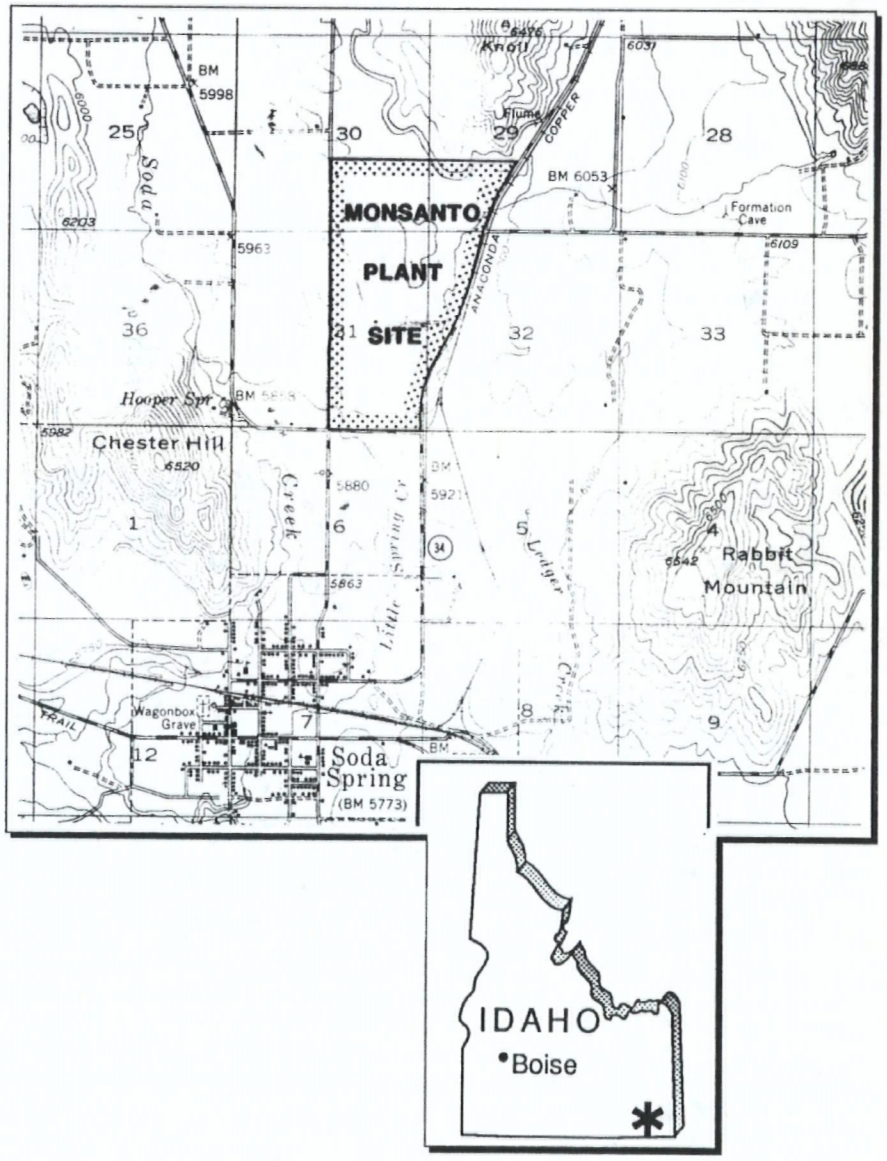
Submitted to:

Monsanto

Phase I Remedial Investigation/Feasibility Study
Preliminary Site Characterization Summary Report
for the Soda Springs Elemental Phosphorus Plant

Appendices



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APPENDIX S

DATA VALIDATION SUMMARY

DATA VALIDATION SUMMARY REPORT

FOR THE

PHASE I REMEDIAL INVESTIGATION/FEASIBILITY STUDY
AT THE
MONSANTO CHEMICAL COMPANY
SODA SPRINGS ELEMENTAL PHOSPHORUS PLANT
SODA SPRINGS, IDAHO

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1. INTRODUCTION

This report presents a summary of data validation conducted in support of the Phase I Remedial Investigation/Feasibility Study conducted at the Monsanto Chemical Company, Soda Springs, Idaho, Elemental Phosphorus Plant.

Analytical data for radiochemistry, metals and general chemistry analyses were reviewed and validated against the criteria contained in the EPA functional guildelines (Bleyler 1988). Data validation, in general, consisted of a review of laboratory report completeness, holding times, calibrations, duplicates, spikes, controls and blanks. Deficiencies identified during validation resulted in qualifying data as either estimated (J for detected results, UJ for undetected results) or undetected (U).

Samples of water, sediments, surface soil and source material were analyzed for the target compounds listed in the work plan (Golder 1991) by Chen-Northern Inc. (CNI), Billings, Montana (metals and general chemistry analyses) and Acculabs Research Inc. (ALR), Golden, Colorado (radiochemistry analyses). Samples were collected between October 15, 1991 through November 4, 1991.

Section 2 provides a discussion of the water quality data validation and Section 3 discusses the source, sediment and surface soil data validation. Attachments 1 through 5 provide copies of the data assessment summary forms and laboratory results.

2. WATER SAMPLE DATA QUALITY SUMMARY

This section provides a summary of the data validation conducted on the water quality data for chemical and radiochemical analyses. Section 2.1 discusses the chemistry data and section 2.2 discusses the radiochemistry data.

2.1 Chemical Data Summary

2.1.1 Holding Times

Holding times for metals analyses were 6 months from the date of sample collection. All holding times for metals met this criteria and no data qualification was required. Holding times for the remaining general chemistry parameters were met with the exception of ammonium, chloride, alkalinity (bicarbonate, carbonate, hydroxide), total dissolved solids (TDS), specific conductance, and chemical oxygen demand, however, no gross exceedances (>2x criteria) were observed. Results for these parameters have been qualified as estimated (J for detected results, UJ for undetected results) in associated samples.

2.1.2 Verification of Results

Reported results for all analytes were checked against the raw data to verify the absence of calculation and transcription errors. A few minor transcription errors were detected and the

results were manually corrected on the report forms.

Target sample quantitation limits (TQLs) were specified in Table 7-1 of the work plan (Golder, 1991) and these limits were met by the laboratory with the exception of the quantitation limits for vanadium and silver. Silver and vanadium could not be determined by the laboratory at the work plan TQL values (0.2 µg/L and 5 µg/L) due to the following reasons:

- Precision of silver measurements at the laboratory method detection limit, (MDL of 10 µg/L), was 15 percent relative standard deviation (%RSD). When the laboratory attempted a lower detection limit (<10 µg/L), the %RSD increased to 100%; and

- Precision of vanadium measurements at the laboratory MDL, (10 µg/L) was 6 %RSD and at lower concentrations (8 µg/L or less), the %RSD was greater than 20%.

2.1.3 Calibrations

Daily initial calibrations were performed for all analyses. In addition, initial and continuing calibration verifications were analyzed at least every 10 or 20 sample analyses. Minor quality control deficiencies were identified in the calibration verifications for aluminum, arsenic, beryllium, magnesium, nickel and potassium. Sample results associated with these calibration results were either undetected or determined to be undetected based on a review of blanks and were not qualified based on calibration verification criteria.

2.1.4 Blanks

Laboratory preparation blanks were analyzed with each sample analysis batch. No target analytes were detected in the preparation blanks at greater than 5 times the target quantitation limits listed in the analytical methods. The following table provides a list of analytes detected in the laboratory blanks and their highest concentrations:

ANALYTE	HIGHEST DETECTED CONCENTRATION, mg/L	5X HIGHEST DETECTED CONCENTRATION, mg/L
Sodium	0.06	0.3
Aluminum	0.1	0.5
Lead	0.002	0.01
Vanadium	0.01	0.05

Associated sample results (on a sample delivery group basis) that are less than 5 times the sample blank values have been qualified as undetected (U).

Following a review of laboratory blanks, field blank data were reviewed for detected analytes. The following provides a list of analytes detected in the field blanks and their highest

respective concentrations:

ANALYTE	HIGHEST CONCENTRATION DETECTED mg/L except where noted	5X HIGHEST CONCENTRATION DETECTED
Aluminum	0.17	0.85
Calcium	0.7	0.35
Copper	0.01	0.05
Iron	0.168	0.84
Lead	0.004	0.02
Managanese	0.011	0.055
Silver	0.03	0.15
Sodium	0.27	1.35
Vanadium	0.04	0.2
Zinc	0.016	0.08
Ammonium	0.19	0.95
Bicarbonate	3.62	18.2
Chloride	0.34	1.7
Sulfate	1	5
Total Phosphorus	0.14	0.7
Sp. Conductance, µmhos/cm	24	120
Total Diss. Solids	13	65

All sample data were reviewed against the field blank concentrations listed above. Sample results less than five times the highest field blank concentration were qualified as undetected (U) in accordance with the validation guidelines.

2.1.5 Precision

Compliance with precision data quality objectives was determined by a review of laboratory duplicate, field duplicate and field split analyses.

2.1.5.1 Laboratory Duplicates

Laboratory duplicates were analyzed at the proper frequency and results were acceptable with the exception of some of the pH results which were qualified as estimated (J).

✓ Duplicate injections were not conducted for graphite furnace atomic absorption analyses (GFAA) which is contrary to the analytical requirements, however, since laboratory duplicate analyses were acceptable, in the reviewers judgement, this oversight does not affect sample data quality.

2.1.5.2 Field Duplicate and Split Samples

One field duplicate was collected (location TW-26) and analyzed for metals, wet chemistry and radionuclides and the results are presented in Table S-1. Precision (as relative percent difference, RPD) for sample results >5 times the sample quantitation limits (SQLs) ranged from 0 to 20 percent which is within the inorganic validation criteria (Bleyler, 1988).

Three field split samples were collected (locations TW-21, TW-18 and DOC) and analyzed at both Chen-Northern Inc. (CNI)/Acculabs Research (ALR) and Core Laboratories Inc. (Core) of Casper, Wyoming for metals, wet chemistry and radionuclides. Results are presented in Tables S-2 through S-4.

The laboratories were instructed to use identical EPA-reference methods for analyses, however, Core Laboratories used other acceptable EPA-reference methods for analysis of metals and wet chemistry parameters, hence, the split results are not directly comparable. Table S-5 presents a comparison of the analytical methods used by the CNI/ALR and Core.

The most notable differences between results were observed when comparing low concentration (<5x SQL) metals results reported from more sensitive GFAA or inductively coupled plasma (ICP) emission techniques (used by CNI) as opposed to results reported from less sensitive flame atomic absorption (FLAA) techniques (used by Core). These differences would be expected, and, in the reviewers judgement, are not an indication of poor data quality. Where results are observed at higher concentrations (>5x SQL) comparability is better, ranging from 0% to 50% RPD, which exceeds the inorganic validation criteria of 20%. However, since identical analytical procedures were not followed between the two laboratories, this difference should not be considered significant.

No sample data were qualified based on field duplicate and split sample performance.

2.1.6 Accuracy

Compliance with accuracy data quality objectives was determined by review of laboratory spike sample and control sample recoveries.

Laboratory matrix spikes were analyzed with each sample delivery group and the results were within the laboratory established control limits with the exception of chromium and iron in sample delivery group three and chromium in sample delivery group one. Results were reported with an "N" qualifier as required by the analytical statement of work, however, no data was qualified during validation since all spike recoveries were within the validation criteria of 75% to 125%.

Analytical spikes were not conducted by the laboratory for GFAA analyses which is contrary to the analytical statement of work requirements, however, this does not affect data quality since spike sample recoveries were acceptable.

At least one laboratory control sample analysis was conducted for each of the four sample delivery groups. All aqueous control sample percent recoveries were within the reference limits of 80 to 120%.

2.2 Radiochemical Data Summary

This section presents a summary of the data quality for radiochemical analytes in the water samples.

2.2.1 Validation Criteria

The validation criteria used for review of the radiochemical analyses in general followed the recommendations contained in the inorganic data validation functional guidelines (Bleyler, 1988). Information concerning the specifics of the data validation criteria is contained in each of the subsequent sections 2.2.2 through 2.2.6.

2.2.2 Holding Times

Holding times specified for the radiochemical analytes were 6 months from date of collection. All analyses were completed within this time frame.

2.2.3 Verification of Results

Reported results for all analytes were checked against the raw data to verify the absence of calculation and transcription errors. A few minor transcription errors were detected and the results were manually corrected on the report forms.

2.2.4 Calibrations

Data packages were reviewed to verify compliance with the following requirements:

- Instruments and detectors were calibrated initially prior to sample analyses;
- Calibration checks appropriate to the method of analysis were conducted;
- Efficiences were determined for all Lucas cells used for radium-226 analyses; and
- Calibration sources used for initial and continuing calibration were traceable to NIST or an appropriate standards manufacturer.

All analyses were determined to meet the above criteria and no data qualification was necessary.

2.2.5 Blanks

Method blanks, blank planchets, blank Lucas Cells (Radium-226 analyses) and instrument backgrounds were analyzed or determined prior to sample analysis. Several of the method blanks reported contained low concentrations for gross alpha radioactivity, radium-226, radium-228 and radon-222. Sample results less than or equal to five times the associated method blank results were qualified as undetected (U).

2.2.6 Precision

Compliance with precision data quality objectives was monitored by a review of laboratory duplicate, field duplicate and field split analyses.

2.2.6.1 Laboratory Duplicates

Laboratory duplicate analyses were reviewed to determine if RPD values were ≤20%. All laboratory duplicate analyses were acceptable.

2.2.6.2 Field Duplicate and Split Samples

Table S-1 presents the results of the single field duplicate sample collected for radionuclides. RPD values ranged from 2 to 200 percent which is within the criteria specified in validation guidelines recommended in Bleyler (1988) with the exception of precision for gross alpha (67%).

Tables S-2 through S-4 present results for split samples for radionuclides. Results between the two laboratories (ALR and Core) vary considerably, however, upon review, these differences are due to different sample quantitation limits reported by the respective laboratories.

No sample data were qualified based on field duplicate and split sample performance.

2.2.7 Accuracy

Compliance with accuracy objectives was determined by a review of laboratory control sample (LCS) performance. All radiochemical determinations contained at least one analysis of a traceable LCS and percent recoveries were within the acceptance limits of 80% to 120%.

3. SEDIMENT, SOIL AND SOURCE DATA QUALITY SUMMARY

This section presents a summary of the data validation conducted for the sediment, soil and source data. Section 3.1 presents the summary of the chemical data quality and Section 3.2 presents the summary of the radiochemical data quality.

3.1 Chemical Data Summary

3.1.1 Holding Times

All sample analyses met the holding time criteria of 6 months for metals analyses and 28 days for nitrate+nitrite analyses.

3.1.2 Verification of Results

Reported results were verified against the raw data and where minor discrepancies were found the results were corrected on the report forms.

3.1.3 Calibrations

Daily calibrations were conducted for all analyses as were calibration verification checks at least every 10 or 20 analyses. Calibration verification results were exceeded for arsenic and chromium and associated sample results were qualified as estimated (J for detected results, UJ for undetected results).

3.1.4 Blanks

Laboratory method blanks were analyzed with each sample batch. No contaminants were identified in the method blanks of sufficient concentration to warrant qualification of sample results.

Section 2.1.4 provides a summary of the analytes detected in the field blanks. These concentrations were compared to the aqueous-based analyte concentrations contained in the raw data (prior to correction for dilution, solids and moisture content) and no field blank contaminants were present in sufficient concentration to warrant qualification of sample results.

3.1.5 Precision

3.1.5.1 Laboratory Duplicates

Duplicate samples were prepared and analyzed with each sample analysis batch. RPD values for iron, potassium and zinc were outside the acceptance limits and associated sample results have been qualified as estimated (J for detected results, UJ for undetected results).

3.1.5.2 Field Duplicate and Split Samples

A total of four field duplicate and one field split samples were collected and analyzed for the target analytes. Tables S-6 through S-10 present a summary of the results. RPD values in field duplicates for nitrate+nitrite as N, (sample S-8B); lead and fluoride, (sample Back-3B); arsenic, chromium, copper and vanadium (sample Soda N) exceeded the validation criteria of 35% RPD, however, this is likely due to heterogeneity of the sample matrix since associated laboratory QC were acceptable for these parameters.

RPD values in the field split sample for aluminum, copper, iron, nickel, potassium, silver, sodium, fluoride and nitrate+nitrite as N also exceeded the 35% RPD criteria however the methods of analysis between the two laboratories were different (see Table S-5), hence, differences would be expected.

3.1.6 Accuracy

Spike samples and laboratory control samples were analyzed with each sample batch for metals. Arsenic, cadmium, chromium, selenium and silver spike recoveries exceeded the acceptance limits requiring qualification of associated results as estimated (J for detected results, UJ for undetected results).

Laboratory control sample recoveries were exceeded for potassium and aluminum and associated results have been qualified as estimated (J for detected results) where applicable.

3.2 Radiochemical Data Summary

Radiochemical analyses were conducted on sediment, soil and source samples for polonium-210, throrium-228, thorium-230 and thorium-232 using traditional chemical separation and counting methods. In addition, the radionuclides, lead-210, uranium, radium-226, radium-228 and potassium-40 were analyzed using gamma spectrometry procedures by determining the abundance of their respective daughter radionuclides. This was conducted in order to complete the analyses within schedule. The following table provides an explanation of how the results were determined using gamma spectrometry techniques.

TARGET RADIONUCLIDE	DAUGHTER RADIONUCLIDE and GAMMA ENERGY	EXPLANATION
Lead-210	Lead-210 at 46 KeV	Reported as is
Uranium	Thorium-234 @ 63.3 KeV Uranium-235 @ 143 KeV	Major daughter of uranium-238
Radium-226	Radium 226 @ 186.0 KeV Lead-214 @ 295.2 KeV Lead-214 @ 352 KeV Bismuth-214 @ 609.4 KeV Bismuth-214 @ 1120.4 KeV Bismuth-214 @ 1764.7 KeV Lead-212 @ 238 KeV Bismuth-212 @ 727 KeV	All are daughter products of Radium-226, however, lead-214 and bismuth-214 daughters are of greatest abundance. Radium-226 reported as the average of the lead-214 and bismuth-214 daughters
Radium-228	Actinium-228 @ 338 KeV Actinium-228 @ 911 KeV Actinium-228 @ 968 KeV	All are daughter products of Radium-228, however actinium-228 @ 911 KeV is of greatest abundance. Radium-228 reported as the value of actinium-228 @ 911 KeV.

3.2.1 Validation Criteria

The validation criteria used for evaluation of the radiochemical analyses are described in Section 2.2.1.

3.2.2 Holding Times

All samples met the holding time criteria of 6 months from date of collection to analysis completion.

3.2.3 Verification of Results

Minor transcription errors were identified during verification of reported results against the raw data and these were corrected on the laboratory reports.

3.2.4 Calibrations

Review of calibration data for all analyses revealed that the following requirements were met:

- Instruments and detectors were calibrated initially prior to sample analyses;
- Daily calibration checks were performed for the radiochemical separation and counting methods (polonium, thorium, lead) and a gamma energy calibration for all target energies of interest was conducted;
- Detector efficiencies were reported and verified in the raw data; and
- Calibration sources used for calibrations were identified and traceable to NIST or an appropriate standards manufacturer.

3.2.5 Blanks

Method blanks, blank planchets and instrument backgrounds were analyzed or determined prior to sample analysis. No blank contamination was identified which required qualification of sample results.

3.2.6 Precision

3.2.6.1 Laboratory Duplicates

Duplicate analyses were conducted for each sample delivery group and RPD results were within the laboratory control limits.

3.2.6.2 Field Duplicate and Split Samples

A total of four field duplicate samples were collected and analyzed for the target radionuclides of concern. Tables S-6 through S-10 present a summary of the results. RPD values for field duplicates ranged from 0 to 100 percent which is within the validation criteria of plus or minus two times the method detection limits. RPD values for field splits were acceptable with the exception of the radium-228 values (109%) which is likely due to slight differences in instrument backgrounds and sample preparation methods.

3.2.7 Accuracy

Accuracy of the radionuclide analyses was monitored by the laboratory by the analysis of traceable LCSs. LCS analyses were performed daily or with each sample batch and all percent recoveries were within the acceptance limits of 80% to 120%.

4. OVERALL ASSESSMENT

Analytical data from the chemical and radiochemical analysis of 109 water samples and 78 source, sediment and soil samples were validated in order to verify that reported results were of sufficient quality to support the project work plan objectives. The samples were analyzed for metals, general chemical parameters and radionuclides.

Validation was conducted using U.S. EPA CLP guidelines (Bleyler, 1988). No data were rejected based on the validation conducted. Some minor quality control deficiencies were identified which resulted in qualification of data as undetected (U) or estimated (J or UJ) and these deficiencies are summarized in the preceeding sections. Two notable deficiencies were identified during validation and are summarized below.

- Silver and vanadium results in the water samples were not reported to the target quantitation limits due to the low precision of the analytical measurement equipment at the target limits of 0.2 µg/L and 5 µg/L, respectively, and

- Field split results for water and soil samples showed significant differences for the metals, general chemistry and radionuclide parameters however, these are likely due to the use of different analytical methods and method detection limits by the respective laboratories.

With the exception of the minor deficiencies summarized previously, the work plan quality assurance objectives were met and, the analytical data, as qualified, are acceptable for use.

5. REFERENCES

Bleyler, 1988, Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyis, U.S. Environmental Protection Agency, Washington, D.C.

