

## TELEPHONE CONVERSATION RECORD

**PERSON CALLED:** James R. Persoon, Ph.D.  
Radiation Safety Officer (RSO)  
Alliant Techsystems Inc. (ATK)

**TELEPHONE:** (651) 639-3331  
**PAGER:** (612) 740-2433  
**E-MAIL:**

**CALLER:** George M. McCann  
Senior Radiation Specialist  
NRC, Region III (RIII), Decommissioning Branch  
(DB)

**TELEPHONE:** (630) 829-9856  
**E-MAIL:** [gmm@nrc.gov](mailto:gmm@nrc.gov)

**DATE OF CALL:** December 20, 2002

**Subject:** DB REVIEW OF ATK'S SOIL SAMPLE RESULTS

**Reference(S):**

1. ATK letter dated December 18, 2002 (initial submittal (facsimile))
2. Atk letter dated December 18, 2002 (revised sample results (facsimile))

On the above date, the licensee's RSO was contacted to discuss the above referenced letters, and ATK's intent to back-fill excavations where its former depleted uranium (DU) processing building (Building 502), and some adjoining areas were located. Building 502, and adjoining areas had been demolished or remediated, as part of, the ATK's NRC approved decommissioning plan (DP). The licensee indicated that they were anxious to back-fill these areas, as soon as, possible due to weather and safety concerns. ATK is trying to complete its decommissioning by February 2003, and submit its final status surveys (FSS) shortly thereafter. ATK's license limits its decommissioning to an end date of May 31, 2003.

During telephone conversations on December 18, and 19, 2002, with Mr. Mike Renheck (one of ATK's radiological consultant personnel (SEC)) and ATK's RSO, they were informed that DB staff review had identified issues which needed to be clarified as follows:

1. The initial letter provided sampling results for the excavated areas. However, two issues required resolution as follows:
  - A. The sample results provided by the licensee's contractor were in microgram (total uranium (U)) per gram ( $\mu\text{g/g}$ ). The NRC release criteria is specified in Pico curies ( $^{238}\text{U}$ ) per gram (pCi/g). The approved release criteria is 35 pCi/g. The licensee was requested to resubmit the data in the appropriate units, with the calculations and conversion factors used.
  - B. The licensee was requested to submit a revised site diagram which identified the excavated areas, and locations of the collected soil samples.
2. The second letter faxed to RIII provided some of the requested information. However, questions were also raised after DB review. The issues discussed are as follows:
  - A. The data had been converted from  $\mu\text{g/g}$  to pCi/g as requested. Also, a conversion factor of 0.486 (i.e.,  $\mu\text{g/g} * 0.486 = \text{pCi/g}$ ) was also provided. Issues with the data was transmitted to the licensee's consultant and RSO on December 20, 2002, as follows:
    - i. The revised "TCAAP D&D Project, Soil Sample Summary Log," for the "TSS=single samples" appeared to be mathematically incorrect. The Log for the "TSC=composite samples" appeared to be mathematically correct. During a telephone conversation on December 20, 2002, the ATK consultant was requested to submit a corrected TSS soil sample Log.
    - ii. The complete calculations used in developing the conversion factor was not provided. Independent NRC staff assessment identified a conversion factor of 0.337. Since the licensee's conversion factor is more conservative, and the results of the samples are on the average less than 1% of the NRC unrestricted release criteria, it DB staff view that back-filling the excavations does not appear to be an issue. A commitment to fax revised data was made on December 20, 2002, during discussions with the RSO and its consultant.

**During the above discussions, DB staff informed the licensee's RSO that the review of this data is not considered an approval for unrestricted release. Further, that additional evaluation of the excavated areas may be necessary after the NRC receives results of confirmatory soil samples collected during the initial phase of the RIII December 10-13, 2002, inspection, or if the licensee's sampling data should raise new issues.**

**The licensee's RSO acknowledge this issue, and indicated that they were willing to accept the risk of having to re-excavate or re-assess the filled excavated areas at a later date if necessary. Based on the sampling data, NRC direct survey results, and the licensee's understanding of risk, the licensee's RSO was informed that RIII does not object to the back-fill of the excavated areas.**

**No further.**

**George M. McCann, Senior Radiation Specialist  
Decommissioning Branch  
NRC ATK Project Manager.**



Tel (651) 639-3331  
Twin Cities Army Ammunition Plant  
MN30-2530, Building 502  
Arden Hills, MN 55112

Subject: Twin City Army Ammunition Plant DU Room Excavation Soil Sample Results

18 December 2002

Mr. Michael McCann  
Mr. Michael LaFranzo  
U. S. Nuclear Regulatory Commission, Region III  
801 Warrenville Road  
Lisle, IL 60532-4351

