W110098	DG	03/02/11 11:31	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray
Technical Director



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W1B0493**
Reported: 11-Mar-11 14:43

Client Sample ID: **4-7 YEAR COMPOSITE**

SVL Sample ID: **W1B0493-02 (Soil)**

Sample Report Page 1 of 1

Sampled: —
Received: 23-Feb-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 6020	Thallium	< 0.100	mg/kg	0.100	0.002	5	W109270	DG	02/28/11 10:10	
EPA 6020	Uranium	2.66	mg/kg	0.050	0.002	5	W109270	DG	02/28/11 10:10	

Meteoric Water Mobility Extraction Parameters

ASTM E2242-02	Extraction Fluid pH	5.31	pH Units				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Extraction Fluid pH	5.36	pH Units				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Extraction Time	24.0	Hrs				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Extraction Time	24.0	Hrs				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Extraction Type	Rotation					W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Extraction Type	Rotation					W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Feed Moisture	0.860	%				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Feed Moisture	0.860	%				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Final Fluid pH	5.00	pH Units				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Final Fluid pH	8.52	pH Units				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Sample Weight	1000	g				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Sample Weight	3310	g				W110225	ESB	03/09/11 13:20	

Meteoric Water Mobility Leachates (Metals by 200 Series)

EPA 200.8	Thallium	< 0.00100	mg/L Extract	0.00100	0.000018		W110097	DG	03/01/11 11:30	
EPA 200.8	Uranium	< 0.00100	mg/L Extract	0.00100	0.0000087		W110097	DG	03/01/11 11:30	

SPLP Extraction Parameters

SW-846 1312	Final Fluid pH	9.00	pH Units				W109284	ESB	02/26/11 07:00	
SW-846 1312	Final Fluid pH	7.98	pH Units				W110226	ESB	03/09/11 07:20	

SPLP Leachates (Metals)

EPA 6020	Thallium	< 0.001	mg/L Extract	0.001	0.00002		W110098	DG	03/02/11 11:40	
EPA 6020	Uranium	< 0.001	mg/L Extract	0.001	0.000009		W110098	DG	03/02/11 11:40	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray
Technical Director



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W1B0493**
Reported: 11-Mar-11 14:43

Client Sample ID: **COLINA**

SVL Sample ID: **W1B0493-03 (Soil)**

Sample Report Page 1 of 1

Sampled: —
Received: 23-Feb-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 6020	Thallium	0.101	mg/kg	0.100	0.002	5	W109270	DG	02/28/11 10:11	
EPA 6020	Uranium	3.39	mg/kg	0.050	0.002	5	W109270	DG	02/28/11 10:11	

Meteoric Water Mobility Extraction Parameters

ASTM E2242-02	Extraction Fluid pH	5.31	pH Units				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Extraction Fluid pH	5.36	pH Units				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Extraction Time	24.0	Hrs				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Extraction Time	24.0	Hrs				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Extraction Type	Rotation					W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Extraction Type	Rotation					W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Feed Moisture	0.520	%				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Feed Moisture	0.520	%				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Final Fluid pH	5.00	pH Units				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Final Fluid pH	8.65	pH Units				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Sample Weight	1000	g				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Sample Weight	5000	g				W110225	ESB	03/09/11 13:20	

Meteoric Water Mobility Leachates (Metals by 200 Series)

EPA 200.8	Thallium	< 0.00100	mg/L Extract	0.00100	0.000018		W110097	DG	03/01/11 11:31	
EPA 200.8	Uranium	< 0.00100	mg/L Extract	0.00100	0.0000087		W110097	DG	03/01/11 11:31	

SPLP Extraction Parameters

SW-846 1312	Final Fluid pH	9.13	pH Units				W109284	ESB	02/26/11 07:00	
SW-846 1312	Final Fluid pH	8.01	pH Units				W110226	ESB	03/09/11 07:20	

SPLP Leachates (Metals)