Golder 1991, Phase I Remedial Investigation/Feasibility Study Work Plan for the Soda Springs Elemental Phosphorus Plant, Golder Associates Inc., Redmond, Washington.

APPENDIX S

TABLES

TABLE S-1. WATER SAMPLE FIELD DUPLICATE SUMMARY

ANALYTE	TW-26	TW-26-DUP	RPD
Aluminum	0.1	0.12	18
Arsenic	<0.002	0.002	200
Beryllium	<0.001	<0.001	NC
Cadmium	<0.005	<0.005	NC
Calcium	120	123	2
Chromium	<0.01	<0.01	NC
Copper	0.005	<0.005	200
Iron	0.22	0.27	20
Lead	0.001	0.002	67
Magnesium	124	126	2
Manganese	0.72	0.74	3
Nickel	<0.02	<0.02	NC
Potassium	25.5	25	2
Selenium	0.007	0.007	0
Silver	<0.01	<0.01	NC
Sodium	108	112	4
Vanadium	0.01	<0.01	200
Zinc	0.032	0.028	13
Ammonium	1.8	1.7	6
Bicarbonate	560	554	1
Carbonate	0	0	NC
Chloride	104	101	3
Fluoride	1.02	1.12	9
Hydroxide	0	0	NC
Nitrate+nitrite-N	7.95	7.9	1
Sulfate	360	360	0
Total Phosphorus	0.67	0.7	4
pH, std. units	6.7	6.7	0
Specific Conductance, μmhos/Cm @ 25°C	1730	1820	5
Total Dissolved Solids @ 180°C	1180	1180	0
Gross Alpha, total, pCi/L	6	12	67
Radium-226, total, pCi/L	0.4	<0.5	200
Radium-228, total, pCi/L	<-0.1	<0.1	NC
Radon-222, total, pCi/L	94	92	2
Uranium, total, mg/L	<0.002	<0.002	NC

Results are reported in mg/L except where noted.

RPD - Relative percent difference. Equal to the absolute value of the difference between two measurements divided by the average and multiplied by 100. A value of zero is substituted when one result is less than the detection limit.

NC - Indicates the RPD value can not be calculated due to both results being less than the detection limit.

TABLE S-2. WATER SAMPLE FIELD SPLIT SUMMARY

ANALYTE	TW-21	TW-21-S	RPD
Aluminum	0.18	<1	200
Arsenic	<0.002	<0.002	NC
Beryllium	<0.001	<0.01	NC
Cadmium	<0.005	0.02	200
Calcium	60	60	0
Chromium	<0.01	0.07	200
Copper	<0.005	0.01	200
Iron	7.72	8.41	9
Lead	0.001	0.09	196
Magnesium	264	265	0
Manganese	0.17	0.22	26
Nickel	0.03	0.14	129
Potassium	20.3	17.2	17
Selenium	<0.003	<0.001	NC
Silver	<0.01	0.09	200
Sodium	44	40	10
Vanadium	<0.01	0.24	200
Zinc	<0.008	<0.1	NC
Ammonium	0.36	0.2	57
Bicarbonate	1416	732	64
Carbonate	0	264	200
Chloride	21	19	10
Fluoride	0.2	0.2	0
Hydroxide	0	<1	NC
Nitrate+nitrite-N	0.5	<0.1	200
Sulfate	84	94	11
Total Phosphorus	0.79	0.75	5
pH, std. units	6.1	9.35	42
Specific Conductance, µmhos/Cm @ 25°C	1920	1470	27
Total Dissolved Solids @ 180°C	1120	1280	13
Gross Alpha, total, pCi/L	<1	<33	NC
Radium-226, total, pCi/L	<-0.3	<0.2	NC
Radium-228, total, pCi/L	<0.1	<2.6	NC
Radon-222, total, pCi/L	120	222	60
Uranium, total, mg/L	<0.002	0.01	200

Results are reported in mg/L except where noted.

RPD - Relative percent difference. Equal to the absolute value of the difference between two measurements divided by the average and multiplied by 100. A value of zero is substituted when one result is less than the detection limit.

NC - Indicates the RPD value can not be calculated due to both results being less than the detection limit.

TABLE S-3. WATER SAMPLE FIELD SPLIT SUMMARY, CONT.

ANALYTE	TW-18	TW-18-S	RPD
Aluminum	0.06	<1	200
Arsenic	0.003	0.003	0
Beryllium	<0.001	<0.01	NC
Cadmium	<0.005	0.01	200
Calcium	88.5	97	9
Chromium	<0.01	0.07	200
Copper	<0.005	0.01	200
Iron	6.74	8.27	20
Lead	<0.001	0.12	200
Magnesium	190	218	14
Manganese	0.29	0.36	22
Nickel	<0.02	0.07	200
Potassium	21.9	16	31
Selenium	<0.003	<0.001	NC
Silver	<0.01	0.05	200
Sodium	42.8	40	7
Vanadium	<0.01	0.24	200
Zinc	0.01	<0.1	200
Ammonium	0.35	0.2	55
Bicarbonate	1340	1330	1
Carbonate	0	<1	NC
Chloride	17	14	19
Fluoride	0.23	0.2	14
Hydroxide	0	<1	NC
Nitrate+nitrite-N	<0.5	<0.1	NC
Sulfate	60	53	12
Total Phosphorus	0.35	0.59	51
pH, std. units	6	7.8	26
Specific Conductance, µmhos/Cm @ 25°C	2000	1780	12
Total Dissolved Solids @ 180°C	1004	1180	16
Gross Alpha, total, pCi/L	-7	20.2	412
Radium-226, total, pCi/L	<0.2	0.1	200
Radium-228, total, pCi/L	<-0.1	<8.3	NC
Radon-222, total, pCi/L	93	292	103
Uranium, total, mg/L	<0.002	0.004	200

Results are reported in mg/L except where noted.

RPD - Relative percent difference. Equal to the absolute value of the difference between two measurements divided by the average and multiplied by 100. A value of zero is substituted when one result is less than the detection limit.

NC - Indicates the RPD value can not be calculated due to both results being less than the detection limit.

TABLE S-4. WATER SAMPLE FIELD SPLIT SUMMARY, CONT.

ANALYTE	DOC	DOC-S	RPD
Aluminum	0.08	0.2	86
Arsenic	<0.002	<0.002	NC
Beryllium	<0.001	<0.01	NC
Cadmium	<0.005	0.01	200
Calcium	116	120	3
Chromium	<0.01	0.07	200
Copper	<0.005	<0.01	NC
Iron	8.34	8.38	0
Lead	<0.001	0.07	200
Magnesium	133	138	4
Manganese	0.298	0.33	10
Nickel	<0.02	0.08	200
Potassium	14.1	11.2	23
Selenium	<0.002	<0.001	NC
Silver	<0.01	<0.05	NC
Sodium	34.2	30	13
Vanadium	0.02	0.25	170
Zinc	0.009	<0.1	200
Ammonium	0.6	0.4	40
Bicarbonate	496	1000	67
Carbonate	0	<1	NC
Chloride	14	11	24
Fluoride	0.38	0.4	5
Hydroxide	0	<1	NC
Nitrate+nitrite-N	<0.5	<0.1	NC
Sulfate	30	55	59
Total Phosphorus	0.37	0.33	11
pH, std. units	6	7.3	20
Specific Conductance, µmhos/Cm @ 25°C	1510	1430	5
Total Dissolved Solids @ 180°C	812	910	11
Gross Alpha, total, pCi/L	0	4.1	200
Radium-226, total, pCi/L	<-0.1	0.3	200
Radium-228, total, pCi/L	<0.3	<8.3	NC
Radon-222, total, pCi/L	62	205	107
Uranium, total, mg/L	<0.002	0.004	200

Results are reported in mg/L except where noted.

RPD - Relative percent difference. Equal to the absolute value of the difference between two measurements divided by the average and multiplied by 100. A value of zero is substituted when one result is less than the detection limit.

NC - Indicates the RPD value can not be calculated due to both results being less than the detection limit.

TABLE S-5. SPLIT SAMPLE ANALYTICAL METHOD COMPARISON

ANALYTE	METHOD OF ANALYSIS				ANALYTE	METHOD OF ANALYSIS			
	CN/ALR		CORE			CN/ALR		CORE	
Aluminum	6010 (1)	ICP	7020 (1)	FLAA	Zinc	6010 (1)	ICP	7950 (1)	FLAA
Arsenic	7061 (1)	H	7061 (1)	H	Ammonium	350.1 (2)	AP	350.3 (2)	ISE
Beryllium	7091 (1)	GFAA	7090 (1)	FLAA	Bicarbonate	310.1 (2)	T	310.1 (2)	T
Cadmium	7131 (1)	GFAA	7130 (1)	FLAA	Carbonate	310.1 (2)	T	310.1 (2)	T
Calcium	6010 (1)	ICP	215.1 (2)	FLAA	Chloride	325.3 (2)	T	325.1 (2)	AF
Chromium	6010 (1)	ICP	7190 (1)	FLAA	Fluoride	340.2 (2)	ISE	340.2 (2)	ISE
Copper	7211 (1)	GFAA	7210 (1)	FLAA	Hydroxide	310.1 (2)	T	310.1 (2)	T
Iron	6010 (1)	ICP	7380 (1)	FLAA	Nitrate+nitrite-N	353.2 (2)	ACR	352.1+354.1 (2)	BM
Lead	7421 (1)	GFAA	7420 (1)	FLAA	Sulfate	375.2 (2)	AM	375.2 (2)	AM
Magnesium	6010 (1)	ICP	242.1 (2)	FLAA	Total Phosphorus	365.2 (2)	MA	365.2 (2)	MA
Manganese	6010 (1)	ICP	7460 (1)	FLAA	pH, std. units	150.1 (2)	E	150.1 (2)	E
Nickel	249.2 (2)	GFAA	7520 (1)	FLAA	Specific Conductance	120.1 (2)	E	120.1 (2)	E
Potassium	258.1 (2)	FLAA	258.1 (2)	FLAA	Total Dissolved Solids	160.1 (2)	G	160.1 (2)	G
Selenium	7741 (1)	H	7741 (1)	H	Gross Alpha	900.0 (3)	GFPC	900.0 (3)	GFPC
Silver	7761 (1)	GFAA	7760 (1)	FLAA	Radium-226	903.1 (3)	REAS	903.1 (3)	REAS
Sodium	6010 (1)	ICP	273.1 (2)	FLAA	Radium-228	904.0 (3)	LBPC	904.0 (3)	LBPC
Vanadium	7911 (1)	GFAA	7910 (1)	FLAA	Radon-222	---	LS	---	LS
					Uranium	908.1	F	908.1	F

CN/ALR – Chen-Northern, Billings, Montana. Acculabs Research, Golden, Colorado.
CORE – Core Laboratories, Casper, Wyoming.
(1) – Method from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, Third Edition, September 1986".
(2) – Method from "Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, March 1983".
(3) – Method from "Prescribed Procedures for the Measurement of Radioactivity in Drinking Water, EPA-600/4-80-075, November 1980".

ICP – Inductively Coupled Plasma Atomic Emission Spectrometry
GFAA – Graphite Furnace Atomic Absorption Spectrophotometry
FLAA – Flame Atomic Absorption Spectrophotometry
H – Gaseous Hydride Flame Atomic Absorption Spectrophotometry
AP – Automated Phenate Colorimetric Method
T – Titrimetric Method
AF – Automated Ferricyanide Colorimetric Method
ISE – Ion Selective Electrode Method
ACR – Automated Cadmium Reduction Colorimetric Method
BM – Brucine Sulfate/Manual Diazotization Colorimetric Method
AM – Automated Methylthymol Blue Colorimetric Method
MA – Manual Ascorbic Acid Colorimetric Method
E – Manual Electrode Method
G – Gravimetric Method
GFPC – Gas Flow Proportional Counting Method
REAS – Radon Emanation Alpha Scintillation Method
LBPC – Low Background Proportional Counter
LS – Liquid Scintillation Method
F – Fluorometric Method

TABLE S-6. SOIL SAMPLE FIELD DUPLICATE SUMMARY

ANALYTE	S-8A	S-8A-DUP	RPD
Aluminum	21900	22500	3
Arsenic	5.6	6.6	16
Beryllium	2	2	0
Cadmium	13	14	7
Chromium	39	42	7
Copper	17	17	0
Iron	17300	17700	2
Lead	24	28	15
Manganese	411	406	1
Nickel	30	32	6
Potassium	4600	5500	18
Selenium	1	0.8	22
Silver	1.5	1	40
Sodium	424	399	6
Vanadium	63.3	67.4	6
Zinc	210	215	2
Fluoride	33.1	33.1	0
Cation Exchange Capacity, meq/100g	17.6	18.6	6
Nitrate+nitrite-N	6.1	5.1	18
pH, std. units	7.6	7.5	1
Polonium-210, total, pCi/g	5.7	5.7	0
Thorium-228, total, pCi/g	0.9	1.2	29
Thorium-230, total, pCi/g	3.1	2.8	10
Thorium-232, total, pCi/g	1	0.6	50
Lead-210, pCi/g	6	6.9	14
Uranium, pCi/g	4.2	4.1	2
Radium-226, pCi/g	4	3.8	5
Radium-228, pCi/g	1.2	1.1	9
Potassium-40, pCi/g	16	17	6

Results are reported in mg/Kg except where noted.

RPD - Relative percent difference. Equal to the absolute value of the difference between two measurements divided by the average and multiplied by 100. A value of zero is substituted when one result is less than the detection limit.

NC - Indicates the RPD value can not be calculated due to both results being less than the detection limit.

TABLE S-7. SOIL SAMPLE FIELD DUPLICATE SUMMARY, CONT.

ANALYTE	S-8B	S-8B-DUP	RPD
Aluminum	29200	31700	8
Arsenic	6.7	6.4	5
Beryllium	2	2	0
Cadmium	13	13.1	1
Chromium	57	60	5
Copper	17	17	0
Iron	24600	24000	2
Lead	21	18	15
Manganese	424	424	0
Nickel	32	37	14
Potassium	5400	5200	4
Selenium	1	1	0
Silver	1	1	0
Sodium	349	399	13
Vanadium	87	92	6
Zinc	210	215	2
Fluoride	23	25.8	11
Cation Exchange Capacity, meq/100g	17.6	23.3	28
Nitrate+nitrite-N	9.8	19	64
pH, std. units	7.6	7.4	3
Polonium-210, total, pCi/g	7	5.5	24
Thorium-228, total, pCi/g	1	1	0
Thorium-230, total, pCi/g	4	3.9	3
Thorium-232, total, pCi/g	1	0.9	11
Lead-210, pCi/g	6.5	6.8	5
Uranium, pCi/g	3.1	3.2	3
Radium-226, pCi/g	3.7	3.4	8
Radium-228, pCi/g	1.1	1.1	0
Potassium-40, pCi/g	16	15	6

Results are reported in mg/Kg except where noted.

RPD - Relative percent difference. Equal to the absolute value of the difference between two measurements divided by the average and multiplied by 100. A value of zero is substituted when one result is less than the detection limit.

NC - Indicates the RPD value can not be calculated due to both results being less than the detection limit.

TABLE S-8. SOIL SAMPLE FIELD DUPLICATE SUMMARY, CONT.

ANALYTE	Back-3B	Back-3C	RPD
Aluminum	17400	16700	4
Arsenic	5	5	0
Beryllium	1	2	67
Cadmium	7	6	15
Chromium	15	13	14
Copper	14	15	7
Iron	23000	21900	5
Lead	81	25	106
Manganese	514	493	4
Nickel	37	37	0
Potassium	3800	3900	3
Selenium	<0.6	<0.6	NC
Silver	<2	2	200
Sodium	798	972	20
Vanadium	42	40	5
Zinc	78.3	63.8	20
Fluoride	5.7	3.9	38
Cation Exchange Capacity, meq/100g	22.3	22.5	1
Nitrate+nitrite-N	12	13	8
pH, std. units	7.7	7.7	0
Polonium-210, total, pCi/g	1.4	1	33
Thorium-228, total, pCi/g	0.9	0.9	0
Thorium-230, total, pCi/g	0.9	0.8	12
Thorium-232, total, pCi/g	1	1	0
Lead-210, pCi/g	1.2	1.1	9
Uranium, pCi/g	1.2	0.8	40
Radium-226, pCi/g	1	0.9	11
Radium-228, pCi/g	1.2	1	18
Potassium-40, pCi/g	15	15	0

Results are reported in mg/Kg except where noted.

RPD - Relative percent difference. Equal to the absolute value of the difference between two measurements divided by the average and multiplied by 100. A value of zero is substituted when one result is less than the detection limit.

NC - Indicates the RPD value can not be calculated due to both results being less than the detection limit.

TABLE S-9. SOIL SAMPLE FIELD DUPLICATE SUMMARY, CONT.

ANALYTE	Soda N	Soda S	RPD
Aluminum	7280	8460	15
Arsenic	8.2	15	59
Beryllium	2.7	3	11
Cadmium	25.1	29.6	16
Chromium	13	19	38
Copper	7	16	78
Iron	194000	197000	2
Lead	11	10	10
Manganese	1200	1270	6
Nickel	82.3	89	8
Potassium	13500	13900	3
Selenium	1	1.2	18
Silver	0.2	0.5	86
Sodium	600	800	29
Vanadium	94	208	75
Zinc	100	110	10
Fluoride	2.3	1.7	30
Cation Exchange Capacity, meq/100g	33.2	58.1	55
Nitrate+nitrite-N	---	---	---
pH, std. units	7.1	7.6	7
Polonium-210, total, pCi/g	0.5	0.6	18
Thorium-228, total, pCi/g	0.3	0.3	0
Thorium-230, total, pCi/g	1.4	0.7	67
Thorium-232, total, pCi/g	0.3	0.1	100
Lead-210, pCi/g	0.4	0.5	22
Uranium, pCi/g	0.6	0.6	0
Radium-226, pCi/g	0.6	0.6	0
Radium-228, pCi/g	0.4	0.4	0
Potassium-40, pCi/g	5.4	5.3	2

Results are reported in mg/Kg except where noted.

RPD - Relative percent difference. Equal to the absolute value of the difference between two measurements divided by the average and multiplied by 100. A value of zero is substituted when one result is less than the detection limit.

NC - Indicates the RPD value can not be calculated due to both results being less than the detection limit.

TABLE S-10. SOIL SAMPLE FIELD SPLIT SUMMARY

ANALYTE	S-11b	S-11b-S	RPD
Aluminum	27200	12600	73
Arsenic	5.6	4.3	26
Beryllium	2	0.7	96
Cadmium	16	19.3	19
Chromium	55	30.3	58
Copper	2	17.8	160
Iron	20000	11800	52
Lead	20	21.9	9
Manganese	417	463	10
Nickel	35	23.6	39
Potassium	5400	3530	42
Selenium	1.2	2.8	80
Silver	1.5	6.7	127
Sodium	300	680	78
Vanadium	87	78.5	10
Zinc	250	209	18
Fluoride	24.8	6.7	115
Cation Exchange Capacity, meq/100g	19.4	<10	200
Nitrate+nitrite-N	5.6	<0.1	200
pH, std. units	7.0	6.75	4
Polonium-210, total, pCi/g	4.1	---	---
Thorium-228, total, pCi/g	1.1	1.5	31
Thorium-230, total, pCi/g	3.4	3.7	8
Thorium-232, total, pCi/g	1.3	1.4	7
Lead-210, pCi/g	4.5	4.4	2
Uranium, pCi/g	*	*	---
Radium-226, pCi/g	3.0	3.7	21
Radium-228, pCi/g	1.2	4.1	109
Potassium-40, pCi/g	19.0	18.5	3

Results are reported in mg/Kg except where noted.

RPD - Relative percent difference. Equal to the absolute value of the difference between two measurements divided by the average and multiplied by 100. A value of zero is substituted when one result is less than the detection limit.

--- - Indicates analyte not determined.

* - Results could not be compared since uranium was analyzed by ALR using gamma spectrometry and by Core using fluorimetric procedures.

APPENDIX S

ATTACHMENT 1

INORGANIC DATA ASSESSMENT SUMMARIES - WATER SAMPLES

INORGANIC DATA ASSESSMENT SUMMARY

PROJECT NO. 913-1101-211 SITE Monsanto Soda Springs

LABORATORY Chem-Northern SAMPLES/MATRIX 17 Waters 121145-121150, 121153-121157, 121162-121167

SDG # 91-942 (1)

DATA ASSESSMENT SUMMARY

	ICP	AA	~~ISE~~ ~~HG~~ wet chem	CYANIDE
1. HOLDING TIMES	0	0	0[3]	
2. CALIBRATIONS	0	0	0	
3. BLANKS	0	0	0	
4. ICS	0			
5. LCS	0	0	0	
6. DUPLICATE ANALYSIS	0	0	0	
7. MATRIX SPIKE	0	0	0	
8. MSA		X[2]		
9. SERIAL DILUTION	0		X[1]	
10. SAMPLE VERIFICATION	0	0	0 KA 11/24/92	
11. OTHER QC	0	0	0	
12. OVERALL ASSESSMENT	0	0	X[1]	

GWA 1/13/92

0 = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

NOTES: [1] Raw data for F, SO_4, NO_2, TP not provided, lab contacted.
[2] Analytical spikes not performed as per SOW lab contacted.
[3] Holding times missed for NH_4^+, Cl, Sp.Cond, TDS results qualified as estimated.