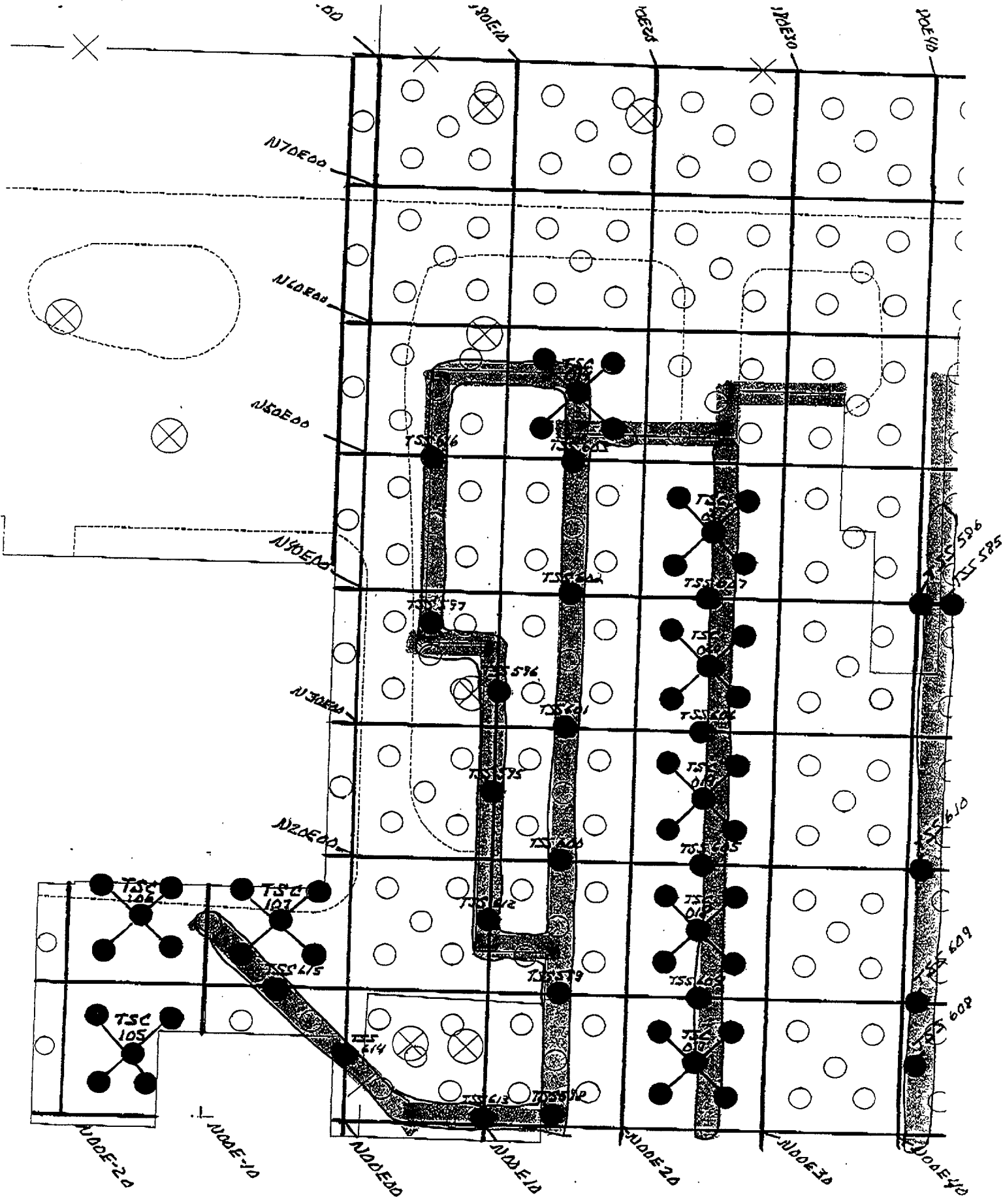
Dear Mr. McCann & Mr. LaFranzo:


Enclosed is the radiological sampling and analysis results for the some of the excavations for the TCAAP DU Room. This data covers the excavations from grid N00E-20 through grid N80E40. A map showing the grid locations and the sample locations is included along with a summary of the results of the sampling and the actual analytical results of the samples. SEC would like to proceed with backfilling of these grids no later than Monday, December 23, 2003. Therefore, a timely review of the data and your concurrence that the excavations meet the requirements necessary for backfilling is requested. Please contact me if you have any questions.

Sincerely,

A handwritten signature in black ink that reads "James R. Persoon". The signature is written in a cursive style with a large, looping initial "J".


James R. Persoon Ph.D.  
Radiation Safety Officer and Program Director  
Alliant Techsystems Inc.



 <b>TCAAP D&amp;D Project</b> <b>Soil Sample Summary Log</b>			
Sample #	PC/g	PP/g	DL
TSS-585	0.022	0.0953	0.486
TSS-586	0.021	0.0923	0.486
TSS-595	0.009	0.0656	0.486
TSS-596	0.008	0.0875	0.486
TSS-597	0.012	0.0802	0.486
TSS-598	0.008	0.0671	0.486
TSS-599	0.014	0.0899	0.486
TSS-600	0.012	0.0933	0.486
TSS-601	0.011	0.0880	0.486
TSS-602	0.013	0.0889	0.486
TSS-603	0.025	0.0695	0.486
TSS-604	0.006	0.0705	0.486
TSS-605	0.025	0.0943	0.486
TSS-606	0.012	0.0943	0.486
TSS-607	0.026	0.0933	0.486
TSS-608	0.006	0.0787	0.486
TSS-609	0.007	0.0855	0.486
TSS-610	0.043	0.0923	0.486
TSS-612	0.008	0.0899	0.486
TSS-613	0.007	0.0953	0.486
TSS-614	0.011	0.0914	0.486
TSS-615	0.008	0.0773	0.486
TSS-616	0.009	0.0933	0.486

- 1.54 pd

$$\mu\text{g/g} \times 0.486 = \text{pCi/g}$$



**TCAAP D&D Project**  
**Soil Sample Summary Log**

Sample #	pCi/g	±	DL
TSC-014	0.564	0.0081	0.084
TSC-017	0.515	0.0099	0.076
TSC-018	0.583	0.0084	0.088
TSC-019	0.928	0.0127	0.082
TSC-020	1.162	0.0172	0.094
TSC-021	2.012	0.0283	0.088
TSC-105	0.435	0.0073	0.080
TSC-106	0.459	0.0087	0.086
TSC-107	0.977	0.0153	0.084

ok

$$\mu\text{g/g} \times 0.486 = \text{pCi/g}$$

1. For ATK uranium, U-238 constitutes 68.5% of the total uranium activity.
2. Specific activity for U-238 is  $0.333 \times 10^{-6}$  Ci/g or 0.333  $\mu$ Ci/g.
3. U-238 constitutes essentially the entire weight of uranium in a KPA analysis. (This is because the specific activity for U-238 is orders of magnitude less than those of U-234 and U-235.)