EPA 6020	Thallium	< 0.001	mg/L Extract	0.001	0.00002		W110098	DG	03/02/11 11:41	
EPA 6020	Uranium	< 0.001	mg/L Extract	0.001	0.000009		W110098	DG	03/02/11 11:41	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray
Technical Director



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W1B0493**
Reported: 11-Mar-11 14:43

Client Sample ID: **HORQUILLA**
SVL Sample ID: **W1B0493-04 (Soil)**

Sample Report Page 1 of 1

Sampled: —
Received: 23-Feb-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 6020	Thallium	< 0.100	mg/kg	0.100	0.002	5	W109270	DG	02/28/11 10:12	
EPA 6020	Uranium	3.07	mg/kg	0.050	0.002	5	W109270	DG	02/28/11 10:12	

Meteoric Water Mobility Extraction Parameters

ASTM E2242-02	Extraction Fluid pH	5.31	pH Units				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Extraction Fluid pH	5.36	pH Units				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Extraction Time	24.0	Hrs				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Extraction Time	24.0	Hrs				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Extraction Type	Rotation					W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Extraction Type	Rotation					W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Feed Moisture	0.710	%				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Feed Moisture	0.710	%				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Final Fluid pH	8.06	pH Units				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Final Fluid pH	8.38	pH Units				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Sample Weight	1000	g				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Sample Weight	5000	g				W110225	ESB	03/09/11 13:20	

Meteoric Water Mobility Leachates (Metals by 200 Series)

EPA 200.8	Thallium	< 0.00100	mg/L Extract	0.00100	0.000018		W110097	DG	03/01/11 11:32	
EPA 200.8	Uranium	0.00181	mg/L Extract	0.00100	0.0000087		W110097	DG	03/01/11 11:32	

SPLP Extraction Parameters

SW-846 1312	Final Fluid pH	9.04	pH Units				W109284	ESB	02/26/11 07:00	
SW-846 1312	Final Fluid pH	8.76	pH Units				W110226	ESB	03/09/11 07:20	

SPLP Leachates (Metals)

EPA 6020	Thallium	< 0.001	mg/L Extract	0.001	0.00002		W110098	DG	03/02/11 11:43	
EPA 6020	Uranium	< 0.001	mg/L Extract	0.001	0.000009		W110098	DG	03/02/11 11:43	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray
Technical Director



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W1B0493**
Reported: 11-Mar-11 14:43

Client Sample ID: **EPITAPH**

SVL Sample ID: **W1B0493-05 (Soil)**

Sample Report Page 1 of 1

Sampled: —
Received: 23-Feb-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 6020	Thallium	< 0.100	mg/kg	0.100	0.002	5	W109270	DG	02/28/11 10:16	
EPA 6020	Uranium	4.23	mg/kg	0.050	0.002	5	W109270	DG	02/28/11 10:16	

Meteoric Water Mobility Extraction Parameters

ASTM E2242-02	Extraction Fluid pH	5.31	pH Units				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Extraction Fluid pH	5.36	pH Units				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Extraction Time	24.0	Hrs				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Extraction Time	24.0	Hrs				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Extraction Type	Rotation					W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Extraction Type	Rotation					W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Feed Moisture	0.620	%				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Feed Moisture	0.620	%				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Final Fluid pH	8.02	pH Units				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Final Fluid pH	8.13	pH Units				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Sample Weight	1000	g				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Sample Weight	4800	g				W110225	ESB	03/09/11 13:20	

Meteoric Water Mobility Leachates (Metals by 200 Series)

EPA 200.8	Thallium	< 0.00100	mg/L Extract	0.00100	0.000018		W110097	DG	03/01/11 11:34	
EPA 200.8	Uranium	< 0.00100	mg/L Extract	0.00100	0.0000087		W110097	DG	03/01/11 11:34	