Validated by: [signature] Date: 1/13/92

Reviewed by: Kenny Lowe Date: 4/17/92

SDG # 91-942 Project No. 913-1101-211

	Acceptable YES	NO
1. Holding Times		✓

Holding times missed for compounds shown on attached, results qualified J or UJ

2. Calibrations	✓	

Proper number of standards used for all analyses, results acceptable, ICV, CCV etc.

3. Blanks	✓	

Method blanks and field blanks analyzed, ICB, CCB analyzed for ICP/AA analyses.

4. ICP Interference Check Sample (ICS)	✓	

ICS acceptable

5. Laboratory Control Sample (LCS)	✓	

LCS acceptable

6. Duplicate Sample Analysis	✓	

Lab duplicate analyses acceptable

7. Matrix Spike Sample Analysis	✓	

Spike analyses acceptable

SDG # 91-942 Project No. 913-1101-211

	Acceptable YES	Acceptable NO
8. Furnace Atomic Absorption QC		✓

Analytical spikes not run but matrix spikes acceptable and internal lab spikes acceptable.

9. ICP Serial Dilution	✓	

ISO acceptable

10. Sample Result Verification	✓	

Results verified and corrected as appropriate on attached Forms

11. Field Duplicates		

N/A

12. Overall Assessment	✓	

GFAA spikes need to be run in future spl rounds. Validation of this data will be completed when remaining raw data is received. IDL's and CRDLs met as specified in QAPP with the exception of silver and vanadium. Data meets work plan DQO's DLs within 5X of CRDLs.

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. Calf Spring

Matrix (Soil/Water): Water

Level (Low/Med): --

Solids: --

Lab Sample ID: 121145

Date Received: 10/18/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.16	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		~~P~~ F KAB
7440-43-9	Cadmium	0.006			F
7440-70-2	Calcium	128			P
7440-47-3	Chromium	0.01	U	N	P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.067	U		P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	69			P
7439-96-5	Manganese	0.015	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	14.3			A
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	~~.0002~~ 0.01	U		~~P~~ F KAB
7440-23-5	Sodium	55			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.071	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	542			T
	Carbonate	0			T
	Chloride	87	J		T
	Fluoride	3.0			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	2.56			ACR
	Sulfate	126			AM
	Total Phosphorus	0.31	U		MA
	pH	6.7			E
	Specific Conductance	1320	J		E
	Total Dissolved Solids	807			G
	Turbidity	Not required			N

1/13/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc. Sample No. Mormon B

Matrix (Soil/Water): Water Lab Sample ID: 121146
Level (Low/Med): -- Date Received: 10/18/91
Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.14			P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		~~P~~ F KB
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	88			P
7440-47-3	Chromium	0.01	U	N	P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.025	U		P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	98			P
7439-96-5	Manganese	0.005			P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	12.5			A
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		~~P~~ F KB
7440-23-5	Sodium	64			P
7440-62-2	Vanadium	0.01			F
7440-66-6	Zinc	0.008	U	KB	P
	Ammonium	0.10	U		AP
	Bicarbonate	536			T
	Carbonate	0			T
	Chloride	95	J		T
	Fluoride	1.6			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	3.66			ACR
	Sulfate	150			AM
	Total Phosphorus	0.31			MA
	pH	6.7			B
	Specific Conductance	1510	J		E
	Total Dissolved Solids	833			G
	Turbidity	Not required			N

1/15/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. Mormon C

Matrix (Soil/Water): Water

Level (Low/Med): --

Solids: --

Lab Sample ID: 121147

Date Received: 10/18/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.11	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		~~P~~ F KB
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	104			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.025	U		P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	74			P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	13.7			A
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		~~P~~ F KB
7440-23-5	Sodium	29			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.008	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	536			T
	Carbonate	0			T
	Chloride	37	J		T
	Fluoride	1.2			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	5.20			ACR
	Sulfate	78			AM
	Total Phosphorus	0.21	U		MA
	pH	6.7			E
	Specific Conductance	1050	J		E
	Total Dissolved Solids	705			G
	Turbidity	Not required			N

Check 7/13/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. Homestead

Matrix (Soil/Water): Water

Lab Sample ID: 121148

Level (Low/Med): --

Date Received: 10/18/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.10	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		~~P~~ F KAS
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	102			P
7440-47-3	Chromium	0.01	U	N	P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.025	U		P
7439-92-1	Lead	0.004	U		F KAS 1/13/92
7439-95-4	Magnesium	95			P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	6.1			A
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		~~P~~ F KAS
7440-23-5	Sodium	31			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.008	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	724			T
	Carbonate	0			T
	Chloride	17			T
	Fluoride	0.4			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	5.50			ACR
	Sulfate	54			AM
	Total Phosphorus	0.24	U		MA
	pH	6.8			E
	Specific Conductance	1070	J		E
	Total Dissolved Solids	731			G
	Turbidity	Not required			N

KAS 1/13/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. TW-2-RFK

Matrix (Soil/Water): Water

Lab Sample ID: 121149

Level (Low/Med): --

Date Received: 10/18/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.13			P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		~~P~~ F KB
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	116			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.021			F
7439-89-6	Iron	0.069			P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	60			P
7439-96-5	Manganese	0.016			P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	4.8			A
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		~~P~~ F KB
7440-23-5	Sodium	15			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	1.41			P
	Ammonium	0.10	U		AP
	Bicarbonate	472			T
	Carbonate	0			T
	Chloride	17			T
	Fluoride	0.2			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	3.42			ACR
	Sulfate	84			AM
	Total Phosphorus	0.10			MA
	pH	6.5			E
	Specific Conductance	1020	J		E
	Total Dissolved Solids	631			G
	Turbidity	Not required			N

Tent 1/13/92

(1/22/92 MH)

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. ~~FB-01~~ 02-RFK

Matrix (Soil/Water): Water

Lab Sample ID: 121150

Level (Low/Med): --

Date Received: 10/18/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.02	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		~~P~~ F KB
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	0.5	U		P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.006			F
7439-89-6	Iron	0.025	U		P
7439-92-1	Lead	0.001			F
7439-95-4	Magnesium	0.5	U		P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	0.4	U		A
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		~~P~~ F KB
7440-23-5	Sodium	0.09			P
7440-62-2	Vanadium	0.01 ~~0.01 0.02~~	~~U~~	U	F
7440-66-6	Zinc	0.008	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	0.1	U		T
	Carbonate	0			T
	Chloride	0.1	U		T
	Fluoride	0.10	U		ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	1			AM
	Total Phosphorus	0.10	U		MA
	pH	4.8			E
	Specific Conductance	10	UJ		E
	Total Dissolved Solids	10	U		G
	Turbidity	Not required			N

MH 1/13/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. PW-1-RFK

Matrix (Soil/Water): Water

Lab Sample ID: 121153

Level (Low/Med): --

Date Received: 10/18/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.17	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		~~P~~ F KAS
7440-43-9	Cadmium	0.080			F
7440-70-2	Calcium	134			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.025	U		P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	71			P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	12.2			A
7782-49-2	Selenium	0.007			H
7440-22-4	Silver	0.01	U		~~P~~ F KAS
7440-23-5	Sodium	44			P
7440-62-2	Vanadium	0.02	U		F
7440-66-6	Zinc	0.077	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	452			T
	Carbonate	0			T
	Chloride	136			T
	Fluoride	1.3			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	5.10			ACR
	Sulfate	162			AM
	Total Phosphorus	~~1.46~~ 1.14			MA
	pH	6.7			E
	Specific Conductance	1540	J		E
	Total Dissolved Solids	960			G
	Turbidity	Not required			N

1/13/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. PW-2-RFK

Matrix (Soil/Water): Water

Level (Low/Med): --

Solids: --

Lab Sample ID: 121154

Date Received: 10/18/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.12	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		~~P~~ F KAS
7440-43-9	Cadmium	0.020			F
7440-70-2	Calcium	119			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.027	U		P
7439-92-1	Lead	0.002	U		F
7439-95-4	Magnesium	57			P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	6.2			A
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		~~P~~ F KAS
7440-23-5	Sodium	20			P
7440-62-2	Vanadium	0.05	U		F
7440-66-6	Zinc	0.015	U		P
	Ammonium	0.25			AP
	Bicarbonate	443			T
	Carbonate	0			T
	Chloride	28			T
	Fluoride	0.40			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	4.05			ACR
	Sulfate	84			AM
	Total Phosphorus	~~0.54~~ .54	U		MA
	pH	6.7			E
	Specific Conductance	1030	J		E
	Total Dissolved Solids	625			G
	Turbidity	Not required			N

1/13/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. PW-3-RFK

Matrix (Soil/Water): Water

Lab Sample ID: 121155

Level (Low/Med): --

Date Received: 10/18/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.12	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		~~P~~ F KAS
7440-43-9	Cadmium	0.007			F
7440-70-2	Calcium	126			P
7440-47-3	Chromium	0.01		N	P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.051	U		P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	~~63~~ 55			P
7439-96-5	Manganese	0.006	U		P
7440-02-0	Nickel	0.04			F
7440-09-7	Potassium	6.1			A
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		~~P~~ F KAS
7440-23-5	Sodium	~~21~~ 28			P
7440-62-2	Vanadium	0.16	U		F
7440-66-6	Zinc	0.013	U		P
	Ammonium	0.26	J		AP
	Bicarbonate	428	J		T
	Carbonate	0	J		T
	Chloride	35			T
	Fluoride	0.34			ISE
	Hydroxide	0	J		T
	Nitrate/Nitrite as N	4.45			ACR
	Sulfate	90			AM
	Total Phosphorus	0.49	U		MA
	pH	6.8			E
	Specific Conductance	1010	J		E
	Total Dissolved Solids	653	J		G
	Turbidity	Not required			N

1/13/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. PW-4-RFK

Matrix (Soil/Water): Water

Lab Sample ID: 121156

Level (Low/Med): --

Date Received: 10/18/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.05			P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		~~P~~ F ICAS
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	120			P
7440-47-3	Chromium	0.01		N	P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.36	U		P
7439-92-1	Lead	0.001			F
7439-95-4	Magnesium	58			P
7439-96-5	Manganese	0.007			P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	4.6			A
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		~~P~~ F ICAS
7440-23-5	Sodium	16			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.008	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	427			T
	Carbonate	0			T
	Chloride	14			T
	Fluoride	0.23			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	3.80			ACR
	Sulfate	78			AM
	Total Phosphorus	0.10			MA
	pH	6.8			E
	Specific Conductance	838	J		E
	Total Dissolved Solids	585			G
	Turbidity	Not required			N

1/13/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. FB-01-RFK

Matrix (Soil/Water): Water

Lab Sample ID: 121157

Level (Low/Med): --

Date Received: 10/18/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.02			P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		~~P~~ F KB
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	0.5	U		P
7440-47-3	Chromium	0.01	U	N	P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.025	U		P
7439-92-1	Lead	0.001			F
7439-95-4	Magnesium	0.5	U		P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	0.4	U		A
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		~~P~~ F KB
7440-23-5	Sodium	0.10			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.008	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	1.0			T
	Carbonate	0			T
	Chloride	0.1	U		T
	Fluoride	~~0.10~~ .02 Klein	U		ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	1			AM
	Total Phosphorus	0.10	U		MA
	pH	5.6			E
	Specific Conductance	10	UJ		E
	Total Dissolved Solids	10	U		G
	Turbidity	Not required			N

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. TW-28-RFK

Matrix (Soil/Water): Water

Lab Sample ID: 121162

Level (Low/Med): --

Date Received: 10/21/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.16			P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		~~P~~ F KA
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	203			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	~~0.058~~ 0.052			P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	119			P
7439-96-5	Manganese	0.008			P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	8.4			A
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		~~P~~ F KA
7440-23-5	Sodium	31			~~P~~ KA
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.008	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	1080	J		T
	Carbonate	0	J		T
	Chloride	21			T
	Fluoride	0.15			ISE
	Hydroxide	0	J		T
	Nitrate/Nitrite as N	1.38			ACR
	Sulfate	78			AM
	Total Phosphorus	0.21			MA
	pH	6.0			E
	Specific Conductance	1640	J		E
	Total Dissolved Solids	976			G
	Turbidity	Not required			N

1/13/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. TW-29-RFK

Matrix (Soil/Water): Water

Level (Low/Med): --

Solids: --

Lab Sample ID: 121163

Date Received: 10/21/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.18	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		~~P~~ F KB
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	134			P
7440-47-3	Chromium	0.01	U	N	P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.016	U		P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	71			P
7439-96-5	Manganese	0.028	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	5.6			A
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		~~P~~ F KB
7440-23-5	Sodium	21			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.008	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	611	J		T
	Carbonate	0	J		T
	Chloride	18			T
	Fluoride	0.22			ISE
	Hydroxide	0	J		T
	Nitrate/Nitrite as N	4.25			ACR
	Sulfate	90			AM
	Total Phosphorus	0.21	U		MA
	pH	6.4			E
	Specific Conductance	1040	J		E
	Total Dissolved Solids	667			G
	Turbidity	Not required			N

1/13/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. TW-9-RFK

Matrix (Soil/Water): Water

Level (Low/Med): --

Solids: --

Lab Sample ID: 121164

Date Received: 10/21/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.23	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		~~P~~ F KB
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	158			P
7440-47-3	Chromium	0.01	U	N	P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	16.8			P
7439-92-1	Lead	0.004	U		F
7439-95-4	Magnesium	179			P
7439-96-5	Manganese	0.495			P
7440-02-0	Nickel	0.03			F
7440-09-7	Potassium	17.2			A
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		~~P~~ F KB
7440-23-5	Sodium	43			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.011	U		P
	Ammonium	0.74	~~U~~	U	AP Kent 1/13/92
	Bicarbonate	1292	J		T
	Carbonate	0	J		T
	Chloride	24			T
	Fluoride	0.34			ISE
	Hydroxide	0	J		T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	96			AM
	Total Phosphorus	0.51	U		MA
	pH	6.0			E
	Specific Conductance	1910	J		E
	Total Dissolved Solids	1090			G
	Turbidity	Not required			N

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. TW-21-RFK

Matrix (Soil/Water): Water

Level (Low/Med): --

Solids: --

Lab Sample ID: 121165

Date Received: 10/21/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	~~0.19~~ 0.18	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		~~P~~ FKB
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	60			P
7440-47-3	Chromium	0.01	U	N	P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	7.72 ~~7.72~~ ~~77.2~~			P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	264			P
7439-96-5	Manganese	0.17 ~~0.17~~ ~~1.72~~ (KB)			P
7440-02-0	Nickel	0.03			F
7440-09-7	Potassium	20.3			A
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		~~P~~ FKB
7440-23-5	Sodium	44			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.008	U		P
	Ammonium	0.36	U		AP
	Bicarbonate	1416	J		T
	Carbonate	0	J		T
	Chloride	21			T
	Fluoride	0.20			ISE
	Hydroxide	0	J		T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	84			AM
	Total Phosphorus	0.79			MA
	pH	6.1			E
	Specific Conductance	1920	J		E
	Total Dissolved Solids	1120			G
	Turbidity	Not required			N

1/13/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. FB-03-RFK

Matrix (Soil/Water): Water

Level (Low/Med): --

Solids: --

Lab Sample ID: 121166

Date Received: 10/21/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.10			P
7440-38-2	Arsenic	-0.002	U		H
7440-41-7	Beryllium	0.001	U		~~P~~ F KAS
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	0.5	U		P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.010			F
7439-89-6	Iron	0.035			P
7439-92-1	Lead	0.003			F
7439-95-4	Magnesium	0.5	U		P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	0.4	U		A
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.03			~~P~~ F KAS
7440-23-5	Sodium	0.27			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.008	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	0.6	J		T
	Carbonate	0	J		T
	Chloride	0.2			T
	Fluoride	~~0.10~~ .02	U		ISE
	Hydroxide	0	J		T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	1	U		AM
	Total Phosphorus	~~0.10~~ .05	U		MA
	pH	5.3			E
	Specific Conductance	10	UJ		E
	Total Dissolved Solids	10	U		G
	Turbidity	Not required			N

1/13/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. TW-34-RFK

Matrix (Soil/Water): Water

Level (Low/Med): --

Solids: --

Lab Sample ID: 121167

Date Received: 10/21/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.13			P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		~~P~~ F KAB
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	74			P
7440-47-3	Chromium	0.01	U	N	P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.84			P
7439-92-1	Lead	0.006			F
7439-95-4	Magnesium	72			P
7439-96-5	Manganese	0.25 ~~0.27~~			P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	28.2			A
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		~~P~~ F KAB
7440-23-5	Sodium	43			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.054			P
	Ammonium	0.10	U		AP
	Bicarbonate	448	J		T
	Carbonate	0	J		T
	Chloride	21			T
	Fluoride	0.94			ISE
	Hydroxide	0	J		T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	138			AM
	Total Phosphorus	0.24			MA
	pH	7.5			E
	Specific Conductance	928	J		E
	Total Dissolved Solids	632			G
	Turbidity	Not required			N

1/13/92

INORGANIC DATA ASSESSMENT SUMMARY

PROJECT NO. 913-1101-.211 SITE Monsanto Soda Spgs

LABORATORY Chem - Northern SAMPLES/MATRIX

121196 - 121204

SDG # 91-942(2) 121266 - 121270

~~121192~~ 121271

DATA ASSESSMENT SUMMARY

	ICP	AA	~~HG~~ Wet Chem	CYANIDE
1. HOLDING TIMES	O	O	O	
2. CALIBRATIONS	O	O	O	
3. BLANKS	O	O	O	
4. ICS	O			
5. LCS	O	O	O	
6. DUPLICATE ANALYSIS	O	O	O	
7. MATRIX SPIKE	O	O	O	
8. MSA		X'		
9. SERIAL DILUTION	O			
10. SAMPLE VERIFICATION	O	O	O	
11. OTHER QC	O	O	O	
12. OVERALL ASSESSMENT	O	O	O	

KLowe 1/28/92

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

NOTES:

1 Analytical spikes not performed per SOW lab Contract

Validated by: [signature] Date: 2/3/92

Reviewed by: [signature] Date: 2/5/92

SDG # 91-942 (2) Project No. 913-1101.211

	Acceptable YES	NO
1. Holding Times	✓	

holding Time acceptable ✓

2. Calibrations	✓	

A analyte outside of QC limits Results less then IDL, results acceptable. Verified appropiate number of standard and blanks used. ✓

3. Blanks	✓	

NO Contaminates found in Blanks ✓

4. ICP Interference Check Sample (ICS)	✓	

ICS within QC limits Recal Al %R $540/501 \times 100 = 107.9$ ✓

5. Laboratory Control Sample (LCS)	✓	

all LCS with in QC limits ✓
Recal LCS %R Pb $.024/.023 \times 100 = 104.34$
ERROR in Calculating %R for Pb

6. Duplicate Sample Analysis	✓	

Duplicates with in control limits ✓
Duplicate analysis acceptable.

7. Matrix Spike Sample Analysis	✓	

spike recovery %R with in QC limits for analyte. Recal %R Al ~~.035 - .018~~ ✓
$\frac{.38 - .18}{.20} \times 100 = 100$ acceptable analysis

SDG # 91-942(27) Project No. 913-1101.211

	Acceptable YES	Acceptable NO
8. Furnace Atomic Absorption QC		✓

analytical spikes not run but matrix spike acceptable and Internal lab spike acceptable. ✓

9. ICP Serial Dilution	✓	

Recal %D 540/501 x100 = 107.7 acceptable Data ✓

10. Sample Result Verification	✓	

Results verified and corrected as appropriate attached form ✓

11. Field Duplicates	✓	

N/A ✓

12. Overall Assessment	✓	

G-FAA spikes need to be run in future ~~and~~ ✓

Data meets work plan DQO's DLs reported to SX CRDLs.