$$\frac{\mu\text{g}_U}{\text{g}_U} \times 0.333 \frac{\mu\text{Ci}_{238}}{\mu\text{g}_U} \times \frac{1 \frac{\mu\text{Ci}_{238}}{\text{g}_U}}{0.685 \frac{\mu\text{Ci}_{238}}{\text{g}_U}}$$

$$= 0.486 \frac{\mu\text{Ci}_{238}}{\text{g}_U}$$

$\therefore$  multiply  $\frac{\mu\text{g}}{\text{g}}$  times 0.486 to obtain total  $\mu\text{Ci/g}$  of uranium





Tel (651) 639-3331  
Twin Cities Army Ammunition Plant  
MN30-2530, Building 502  
Arden Hills, MN 55112

Subject: Twin City Army Ammunition Plant DU Room Excavation Soil Sample Results

18 December 2002

Mr. Michael McCann  
Mr. Michael LaFranzo  
U. S. Nuclear Regulatory Commission, Region III  
801 Warrenville Road  
Lisle, IL 60532-4351

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Sincerely,

James R. Persoon Ph.D.  
Radiation Safety Officer and Program Director  
Alliant Techsystems Inc.

62  
740  
2433

1. No objection
2. Under standing that  
area may
- 3.



# TCAAP D&D Project Soil Sample Log

Sample #	ug/g	H	DL	RL
TSC-014	1.160	0.0166	0.172	1.00
TSC-017	1.060	0.0203	0.157	1.00
TSC-018	1.200	0.0173	0.181	1.00
TSC-019	1.910	0.0262	0.168	1.00
TSC-020	2.390	0.0353	0.194	1.00
TSC-021	4.140	0.0582	0.181	1.00
TSC-105	0.896	0.0150	0.165	1.00
TSC-106	0.945	0.0180	0.176	1.00
TSC-107	2.010	0.0315	0.173	1.00