SPLP Extraction Parameters

SW-846 1312	Final Fluid pH	8.50	pH Units				W109284	ESB	02/26/11 07:00	
SW-846 1312	Final Fluid pH	8.47	pH Units				W110226	ESB	03/09/11 07:20	

SPLP Leachates (Metals)

EPA 6020	Thallium	< 0.001	mg/L Extract	0.001	0.00002		W110098	DG	03/02/11 11:44	
EPA 6020	Uranium	< 0.001	mg/L Extract	0.001	0.000009		W110098	DG	03/02/11 11:44	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray
Technical Director



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W1B0493**
Reported: 11-Mar-11 14:43

Client Sample ID: **EARP**

SVL Sample ID: **W1B0493-06 (Soil)**

Sample Report Page 1 of 1

Sampled: —
Received: 23-Feb-11
Sampled By:

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 6020	Thallium	< 0.100	mg/kg	0.100	0.002	5	W109270	DG	02/28/11 10:18	
EPA 6020	Uranium	2.16	mg/kg	0.050	0.002	5	W109270	DG	02/28/11 10:18	

Meteoric Water Mobility Extraction Parameters

ASTM E2242-02	Extraction Fluid pH	5.31	pH Units				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Extraction Fluid pH	5.36	pH Units				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Extraction Time	24.0	Hrs				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Extraction Time	24.0	Hrs				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Extraction Type	Rotation					W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Extraction Type	Rotation					W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Feed Moisture	1.03	%				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Feed Moisture	1.03	%				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Final Fluid pH	7.82	pH Units				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Final Fluid pH	7.98	pH Units				W110225	ESB	03/09/11 13:20	
ASTM E2242-02	Sample Weight	1000	g				W109283	ESB	02/26/11 13:30	
ASTM E2242-02	Sample Weight	5000	g				W110225	ESB	03/09/11 13:20	

Meteoric Water Mobility Leachates (Metals by 200 Series)

EPA 200.8	Thallium	< 0.00100	mg/L Extract	0.00100	0.000018		W110097	DG	03/01/11 11:35	
EPA 200.8	Uranium	0.0476	mg/L Extract	0.00100	0.0000087		W110097	DG	03/01/11 11:35	

SPLP Extraction Parameters

SW-846 1312	Final Fluid pH	8.79	pH Units				W109284	ESB	02/26/11 07:00	
SW-846 1312	Final Fluid pH	8.51	pH Units				W110226	ESB	03/09/11 07:20	

SPLP Leachates (Metals)

EPA 6020	Thallium	< 0.001	mg/L Extract	0.001	0.00002		W110098	DG	03/02/11 11:45	
EPA 6020	Uranium	0.001	mg/L Extract	0.001	0.000009		W110098	DG	03/02/11 11:45	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray
Technical Director



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W1B0493**
Reported: 11-Mar-11 14:43

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
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Metals (Total)

EPA 6020	Thallium	mg/kg	<0.100	0.002	0.100	W109270	28-Feb-11	
EPA 6020	Uranium	mg/kg	<0.050	0.002	0.050	W109270	28-Feb-11	

Meteoric Water Mobility Leachates (Metals by 200 Series)

EPA 200.8	Thallium	mg/L Extract	<0.00100	0.000018	0.00100	W110097	01-Mar-11	
EPA 200.8	Uranium	mg/L Extract	<0.00100	0.0000087	0.00100	W110097	01-Mar-11	

SPLP Extraction Parameters

SW-846 1312	Final Fluid pH	pH Units	5.00			W109284	26-Feb-11	
SW-846 1312	Final Fluid pH	pH Units	5.00			W110226	09-Mar-11	

SPLP Leachates (Metals)

EPA 6020	Thallium	mg/L Extract	<0.001	0.00002	0.001	W110098	02-Mar-11	
EPA 6020	Uranium	mg/L Extract	<0.001	0.000009	0.001	W110098	02-Mar-11	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Metals (Total)