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121196
Lab Sample ID: TW-30-CCY
Date Received: 10/22/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Total Aluminum	.38 ~~0.38~~	UL		P
7440-38-2	Total Arsenic	0.002			H
7440-41-7	Total Beryllium	0.001	U		F
7440-43-9	Total Cadmium	0.005	U		F
7440-70-2	Total Calcium	231			P
7440-47-3	Total Chromium	0.01	U		P
7440-50-8	Total Copper	0.005	U		F
7439-89-6	Total Iron	1.90			P
7439-92-1	Total Lead	0.001	U		F
7439-95-4	Total Magnesium	156			P
7439-96-5	Total Manganese	0.18			P
7440-02-0	Total Nickel	0.02	U		F
7440-09-7	Total Potassium	46.0			P
7782-49-2	Total Selenium	0.015			H
7440-22-4	Total Silver	0.01	U		F
7440-23-5	Total Sodium	195			P
7440-62-2	Total Vanadium	0.01	UL		F
7440-66-6	Total Zinc	0.032	UL		P
	Ammonium	0.57	UL		AP
	Bicarbonate	472			T
	Carbonate	0			T
	Chloride	313			T
	Fluoride	3.0			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	12.2			ACR
	Sulfate	360			AM
	Total Phosphorus	~~231~~ 2.13			NA
	pH	6.4			E
	Specific Conductance	2430			E
	Total Dissolved Solids	1530			G
	Turbidity	Not required			N

2/5/92

2/3/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121196
Lab Sample ID: TW-30-CCY
Date Received: 10/22/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Dissolved Aluminum	0.17	U		P
7440-38-2	Dissolved Arsenic	0.003			H
7440-41-7	Dissolved Beryllium	0.001	U		F
7440-43-9	Dissolved Cadmium	0.005			F
7440-70-2	Dissolved Calcium	171			P
7440-47-3	Dissolved Chromium	0.01	U		P
7440-50-8	Dissolved Copper	0.005	U		F
7439-89-6	Dissolved Iron	0.042	U		P
7439-92-1	Dissolved Lead	0.001	U		F
7439-95-4	Dissolved Magnesium	115			P
7439-96-5	Dissolved Manganese	0.032	U		P
7440-02-0	Dissolved Nickel	0.02	U		F
7440-09-7	Dissolved Potassium	46.5			P
7782-49-2	Dissolved Selenium	0.016			H
7440-22-4	Dissolved Silver	0.01	U		F
7440-23-5	Dissolved Sodium	153			P
7440-62-2	Dissolved Vanadium	0.01	U		F
7440-66-6	Dissolved Zinc	0.053	U		P
	Ammonium	Not applicable			AP
	Bicarbonate	Not applicable			T
	Carbonate	Not applicable			T
	Chloride	Not applicable			T
	Fluoride	Not applicable			ISE
	Hydroxide	Not applicable			T
	Nitrate/Nitrite as N	Not applicable			ACR
	Sulfate	Not applicable			AM
	Total Phosphorus	Not applicable			NA
	pH	Not applicable			E
	Specific Conductance	Not applicable			E
	Total Dissolved Solids	Not applicable			G
	Turbidity	Not required			N

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121197
Lab Sample ID: EB-01-CCY
Date Received: 10/22/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.02	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	0.5	U		P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.025	U		P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	0.5	U		P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	0.4	U		P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	0.04	U		P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.009	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	0.6	U		T
	Carbonate	0			T
	Chloride	0.10	U		T
	Fluoride	~~0.10~~ .02	U		ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	1	U		AM
	Total Phosphorus	~~0.46~~ .04	~~U~~		NA
	pH	4.5			E
	Specific Conductance	15			E
	Total Dissolved Solids	10	U		G
	Turbidity	Not required			N

4/16/92

Klein 2/3/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121198
Lab Sample ID: TW-26-RFK
Date Received: 10/22/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	.10 ~~0.10~~ Klouri .33 ✓	U		P
7440-38-2	Arsenic	0.002 ✓	U		H
7440-41-7	Beryllium	0.001 ✓	U		F
7440-43-9	Cadmium	0.005 ✓	U		F
7440-70-2	Calcium	120 ✓			P
7440-47-3	Chromium	0.01 ✓	U		P
7440-50-8	Copper	0.005 ✓	U		F
7439-89-6	Iron	0.22 ✓	U		P
7439-92-1	Lead	0.001 ✓	U		F
7439-95-4	Magnesium	124 ✓			P
7439-96-5	Manganese	0.72 ✓			P
7440-02-0	Nickel	0.02 ✓	U		F
7440-09-7	Potassium	25.5 ✓			P
7782-49-2	Selenium	0.007 ✓			H
7440-22-4	Silver	0.01 ✓	U		F
7440-23-5	Sodium	108 ✓			P
7440-62-2	Vanadium	0.01 ✓	U		F
7440-66-6	Zinc	0.032 ✓	U		P
	Ammonium	~~1.96~~ 1.8 ✓			AP
	Bicarbonate	560 ✓			T
	Carbonate	0			T
	Chloride	104 ✓			T
	Fluoride	~~1.0~~ 1.02 ✓			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	7.95 ✓			ACR
	Sulfate	360 ✓			AM
	Total Phosphorus	~~0.87~~ .67 ✓	U		NA
	pH	6.7 ✓			E
	Specific Conductance	1730 ✓			E
	Total Dissolved Solids	1180 ✓			G
	Turbidity	Not required			N

Klouri
2/3/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121199
Lab Sample ID: TW-13-RFK
Date Received: 10/22/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.17			P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	110			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.070	U		P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	46.4			P
7439-96-5	Manganese	0.008	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	5.5			P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	7.6			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.008	U		P
	Ammonium	0.31	U		AP
	Bicarbonate	498			T
	Carbonate	0			T
	Chloride	13			T
	Fluoride	0.23			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	1.84			ACR
	Sulfate	34			AM
	Total Phosphorus	0.10	U		NA
	pH	7.0			E
	Specific Conductance	774			E
	Total Dissolved Solids	424			G
	Turbidity	Not required			N

4/16/92

2/3/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121200
Lab Sample ID: TW-26-RFK-DUP
Date Received: 10/22/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.12 ✓	U		P
7440-38-2	Arsenic	0.002 ✓			H
7440-41-7	Beryllium	0.001 ✓	U		F
7440-43-9	Cadmium	0.005 ✓	U		F
7440-70-2	Calcium	123 ✓			P
7440-47-3	Chromium	0.01 ✓	U		P
7440-50-8	Copper	0.005 ✓	U		F
7439-89-6	Iron	0.27 ✓	U		P
7439-92-1	Lead	0.002 ✓	U		F
7439-95-4	Magnesium	126 ✓			P
7439-96-5	Manganese	0.74 ✓	~~U~~		P
7440-02-0	Nickel	0.02 ✓	U		F
7440-09-7	Potassium	25.0 ✓			P
7782-49-2	Selenium	0.007 ✓			H
7440-22-4	Silver	0.01 ✓	U		F
7440-23-5	Sodium	112 ✓			P
7440-62-2	Vanadium	0.01 ✓	U		F
7440-66-6	Zinc	0.028	U		P
	Ammonium	~~1.80~~ 1.7 ✓			AP
	Bicarbonate	554 ✓			T
	Carbonate	0			T
	Chloride	101 ✓			T
	Fluoride	1.12 ✓			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	7.90 ✓			ACR
	Sulfate	360 ✓			AM
	Total Phosphorus	~~0.72~~ .70 ✓	U		NA
	pH	6.7 ✓			E
	Specific Conductance	1820 ✓			E
	Total Dissolved Solids	1180 ✓			G
	Turbidity	Not required			N

[illegible] 4/16/92

Klonig 2/3/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121201
Lab Sample ID: TW-15-RFK
Date Received: 10/22/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	~~0.09~~ .06	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	117			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.051	U		P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	47.2			P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	3.1			P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	7.0			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.008	U		P
	Ammonium	0.15			AP
	Bicarbonate	509			T
	Carbonate	0			T
	Chloride	15			T
	Fluoride	0.24			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	-1.5~~8~~3			ACR
	Sulfate	34			AM
	Total Phosphorus	~~0.11~~ .10	U		NA
	pH	7.0			E
	Specific Conductance	786			E
	Total Dissolved Solids	457			G
	Turbidity	Not required			N

4/16/92

Klorie 2/3/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121202
Lab Sample ID: Hooper
Date Received: 10/22/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.12	U		P
7440-38-2	Arsenic	0.002			H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	120			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	5.92			P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	130			P
7439-96-5	Manganese	0.28			P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	15.0			P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	33.4			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.0085	U		P
	Ammonium	0.54	U		AP
	Bicarbonate	1002			T
	Carbonate	0			T
	Chloride	23			T
	Fluoride	0.42			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	60			AM
	Total Phosphorus	~~0.29~~ .27	U		NA
	pH	5.9			E
	Specific Conductance	1460			E
	Total Dissolved Solids	812			G
	Turbidity	Not required			N

4/16/92

Klonie 2/3/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121203
Lab Sample ID: ~~TB-04-RFK~~ TW-44-RFK
Date Received: 10/22/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Total Aluminum	.18 ~~0.18~~ ~~.15~~			P
7440-38-2	Total Arsenic	0.007			H
7440-41-7	Total Beryllium	0.001	U		F
7440-43-9	Total Cadmium	0.070			F
7440-70-2	Total Calcium	59.5			P
7440-47-3	Total Chromium	0.04			P
7440-50-8	Total Copper	0.011	U		F
7439-89-6	Total Iron	5.57 ~~5.26~~ ~~5.17~~			P
7439-92-1	Total Lead	0.028			F
7439-95-4	Total Magnesium	190			P
7439-96-5	Total Manganese	0.16			P
7440-02-0	Total Nickel	0.06			F
7440-09-7	Total Potassium	15.4			P
7782-49-2	Total Selenium	0.003	U		H
7440-22-4	Total Silver	0.01	U		F
7440-23-5	Total Sodium	33.3			P
7440-62-2	Total Vanadium	0.02	U		F
7440-66-6	Total Zinc	0.44			P
	Ammonium	0.47	U		AP
	Bicarbonate	1108			T
	Carbonate	0			T
	Chloride	23			T
	Fluoride	0.46			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.50			ACR
	Sulfate	54			AM
	Total Phosphorus	~~1.69~~ 1.46			NA
	pH	6.6			E
	Specific Conductance	1660			E
	Total Dissolved Solids	843			G
	Turbidity	Not required			N

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121203
Lab Sample ID: ~~FB-04-RFK~~ TW-44-RFK-F
Date Received: 10/22/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Dissolved Aluminum	0.15			P
7440-38-2	Dissolved Arsenic	0.004			H
7440-41-7	Dissolved Beryllium	0.001	U		F
7440-43-9	Dissolved Cadmium	0.005	U		F
7440-70-2	Dissolved Calcium	53.4			P
7440-47-3	Dissolved Chromium	0.01	U		P
7440-50-8	Dissolved Copper	0.005	U		F
7439-89-6	Dissolved Iron	1.21			P
7439-92-1	Dissolved Lead	0.001	U		F
7439-95-4	Dissolved Magnesium	184			P
7439-96-5	Dissolved Manganese	0.17			P
7440-02-0	Dissolved Nickel	0.03			F
7440-09-7	Dissolved Potassium	14.5			P
7782-49-2	Dissolved Selenium	0.003	U		H
7440-22-4	Dissolved Silver	0.01	U		F
7440-23-5	Dissolved Sodium	32.8			P
7440-62-2	Dissolved Vanadium	0.01	U		F
7440-66-6	Dissolved Zinc	0.073	U		P
	Ammonium	Not required			AP
	Bicarbonate	Not required			T
	Carbonate	Not required			T
	Chloride	Not required			T
	Fluoride	Not required			ISE
	Hydroxide	Not required			T
	Nitrate/Nitrite as N	Not required			ACR
	Sulfate	Not required			AM
	Total Phosphorus	Not required			NA
	pH	Not required			E
	Specific Conductance	Not required			E
	Total Dissolved Solids	Not required			G
	Turbidity	Not required			N

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121204
Lab Sample ID: FB-04-RFK
Date Received: 10/22/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.06			P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	0.7			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.025	U		P
7439-92-1	Lead	0.004			F
7439-95-4	Magnesium	0.5	U		P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	0.4	U		P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.03			F
7440-23-5	Sodium	0.21			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.013			P
	Ammonium	0.15			AP
	Bicarbonate	3.63			T
	Carbonate	0			T
	Chloride	0.34			T
	Fluoride	~~0.10~~ .02	U		ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	1			AM
	Total Phosphorus	~~0.10~~ .05	U		NA
	pH	5.9			E
	Specific Conductance	24			E
	Total Dissolved Solids	13			G
	Turbidity	Not required			N

KJ 2/3/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121266
Lab Sample ID: TW-39-RFK
Date Received: 10/23/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.17			P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.020			F
7440-70-2	Calcium	149			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.033	U		P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	130			P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02			F
7440-09-7	Potassium	28.4			P
7782-49-2	Selenium	0.007			H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	114			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.18			P
	Ammonium	0.10	U		AP
	Bicarbonate	498			T
	Carbonate	0			T
	Chloride	183			T
	Fluoride	6.34			ISE
	Hydroxide				T
	Nitrate/Nitrite as N	5.90			ACR
	Sulfate	420			AM
	Total Phosphorus	~~0.30~~ .34	U		NA
	pH	6.5			E
	Specific Conductance	2060			E
	Total Dissolved Solids	1330			G
	Turbidity	Not required			N

4/16/92

Klonie 2/3/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121267
Lab Sample ID: TW-12-RFK
Date Received: 10/23/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.137 1	U		P
7440-38-2	Arsenic	0.002			H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	224			P
7440-47-3	Chromium	~~0.01~~ .001	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.024			P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	83.3			P
7439-96-5	Manganese	0.10			P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	47.5			P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	590			P
7440-62-2	Vanadium	0.96			F
7440-66-6	Zinc	0.036	U		P
	Ammonium	100			AP
	Bicarbonate	515			T
	Carbonate	0			T
	Chloride	516			T
	Fluoride	0.29			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	8.60			ACR
	Sulfate	1250			AM
	Total Phosphorus	~~4.82~~ 2.15			NA
	pH	6.8			E
	Specific Conductance	4620			E
	Total Dissolved Solids	2740			G
	Turbidity	Not required			N

4/16/92

Klorie 2/3/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121268
Lab Sample ID: TW-35-RFK
Date Received: 10/23/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.12	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	59.6			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	3.85			P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	275			P
7439-96-5	Manganese	0.12			P
7440-02-0	Nickel	0.02			F
7440-09-7	Potassium	15.6			P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	31.4			P
7440-62-2	Vanadium	0.02	U		F
7440-66-6	Zinc	0.009	U		P
	Ammonium	0.18	U		AP
	Bicarbonate	1450/2			T
	Carbonate	0			T
	Chloride	39			T
	Fluoride	0.24			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	96			AM
	Total Phosphorus	~~0.40~~ 0.33	U		NA
	pH	6.3			E
	Specific Conductance	2170			E
	Total Dissolved Solids	1240			G
	Turbidity	Not required			N

4/16/92

Klonie 2/3/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121269
Lab Sample ID: TW-45-RFK
Date Received: 10/23/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.12			P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.030			F
7440-70-2	Calcium	120			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	9.41 ~~11.1~~			P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	153			P
7439-96-5	Manganese	0.64			P
7440-02-0	Nickel	0.03			F
7440-09-7	Potassium	28.0			P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	55.4			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.13			P
	Ammonium	0.90	U		AP
	Bicarbonate	1090 87			T
	Carbonate	0			T
	Chloride	65			T
	Fluoride	1.21			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	76			AM
	Total Phosphorus	~~0.41~~ .44	U		NA
	pH	5.8			E
	Specific Conductance	1930			E
	Total Dissolved Solids	1130			G
	Turbidity	Not required			N

4/16/92

Klowi 2/3/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121270
Lab Sample ID: TW-10-RFK
Date Received: 10/23/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.13	U		P
7440-38-2	Arsenic	0.002			H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	90.9			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.19	U		P
7439-92-1	Lead	0.002	U		F
7439-95-4	Magnesium	69.8			P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	13.6			P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	100			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.046	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	498			T
	Carbonate	0			T
	Chloride	145			T
	Fluoride	1.8			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	4.40			ACR
	Sulfate	102			AM
	Total Phosphorus	~~0.62~~ .66	U		NA
	pH	7.1			E
	Specific Conductance	1410			E
	Total Dissolved Solids	756			G
	Turbidity	Not required			N

4/16/92

K Lowe 2/3/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121271
Lab Sample ID: TW-37-RFK
Date Received: 10/23/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.25			P
7440-38-2	Arsenic	0.005			H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.389			P
7440-70-2	Calcium	100			P
7440-47-3	Chromium	0.01			P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.28	U		P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	66.2			P
7439-96-5	Manganese	1.07			P
7440-02-0	Nickel	0.13			F
7440-09-7	Potassium	46.0			P
7782-49-2	Selenium	0.076			H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	65.5			P
7440-62-2	Vanadium	0.08	U		F
7440-66-6	Zinc	3.01			P
	Ammonium	1.32			AP
	Bicarbonate	417			T
	Carbonate	0			T
	Chloride	59			T
	Fluoride	~~28~~ 19.93			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	5.50			ACR
	Sulfate	200			AM
	Total Phosphorus	~~1.16~~ 1.18			NA
	pH	6.6			E
	Specific Conductance	1270			E
	Total Dissolved Solids	772			G
	Turbidity	Not required			N

4/16/92

Klonie 2/3/92

INORGANIC DATA ASSESSMENT SUMMARY

PROJECT NO. 913-1101.211 SITE monsanto soda spring

LABORATORY Chem Northern SAMPLES/MATRIX

121317 - 121326

SDG # Part 3 121370 - 121378

121380 - 121384

DATA ASSESSMENT SUMMARY

	ICP	AA	~~HG~~ wet chem	~~CYANIDE~~
1. HOLDING TIMES	O	O	O	
2. CALIBRATIONS	O	O	O	
3. BLANKS	O	O	O	
4. ICS	O			
5. LCS	O	O	O	
6. DUPLICATE ANALYSIS	O	O	O	
7. MATRIX SPIKE	O	O	O	
8. MSA		X'		
9. SERIAL DILUTION	O			
10. SAMPLE VERIFICATION	O	O	O	
11. OTHER QC	O	O	O	
12. OVERALL ASSESSMENT	O	O	X'	

Klone 11/30/92

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

NOTES:

1 - analytical spikes not performed per Sou; Lab Contract.

Validated by: Kenny Irvine Date: 11/30/92

Reviewed by: [illegible] Date: 2/5/92

SDG # Part 3 Project No. 913-1101.211

	Acceptable YES	NO
1. Holding Times	✓	
Holding Time acceptable		
2. Calibrations	✓	
3 analyte outside of QC limits but data is acceptable verified standards and cal Blanks used		
3. Blanks	✓	
3 contaminants found in Blank requalify values less than 5x the value with "U"		
4. ICP Interference Check Sample (ICS)	✓	
all ICP with in QC limits of ± 20% of true value. all value acceptable		
5. Laboratory Control Sample (LCS)	✓	
all LCS acceptable with in QC limits of 80-120%		
6. Duplicate Sample Analysis	✓	
Duplicate with in Control limits		
7. Matrix Spike Sample Analysis	✓	
2 analyte outside of Control limits Requalify K, Na with postive hits with "J" Qualifier		

SDG # Monsanto Soda Spg Project No. 913-1101.211

	Acceptable YES	NO
8. Furnace Atomic Absorption QC ----------		

analytical spikes not run but matrix spike acceptable and internal lab spike acceptable ✓

9. ICP Serial Dilution ----------		

ICP serial dilution acceptable ✓

10. Sample Result Verification ----------		

Sample results verified against Raw Data ✓

11. Field Duplicates ----------		

N/A

12. Overall Assessment ----------		

Data usable, meets work plan DQO's

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121317
Sample ID: EB-02-RFK
Date Received: 10/24/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.04			P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	0.5			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.025	U		P
7439-92-1	Lead	0.002			F
7439-95-4	Magnesium	0.5	U		P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	0.4	U		P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	0.10			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.016			P
	Ammonium	0.10	U		AP
	Bicarbonate	1	U		T
	Carbonate	0			T
	Chloride	0.1	U		T
	Fluoride	0.10	U		ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	1	U		AM
	Total Phosphorus	0.10	U		NA
	pH	6.0			E
	Specific Conductance	10	U		E
	Total Dissolved Solids	10	U		G
	Turbidity	Not required			N

U

11/6/92

Klonic 2/4/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121318
Sample ID: TW-22-RFK
Date Received: 10/24/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Total Aluminum	0.67			P
7440-38-2	Total Arsenic	0.002	U		H
7440-41-7	Total Beryllium	0.001	U		F
7440-43-9	Total Cadmium	0.024			F
7440-70-2	Total Calcium	139			P
7440-47-3	Total Chromium	0.04			P
7440-50-8	Total Copper	0.031	U		F
7439-89-6	Total Iron	0.89			P
7439-92-1	Total Lead	0.017	U		F
7439-95-4	Total Magnesium	87.0			P
7439-96-5	Total Manganese	0.88			P
7440-02-0	Total Nickel	0.06			F
7440-09-7	Total Potassium	65			P
7782-49-2	Total Selenium	0.008			H
7440-22-4	Total Silver	0.01	U		F
7440-23-5	Total Sodium	96.8			P
7440-62-2	Total Vanadium	0.02	U		F
7440-66-6	Total Zinc	0.182			P
	Ammonium	3.9			AP
	Bicarbonate	696			T
	Carbonate	0			T
	Chloride	62			T
	Fluoride	6.9			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	2.80			ACR
	Sulfate	270			AM
	Total Phosphorus	0.95			NA
	pH	6.6			E
	Specific Conductance	1,660			E
	Total Dissolved Solids	1,070			G
	Turbidity	Not required			N

J

J

4/16/92

Klorie 2/9/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121318
Sample ID: TW-22-RFK
Date Received: 10/24/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Dissolved Aluminum	0.10	U		P
7440-38-2	Dissolved Arsenic	0.002	U		H
7440-41-7	Dissolved Beryllium	0.001	U		F
7440-43-9	Dissolved Cadmium	0.005	U		F
7440-70-2	Dissolved Calcium	134			P
7440-47-3	Dissolved Chromium	0.01	U		P
7440-50-8	Dissolved Copper	0.005	U		F
7439-89-6	Dissolved Iron	0.057	U		P
7439-92-1	Dissolved Lead	0.001	U		F
7439-95-4	Dissolved Magnesium	89.8			P
7439-96-5	Dissolved Manganese	0.77			P
7440-02-0	Dissolved Nickel	0.05			F
7440-09-7	Dissovled Potassium	61.5			P
7782-49-2	Dissolved Selenium	0.016			H
7440-22-4	Dissolved Silver	0.01	U		F
7440-23-5	Dissolved Sodium	95.5			P
7440-62-2	Dissolved Vanadium	0.02	U		F
7440-66-6	Dissolved Zinc	0.072	U		P