TSC = Composite Sample

0.337

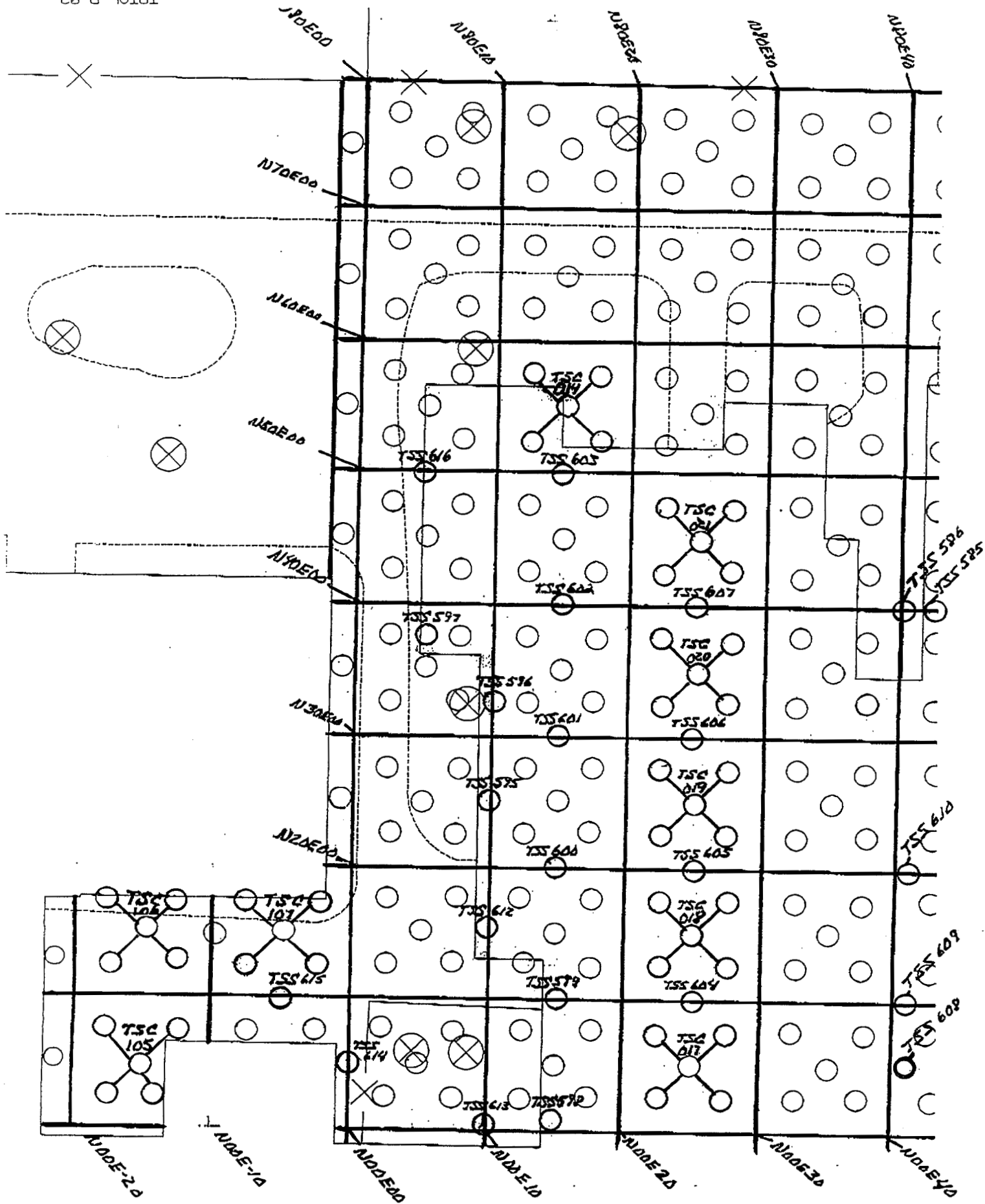


# TCAAP D&D Project

## Soil Sample Summary Log

Sample #	g/g	FE	DL	RL
TSS-585	2.990	0.0445	0.196	1.00
TSS-586	2.940	0.0442	0.190	1.00
TSS-595	0.994	0.0176	0.135	1.00
TSS-596	1.090	0.0168	0.180	1.00
TSS-597	1.690	0.0238	0.165	1.00
TSS-598	0.916	0.0159	0.138	1.00
TSS-599	2.070	0.0293	0.185	1.00
TSS-600	1.720	0.0256	0.192	1.00
TSS-601	1.490	0.0226	0.181	1.00
TSS-602	1.770	0.0276	0.183	1.00
TSS-603	3.710	0.0515	0.143	1.00
TSS-604	0.732	0.0117	0.145	1.00
TSS-605	3.640	0.0516	0.194	1.00
TSS-606	1.630	0.0239	0.194	1.00
TSS-607	3.820	0.0531	0.192	1.00
TSS-608	0.724	0.0118	0.162	1.00
TSS-609	0.874	0.0151	0.176	1.00
TSS-610	6.240	0.0884	0.190	1.00
TSS-612	1.000	0.0163	0.185	1.00
TSS-613	0.978	0.0144	0.196	1.00
TSS-614	1.480	0.0218	0.188	1.00
TSS-615	0.823	0.0160	0.159	1.00
TSS-616	1.100	0.0192	0.192	1.00

TSS = Single Sample.



## Certificate of Analysis

Company : SEC  
 Address : TCAAP Building 502  
 Arden Hills, Minnesota 55112--5792

Report Date: December 16, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 2

Client Sample ID:	TSC-014	Project:	SECT00101
Sample ID:	71786021	Client ID:	SECT001
Matrix:	Soil		
Collect Date:	23-NOV-02 12:00		
Receive Date:	09-DEC-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Total U											
<i>KPA, Total U, Solid</i>											
Total Uranium		1.16 +/-0.0166	0.172	1.00	ug/g	BF1	12/13/02	1300	220490		1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1701	220360

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	ASTM D 5174	

**Notes:**

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- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on a dry weight basis except where prohibited by the analytical procedure.

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Report Date: December 16, 2002

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Project: Routine Analytical(ATK-TCAAP)

Page 2 of 2

Client Sample ID: TSC-014  
Sample ID: 71786021

Project: SECT00101  
Client ID: SECT001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
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Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, Inc. standard operating procedures. Please direct any questions to your Project Manager, Sarah Kozlik.

Reviewed by \_\_\_\_\_

## Certificate of Analysis

Company: SEC  
 Address: TCAAP Building 502  
 Arden Hills, Minnesota 55112--5792

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Report Date: December 11, 2002

Page 1 of 2

Client Sample ID: TSC-017      Project: SECT00101  
 Sample ID: 71539036      Client ID: SECT001  
 Matrix: Soil  
 Collect Date: 23-NOV-02 12:00  
 Receive Date: 04-DEC-02  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Rad Total U</b>											
<i>KPA, Total U, Solid</i>											
Total Uranium		1.06 +/-0.0203	0.157	1.00	ug/g		CAF1	12/10/02	1254	219818	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	AWB	12/06/02	0955	219666
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	TCD	12/05/02	1145	219577

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	ASTM D 5174	

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Company: SEC  
Address: TCAAP Building 502  
Arden Hills, Minnesota 55112--5792

Report Date: December 11, 2002

Contact: Todd Willis  
Project: Routine Analytical(ATK-TCAAP)

Page 2 of 2

Client Sample ID: TSC-017  
Sample ID: 71539036

Project: SECT00101  
Client ID: SECT001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
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Reviewed by \_\_\_\_\_



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 Address : TCAAP Building 502  
 Arden Hills, Minnesota 55112--5792

Report Date: December 11, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID:	TSC-018	Project:	SECT00101
Sample ID:	71539037	Client ID:	SECT001
Matrix:	Soil		
Collect Date:	23-NOV-02 12:00		
Receive Date:	04-DEC-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Rad Total U</b>											
<i>KPA, Total U, Solid</i>											
Total Uranium		1.20	+/-0.0173	0.181	1.00	ug/g	CAF1	12/10/02	1129	219818	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	AWB	12/06/02	0955	219666
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	TCD	12/05/02	1145	219577

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Reviewed by \_\_\_\_\_

## Certificate of Analysis

Company : SEC  
Address : TCAAP Building 502  
Arden Hills, Minnesota 55112-5792

Report Date: December 11, 2002

Contact: Todd Willis  
Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID: TSC-019  
Sample ID: 71539038  
Matrix: Soil  
Collect Date: 23-NOV-02 12:00  
Receive Date: 04-DEC-02  
Collector: Client  
Project: SECT00101  
Client ID: SECT001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Total U											
KPA, Total U, Solid											
Total Uranium		1.91 +/-0.0262	0.168	1.00	ug/g		CAFI	12/10/02	1133	219818	1

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	AWB	12/06/02	0955	219666
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	TCD	12/05/02	1145	219577

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Reviewed by \_\_\_\_\_

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Company : SEC  
 Address : TCAAP Building 502  
 Arden Hills, Minnesota 55112--5792