EPA 6020	Thallium	mg/kg	2.51	2.50	101	80 - 120	W109270	28-Feb-11	
EPA 6020	Uranium	mg/kg	2.64	2.50	105	80 - 120	W109270	28-Feb-11	

Meteoric Water Mobility Leachates (Metals by 200 Series)

EPA 200.8	Thallium	mg/L Extract	0.0259	0.0250	103	85 - 115	W110097	01-Mar-11	
EPA 200.8	Uranium	mg/L Extract	0.0271	0.0250	108	85 - 115	W110097	01-Mar-11	

SPLP Leachates (Metals)

EPA 6020	Thallium	mg/L Extract	0.026	0.0250	103	80 - 120	W110098	02-Mar-11	
EPA 6020	Uranium	mg/L Extract	0.028	0.0250	110	80 - 120	W110098	02-Mar-11	

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
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Metals (Total)

EPA 6020	Thallium	mg/kg	<0.100	<0.100	<RL	20	W109270	28-Feb-11	
EPA 6020	Uranium	mg/kg	3.02	3.10	2.6	200	W109270	28-Feb-11	

Meteoric Water Mobility Leachates (Metals by 200 Series)

EPA 200.8	Thallium	mg/L Extract	<0.00100	<0.00100	<RL	20	W110097	01-Mar-11	
EPA 200.8	Uranium	mg/L Extract	0.00136	0.00135	0.1	20	W110097	01-Mar-11	

SPLP Leachates (Metals)

EPA 6020	Thallium	mg/L Extract	<0.001	<0.001	UDL	20	W110098	02-Mar-11	
EPA 6020	Uranium	mg/L Extract	<0.001	<0.001	<RL	20	W110098	02-Mar-11	



Tetra Tech EM, Inc. (Tucson)
 3031 West Ina Road
 Tucson, AZ 85741

Project Name: Rosemont
 Work Order: **W1B0493**
 Reported: 11-Mar-11 14:43

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Metals (Total)

EPA 6020	Thallium	mg/kg	2.24	<0.100	2.50	87.1	75 - 125	W109270	28-Feb-11	
EPA 6020	Uranium	mg/kg	5.24	3.10	2.50	85.4	75 - 125	W109270	28-Feb-11	

Meteoric Water Mobility Leachates (Metals by 200 Series)

EPA 200.8	Thallium	mg/L Extract	0.0264	<0.00100	0.0250	105	70 - 130	W110097	01-Mar-11	
EPA 200.8	Uranium	mg/L Extract	0.0294	0.00135	0.0250	112	70 - 130	W110097	01-Mar-11	

SPLP Leachates (Metals)

EPA 6020	Thallium	mg/L Extract	0.025	<0.001	0.0250	102	75 - 125	W110098	02-Mar-11	
EPA 6020	Uranium	mg/L Extract	0.028	<0.001	0.0250	112	75 - 125	W110098	02-Mar-11	

Quality Control - POST DIGESTION SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Metals (Total)

EPA 6020	Thallium	mg/kg	2.52	<0.100	2.50	98.5	75 - 125	W109270	28-Feb-11	
EPA 6020	Uranium	mg/kg	5.43	3.10	2.50	93.1	75 - 125	W109270	28-Feb-11	

SPLP Leachates (Metals)

EPA 6020	Thallium	mg/L Extract	0.027	<0.001	0.0250	109	75 - 125	W110098	02-Mar-11	
EPA 6020	Uranium	mg/L Extract	0.029	<0.001	0.0250	117	75 - 125	W110098	02-Mar-11	

Notes and Definitions

- LCS Laboratory Control Sample (Blank Spike)
- RPD Relative Percent Difference
- UDL A result is less than the detection limit
- R > 4S % recovery not applicable, sample concentration more than four times greater than spike level
- <RL A result is less than the reporting limit
- MRL Method Reporting Limit
- MDL Method Detection Limit
- N/A Not Applicable