4/16/92

Klonie 2/4/9-

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121319
Sample ID: TW-23-RFK
Date Received: 10/24/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.16	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	145			P
7440-47-3	Chromium	0.01	U	N	P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	11.0		N	P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	149			P
7439-96-5	Manganese	0.58			P
7440-02-0	Nickel	0.04			F
7440-09-7	Potassium	16.4			P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	38.5			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.050	U		P
	Ammonium	0.63	U		AP
	Bicarbonate	908			T
	Carbonate	0			T
	Chloride	78			T
	Fluoride	0.59			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	270			AM
	Total Phosphorus	0.60	U		NA
	pH	6.0			E
	Specific Conductance	1,940			E
	Total Dissolved Solids	1,220			G
	Turbidity	Not required			N

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J

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4/16/92

Klorie 2/4/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121320
Sample ID: FB-05-RFK
Date Received: 10/24/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.04			P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	0.5	U		P
7440-47-3	Chromium	0.01	U	N	P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.026		N	P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	0.5	U		P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	0.4	U		P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	0.07			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.008	U		P
	Ammonium	0.19			AP
	Bicarbonate	~~1~~ Klone	U		T
	Carbonate	0			T
	Chloride	0.10	U		T
	Fluoride	~~0.10~~ Klone .02	U		ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	1	U		AM
	Total Phosphorus	0.10	U		NA
	pH	5.5			E
	Specific Conductance	10	U		E
	Total Dissolved Solids	10	U		G
	Turbidity	Not required			N

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Klone 2/4/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121321
Sample ID: Southwest
Date Received: 10/24/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.06	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005			F
7440-70-2	Calcium	113			P
7440-47-3	Chromium	0.01	U	N	P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	~~0.035~~ .053 Klein	U	N	P
7439-92-1	Lead	0.001			F
7439-95-4	Magnesium	127			P
7439-96-5	Manganese	0.015			P
7440-02-0	Nickel	0.03			F
7440-09-7	Potassium	15.4			P
7782-49-2	Selenium	0.009			H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	38.6			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.075	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	981			T
	Carbonate	0			T
	Chloride	21			T
	Fluoride	1.1			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	2.14			ACR
	Sulfate	60			AM
	Total Phosphorus	0.18	U		NA
	pH	6.5			E
	Specific Conductance	1,620			E
	Total Dissolved Solids	844			G
	Turbidity	Not required			N

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4/16/92

Klein 2/4/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121322
Sample ID: Mormon
Date Received: 10/24/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M	
7429-90-5	Aluminum	0.10			P	
7440-38-2	Arsenic	0.002			H	
7440-41-7	Beryllium	0.001	U		F	
7440-43-9	Cadmium	0.018			F	
7440-70-2	Calcium	116			P	
7440-47-3	Chromium	0.01	U		P	
7440-50-8	Copper	0.005	U		F	
7439-89-6	Iron	0.025	U		P	
7439-92-1	Lead	0.001			F	U
7439-95-4	Magnesium	73.0			P	
7439-96-5	Manganese	0.005	U		P	
7440-02-0	Nickel	0.02			F	
7440-09-7	Potassium	14.6			P	J
7782-49-2	Selenium	0.003	U		H	
7440-22-4	Silver	0.01	U		F	
7440-23-5	Sodium	70.2			P	J
7440-62-2	Vanadium	0.02			F	U
7440-66-6	Zinc	0.155			P	
	Ammonium	0.10	U		AP	
	Bicarbonate	551			T	
	Carbonate	0			T	
	Chloride	113			T	
	Fluoride	2.2			ISE	
	Hydroxide	0			T	
	Nitrate/Nitrite as N	2.80			ACR	
	Sulfate	114			AM	
	Total Phosphorus	~~0.36~~ 0.31	U		NA	
	pH	7.2			E	
	Specific Conductance	1,410			E	
	Total Dissolved Solids	780			G	
	Turbidity	Not required			N	

4/16/92

2/4/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121323
Sample ID: TW-33-RFK
Date Received: 10/24/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M	
7429-90-5	Total Aluminum	0.49	U		P	
7440-38-2	Total Arsenic	0.003			H	
7440-41-7	Total Beryllium	0.001	U		F	
7440-43-9	Total Cadmium	0.005	U		F	
7440-70-2	Total Calcium	117			P	
7440-47-3	Total Chromium	0.02		N	P	
7440-50-8	Total Copper	0.005	U		F	
7439-89-6	Total Iron	0.65	U	N	P	
7439-92-1	Total Lead	0.004			F	U
7439-95-4	Total Magnesium	43.3			P	
7439-96-5	Total Manganese	0.028	U		P	
7440-02-0	Total Nickel	0.02	U		F	
7440-09-7	Total Potassium	6.6			P	J
7782-49-2	Total Selenium	0.003	U		H	
7440-22-4	Total Silver	0.01	U		F	
7440-23-5	Total Sodium	63.1			P	J
7440-62-2	Total Vanadium	2.78			F	
7440-66-6	Total Zinc	0.016	U		P	
	Ammonium	1.96			AP	
	Bicarbonate	478			T	
	Carbonate	0			T	
	Chloride	128			T	
	Fluoride	0.37			ISE	
	Hydroxide	0			T	
	Nitrate/Nitrite as N	6.00			ACR	
	Sulfate	66			AM	
	Total Phosphorus	1.06			NA	
	pH	7.2			E	
	Specific Conductance	1,130			E	
	Total Dissolved Solids	608			G	
	Turbidity	Not required			N	

4/16/92

Klowie 2/4/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121323
Sample ID: TW-33
Date Received: 10/24/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Dissolved Aluminum	0.07	U		P
7440-38-2	Dissolved Arsenic	0.003			H
7440-41-7	Dissolved Beryllium	0.001	U		F
7440-43-9	Dissolved Cadmium	0.005	U		F
7440-70-2	Dissolved Calcium	123			P
7440-47-3	Dissolved Chromium	0.01	U	N	P
7440-50-8	Dissolved Copper	0.005	U		F
7439-89-6	Dissolved Iron	0.071	U	N	P
7439-92-1	Dissolved Lead	0.001	U		F
7439-95-4	Dissolved Magnesium	44.2			P
7439-96-5	Dissolved Manganese	0.027	U		P
7440-02-0	Dissolved Nickel	0.02	U		F
7440-09-7	Dissolved Potassium	6.4			P
7782-49-2	Dissolved Selenium	0.003	U		H
7440-22-4	Dissolved Silver	0.01	U		F
7440-23-5	Dissolved Sodium	60.9			P
7440-62-2	Dissolved Vanadium	2.86			F
7440-66-6	Dissolved Zinc	0.011	U		P

2/14/92

Klonie 2/4/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121324
Sample ID: TW-48-RFK
Date Received: 10/24/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M	
7429-90-5	Aluminum	0.23	U		P	
7440-38-2	Arsenic	0.002	U		H	
7440-41-7	Beryllium	0.001	U		F	
7440-43-9	Cadmium	0.005	U		F	
7440-70-2	Calcium	108			P	
7440-47-3	Chromium	0.01	U		P	
7440-50-8	Copper	0.009	U		F	
7439-89-6	Iron	0.26	U		P	
7439-92-1	Lead	0.001			F	U
7439-95-4	Magnesium	53.1			P	
7439-96-5	Manganese	0.006	U		P	
7440-02-0	Nickel	0.02	U		F	
7440-09-7	Potassium	4.9			P	J
7782-49-2	Selenium	0.003	U		H	
7440-22-4	Silver	0.01	U		F	
7440-23-5	Sodium	11.3			P	J
7440-62-2	Vanadium	0.04			F	U
7440-66-6	Zinc	0.018	U		P	
	Ammonium	0.10	U		AP	
	Bicarbonate	472			T	
	Carbonate	0			T	
	Chloride	19			T	
	Fluoride	0.23			ISE	
	Hydroxide	0			T	
	Nitrate/Nitrite as N	4.15			ACR	
	Sulfate	72			AM	
	Total Phosphorus	0.17	U		NA	
	pH	7.0			E	
	Specific Conductance	911			E	
	Total Dissolved Solids	487			G	
	Turbidity	Not required			N	

4/16/92

Klowe 2/9/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121325
Sample ID: TW-49-RFK
Date Received: 10/24/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.06			P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	125			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.033	U		P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	66.1			P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	5.1			P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	13.8			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.008	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	544			T
	Carbonate	0			T
	Chloride	17			T
	Fluoride	0.23			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	3.35			ACR
	Sulfate	72			AM
	Total Phosphorus	0.13	U		NA
	pH	6.7			E
	Specific Conductance	1,010			E
	Total Dissolved Solids	572			G
	Turbidity	Not required			N

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4/16/92

Klonie 2/4/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121326
Sample ID: SW-49-RFK
Date Received: 10/24/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.08			P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	112			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.032	U		P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	58.8			P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	4.7			P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	12.1			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.008	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	538			T
	Carbonate	0			T
	Chloride	19			T
	Fluoride	0.23			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	3.50			ACR
	Sulfate	102			AM
	Total Phosphorus	0.13	U		NA
	pH	6.7			E
	Specific Conductance	1,000			E
	Total Dissolved Solids	578			G
	Turbidity	Not required			N

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4/16/92

Klowie 2/4/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121370
Sample ID: Boy Scout
Date Received: 10/26/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M	
7429-90-5	Aluminum	0.13			P	
7440-38-2	Arsenic	0.002	U		H	
7440-41-7	Beryllium	0.001	U		F	
7440-43-9	Cadmium	0.005	U		F	
7440-70-2	Calcium	111			P	
7440-47-3	Chromium	0.01	U		P	
7440-50-8	Copper	0.005	U		F	
7439-89-6	Iron	0.18	U		P	
7439-92-1	Lead	0.001			F	U
7439-95-4	Magnesium	48.8			P	
7439-96-5	Manganese	0.010	U		P	
7440-02-0	Nickel	0.02	U		F	
7440-09-7	Potassium	~~2.6~~ / 2.6	B		P	J
7782-49-2	Selenium	0.003	U		H	
7440-22-4	Silver	0.01	U		F	
7440-23-5	Sodium	6.7			P	J
7440-62-2	Vanadium	0.01	U		F	
7440-66-6	Zinc	0.012	U		P	
	Ammonium	0.18	U		AP	
	Bicarbonate	491			T	
	Carbonate	0			T	
	Chloride	10			T	
	Fluoride	0.26			ISE	
	Hydroxide	0			T	
	Nitrate/Nitrite as N	0.50	U		ACR	
	Sulfate	36			AM	
	Total Phosphorus	0.10	U		NA	
	pH	7.7			E	
	Specific Conductance	718			E	
	Total Dissolved Solids	~~398~~ 414			G	
	Turbidity	Not required			N	

Kent 4/16/92

Klonie 2/4/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121371
Sample ID: Spring Box
Date Received: 10/25/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.13			P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	109			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.080	U		P
7439-92-1	Lead	0.002			F
7439-95-4	Magnesium	47.1			P
7439-96-5	Manganese	0.007	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	2.5 / 2.6 KAS			P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	6.5			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.0082 Klo	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	503			T
	Carbonate	0			T
	Chloride	8			T
	Fluoride	0.26			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	36			AM
	Total Phosphorus	0.10	U		NA
	pH	7.4			E
	Specific Conductance	752			E
	Total Dissolved Solids	428			G
	Turbidity	Not required			N

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Klo 4/16/92

Klo 2/4/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No.: 121372
Sample ID: Finch
Date Received: 10/26/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.10	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	150			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.030	U		P
7439-92-1	Lead	0.007			F UA
7439-95-4	Magnesium	57.0			P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	5.3 / 4.7 KB			P J
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	69.9			P J
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.008	U		P
	Ammonium	1.44			AP
	Bicarbonate	478			T
	Carbonate	0			T
	Chloride	156			T
	Fluoride	0.25			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	4.85			ACR
	Sulfate	66			AM
	Total Phosphorus	.10 ~~0.10~~ .05	U		NA
	pH	7.0			E
	Specific Conductance	1,360			E
	Total Dissolved Solids	706			G
	Turbidity	Not required			N

4/16/92

Klone 2/4/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No.: 121373
Sample ID: Formation A
Date Received: 10/26/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.10	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	162			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.035	U		P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	43.0			P
7439-96-5	Manganese	~~0.005~~ .0005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	1.4 / 1.7			P J
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	4.3			P J
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.012	U		P
	Ammonium	~~0.010~~ .10	U		AP
	Bicarbonate	599			T
	Carbonate	0			T
	Chloride	5			T
	Fluoride	0.29			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	30			AM
	Total Phosphorus	0.10	U		NA
	pH	6.6			E
	Specific Conductance	968			E
	Total Dissolved Solids	546			G
	Turbidity	Not required			N

4/16/92

Klowie 2/4/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): –
Solids: –

Sample No.: 121374
Sample ID: Ledger A
Date Received: 10/26/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M	
7429-90-5	Aluminum	0.10	U		P	
7440-38-2	Arsenic	0.002	U		H	
7440-41-7	Beryllium	0.001	U		F	
7440-43-9	Cadmium	0.005	U		F	
7440-70-2	Calcium	127			P	
7440-47-3	Chromium	~~0.01~~ .001	U		P	
7440-50-8	Copper	0.005	U		F	
7439-89-6	Iron	0.034	U		P	
7439-92-1	Lead	0.001			F	U
7439-95-4	Magnesium	45.1			P	
7439-96-5	Manganese	0.005	U		P	
7440-02-0	Nickel	0.02	U		F	
7440-09-7	Potassium	1.7 / 1.9			P	J
7782-49-2	Selenium	0.003	U		H	
7440-22-4	Silver	0.01	U		F	
7440-23-5	Sodium	5.4			P	J
7440-62-2	Vanadium	0.01	U		F	
7440-66-6	Zinc	0.009	U		P	
	Ammonium	0.10	U		AP	
	Bicarbonate	527			T	
	Carbonate	0			T	
	Chloride	7			T	
	Fluoride	0.24			ISE	
	Hydroxide	0			T	
	Nitrate/Nitrite as N	0.50	U		ACR	
	Sulfate	30			AM	
	Total Phosphorus	0.10	U		NA	
	pH	7.1			E	
	Specific Conductance	780			E	
	Total Dissolved Solids	442			G	
	Turbidity	Not required			N	

4/16/92

Klowe 2/4/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No.: 121375
Sample ID: Ledger B
Date Received: 10/26/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	~~0.05~~ .08	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	129			P
7440-47-3	Chromium	~~0.01~~ .001	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.029	U		P
7439-92-1	Lead	0.001			F
7439-95-4	Magnesium	46			P
7439-96-5	Manganese	~~0.005~~ .0005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	1.6 / 1.9			P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	5.5			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.009	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	527			T
	Carbonate	0			T
	Chloride	7			T
	Fluoride	0.21			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	30			AM
	Total Phosphorus	0.10	U		NA
	pH	7.2			E
	Specific Conductance	768			E
	Total Dissolved Solids	410			G
	Turbidity	Not required			N

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No.: 121376
Sample ID: Formation B
Date Received: 10/26/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.11	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	157			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.042	U		P
7439-92-1	Lead	0.001			F U
7439-95-4	Magnesium	43.6			P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	1.5 / 1.6			P J
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	4.6			P J
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.020	U		P
	Ammonium	0.43			AP
	Bicarbonate	527			T
	Carbonate	0			T
	Chloride	10			T
	Fluoride	0.23			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	30			AM
	Total Phosphorus	0.10	U		NA
	pH	7.5			E
	Specific Conductance	718			E
	Total Dissolved Solids	412			G
	Turbidity	Not required			N

4/6/92

Klorie 2/9/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No.: 121377
Sample ID: EB-03-CCY
Date Received: 10/26/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M	
7429-90-5	Aluminum	0.17	~~U~~		P	
7440-38-2	Arsenic	0.002	U		H	
7440-41-7	Beryllium	0.001	U		F	
7440-43-9	Cadmium	0.005	U		F	
7440-70-2	Calcium	0.5			P	
7440-47-3	Chromium	0.01	U		P	
7440-50-8	Copper	0.005	U		F	
7439-89-6	Iron	0.168			P	
7439-92-1	Lead	0.001			F	U
7439-95-4	Magnesium	0.5	U		P	
7439-96-5	Manganese	0.011			P	
7440-02-0	Nickel	0.02	U		F	
7440-09-7	Potassium	0.4 / 0.4	U		P	
7782-49-2	Selenium	0.003 KAB	U		H	
7440-22-4	Silver	0.01	U		F	
7440-23-5	Sodium	0.06			P	U
7440-62-2	Vanadium	0.01	U		F	
7440-66-6	Zinc	0.014			P	
	Ammonium	0.10	U		AP	
	Bicarbonate	KAB ~~0.04~~ 0.4			T	J Klonie 1/30/92
	Carbonate	0			T	
	Chloride	0.1	U		T	
	Fluoride	0.10	U		ISE	[illegible] 4/16/92
	Hydroxide	0			T	
	Nitrate/Nitrite as N	0.50	U		ACR	
	Sulfate	1	U		AM	
	Total Phosphorus	0.14			NA	
	pH	5.8			E	
	Specific Conductance	10	U		E	
	Total Dissolved Solids	~~10~~ Klonie 3	U		G	
	Turbidity	Not required			N	Klonie 2/4/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No.: 121378
Sample ID: TW-38-CCY
Date Received: 10/26/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Total Aluminum	8.2			P
7440-38-2	Total Arsenic	0.005			H
7440-41-7	Total Beryllium	0.001	U		F
7440-43-9	Total Cadmium	0.005	U		F
7440-70-2	Total Calcium	164			P
7440-47-3	Total Chromium	0.01	U		P
7440-50-8	Total Copper	0.017	U		F
7439-89-6	Total Iron	16.4			P
7439-92-1	Total Lead	0.015	U		F
7439-95-4	Total Magnesium	64.2			P
7439-96-5	Total Manganese	0.181			P
7440-02-0	Total Nickel	0.02			F
7440-09-7	Total Potassium	10.2 95	J		P J
7782-49-2	Total Selenium	0.003	U		H
7440-22-4	Total Silver	0.01	U		F
7440-23-5	Total Sodium	86.5			P J
7440-62-2	Total Vanadium	0.18	U		F
7440-66-6	Total Zinc	0.041	U		P
	Ammonium	~~2.48~~ 2.1			AP
	Bicarbonate	472			T
	Carbonate	0			T
	Chloride	86			T
	Fluoride	0.24			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	1.77			ACR
	Sulfate	200			AM
	Total Phosphorus	1.04			NA
	pH	7.2			E
	Specific Conductance	1,380			E
	Total Dissolved Solids	812			G
	Turbidity	Not required			N

Klowie 2/4/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No.: 121378
Sample ID: TW-38-CCY
Date Received: 10/26/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Dissolved Aluminum	0.07	U		P
7440-38-2	Dissolved Arsenic	0.002	U		H
7440-41-7	Dissolved Beryllium	0.001	U		F
7440-43-9	Dissolved Cadmium	0.005	U		F
7440-70-2	Dissolved Calcium	145			P
7440-47-3	Dissolved Chromium	0.01	U		P
7440-50-8	Dissolved Copper	0.005	U		F
7439-89-6	Dissolved Iron	0.038	U		P
7439-92-1	Dissolved Lead	0.001	U		F
7439-95-4	Dissolved Magnesium	57.2			P
7439-96-5	Dissolved Manganese	0.008	U		P
7440-02-0	Dissolved Nickel	0.02	U		F
7440-09-7	Dissolved Potassium	8.8 / 8.5			P
7782-49-2	Dissolved Selenium	0.003	U		H
7440-22-4	Dissolved Silver	0.01	U		F
7440-23-5	Dissolved Sodium	83.5			P
7440-62-2	Dissolved Vanadium	0.18	U		F
7440-66-6	Dissolved Zinc	0.016	U		P

KWA 4/16/92

Klowi 2/21/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121380
Sample ID: TW-50-RFK
Date Received: 10/25/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M	
7429-90-5	Total Aluminum	12.3			P	
7440-38-2	Total Arsenic	0.002	U		H	
7440-41-7	Total Beryllium	0.001	U		F	
7440-43-9	Total Cadmium	0.005	U		F	
7440-70-2	Total Calcium	111			P	
7440-47-3	Total Chromium	0.01			P	
7440-50-8	Total Copper	0.012	U		F	
7439-89-6	Total Iron	13.4			P	
7439-92-1	Total Lead	0.002			F	U
7439-95-4	Total Magnesium	154			P	
7439-96-5	Total Manganese	0.59			P	
7440-02-0	Total Nickel	0.03			F	
7440-09-7	Total Potassium	14.6			P	J
7782-49-2	Total Selenium	0.003	U		H	
7440-22-4	Total Silver	0.01	U		F	
7440-23-5	Total Sodium	65.2			P	J
7440-62-2	Total Vanadium	0.01	U		F	
7440-66-6	Total Zinc	0.048	U		P	
	Ammonium	0.18	U		AP	
	Bicarbonate	472			T	
	Carbonate	0			T	
	Chloride	183			T	
	Fluoride	0.56			ISE	
	Hydroxide	0			T	
	Nitrate/Nitrite as N	0.50	U		ACR	
	Sulfate	300			AM	
	Total Phosphorus	0.97			NA	
	pH	7.1			E	
	Specific Conductance	1,780			E	
	Total Dissolved Solids	992			G	
	Turbidity	Not required			N	