Report Date: December 11, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID:	TSC-020	Project:	SECT00101
Sample ID:	71539039	Client ID:	SECT001
Matrix:	Soil		
Collect Date:	23-NOV-02 12:00		
Receive Date:	04-DEC-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Total U											
<i>KPA, Total U, Solid</i>											
Total Uranium		2.39 +/-0.0353	0.194	1.00	ug/g		CAF1	12/10/02	1134	219818	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	AWB	12/06/02	0955	219666
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	TCD	12/05/02	1145	219577

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Address : TCAAP Building 502  
Arden Hills, Minnesota 55112--5792

Contact: Todd Willis  
Project: Routine Analytical(ATK-TCAAP)

Report Date: December 11, 2002

Page 1 of 1

Client Sample ID: TSC-021  
Sample ID: 71539041  
Matrix: Soil  
Collect Date: 23-NOV-02 12:00  
Receive Date: 04-DEC-02  
Collector: Client

Project: SECT00101  
Client ID: SECT001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Total U											
<i>KPA, Total U, Solid</i>											
Total Uranium		4.14 +/-0.0582	0.181	1.00	ug/g		CAF1	12/10/02	1148	219818	1

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- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on a dry weight basis except where prohibited by the analytical procedure. Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, Inc. standard operating procedures. Please direct any questions to your Project Manager, Sarah Kozlik.

Reviewed by \_\_\_\_\_

## Certificate of Analysis

Company: SEC  
 Address: TCAAP Building 502  
 Arden Hills, Minnesota 55112--5792

Report Date: December 16, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID:	TSC-105	Project:	SECT00101
Sample ID:	71786025	Client ID:	SECT001
Matrix:	Soil		
Collect Date:	23-NOV-02 12:00		
Receive Date:	09-DEC-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Rad Total U</b>											
<i>KPA, Total U, Solid</i>											
Total Uranium		0.896	+/-0.015	0.165	1.00	ug/g	BFI	12/13/02	1135	220490	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1701	220360

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	ASTM D 5174	

**Notes:**

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on a dry weight basis except where prohibited by the analytical procedure. Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, Inc. standard operating procedures. Please direct any questions to your Project Manager, Sarah Kozlik.

Reviewed by \_\_\_\_\_

## Certificate of Analysis

Company : SEC  
 Address : TCAAP Building 502  
 Arden Hills, Minnesota 55112-5792

Report Date: December 16, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID:	TSC-106	Project:	SECT00101
Sample ID:	71786026	Client ID:	SECT001
Matrix:	Soil		
Collect Date:	25-NOV-02 12:00		
Receive Date:	09-DEC-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Rad Total U</b>											
<i>KPA, Total U, Solid</i>											
Total Uranium		0.945 +/-0.018	0.176	1.00	ug/g		BFI	12/13/02	1141	220490	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1701	220360

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	ASTM D 5174	

**Notes:**

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- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on a dry weight basis except where prohibited by the analytical procedure.

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This data report has been prepared and reviewed in accordance with General Engineering Laboratories, Inc. standard operating procedures. Please direct any questions to your Project Manager, Sarah Kozlik.

Reviewed by \_\_\_\_\_

## Certificate of Analysis

Company : SEC  
 Address : TCAAP Building 502  
 Arden Hills, Minnesota 55112-5792

Report Date: December 16, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID:	TSC-107	Project:	SECT00101
Sample ID:	71786027	Client ID:	SECT001
Matrix:	Soil		
Collect Date:	04-DEC-02 12:00		
Receive Date:	09-DEC-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Rad Total U</b>											
<i>KPA, Total U, Solid</i>											
Total Uranium		2.01 +/-0.0315	0.173	1.00	ug/g		BF1	12/13/02	1143	220490	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1701	220360

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	ASTM D 5174	

**Notes:**

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- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- U1 Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on a dry weight basis except where prohibited by the analytical procedure. Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, Inc. standard operating procedures. Please direct any questions to your Project Manager, Sarah Kozlik.

Reviewed by \_\_\_\_\_

## Certificate of Analysis

Company : SEC  
 Address : TCAAP Building 502  
 Arden Hills, Minnesota 55112--5792

Report Date: December 11, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID: TSS-585      Project: SECT00101  
 Sample ID: 71539055      Client ID: SECT001  
 Matrix: Soil  
 Collect Date: 21-NOV-02 12:00  
 Receive Date: 04-DEC-02  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Total U											
KPA, Total U, Solid											
Total Uranium		2.99 +/-0.0445	0.196	1.00	ug/g		CAFI	12/10/02	1039	219819	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	AWB	12/06/02	0955	219666
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	TCD	12/05/02	1145	219577

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
I	ASTM D 5174	

Notes:

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- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

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Reviewed by \_\_\_\_\_



## Certificate of Analysis

Company : SEC  
 Address : TCAAP Building 502  
 Arden Hills, Minnesota 55112--5792

Report Date: December 11, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID: TSS-586                      Project: SECT00101  
 Sample ID: 71539056                      Client ID: SECT001  
 Matrix: Soil  
 Collect Date: 21-NOV-02 12:00  
 Receive Date: 04-DEC-02  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Total U											
<i>KPA, Total U, Solid</i>											
Total Uranium		2.94 +/-0.0442	0.190	1.00	ug/g		CAF1	12/10/02	1041	219819	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	AWB	12/06/02	0955	219666
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	TCD	12/05/02	1145	219577

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	ASTM D 5174	

Notes:

The Qualifiers in this report are defined as follows :

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- > Actual result is greater than amount reported
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- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on a dry weight basis except where prohibited by the analytical procedure.

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This data report has been prepared and reviewed in accordance with General Engineering Laboratories, Inc. standard operating procedures. Please direct any questions to your Project Manager, Sarah Kozlik.

Reviewed by \_\_\_\_\_

## Certificate of Analysis

Company : SEC  
 Address : TCAAP Building 502  
 Arden Hills, Minnesota 55112--5792

Report Date: December 16, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID:	TSS-595	Project:	SECT00101
Sample ID:	71786033	Client ID:	SECT001
Matrix:	Soil		
Collect Date:	01-DEC-02 12:00		
Receive Date:	09-DEC-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Rad Total U</b>											
<i>KPA, Total U, Solid</i>											
Total Uranium		0.994 +/-0.0176	0.135	1.00	ug/g	BF1	12/13/02	1237	220490	1	

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1701	220360

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	ASTM D 5174	

**Notes:**

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on a dry weight basis except where prohibited by the analytical procedure. Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, Inc. standard operating procedures. Please direct any questions to your Project Manager, Sarah Kozlik.

Reviewed by \_\_\_\_\_

## Certificate of Analysis

Company : SEC  
Address : TCAAP Building 502  
Arden Hills, Minnesota 55112--5792

Report Date: December 16, 2002

Contact: Todd Willis  
Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID:	TSS-596	Project:	SECT00101
Sample ID:	71786034	Client ID:	SECT001
Matrix:	Soil		
Collect Date:	01-DEC-02 12:00		
Receive Date:	09-DEC-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Total U											
KPA, Total U, Solid											
Total Uranium		1.09 +/-0.0168	0.180	1.00	ug/g		BF1	12/13/02	1241	220490	1

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1701	220360

### The following Analytical Methods were performed

Method	Description	Analyst Comments
1	ASTM D 5174	

- Notes:
- The Qualifiers in this report are defined as follows :
- < Actual result is less than amount reported
  - > Actual result is greater than amount reported
  - B Analyte found in the sample as well as the associated blank.
  - BD Flag for results below the MDC or a flag for low tracer recovery.
  - E Concentration exceeds instrument calibration range
  - H Holding time exceeded
  - J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
  - P The response between the confirmation column and the primary column is >40%D
  - U Indicates the compound was analyzed for but not detected above the detection limit
  - UI Uncertain identification for gamma spectroscopy.
  - X Lab-specific qualifier - must be fully described in case narrative and data summary package
  - Y QC Samples were not spiked with this compound.

The above sample is reported on a dry weight basis except where prohibited by the analytical procedure.  
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This data report has been prepared and reviewed in accordance with General Engineering Laboratories, Inc. standard operating procedures. Please direct any questions to your Project Manager, Sarah Kozlik.

Reviewed by \_\_\_\_\_

## Certificate of Analysis

Company : SEC  
 Address : TCAAP Building 502  
 Arden Hills, Minnesota 55112--5792

Report Date: December 16, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID:	TSS-597	Project:	SECT00101
Sample ID:	71786035	Client ID:	SECT001
Matrix:	Soil		
Collect Date:	01-DEC-02 12:00		
Receive Date:	09-DEC-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Rad Total U</b>											
<i>KPA, Total U, Solid</i>											
Total Uranium		1.69 +/-0.0238	0.165	1.00	ug/g	BF1	12/13/02	1248	220490	1	

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1701	220360

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	ASTM D 5174	

Notes:

The Qualifiers in this report are defined as follows :

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- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

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Reviewed by \_\_\_\_\_

## Certificate of Analysis

Company : SEC  
Address : TCAAP Building 502  
Arden Hills, Minnesota 55112-5792

Contact: Todd Willis  
Project: Routine Analytical(ATK-TCAAP)

Report Date: December 16, 2002

Page 1 of 1

Client Sample ID: TSS-598      Project: SECT00101  
Sample ID: 71786060      Client ID: SECT001  
Matrix: Soil  
Collect Date: 04-DEC-02 12:00  
Receive Date: 09-DEC-02  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Total U											
KPA, Total U, Solid											
Total Uranium		0.916	+/-0.0159	0.138	1.00	ug/g	BP1	12/15/02	1947	220493	1

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1702	220360

### The following Analytical Methods were performed

Method	Description	Analyst Comments
1	ASTM D 5174	

- Notes:
- The Qualifiers in this report are defined as follows :
- < Actual result is less than amount reported
  - > Actual result is greater than amount reported
  - B Analyte found in the sample as well as the associated blank.
  - BD Flag for results below the MDC or a flag for low tracer recovery.
  - E Concentration exceeds instrument calibration range
  - H Holding time exceeded
  - J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
  - P The response between the confirmation column and the primary column is >40%D
  - U Indicates the compound was analyzed for but not detected above the detection limit
  - UI Uncertain identification for gamma spectroscopy.
  - X Lab-specific qualifier - must be fully described in case narrative and data summary package
  - Y QC Samples were not spiked with this compound.

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Reviewed by \_\_\_\_\_

## Certificate of Analysis

Company : SEC  
 Address : TCAAP Building 502  
 Arden Hills, Minnesota 55112-5792

Report Date: December 16, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

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Client Sample ID:	TSS-599	Project:	SECT00101
Sample ID:	71786036	Client ID:	SECT001
Matrix:	Soil		
Collect Date:	26-NOV-02 12:00		
Receive Date:	09-DEC-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Total U											
KPA, Total U, Solid											
Total Uranium		2.07	+/-0.0293	0.185	1.00	ug/g	BF1	12/13/02	1616	220492	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1701	220360

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	ASTM D 5174	

Notes:

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

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Reviewed by \_\_\_\_\_

## Certificate of Analysis

Company: SEC  
 Address: TCAAP Building 502  
 Arden Hills, Minnesota 55112--5792

Report Date: December 16, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID:	TSS-600	Project:	SECT00101
Sample ID:	71786037	Client ID:	SECT001
Matrix:	Soil		
Collect Date:	26-NOV-02 12:00		
Receive Date:	09-DEC-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Rad Total U</b>											
<i>KPA, Total U, Solid</i>											
Total Uranium		1.72 +/-0.0256	0.192	1.00	ug/g		BF1	12/13/02	1416	220492	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1701	220360