4/6/92

Klaire 2/4/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121380
Lab Sample ID: TW2-50
Date Received: 10/25/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Dissolved Aluminum	0.10	U		P
7440-38-2	Dissolved Arsenic	0.002	U		H
7440-41-7	Dissolved Beryllium	0.001	U		F
7440-43-9	Dissolved Cadmium	0.005	U		F
7440-70-2	Dissolved Calcium	134			P
7440-47-3	Dissolved Chromium	0.01	U	N	P
7440-50-8	Dissolved Copper	0.005	U		F
7439-89-6	Dissolved Iron	0.057	U		P
7439-92-1	Dissolved Lead	0.001	U		F
7439-95-4	Dissolved Magnesium	89.8			P
7439-96-5	Dissolved Manganese	0.77			P
7440-02-0	Dissolved Nickel	0.02			F
7440-09-7	Dissolved Potassium	61.5			P
7782-49-2	Dissolved Selenium	0.003	U		H
7440-22-4	Dissolved Silver	0.01	U		F
7440-23-5	Dissolved Sodium	95.5			P
7440-62-2	Dissolved Vanadium	0.02	U		F
7440-66-6	Dissolved Zinc	0.072	U		P

KMA 11/16/92

Klowe 2/9/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121381
Sample ID: Harris
Date Received: 10/25/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	~~0.07~~ .04 Klu	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	142			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.008	U		F
7439-89-6	Iron	0.29	U		P
7439-92-1	Lead	0.001			F
7439-95-4	Magnesium	50.9			P
7439-96-5	Manganese	~~0.005~~ .002 Klu	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	6.2			P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	7.4			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.018	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	638			T
	Carbonate	0			T
	Chloride	7			T
	Fluoride	0.66			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	30			AM
	Total Phosphorus	0.16	U		NA
	pH	7.0			E
	Specific Conductance	956			E
	Total Dissolved Solids	532			G
	Turbidity	Not required			N

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4/16/92

Klowe 2/4/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121382
Sample ID: Lewis
Date Received: 10/25/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	~~0.07~~ .052 Klo	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	163			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	~~0.025~~ .022 Klo	U		P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	96.2			P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	9.4			P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	49.8			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.220			P
	Ammonium	0.13			AP
	Bicarbonate	599			T
	Carbonate	0			T
	Chloride	76			T
	Fluoride	0.42			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	5.65			ACR
	Sulfate	220			AM
	Total Phosphorus	0.16	U		NA
	pH	6.8			E
	Specific Conductance	1,500			E
	Total Dissolved Solids	930			G
	Turbidity	Not required			N

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4/16/92

Klowe 2/4/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121383
Sample ID: TW-16-RFK
Date Received: 10/25/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M	
7429-90-5	Aluminum	0.10	U		P	
7440-38-2	Arsenic	0.020			H	
7440-41-7	Beryllium	0.001	U		F	
7440-43-9	Cadmium	0.626			P	
7440-70-2	Calcium	129			P	
7440-47-3	Chromium	0.01	U	N	P	
7440-50-8	Copper	0.005	U		F	
7439-89-6	Iron	0.029	U		P	
7439-92-1	Lead	0.001			F	U
7439-95-4	Magnesium	79.8			P	
7439-96-5	Manganese	0.078			P	
7440-02-0	Nickel	0.04			F	
7440-09-7	Potassium	12.3			P	J
7782-49-2	Selenium	0.090			H	
7440-22-4	Silver	0.01	U		F	
7440-23-5	Sodium	53.9			P	J
7440-62-2	Vanadium	0.02			F	U
7440-66-6	Zinc	2.54			P	
	Ammonium	0.16	U		AP	
	Bicarbonate	720			T	
	Carbonate	0			T	
	Chloride	46			T	
	Fluoride	4.1			ISE	
	Hydroxide	0			T	
	Nitrate/Nitrite as N	5.20			ACR	
	Sulfate	150			AM	
	Total Phosphorus	1.32			NA	
	pH	6.4			E	
	Specific Conductance	1,430			E	
	Total Dissolved Solids	830			G	
	Turbidity	Not required			N	

[illegible] 4/16/92

Klouie 2/4/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.
Matrix (Soil/Water): Water
Level (Low/Med): --
Solids: --

Sample No. 121384
Sample ID: TW-18-RFK
Date Received: 10/25/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M	
7429-90-5	Aluminum	~~0.07~~ .06 Klaus	U		P	
7440-38-2	Arsenic	0.003			H	
7440-41-7	Beryllium	0.001	U		F	
7440-43-9	Cadmium	0.005	U		F	
7440-70-2	Calcium	88.5			P	
7440-47-3	Chromium	0.01	U	N	P	
7440-50-8	Copper	0.005	U		F	
7439-89-6	Iron	~~7.77~~ 6.74 Klaus			P	
7439-92-1	Lead	0.001			F	U
7439-95-4	Magnesium	190			P	
7439-96-5	Manganese	0.29			P	
7440-02-0	Nickel	0.02	U		F	
7440-09-7	Potassium	21.9			P	J
7782-49-2	Selenium	0.003	U		H	
7440-22-4	Silver	0.01	U		F	
7440-23-5	Sodium	42.8			P	J
7440-62-2	Vanadium	0.01	U		F	
7440-66-6	Zinc	0.010	U		P	
	Ammonium	0.35	U		AP	
	Bicarbonate	1,340 1 Klaus			T	
	Carbonate	0			T	
	Chloride	17			T	
	Fluoride	0.23			ISE	
	Hydroxide	0			T	
	Nitrate/Nitrite as N	0.50	U		ACR	
	Sulfate	60			AM	
	Total Phosphorus	0.35	U		NA	
	pH	6.0			E	
	Specific Conductance	2,000			E	
	Total Dissolved Solids	~~1,040~~ 1064 Klaus			G	
	Turbidity	Not required			N	

Klaus 4/16/92

Klaus 2/4/92

INORGANIC DATA ASSESSMENT SUMMARY

PROJECT NO. 913-1101.211 SITE Soda Springs

LABORATORY Chem Northern SAMPLES/MATRIX ~~Soil~~ water

SDG # Part 4 121467 → 121987
121512 → 121515
121588

DATA ASSESSMENT SUMMARY

	ICP	AA	~~HG~~ wet chemistry	CYANIDE
1. HOLDING TIMES	O	O	O	
2. CALIBRATIONS	O	O	O	
3. BLANKS	O	O	O	Klaine
4. ICS	O			
5. LCS	O	O	O	
6. DUPLICATE ANALYSIS	O	O	O	
7. MATRIX SPIKE	O	O	X'	
8. MSA		N/A		
9. SERIAL DILUTION	O			
10. SAMPLE VERIFICATION	O	O	O	
11. OTHER QC	N/A	N/A	N/A	
12. OVERALL ASSESSMENT	O	O	O	

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

NOTES: X' No analytical spikes ran but Data OK
— Missing Data for Se 121467-121477

Validated by: Kenneth Klaine Date: 2/10/92

Reviewed by: [illegible] Date: 2/24/92

SDG # Part 4 Project No. 913-1101.211

	Acceptable YES	NO
1. Holding Times	✓	

holding Time acceptable
analyzed within 6 months
for metals

2. Calibrations	✓	

all Initial Calibration and continuing
Calibration with in QC limits
of 80-120%R, Data acceptable

3. Blanks	✓	

Re Qualify lead for 5x the Blank
value, where Samples results less
than Blank results

4. ICP Interference Check Sample (ICS)	✓	

acceptable
Recal ICS Cr. 1.82/1.00 x 100 = 82

5. Laboratory Control Sample (LCS)		

Requalify Results with "UJ" for
%R in 50-79% ~~and~~ Range and
undetect

6. Duplicate Sample Analysis	✓	

Pb outside of QC limits will Qualify
results with "J".
Data acceptable

7. Matrix Spike Sample Analysis	✓	

acceptable - all %R
with in limits of QC

SDG # Part 4 Project No. 913-1101.211

	Acceptable YES	Acceptable NO
8. Furnace Atomic Absorption QC		✓

analytical spikes not run but matrix spikes acceptable and Internal Lab spike Acceptable

9. ICP Serial Dilution	✓	

data acceptable

10. Sample Result Verification	✓	

acceptable

11. Field Duplicates		✓

N/A

12. Overall Assessment	✓	

GFAA spikes need to be run in Future

- Blanks Qualifies on form 1's

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121479

Matrix (Soil/Water): Water

Sample ID: TW-32-RFK

Level (Low/Med): --

Date Received: 10/29/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Dissolved Aluminum	0.10	U		P
7440-38-2	Dissolved Arsenic	0.004			H
7440-41-7	Dissolved Beryllium	0.001	U		F
7440-43-9	Dissolved Cadmium	0.005	U		F
7440-70-2	Dissolved Calcium	128			P
7440-47-3	Dissolved Chromium	0.02			P
7440-50-8	Dissolved Copper	0.005	U		F
7439-89-6	Dissolved Iron	0.032	U		P
7439-92-1	Dissolved Lead	0.001	U		F
7439-95-4	Dissolved Magnesium	48.5			P
7439-96-5	Dissolved Manganese	0.007	U		P
7440-02-0	Dissolved Nickel	0.02	U		F
7440-09-7	Dissolved Potassium	7.0			P
7782-49-2	Dissolved Selenium	~~0.005~~ .002	U		H
7440-22-4	Dissolved Silver	0.01	U		F
7440-23-5	Dissolved Sodium	93.4			P
7440-62-2	Dissolved Vanadium	5.52			F
7440-66-6	Dissolved Zinc	0.008	U		P

4/16/92

K Jones 2/10/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121480

Matrix (Soil/Water): Water

Sample ID: TW-36-RFK

Level (Low/Med): --

Date Received: 10/29/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.10	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.056			F
7440-70-2	Calcium	104			P
7440-47-3	Chromium	0.01			P
7440-50-8	Copper	0.007	U		F
7439-89-6	Iron	0.069	U		P
7439-92-1	Lead	0.002			F
7439-95-4	Magnesium	87.1			P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.03			F
7440-09-7	Potassium	15.5			P
7782-49-2	Selenium	~~0.085~~, cc 2	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	177			P
7440-62-2	Vanadium	0.05	U		F
7440-66-6	Zinc	0.441			P
	Ammonium	0.10	U		AP
	Bicarbonate	424			T
	Carbonate	0			T
	Chloride	342			T
	Fluoride	5.00			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	3.95			ACR
	Sulfate	78			AM
	Total Phosphorus	0.40	U		MA
	pH	6.8			E
	Specific Conductance	1,830			E
	Total Dissolved Solids	964			G
	Turbidity	Not required			N

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4/16/92

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Klowie 2/10/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121481

Matrix (Soil/Water): Water

Sample ID: EB Beaker

Level (Low/Med): --

Date Received: 10/29/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.06			P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	0.5	U		P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.060			P
7439-92-1	Lead	0.002			F UJ
7439-95-4	Magnesium	0.5	U		P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	0.4	U		P
7782-49-2	Selenium	~~0.003~~ .002	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	0.04	U		P
7440-62-2	Vanadium	0.02			F
7440-66-6	Zinc	0.008	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	0.4	U		T
	Carbonate	0			T
	Chloride	0.10	U		T
	Fluoride	~~0.10~~ .02 Klm	U		ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	1	U		AM
	Total Phosphorus	.10 Klm ~~0.10~~	U		MA
	pH	6.0			E J
	Specific Conductance	11			E
	Total Dissolved Solids	10	U		G
	Turbidity	Not required			N

Klm 2/10/97

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121482

Matrix (Soil/Water): Water

Sample ID: EB Filter

Level (Low/Med): --

Date Received: 10/29/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.07			P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	0.5	U		P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.025	U		P
7439-92-1	Lead	0.002			F
7439-95-4	Magnesium	0.5	U		P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	0.4	U		P
7782-49-2	Selenium	~~0.003~~ .002	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	0.04	U		P
7440-62-2	Vanadium	0.04			F
7440-66-6	Zinc	0.008	U		P
	Ammonium	Analysis not requested			AP
	Bicarbonate	Analysis not requested			T
	Carbonate	Analysis not requested			T
	Chloride	Analysis not requested			T
	Fluoride	Analysis not requested			ISE
	Hydroxide	Analysis not requested			T
	Nitrate/Nitrite as N	Analysis not requested			ACR
	Sulfate	Analysis not requested			AM
	Total Phosphorus	Analysis not requested			MA
	pH	Analysis not requested			E
	Specific Conductance	Analysis not requested			E
	Total Dissolved Solids	Analysis not requested			G
	Turbidity	Not required			N

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Klowie 2/10/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121483

Matrix (Soil/Water): Water

Level (Low/Med): --

Solids: --

Sample ID: TW-11-RFK

Date Received: 10/29/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M	
7429-90-5	Aluminum	0.12	U		P	
7440-38-2	Arsenic	0.002	U		H	
7440-41-7	Beryllium	0.001	U		F	
7440-43-9	Cadmium	0.005	U		F	
7440-70-2	Calcium	173			P	
7440-47-3	Chromium	0.01	U		P	
7440-50-8	Copper	0.005	U		F	
7439-89-6	Iron	0.075	U		P	
7439-92-1	Lead	0.001			F	UJ
7439-95-4	Magnesium	69.7			P	
7439-96-5	Manganese	0.008	U		P	
7440-02-0	Nickel	0.02	U		F	
7440-09-7	Potassium	7.2			P	
7782-49-2	Selenium	~~0.005~~ .002	U		H	
7440-22-4	Silver	0.01	U		F	
7440-23-5	Sodium	145			P	
7440-62-2	Vanadium	0.02	U		F	
7440-66-6	Zinc	0.013	U		P	
	Ammonium	0.10	U		AP	
	Bicarbonate	496			T	
	Carbonate	0			T	
	Chloride	183			T	
	Fluoride	0.21			ISE	
	Hydroxide	0			T	
	Nitrate/Nitrite as N	5.45			ACR	
	Sulfate	320			AM	
	Total Phosphorus	0.11	U		MA	
	pH	6.9			E	J
	Specific Conductance	1,870			E	
	Total Dissolved Solids	1,152			G	
	Turbidity	Not requested			N	

[illegible] 4/16/92

Klonie 2/10/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121484

Matrix (Soil/Water): Water

Level (Low/Med): --

Solids: --

Sample ID: TW-20-RFK

Date Received: 10/29/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M	
7429-90-5	Aluminum	0.10	U		P	
7440-38-2	Arsenic	0.002	U		H	
7440-41-7	Beryllium	0.001	U		F	
7440-43-9	Cadmium	0.019			F	
7440-70-2	Calcium	184			P	
7440-47-3	Chromium	0.01	U		P	
7440-50-8	Copper	0.007	U		F	
7439-89-6	Iron	0.13	U		P	
7439-92-1	Lead	0.003			F	UJ
7439-95-4	Magnesium	106			P	
7439-96-5	Manganese	0.005	U		P	
7440-02-0	Nickel	0.02			F	
7440-09-7	Potassium	30.8			P	
7782-49-2	Selenium	0.011			H	
7440-22-4	Silver	0.01	U		F	
7440-23-5	Sodium	91.9			P	
7440-62-2	Vanadium	0.02	U		F	
7440-66-6	Zinc	0.268			P	
	Ammonium	0.10	U		AP	
	Bicarbonate	394			T	
	Carbonate	0			T	
	Chloride	176			T	
	Fluoride	6.97 ~~7.0~~			ISE	
	Hydroxide	0			T	
	Nitrate/Nitrite as N	7.55			ACR	
	Sulfate	500			AM	
	Total Phosphorus	0.40	U		MA	
	pH	6.9			E	J
	Specific Conductance	1,990			E	
	Total Dissolved Solids	1,298			G	
	Turbidity	Not required			N	

[illegible] 4/6/92

[illegible] 2/10/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121485

Matrix (Soil/Water): Water

Sample ID: TW-40-RFK

Level (Low/Med): --

Date Received: 10/29/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Total Aluminum	0.51	U		P
7440-38-2	Total Arsenic	0.002			H
7440-41-7	Total Beryllium	0.002			F
7440-43-9	Total Cadmium	7.07			F
7440-70-2	Total Calcium	375			P
7440-47-3	Total Chromium	0.02			P
7440-50-8	Total Copper	0.012	U		F
7439-89-6	Total Iron	0.74	U		P
7439-92-1	Total Lead	0.002			F
7439-95-4	Total Magnesium	170			P
7439-96-5	Total Manganese	1.04			P
7440-02-0	Total Nickel	0.15			F
7440-09-7	Total Potassium	86.5			P
7782-49-2	Total Selenium	0.290			H
7440-22-4	Total Silver	0.01	U		F
7440-23-5	Total Sodium	210			P
7440-62-2	Total Vanadium	0.06	U		F
7440-66-6	Total Zinc	11.6			P
	Ammonium	0.21	U		AP
	Bicarbonate	327			T
	Carbonate	0			T
	Chloride	679			T
	Fluoride	7.89 ~~7.9~~			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	35.2			ACR
	Sulfate	680			AM
	Total Phosphorus	1.68			MA
	pH	6.5			E
	Specific Conductance	3,940			E
	Total Dissolved Solids	2,668			G
	Turbidity	Not required			N

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4/16/92

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2/10/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121485

Matrix (Soil/Water): Water

Sample ID: TW-40-RFK

Level (Low/Med): --

Date Received: 10/29/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Dissolved Aluminum	0.30	U		P
7440-38-2	Dissolved Arsenic	0.002			H
7440-41-7	Dissolved Beryllium	0.001	U		F
7440-43-9	Dissolved Cadmium	5.95			F
7440-70-2	Dissolved Calcium	372			P
7440-47-3	Dissolved Chromium	0.01	U		P
7440-50-8	Dissolved Copper	0.008	U		F
7439-89-6	Dissolved Iron	0.030	U		P
7439-92-1	Dissolved Lead	0.001	U		F
7439-95-4	Dissolved Magnesium	184			P
7439-96-5	Dissolved Manganese	0.982			P
7440-02-0	Dissolved Nickel	0.13			F
7440-09-7	Dissolved Potassium	95			P
7782-49-2	Dissolved Selenium	0.289			H
7440-22-4	Dissolved Silver	0.01	U		F
7440-23-5	Dissolved Sodium	216			P
7440-62-2	Dissolved Vanadium	0.08	U		F
7440-66-6	Dissolved Zinc	9.30			P

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Klow 2/10/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121486

Matrix (Soil/Water): Water

Level (Low/Med): --

Solids: --

Sample ID: TW-42-RFK

Date Received: 10/29/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Total Aluminum	0.37	U		P
7440-38-2	Total Arsenic	0.011			H
7440-41-7	Total Beryllium	0.001	U		F
7440-43-9	Total Cadmium	0.112			F
7440-70-2	Total Calcium	190			P
7440-47-3	Total Chromium	0.01	U		P
7440-50-8	Total Copper	0.005	U		F
7439-89-6	Total Iron	0.40	U		P
7439-92-1	Total Lead	0.002			F
7439-95-4	Total Magnesium	106			P
7439-96-5	Total Manganese	0.041	U		P
7440-02-0	Total Nickel	0.02			F
7440-09-7	Total Potassium	40.8			P
7782-49-2	Total Selenium	0.098			H
7440-22-4	Total Silver	0.01	U		F
7440-23-5	Total Sodium	126			P
7440-62-2	Total Vanadium	0.03	U		F
7440-66-6	Total Zinc	0.448			P
	Ammonium	0.10	U		AP
	Bicarbonate	508			T
	Carbonate	0			T
	Chloride	229			T
	Fluoride	4.4			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	12.2			ACR
	Sulfate	320			AM
	Total Phosphorus	3.72			MA
	pH	6.8			E
	Specific Conductance	2,070			E
	Total Dissolved Solids	1,280			G
	Turbidity	Not required			N

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4/16/92

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Klonis 2/10/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121486

Matrix (Soil/Water): Water

Sample ID: TW-42-RFK

Level (Low/Med): --

Date Received: 10/29/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Dissolved Aluminum	0.12	U		P
7440-38-2	Dissolved Arsenic	0.009			H
7440-41-7	Dissolved Beryllium	0.001	U		F
7440-43-9	Dissolved Cadmium	0.079			F
7440-70-2	Dissolved Calcium	186			P
7440-47-3	Dissolved Chromium	0.01	U		P
7440-50-8	Dissolved Copper	0.005	U		F
7439-89-6	Dissolved Iron	0.031	U		P
7439-92-1	Dissolved Lead	0.001	U		F
7439-95-4	Dissolved Magnesium	100			P
7439-96-5	Dissolved Manganese	0.030	U		P
7440-02-0	Dissolved Nickel	0.02			F
7440-09-7	Dissolved Potassium	41			P
7782-49-2	Dissolved Selenium	0.090			H
7440-22-4	Dissolved Silver	0.01	U		F
7440-23-5	Dissolved Sodium	110			P
7440-62-2	Dissolved Vanadium	0.05	U		F
7440-66-6	Dissolved Zinc	0.31			P

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121487

Matrix (Soil/Water): Water

Sample ID: FB-06-RFK

Level (Low/Med): --

Date Received: 10/29/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.05			P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	0.5	U		P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.025	U		P
7439-92-1	Lead	0.001			F
7439-95-4	Magnesium	0.5	U		P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	0.4	U		P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	0.09			P
7440-62-2	Vanadium	0.01			F
7440-66-6	Zinc	0.013			P
	Ammonium	0.10	U		AP
	Bicarbonate	0.4	U		T
	Carbonate	0			T
	Chloride	0.10	U		T
	Fluoride	0.10	U		ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	1	U		AM
	Total Phosphorus	0.10	U		MA
	pH	5.4			E
	Specific Conductance	12			E
	Total Dissolved Solids	11			G
	Turbidity	Not required			N