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	ASTM D 5174	

**Notes:**

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

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Reviewed by \_\_\_\_\_

## Certificate of Analysis

Company : SEC  
 Address : TCAAP Building 502  
 Arden Hills, Minnesota 55112--5792

Report Date: December 16, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID: TSS-601                      Project: SECT00101  
 Sample ID: 71786038                              Client ID: SECT001  
 Matrix: Soil  
 Collect Date: 26-NOV-02 12:00  
 Receive Date: 09-DEC-02  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Rad Total U</b>											
<i>KPA, Total U, Solid</i>											
Total Uranium		1.49 +/-0.0226	0.181	1.00	ug/g		BF1	12/13/02	1420	220492	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1701	220360

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	ASTM D 5174	

Notes:

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- > Actual result is greater than amount reported
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- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on a dry weight basis except where prohibited by the analytical procedure. Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

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Reviewed by \_\_\_\_\_



## Certificate of Analysis

Company: SEC  
 Address: TCAAP Building 502  
 Arden Hills, Minnesota 55112--5792

Report Date: December 16, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID:	TSS-602	Project:	SECT00101
Sample ID:	71786039	Client ID:	SECT001
Matrix:	Soil		
Collect Date:	26-NOV-02 12:00		
Receive Date:	09-DEC-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Total U											
<i>KPA, Total U, Solid</i>											
Total Uranium		1.77	+/-0.0276	0.183	1.00	ug/g	BF1	12/13/02	1425	220492	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1701	220360

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	ASTM D 5174	

Notes:

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- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

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Reviewed by \_\_\_\_\_

## Certificate of Analysis

Company : SEC  
 Address : TCAAP Building 502  
 Arden Hills, Minnesota 55112--5792

Report Date: December 16, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 2

Client Sample ID:	TSS-615	Project:	SECT00101
Sample ID:	71786051	Client ID:	SECT001
Matrix:	Soil		
Collect Date:	04-DEC-02 12:00		
Receive Date:	09-DEC-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Rad Total U</b>											
<i>KPA, Total U, Solid</i>											
Total Uranium		0.823	+/-0.016	0.159	1.00	ug/g	BF1	12/15/02	1917	220493	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1702	220360

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
I	ASTM D 5174	

**Notes:**

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- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on a dry weight basis except where prohibited by the analytical procedure.

## Certificate of Analysis

Company : SEC  
Address : TCAAP Building 502  
Arden Hills, Minnesota 55112--5792

Report Date: December 16, 2002

Contact: Todd Willis  
Project: Routine Analytical(ATK-TCAAP)

Page 2 of 2

Client Sample ID: TSS-615  
Sample ID: 71786051

Project: SECT00101  
Client ID: SECT001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
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Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, Inc. standard operating procedures. Please direct any questions to your Project Manager, Sarah Kozlik.

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## Certificate of Analysis

Company : SEC  
 Address : TCAAP Building 502  
 Arden Hills, Minnesota 55112--5792

Report Date: December 16, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID:	TSS-616	Project:	SECT00101
Sample ID:	71786052	Client ID:	SECT001
Matrix:	Soil		
Collect Date:	04-DEC-02 12:00		
Receive Date:	09-DEC-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Rad Total U</b>											
<i>KPA, Total U, Solid</i>											
Total Uranium		1.10 +/-0.0192	0.192	1.00	ug/g		BF1	12/15/02	1919	220493	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1702	220360

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	ASTM D 5174	

**Notes:**

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- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

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## Certificate of Analysis

Company : SEC  
Address : TCAAP Building 502  
Arden Hills, Minnesota 55112--5792

Report Date: December 16, 2002

Contact: Todd Willis  
Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID: TSS-604  
Sample ID: 71786041  
Matrix: Soil  
Collect Date: 26-NOV-02 12:00  
Receive Date: 09-DEC-02  
Collector: Client

Project: SECT00101  
Client ID: SECT001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Rad Total U</b>											
<i>KPA, Total U, Solid</i>											
Total Uranium		0.732	+/-0.0117	0.145	1.00	ug/g	BF1	12/13/02	1437	220492	1

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1701	220360

### The following Analytical Methods were performed

Method	Description	Analyst Comments
1	ASTM D 5174	

#### Notes:

The Qualifiers in this report are defined as follows :

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- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

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## Certificate of Analysis

Company : SEC  
 Address : TCAAP Building 502  
 Arden Hills, Minnesota 55112-5792

Report Date: December 16, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID:	TSS-605	Project:	SECT00101
Sample ID:	71786042	Client ID:	SECT001
Matrix:	Soil		
Collect Date:	26-NOV-02 12:00		
Receive Date:	09-DEC-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Total U											
<i>KPA, Total U, Solid</i>											
Total Uranium		3.64 +/-0.0516	0.194	1.00	ug/g		BF1	12/13/02	1450	220492	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1701	220360

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	ASTM D 5174	

**Notes:**

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- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

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Reviewed by \_\_\_\_\_

## Certificate of Analysis

Company: SEC  
 Address: TCAAP Building 502  
 Arden Hills, Minnesota 55112--5792

Report Date: December 16, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID: TSS-606      Project: SECT00101  
 Sample ID: 71786043      Client ID: SECT001  
 Matrix: Soil  
 Collect Date: 26-NOV-02 12:00  
 Receive Date: 09-DEC-02  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Total U											
<i>KPA, Total U, Solid</i>											
Total Uranium		1.63 +/-0.0239	0.194	1.00	ug/g		BF1	12/13/02	1512	220492	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1701	220360

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	ASTM D 5174	

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- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- U1 Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