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Klowi 2/10/9

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121512

Matrix (Soil/Water): Water

Sample ID: TW-43-CCY

Level (Low/Med): --

Date Received: 10/30/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Total Aluminum	36.6			P
7440-38-2	Total Arsenic	0.30			H
7440-41-7	Total Beryllium	0.003			F
7440-43-9	Total Cadmium	11.2			P
7440-70-2	Total Calcium	580			P
7440-47-3	Total Chromium	0.57			P
7440-50-8	Total Copper	0.18			F
7439-89-6	Total Iron	32.9			P
7439-92-1	Total Lead	0.164			F
7439-95-4	Total Magnesium	137			P
7439-96-5	Total Manganese	1.69			P
7440-02-0	Total Nickel	0.59			F
7440-09-7	Total Potassium	132			P
7782-49-2	Total Selenium	0.96			H
7440-22-4	Total Silver	0.03	U		F
7440-23-5	Total Sodium	268			P
7440-62-2	Total Vanadium	1.40			F
7440-66-6	Total Zinc	32.6			P
	Ammonium	0.34	U		AP
	Bicarbonate	339			T
	Carbonate	0			T
	Chloride	571			T
	Fluoride	11			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	26.0			ACR
	Sulfate	700			AM
	Total Phosphorus	2.12			MA
	pH	6.6			E
	Specific Conductance	3,540			E
	Total Dissolved Solids	2,330			G
	Turbidity	Not required			N

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4/16/92

K Jones 2/10/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121512

Matrix (Soil/Water): Water

Sample ID: TW-43-CCY

Level (Low/Med): --

Date Received: 10/30/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Dissolved Aluminum	0.15	U		P
7440-38-2	Dissolved Arsenic	0.010			H
7440-41-7	Dissolved Beryllium	0.001	U		F
7440-43-9	Dissolved Cadmium	8.00			P
7440-70-2	Dissolved Calcium	360			P
7440-47-3	Dissolved Chromium	0.01	U		P
7440-50-8	Dissolved Copper	0.005	U		F
7439-89-6	Dissolved Iron	0.035	U		P
7439-92-1	Dissolved Lead	0.001	U		F
7439-95-4	Dissolved Magnesium	143			P
7439-96-5	Dissolved Manganese	1.33			P
7440-02-0	Dissolved Nickel	0.14			F
7440-09-7	Dissolved Potassium	124			P
7782-49-2	Dissolved Selenium	0.22 ~~220~~			H
7440-22-4	Dissolved Silver	0.01	U		F
7440-23-5	Dissolved Sodium	275			P
7440-62-2	Dissolved Vanadium	0.17	U		F
7440-66-6	Dissolved Zinc	14.1			P

3/4/92

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2/10/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121513

Matrix (Soil/Water): Water

Sample ID: Kelly A

Level (Low/Med): --

Date Received: 10/30/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.08	U		F
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	114			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.028	U		P
7439-92-1	Lead	0.001			F
7439-95-4	Magnesium	51.0			P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	4.0			P
7782-49-2	Selenium	~~0.003~~ .002	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	20.5			P
7440-62-2	Vanadium	0.03	U		F
7440-66-6	Zinc	0.014	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	484			T
	Carbonate	0			T
	Chloride	46			T
	Fluoride	0.29			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	1.10			ACR
	Sulfate	36			AM
	Total Phosphorus	0.10	U		MA
	pH	7.9			E
	Specific Conductance	854			E
	Total Dissolved Solids	522			G
	Turbidity	Not required			N

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4/16/92

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121514

Matrix (Soil/Water): Water

Sample ID: Kelly B

Level (Low/Med): --

Date Received: 10/30/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M	
7429-90-5	Aluminum	0.06	U		F	
7440-38-2	Arsenic	0.002	U		H	
7440-41-7	Beryllium	0.001	U		F	
7440-43-9	Cadmium	0.005	U		F	
7440-70-2	Calcium	114			P	
7440-47-3	Chromium	0.01	U		P	
7440-50-8	Copper	0.005	U		F	
7439-89-6	Iron	0.028	U		P	
7439-92-1	Lead	0.001			F	UJ
7439-95-4	Magnesium	49.9			P	
7439-96-5	Manganese	0.005	U		P	
7440-02-0	Nickel	0.02	U		F	
7440-09-7	Potassium	4.2			P	
7782-49-2	Selenium	~~0.003~~ .002	U		H	
7440-22-4	Silver	0.01	U		F	
7440-23-5	Sodium	20.8			P	
7440-62-2	Vanadium	0.02	U		F	
7440-66-6	Zinc	0.014	U		P	
	Ammonium	0.10	U		AP	
	Bicarbonate	484			T	
	Carbonate	0			T	
	Chloride	55			T	
	Fluoride	0.30			ISE	
	Hydroxide	0			T	
	Nitrate/Nitrite as N	1.09			ACR	
	Sulfate	42			AM	
	Total Phosphorus	0.10	U		MA	
	pH	7.9			E	J
	Specific Conductance	814			E	
	Total Dissolved Solids	500			G	
	Turbidity	Not required			N	

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121515

Matrix (Soil/Water): Water

Sample ID: TW-41-RFK

Level (Low/Med): --

Date Received: 10/30/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.21	U		P
7440-38-2	Arsenic	0.012			H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	148			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.008	U		F
7439-89-6	Iron	0.16	U		P
7439-92-1	Lead	0.001			F
7439-95-4	Magnesium	84.6			P
7439-96-5	Manganese	0.418			P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	41			P
7782-49-2	Selenium	0.105			H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	96.8			P
7440-62-2	Vanadium	0.03	U		F
7440-66-6	Zinc	0.019	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	545			T
	Carbonate	0			T
	Chloride	139			T
	Fluoride	4.80			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	11.0			ACR
	Sulfate	234			AM
	Total Phosphorus	2.20			MA
	pH	6.6			E
	Specific Conductance	1,730			E
	Total Dissolved Solids	1,052			G
	Turbidity	Not required			N

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121588

Matrix (Soil/Water): Water

Sample ID: EB Spoon

Level (Low/Med): --

Date Received: 11/01/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.06			P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	0.5	U		P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.025	U		P
7439-92-1	Lead	0.003			F
7439-95-4	Magnesium	0.5	U		P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	0.4	U		P
7782-49-2	Selenium	~~0.003~~ .002	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	0.04	U		P
7440-62-2	Vanadium	0.02			F
7440-66-6	Zinc	0.012			P
	Ammonium	0.10	U		AP
	Bicarbonate	0.4	U		T
	Carbonate	0			T
	Chloride	0.10	U		T
	Fluoride	.02 ~~0.10~~	U		ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	1	U		AM
	Total Phosphorus	0.10	U		MA
	pH	5.5			E
	Specific Conductance	10	U		E
	Total Dissolved Solids	~~10~~ 5	U		G
	Turbidity	Not required			N

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121467

Matrix (Soil/Water): Water

Sample ID: Ledger C

Level (Low/Med): --

Date Received: 10/29/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M	
7429-90-5	Aluminum	0.07	U		P	
7440-38-2	Arsenic	0.002	U		H	
7440-41-7	Beryllium	0.001	U		F	
7440-43-9	Cadmium	0.005	U		F	
7440-70-2	Calcium	123			P	
7440-47-3	Chromium	0.01	U		P	
7440-50-8	Copper	0.005	U		F	
7439-89-6	Iron	0.025	U		P	
7439-92-1	Lead	0.001			F	UJ
7439-95-4	Magnesium	43.1			P	
7439-96-5	Manganese	0.005	U		P	
7440-02-0	Nickel	0.02	U		F	
7440-09-7	Potassium	1.7			P	
7782-49-2	Selenium	0.003	U		H	
7440-22-4	Silver	0.01	U		F	
7440-23-5	Sodium	5.5			P	
7440-62-2	Vanadium	0.02	U		F	
7440-66-6	Zinc	0.011	U		P	
	Ammonium	0.10	U		AP	
	Bicarbonate	533			T	
	Carbonate	0			T	
	Chloride	4			T	
	Fluoride	0.25			ISE	
	Hydroxide	0			T	
	Nitrate/Nitrite as N	0.50	U		ACR	
	Sulfate	30			AM	
	Total Phosphorus	~~0.10~~ .04, .10	U		MA	
	pH	7.1			E	J
	Specific Conductance	797			E	
	Total Dissolved Solids	460			G	
	Turbidity	Not required			N	

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121468

Matrix (Soil/Water): Water

Sample ID: Formation C

Level (Low/Med): --

Date Received: 10/29/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.06	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	164			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.025	U		P
7439-92-1	Lead	0.001			F
7439-95-4	Magnesium	44.4			P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	1.3			P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	4.6			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.023	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	617			T
	Carbonate	0			T
	Chloride	8			T
	Fluoride	0.26			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	30			AM
	Total Phosphorus	.10 ~~0.10~~ ~~.03~~	U		MA
	pH	7.2			E
	Specific Conductance	888			E
	Total Dissolved Solids	488			G
	Turbidity	Not required			N

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121469

Matrix (Soil/Water): Water

Sample ID: Effluent A

Level (Low/Med): --

Date Received: 10/29/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.08	U		F
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	~~0.010~~ .010			F
7440-70-2	Calcium	130			P
7440-47-3	Chromium	~~0.011~~ .01	U		P
7440-50-8	Copper	0.007	U		F
7439-89-6	Iron	0.051	U		P
7439-92-1	Lead	0.001			F
7439-95-4	Magnesium	61.4			P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	7.3			P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	105			P
7440-62-2	Vanadium	0.12	U		F
7440-66-6	Zinc	0.025	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	551			T
	Carbonate	0			T
	Chloride	159			T
	Fluoride	0.43			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	4.70			ACR
	Sulfate	96			AM
	Total Phosphorus	1.06			MA
	pH	8.0			E
	Specific Conductance	1,390			E
	Total Dissolved Solids	814			G
	Turbidity	Not required			N

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121470

Matrix (Soil/Water): Water

Sample ID: Effluent B

Level (Low/Med): --

Date Received: 10/29/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.07	U		F
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.009			F
7440-70-2	Calcium	138			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.008	U		F
7439-89-6	Iron	0.046	U		P
7439-92-1	Lead	0.001			F
7439-95-4	Magnesium	65.0			P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	7.8			P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	113			P
7440-62-2	Vanadium	0.12	U		F
7440-66-6	Zinc	0.037	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	533			T
	Carbonate	0			T
	Chloride	149			T
	Fluoride	0.42			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	4.80			ACR
	Sulfate	96			AM
	Total Phosphorus	1.06			MA
	pH	8.0			E
	Specific Conductance	1,430			E
	Total Dissolved Solids	788			G
	Turbidity	Not required			N

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121471

Matrix (Soil/Water): Water

Sample ID: Effluent C

Level (Low/Med): --

Date Received: 10/29/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.10	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.011			F
7440-70-2	Calcium	128			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.008	U		F
7439-89-6	Iron	0.040	U		P
7439-92-1	Lead	0.001	~~U~~		F
7439-95-4	Magnesium	60.3			P
7439-96-5	Manganese	0.005	U		P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	7.3			P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	104			P
7440-62-2	Vanadium	0.21			F
7440-66-6	Zinc	0.031	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	533			T
	Carbonate	0			T
	Chloride	153			T
	Fluoride	0.40			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	4.55			ACR
	Sulfate	96			AM
	Total Phosphorus	1.08			MA
	pH	8.0			E
	Specific Conductance	1,430			E
	Total Dissolved Solids	786			G
	Turbidity	Not required			N

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121472

Matrix (Soil/Water): Water

Sample ID: Down A

Level (Low/Med): --

Date Received: 10/29/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M	
7429-90-5	Aluminum	0.09	U		P	
7440-38-2	Arsenic	0.002	U		H	
7440-41-7	Beryllium	0.001	U		F	
7440-43-9	Cadmium	0.005	U		F	
7440-70-2	Calcium	88.4			P	
7440-47-3	Chromium	0.01	U		P	
7440-50-8	Copper	0.005	U		F	
7439-89-6	Iron	0.54	U		P	
7439-92-1	Lead	0.001			F	UJ
7439-95-4	Magnesium	76.5			P	
7439-96-5	Manganese	0.060			P	
7440-02-0	Nickel	0.02	U		F	
7440-09-7	Potassium	9.3			P	
7782-49-2	Selenium	0.003	U		H	
7440-22-4	Silver	0.01	U		F	
7440-23-5	Sodium	31.2			P	
7440-62-2	Vanadium	0.03	U		F	
7440-66-6	Zinc	0.012	U		P	
	Ammonium	0.12	U		AP	
	Bicarbonate	611			T	
	Carbonate	0			T	
	Chloride	29			T	
	Fluoride	0.31			ISE	
	Hydroxide	0			T	
	Nitrate/Nitrite as N	1.16			ACR	
	Sulfate	42			AM	
	Total Phosphorus	0.21	U		MA	
	pH	7.1			E	J
	Specific Conductance	1,020			E	
	Total Dissolved Solids	556			G	
	Turbidity	Not required			N	

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121473

Matrix (Soil/Water): Water

Sample ID: Down B

Level (Low/Med): --

Date Received: 10/29/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.11	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	83.7			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.54	U		P
7439-92-1	Lead	0.001	~~U~~		F
7439-95-4	Magnesium	75.0			P
7439-96-5	Manganese	0.063			P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	9.6			P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	29.9			P
7440-62-2	Vanadium	0.03	U		F
7440-66-6	Zinc	0.015	U		P
	Ammonium	0.12			AP
	Bicarbonate	636			T
	Carbonate	0			T
	Chloride	30			T
	Fluoride	0.34			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	1.14			ACR
	Sulfate	42			AM
	Total Phosphorus	0.24	U		MA
	pH	7.0			E
	Specific Conductance	1,030			E
	Total Dissolved Solids	580			G
	Turbidity	Not required			N

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121474

Matrix (Soil/Water): Water

Sample ID: Down C

Level (Low/Med): --

Date Received: 10/29/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.11	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	86.2			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.59	U		P
7439-92-1	Lead	0.002			F
7439-95-4	Magnesium	78.7			P
7439-96-5	Manganese	0.063			P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	10.0			P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	31.1			P
7440-62-2	Vanadium	0.03	U		F
7440-66-6	Zinc	0.008	U		P
	Ammonium	0.43	U		AP
	Bicarbonate	575			T
	Carbonate	0			T
	Chloride	25			T
	Fluoride	0.34			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	1.14			ACR
	Sulfate	42			AM
	Total Phosphorus	0.22	U		MA
	pH	7.0			E
	Specific Conductance	1,020			E
	Total Dissolved Solids	546			G
	Turbidity	Not required			N

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121475

Matrix (Soil/Water): Water

Sample ID: Up Near

Level (Low/Med): --

Date Received: 10/29/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.09	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	84.6			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.93			P
7439-92-1	Lead	0.001	~~U~~		F
7439-95-4	Magnesium	84.1			P
7439-96-5	Manganese	0.083			P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	10.4			P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	22.0			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.014	U		P
	Ammonium	0.13	U		AP
	Bicarbonate	648			T
	Carbonate	0			T
	Chloride	15			T
	Fluoride	0.31			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.65			ACR
	Sulfate	36			AM
	Total Phosphorus	0.13	U		MA
	pH	6.8			E
	Specific Conductance	990			E
	Total Dissolved Solids	546			G
	Turbidity	Not required			N

UJ

4/16/92

J

Klonie 2/10/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121476

Matrix (Soil/Water): Water

Level (Low/Med): --

Solids: --

Sample ID: Up Middle

Date Received: 10/29/91

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M	
7429-90-5	Aluminum	0.11	U		P	
7440-38-2	Arsenic	0.002	U		H	
7440-41-7	Beryllium	0.001	U		F	
7440-43-9	Cadmium	0.005	U		F	
7440-70-2	Calcium	79.8			P	
7440-47-3	Chromium	0.01	U		P	
7440-50-8	Copper	0.005	U		F	
7439-89-6	Iron	0.47	U		P	
7439-92-1	Lead	0.001			F	UJ
7439-95-4	Magnesium	78.4			P	
7439-96-5	Manganese	0.062			P	
7440-02-0	Nickel	0.02	U		F	
7440-09-7	Potassium	9.9			P	
7782-49-2	Selenium	0.003	U		H	
7440-22-4	Silver	0.01	U		F	
7440-23-5	Sodium	21.2			P	[illegible] 4/16/92
7440-62-2	Vanadium	0.01	U		F	
7440-66-6	Zinc	0.010	U		P	
	Ammonium	0.37	U		AP	
	Bicarbonate	611			T	
	Carbonate	0			T	
	Chloride	15			T	
	Fluoride	0.31			ISE	
	Hydroxide	0			T	
	Nitrate/Nitrite as N	0.74			ACR	
	Sulfate	30			AM	
	Total Phosphorus	0.13	U		MA	
	pH	7.1			E	J
	Specific Conductance	950			E	
	Total Dissolved Solids	498			G	
	Turbidity	Not required			N	

Klonie 2/10/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121477

Matrix (Soil/Water): Water

Sample ID: Up Far

Level (Low/Med): --

Date Received: 10/29/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.07	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	77.6			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	0.43	U		P
7439-92-1	Lead	0.001	U		F
7439-95-4	Magnesium	75.5			P
7439-96-5	Manganese	0.058			P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	9.3			P
7782-49-2	Selenium	0.003	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	20.7			P
7440-62-2	Vanadium	0.01	U		F
7440-66-6	Zinc	0.009	U		P
	Ammonium	0.10	U		AP
	Bicarbonate	617			T
	Carbonate	0			T
	Chloride	13			T
	Fluoride	0.31			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.73			ACR
	Sulfate	36			AM
	Total Phosphorus	0.10	U		MA
	pH	7.1			E
	Specific Conductance	933			E
	Total Dissolved Solids	502			G
	Turbidity	Not required			N

UJ

4/14/92

J

Klonie 2/10/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121478

Matrix (Soil/Water): Water

Sample ID: Doc

Level (Low/Med): --

Date Received: 10/29/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	0.08	U		P
7440-38-2	Arsenic	0.002	U		H
7440-41-7	Beryllium	0.001	U		F
7440-43-9	Cadmium	0.005	U		F
7440-70-2	Calcium	116			P
7440-47-3	Chromium	0.01	U		P
7440-50-8	Copper	0.005	U		F
7439-89-6	Iron	8.34			P
7439-92-1	Lead	0.001	~~U~~		F
7439-95-4	Magnesium	133			P
7439-96-5	Manganese	0.298			P
7440-02-0	Nickel	0.02	U		F
7440-09-7	Potassium	14.1			P
7782-49-2	Selenium	~~.003~~ Klonie ~~0.003~~ ~~.002~~ .002	U		H
7440-22-4	Silver	0.01	U		F
7440-23-5	Sodium	34.2			P
7440-62-2	Vanadium	0.02	U		F
7440-66-6	Zinc	0.009	U		P
	Ammonium	0.60	U		AP
	Bicarbonate	496			T
	Carbonate	0			T
	Chloride	14			T
	Fluoride	0.38			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	0.50	U		ACR
	Sulfate	30			AM
	Total Phosphorus	0.37	U		MA
	pH	6.0			E
	Specific Conductance	1,510			E
	Total Dissolved Solids	812			G
	Turbidity	Not required			N

UJ

[illegible] 4/16/92

J

Klonie 2/10/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121479

Matrix (Soil/Water): Water

Sample ID: TW-32-RFK

Level (Low/Med): --

Date Received: 10/29/91

Solids: --

Concentration Units (mg/l or mg/kg dry weight): mg/l

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Total Aluminum	2.9	U		P
7440-38-2	Total Arsenic	0.002	U		H
7440-41-7	Total Beryllium	0.001	U		F
7440-43-9	Total Cadmium	0.005	U		F
7440-70-2	Total Calcium	129			P
7440-47-3	Total Chromium	0.04			P
7440-50-8	Total Copper	0.007	U		F
7439-89-6	Total Iron	2.2			P
7439-92-1	Total Lead	0.003			F
7439-95-4	Total Magnesium	49.0			P
7439-96-5	Total Manganese	0.085			P
7440-02-0	Total Nickel	0.02	U		F
7440-09-7	Total Potassium	8.3			P
7782-49-2	Total Selenium	~~0.003~~ .002	U		H
7440-22-4	Total Silver	0.01	U		F
7440-23-5	Total Sodium	89.3			P
7440-62-2	Total Vanadium	4.69			F
7440-66-6	Total Zinc	0.008	U		P
	Ammonium	5.7			AP
	Bicarbonate	987			T
	Carbonate	0			T
	Chloride	108			T
	Fluoride	0.25			ISE
	Hydroxide	0			T
	Nitrate/Nitrite as N	7.00			ACR
	Sulfate	108			AM
	Total Phosphorus	1.06			MA
	pH	7.1			E
	Specific Conductance	1,250			E
	Total Dissolved Solids	676			G
	Turbidity	Not required			N

UJ

J

4/16/92

Klonie 2/10/92

APPENDIX S

ATTACHMENT 2

RADIOCHEMICAL DATA ASSESSMENT SUMMARIES - WATER SAMPLES

RADIOCHEMICAL DATA ASSESSMENT SUMMARY

PROJECT NO. 913-1101.211 SITE Monsanto

LABORATORY ALR SAMPLES/MATRIX Water

SDG # 40420-21

ledgC, Form C, EHA, EHB
EHC, Down A, B, C, Up-Near,
Middle, Far, [redacted] TW-32, TW-36
EB-Beaker, EB-Filter
TW-11, TW-20, TW-40,
TW-42
FB-06

DATA ASSESSMENT SUMMARY

	ALPHA SCINT.	L.B. SCINT.	GAMMA SPEC.	FLUOR.
1. HOLDING TIMES	0	0		0
2. CALIBRATIONS	0	0		0
3. BLANKS	0	0	Klonie	0
4. LCS	0	0		0
5. DUPLICATE ANALYSIS	0	0		0
6. MATRIX SPIKE	N/A	N/A		N/A
7. SAMPLE VERIFICATION	0	0		0
8. OTHER QC	N/A	N/A		N/A
9. OVERALL ASSESSMENT	0	0		0

0 = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

NOTES: Alpha/Beta recounted [illegible] 2/21/92

Validated by: Kenny Lonie Date: ~~AT~~ Klonie 2/5/92

Reviewed by: [illegible] Date: 2/21/92

SDG # 40420-21 Project No. 913-1101.211

	Acceptable YES	NO
1. Holding Times	✓	

presertives used was ok and within 6 months to analyzed samples

2. Calibrations	✓	

verifies std with true Qa results and recheck ~~eff~~ Reliability, Blanks were used and verifies against Raw Data with LCS

3. Blanks	✓	

Requality Sample results with "u" for value less than 5x blank value

4. Laboratory Control Standard	✓	

Verifies % Recovery within 80-120%
Decal Alpha 180/226 x100 = 80
acceptable Data

5. Duplicate Analysis	✓	

verifies that Results are within ± 20% RPD and with in QC limits of LLD

6. Matrix Spike Analysis	✓	

N/A

7. Sample Results Verification	✓	

Sample results verified, No Transcription errors made

SDG # 40820-21 Project No. 913-1101.211

	Acceptable YES	Acceptable NO
8. Other QC		
N/A		
9. Field Duplicates		
N/A		
10. Overall Assessment	✓	

1 Requalify form 1's for Blanks

Accu-Labs Research, Inc.