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Reviewed by \_\_\_\_\_



## Certificate of Analysis

Company : SEC  
 Address : TCAAP Building 502  
 Arden Hills, Minnesota 55112-5792

Report Date: December 16, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID: TSS-607      Project: SECT00101  
 Sample ID: 71786044      Client ID: SECT001  
 Matrix: Soil  
 Collect Date: 26-NOV-02 12:00  
 Receive Date: 09-DEC-02  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Rad Total U</b>											
<i>KPA, Total U, Solid</i>											
Total Uranium		3.82 +/-0.0531	0.192	1.00	ug/g		BF1	12/13/02	1515	220492	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1701	220360

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	ASTM D 5174	

**Notes:**

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- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

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Reviewed by \_\_\_\_\_

## Certificate of Analysis

Company : SEC  
 Address : TCAAP Building 502  
 Arden Hills, Minnesota 55112--5792

Report Date: December 16, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID:	TSS-608	Project:	SECT00101
Sample ID:	71786045	Client ID:	SECT001
Matrix:	Soil		
Collect Date:	26-NOV-02 12:00		
Receive Date:	09-DEC-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Rad Total U</b>											
<i>KPA, Total U, Solid</i>											
Total Uranium		0.724 +/-0.0118	0.162	1.00	ug/g		BF1	12/13/02	1519	220492	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1701	220360

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	ASTM D 5174	

**Notes:**

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- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

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Reviewed by \_\_\_\_\_

## Certificate of Analysis

Company : SEC  
 Address : TCAAP Building 502  
 Arden Hills, Minnesota 55112-5792

Report Date: December 16, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID:	TSS-609	Project:	SECT00101
Sample ID:	71786046	Client ID:	SECT001
Matrix:	Soil		
Collect Date:	26-NOV-02 12:00		
Receive Date:	09-DEC-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Rad Total U</b>											
<i>KPA, Total U, Solid</i>											
Total Uranium		0.874 +/-0.0151	0.176	1.00	ug/g		BF1	12/13/02	1524	220492	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1702	220360

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	ASTM D 5174	

**Notes:**

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- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

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Reviewed by \_\_\_\_\_

## Certificate of Analysis

Company : SEC  
 Address : TCAAP Building 502  
 Arden Hills, Minnesota 55112--5792

Report Date: December 16, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID:	TSS-610	Project:	SECT00101
Sample ID:	71786047	Client ID:	SECT001
Matrix:	Soil		
Collect Date:	26-NOV-02 12:00		
Receive Date:	09-DEC-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Total U											
<i>KPA, Total U, Solid</i>											
Total Uranium		6.24 +/-0.0884	0.190	1.00	ug/g		BFI	12/13/02	1526	220492	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1702	220360

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	ASTM D 5174	

- Notes:
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  - B Analyte found in the sample as well as the associated blank.
  - BD Flag for results below the MDC or a flag for low tracer recovery.
  - E Concentration exceeds instrument calibration range
  - H Holding time exceeded
  - J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
  - P The response between the confirmation column and the primary column is >40%D
  - U Indicates the compound was analyzed for but not detected above the detection limit
  - UI Uncertain identification for gamma spectroscopy.
  - X Lab-specific qualifier - must be fully described in case narrative and data summary package
  - Y QC Samples were not spiked with this compound.

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Reviewed by \_\_\_\_\_

## Certificate of Analysis

Company : SEC  
 Address : TCAAP Building 502  
 Arden Hills, Minnesota 55112--5792

Report Date: December 16, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

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Client Sample ID:	TSS-612	Project: SECT00101
Sample ID:	71786048	Client ID: SECT001
Matrix:	Soil	
Collect Date:	27-NOV-02 12:00	
Receive Date:	09-DEC-02	
Collector:	Client	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Rad Total U</b>											
<i>KPA, Total U, Solid</i>											
Total Uranium		1.00 +/-0.0163	0.185	1.00	ug/g		BF1	12/13/02	1542	220492	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1702	220360

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
I	ASTM D 5174	

**Notes:**

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- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on a dry weight basis except where prohibited by the analytical procedure.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, Inc. standard operating procedures. Please direct any questions to your Project Manager, Sarah Kozlik.

Reviewed by \_\_\_\_\_

## Certificate of Analysis

Company : SEC  
 Address : TCAAP Building 502  
 Arden Hills, Minnesota 55112--5792

Report Date: December 16, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID:	TSS-613	Project:	SECT00101
Sample ID:	71786049	Client ID:	SECT001
Matrix:	Soil		
Collect Date:	04-DEC-02 12:00		
Receive Date:	09-DEC-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Rad Total U</b>											
<i>KPA, Total U, Solid</i>											
Total Uranium		0.978 +/-0.0144	0.196	1.00	ug/g		BFI	12/13/02	1600	220492	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1702	220360

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	ASTM D 5174	

**Notes:**

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on a dry weight basis except where prohibited by the analytical procedure. Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

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 Arden Hills, Minnesota 55112-5792

Report Date: December 16, 2002

Contact: Todd Willis  
 Project: Routine Analytical(ATK-TCAAP)

Page 1 of 1

Client Sample ID:	TSS-614	Project:	SECT00101
Sample ID:	71786050	Client ID:	SECT001
Matrix:	Soil		
Collect Date:	04-DEC-02 12:00		
Receive Date:	09-DEC-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Total U											
<i>KPA, Total U, Solid</i>											
Total Uranium		1.48 +/-0.0218	0.188	1.00	ug/g		BF1	12/13/02	1603	220492	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep RAD A-021,A-021B,A-026	TCD	12/10/02	1323	220443
Dry Soil Prep	Dry Soil Prep RAD A-021,A-021B,A-026	AWB	12/09/02	1702	220360

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