4663 Table Mountain Drive Golden, Colorado 80403-1650
(303) 277-9514 FAX (303) 277-9512

Rcvd 2/3/92

ANALYSIS REPORT

DATE: 01/27/92 PAGE 1

KATHY SMIT
CHEN-NORTHERN, INC.
P.O. BOX 30615
BILLINGS, MT 59107

Lab Job Number: 8734-40420-21
Date Samples Received: 10/29/91
Customer PO Number: PROJ# 913-1101

These samples to be disposed of 30 days after the date of this report.

ALR Designation -		8734-40420-21-1	8734-40420-21-2	8734-40420-21-3	8734-40420-21-4
Sponsor Designation -		LEDGER C	FORMATION C	EFFLUENT A	EFFLUENT B
Date Collected -		10/25/91	10/25/91	10/25/91	10/25/91
Determinations in pCi/L unless noted	5X Blank				
Gross Alpha - total	0	2 ± 4 *	12 ± 6 *	5 ± 7 *	4 ± 7 *
Radium-226 - total	1.0	-0.2 ± 0.4 * U	1.4 ± 0.4 *	0.0 ± 0.3 * U	-0.2 ± 0.4 * U
Radium-228 - total	0.4	-0.4 ± 3.4 * U	0.8 ± 0.7 *	0.1 ± 0.9 * U	0.5 ± 0.8 *
Radon-222 - total	17.0	480 ± 50 *	680 ± 50 *	20 ± 36 *	8 ± 36 * U
Uranium - total (mg/L)	—	<0.002	0.007	<0.002	<0.002

KWS 2/21/92

KWS 2/21/92

Klowe 2/5/92

40420-12

Accu-Labs Research, Inc.

A N A L Y S I S R E P O R T

DATE: 01/27/92 PAGE 2

Lab Job Number 8734-40420-21

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40420-21-5	8734-40420-21-6	8734-40420-21-7	8734-40420-21-8
Sponsor Designation -	EFFLUENT C	DOWN A	DOWN B	DOWN C
Date Collected -	10/25/91	10/25/91	10/25/91	10/25/91
Determinations in pCi/L unless noted				
Gross Alpha - total	12 ± 8 *	3 ± 5 *	2 ± 4 *	4 ± 5 *
Radium-226 - total	-0.1 ± 0.4 * U	-0.1 ± 0.3 * U	-0.1 ± 0.3 * U	0.0 ± 0.3 * U
Radium-228 - total	0.5 ± 1.0 *	-0.2 ± 0.5 * U	0.2 ± 0.6 * U	-0.2 ± 0.6 * U
Radon-222 - total	13 ± 37 * U	6 ± 37 * U	-12 ± 37 * U	21 ± 38 *
Uranium - total (mg/L)	<0.002	<0.002	0.008	<0.002

2/24/9

Klowe 2/5/92

40420-12

ANALYSIS REPORT
DATE: 01/27/92 PAGE 3
Lab Job Number 8734-40420-21

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40420-21-9	8734-40420-21-10	8734-40420-21-11	8734-40420-21-12
Sponsor Designation -	UP-NEAR	UP-MIDDLE	UP-FAR	DOC
Date Collected -	10/25/91	10/25/91	10/25/91	10/25/91
Determinations in pCi/L unless noted				
Gross Alpha - total	6 ± 5 *	6 ± 5 *	0 ± 4 *	0 ± 1 *
Radium-226 - total	0.0 ± 0.3 * U	-0.2 ± 0.3 * U	0.1 ± 0.4 * U	-0.1 ± 0.3 * U
Radium-228 - total	0.0 ± 0.6 * U	-0.1 ± 0.6 * U	0.3 ± 0.6 * U	0.3 ± 0.6 * U
Radon-222 - total	51 ± 39 *	0 ± 37 * U	19 ± 39 * ~~U~~	62 ± 40 *
Uranium - total (mg/L)	<0.002	<0.002	<0.002	<0.002

[illegible] 2/21/92

Klonie 2/5/92

40420-12

ANALYSIS REPORT

DATE: 01/27/92 PAGE 4

Lab Job Number 8734-40420-21

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40420-21-13	8734-40420-21-14	8734-40420-21-15	8734-40420-21-16
Sponsor Designation -	TW-32-RFK	TW-36-RFK	EB-BEAKER	EB-FILTER
Date Collected -	10/26/91	10/26/91	10/26/91	10/27/91
Determinations in pCi/L unless noted				
Gross Alpha - dissolved	0 ± 6 *	----	----	----
Gross Alpha - total	4 ± 7 *	2 ± 8 *	1 ± 1 *	2 ± 1 *
Radium-226 - dissolved	0.2 ± 0.3 * U	----	----	----
Radium-226 - total	0.1 ± 0.3 * U	0.1 ± 0.3 * U	0.0 ± 0.4 * U	-0.2 ± 0.4 * U
Radium-228 - dissolved	0.2 ± 0.8 * U	----	----	----
Radium-228 - total	0.5 ± 0.7 *	-0.3 ± 0.5 * U	0.3 ± 0.5 * U	0.6 ± 0.5 *
Radon-222 - total	420 ± 50 *	96 ± 37 *	-20 ± 33 *	----
Uranium - dissolved (mg/L)	<0.002	----	----	----
Uranium - total (mg/L)	0.004	<0.002	<0.002	<0.002

2/21/92

Klowe 2/5/92

40420-12

Accu-Labs Research, Inc.

A N A L Y S I S R E P O R T

DATE: 01/27/92 PAGE 5

Lab Job Number 8734-40420-21

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40420-21-17	8734-40420-21-18	8734-40420-21-19	8734-40420-21-20
Sponsor Designation -	TW-11-RFK	TW-20-RFK	TW-40-RFK	TW-42-RFK
Date Collected -	10/27/91	10/27/91	10/27/91	10/27/91
Determinations in pCi/L unless noted				
Gross Alpha - dissolved	----	----	-3 ± 15 *	2 ± 10 *
Gross Alpha - total	6 ± 10 *	3 ± 9 *	5 ± 18 *	1 ± 9 *
Radium-226 - dissolved	----	----	0.7 ± 0.3 * U	0.8 ± 0.3 * U
Radium-226 - total	0.2 ± 0.3 * U	-0.1 ± 0.3 * U	0.1 ± 0.3 * U	0.2 ± 0.3 * U
Radium-228 - dissolved	----	----	0.5 ± 0.7 *	0.0 ± 0.8 * U
Radium-228 - total	0.2 ± 0.5 * U	0.3 ± 0.6 * U	0.5 ± 0.5 *	0.2 ± 0.6 * U
Radon-222 - total	790 ± 50 *	40 ± 30 *	160 ± 30 *	120 ± 30 *
Uranium - dissolved (mg/L)	----	----	0.002	<0.002
Uranium - total (mg/L)	<0.002	0.003	0.009	<0.002

Klow 2/5/92

40420-12

Accu-Labs Research, Inc.

A N A L Y S I S R E P O R T

DATE: 01/27/92 PAGE 6

Lab Job Number 8734-40420-21

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40420-21-21
Sponsor Designation -	FB-06-RFK
Date Collected -	10/27/91

Determinations in pCi/L unless noted

Gross Alpha - total	0 ± 1 *
Radium-226 - total	-0.1 ± 0.5 * U
Radium-228 - total	-0.1 ± 0.5 * U
Radon-222 - total	21 ± 30 * ~~U~~
Uranium - total (mg/L)	<0.002

2/21/92

* Variability of the radioactive disintegration process (counting error) at the 95% confidence level, 1.96σ.

By: Bud Summers
Bud Summers
Radiochemistry Supervisor

BS/ep

2/5/92

40420-12

RADIOCHEMICAL DATA ASSESSMENT SUMMARY

PROJECT NO. 913-1101.211 SITE Monsanto

LABORATORY ALR SAMPLES/MATRIX Water

TW-28, TW-29, TW-9,

SDG # 40296-6 [redacted] FB-03, TW-34

DATA ASSESSMENT SUMMARY

	ALPHA SCINT.	L.B. SCINT.	GAMMA SPEC.	FLUOR.
1. HOLDING TIMES	O	O		O
2. CALIBRATIONS	O	O		O
3. BLANKS	O	O		O
4. LCS	O	O		O
5. DUPLICATE ANALYSIS	O	O		O
6. MATRIX SPIKE	N/A	N/A		N/A
7. SAMPLE VERIFICATION	O	O		O
8. OTHER QC	N/A	N/A		N/A
9. OVERALL ASSESSMENT	O	O		O

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

NOTES:

Validated by: Kenny Lowe Date: 2/9/92

Reviewed by: [signature] Date: 2/21/92

SDG # 40296-6 Project No. 913-1101.201

	Acceptable YES	NO
1. Holding Times	X	

acceptable holding Time within 6 month fo analyzed

2. Calibrations	X	

Verified from Raw Data for std and blanks within limits for α, β, Rn222, 228 and 226

3. Blanks	X	

Qualify Blanks with values less then 5x the blank Results with "U" qualifier.

4. Laboratory Control Standard	X	

Verified LCS with in Control Limits of 80-120% R for aqueous Samples Recal %R Ra226 2136/2380 x 100 = ~~89.7%~~ 89.7%

5. Duplicate Analysis	X	

acceptable Data Results

6. Matrix Spike Analysis		

N/A

7. Sample Results Verification	X	

Verified Sample Results for Transcription error, NO ERRORS made

SDG # 40296-6 Project No. 913-1101-211

	Acceptable YES	Acceptable NO
8. Other QC		
N/A.		
9. Field Duplicates		
N/A		
10. Overall Assessment	X	

1 requality form 1's for Blanks

Accu-Labs Research, Inc.

4663 Table Mountain Drive Golden, Colorado 80403-1650
(303) 277-9514 FAX (303) 277-9512

ANALYSIS REPORT

DATE: 12/17/91 PAGE 1

DEBBIE GRIMM
CHEN-NORTHERN, INC.
P.O. BOX 30615
BILLINGS, MT 59107

Lab Job Number: 8734-40296-6
Date Samples Received: 10/21/91
Customer PO Number: PROJECT #913-1101

These samples to be disposed of 30 days after the date of this report.

ALR Designation -		8734-40296-6-1	8734-40296-6-2	8734-40296-6-3	8734-40296-6-4
Sponsor Designation -		TW-28-RFK	TW-29-RFK	TW-9-RFK	TW-21-RFK
Date Collected -		10/17/91	10/17/91	10/17/91	10/17/91
Determinations in pCi/L unless noted	5X Blank				
Gross Alpha - total	1.2	4 ± 6 *	-2 ± 5 *	1 ± 9 * U	1 ± 10 * U
Radium-226 - total	1.9	-0.4 ± 0.6 * U	0.0 ± 0.6 * U	-0.5 ± 0.6 * U	-0.3 ± 0.5 * U
Radium-228 - total	1.0	-0.1 ± 0.6 * U	-0.1 ± 0.5 * U	0.1 ± 0.6 * U	0.0 ± 0.6 * U
Radon-222 - total	16.7	280 ± 40 *	330 ± 40 *	18 ± 33 *	120 ± 30 *
Uranium - total (mg/L)	---	0.002	<0.002	<0.002	<0.002

ALR Designation -	8734-40296-6-5	8734-40296-6-6
Sponsor Designation -	FB-03-RFK	TW-34-RFK
Date Collected -	10/17/91	10/17/91
Gross Alpha - total	0 ± 1 * U	4 ± 6 *
Radium-226 - total	-0.2 ± 0.5 * U	-0.2 ± 0.6 * U
Radium-228 - total	0.3 ± 0.5 * U	0.5 ± 0.6 * U
Radon-222 - total	51 ± 32 *	86 ± 33 *
Uranium - total (mg/L)	0.002	<0.002

* Variability of the radioactive disintegration process (counting error) at the 95% confidence level, 1.96σ.

By: Bud Summers
Bud Summers
Radiochemistry Supervisor

2/21/92

Klowi 2/4/92

BS/ep

40296-12

RADIOCHEMICAL DATA ASSESSMENT SUMMARY

PROJECT NO. 913-1101-211 SITE Monsanto

LABORATORY ALR SAMPLES/MATRIX Water

Kelly A, Kelly B, AW-3, TW-41

SDG # 40442-5 TW-43

DATA ASSESSMENT SUMMARY

	ALPHA SCINT.	L.B. SCINT.	GAMMA SPEC.	FLUOR.
1. HOLDING TIMES	O	O		O
2. CALIBRATIONS	O	O		O
3. BLANKS	O	O	None	O
4. LCS	O	O		O
5. DUPLICATE ANALYSIS	O	O		O
6. MATRIX SPIKE	N/A	N/A		N/A
7. SAMPLE VERIFICATION	O	O		O
8. OTHER QC	N/A	N/A		N/A
9. OVERALL ASSESSMENT	O	O		O

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

NOTES:

Validated by: Kenny Lowe Date: 2/5/92

Reviewed by: [signature] Date: 2/21/92

SDG # 40442-5 Project No. 913-1101.211

	Acceptable YES	NO
1. Holding Times	✓	

holding time acceptable

2. Calibrations	✓	

Verifies std and blanks with True value verified reliability Average all low Data acceptable

3. Blanks	✓	

requatify sample results with "U" for value less than 5x the Blank Value.

4. Laboratory Control Standard	✓	

Verifies Sample recovery within 80-120%
Recal 224 2550/2380 x 100 = 107 %

5. Duplicate Analysis	✓	

acceptable results all RPD within ± 20%

6. Matrix Spike Analysis		

N/A

7. Sample Results Verification	✓	

Verified No Transcription errors

SDG # 40442-5 Project No. 913-1101.211

	Acceptable YES	NO
8. Other QC		
N/A		
9. Field Duplicates		
N/A		
10. Overall Assessment	✓	

1 Requalify form 1's for Blanks

Accu-Labs Research, Inc.

4663 Table Mountain Drive Golden, Colorado 80403-1650
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A N A L Y S I S R E P O R T

DATE: 01/08/92 PAGE 1

KATHY SMIT
CHEN-NORTHERN, INC.
P.O. BOX 30615
BILLINGS, MT 59107

Lab Job Number: 8734-40442-5
Date Samples Received: 10/30/91
Customer PO Number: PROJ# 913-1101

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	5X Blank	8734-40442-5-1	8734-40442-5-2	8734-40442-5-3	8734-40442-5-4
Sponsor Designation -		KELLY A	KELLY B	PW-3-RFK-R	TW-41-RFK
Date Collected -		10/28/91	10/28/91	10/29/91	10/29/91
Determinations in pCi/L unless noted					
Gross Alpha - total	---	5 ± 4 *	3 ± 4 *	----	11 ± 8 *
Radium-226 - total	0.7	0.0 ± 0.2 * u	0.1 ± 0.2 * u	----	0.0 ± 0.2 * u
Radium-228 - total	0.3	0.7 ± 0.6 *	0.4 ± 0.5 *	----	0.1 ± 0.8 * u
Radon-222 - total	17.2	22 ± 27 * ~~u~~	22 ± 28 * ~~u~~	270 ± 30 *	300 ± 30 *
Uranium - total (mg/L)	---	<0.002	<0.002	----	<0.002

ALR Designation -	8734-40442-5-5
Sponsor Designation -	TW-43-CCY
Date Collected -	10/28/91
Gross Alpha - dissolved	10 ± 15 *
Gross Alpha - total	970 ± 170 *
Radium-226 - dissolved	1.3 ± 0.3 *
Radium-226 - total	21 ± 1 *
Radium-228 - dissolved	1.0 ± 0.6 *
Radium-228 - total	2.6 ± 1.1 *
Radon-222 - total	84 ± 31 *
Uranium - dissolved (mg/L)	<0.002
Uranium - total (mg/L)	0.030

* Variability of the radioactive disintegration process (counting error) at the 95% confidence level, 1.96σ.

2/21/92

Klowie 2/5/92

By: Bud Summers
Radiochemistry Supervisor

BS/ep

40442-12

RADIOCHEMICAL DATA ASSESSMENT SUMMARY

PROJECT NO. 913-1101.211 SITE Monsanto

LABORATORY ACR SAMPLES/MATRIX Water

Eb-Spoon

SDG # 40464-1

DATA ASSESSMENT SUMMARY

	ALPHA SCINT.	L.B. SCINT.	GAMMA SPEC.	FLUOR.
1. HOLDING TIMES	O	O		O
2. CALIBRATIONS	O	O		O
3. BLANKS	O	O		O
4. LCS	O	O		O
5. DUPLICATE ANALYSIS	O	O		O
6. MATRIX SPIKE	N/A	N/A		N/A
7. SAMPLE VERIFICATION	O	O		O
8. OTHER QC	N/A	N/A		N/A
9. OVERALL ASSESSMENT	O	O		O

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

NOTES:

Validated by: Kenny Jones Date: 2/9/92

Reviewed by: [illegible] Date: 2/20/92

SDG # 40464-1 Project No. 913-1101.211

	Acceptable YES	NO
1. Holding Times	✓	

holding time acceptable preservive added, analyzed with in 6 months

2. Calibrations	✓	

Verified std and Blanks were used and with in QC limits

3. Blanks	✓	

Recently sample results for value less than 5x of blank value with "U" Qualifier

4. Laboratory Control Standard	✓	

LCS acceptable with in limits of 80-120%R Decal 228 2033/2403 x 100 = 83%

5. Duplicate Analysis	✓	

acceptable Data

6. Matrix Spike Analysis		X

N/A

7. Sample Results Verification	✓	

Verified Reported sample result value from Raw Data, acceptable

SDG # 40464-1 Project No. 913-1181.211

	Acceptable YES	NO
8. Other QC		✓
N/A.		
9. Field Duplicates		✓
N/A		
10. Overall Assessment	✓	

1 Requality form 1's for Blanks

Accu-Labs Research, Inc.

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(303) 277-9514 FAX (303) 277-9512

ANALYSIS REPORT

DATE: 12/18/91 PAGE 1

KATHY SMIT
CHEN-NORTHERN, INC.
P.O. BOX 30615
BILLINGS, MT 59107

Lab Job Number: 8734-40464-1
Date Samples Received: 10/31/91
Customer PO Number: PROJ# 913-1101

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40464-1-1
Sponsor Designation -	EB-SPOON
Date Collected -	10/29/91

Determinations in pCi/L unless noted

	5x Blank	
Gross Alpha - total	---	9 ± 2 *
Radium-226 - total	0.2	0.2 ± 0.2 * u
Radium-228 - total	1.0	-0.6 ± 0.6 * u
Uranium - total (mg/L)	----	<0.002

* Variability of the radioactive disintegration process (counting error) at the 95% confidence level, 1.96σ.

By: Bud Summers
Radiochemistry Supervisor

BS/dh

Kenney Lewis 12/4/92

40464-12

RADIOCHEMICAL DATA ASSESSMENT SUMMARY

PROJECT NO. 913-1101.211 SITE Monsanto

LABORATORY ALR SAMPLES/MATRIX Water

TW-39, TW-12, TW-35,

SDG # 40335-6 TW-45, TW-10, TW-37

DATA ASSESSMENT SUMMARY

	ALPHA SCINT.	L.B. SCINT.	GAMMA SPEC.	FLUOR.
1. HOLDING TIMES	0	0		0
2. CALIBRATIONS	0	0	Gamma	0
3. BLANKS	0	0		0
4. LCS	0	0		0
5. DUPLICATE ANALYSIS	0	0		0
6. MATRIX SPIKE	N/A	N/A		N/A
7. SAMPLE VERIFICATION	0	0		0
8. OTHER QC	N/A	N/A		N/A
9. OVERALL ASSESSMENT	0	0		0

0 = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

NOTES:

Validated by: Kenny Lowe Date: 2/5/92

Reviewed by: [illegible] Date: 2/21/92

SDG # 40335-6 Project No. 913-1101-211

	Acceptable YES	NO
1. Holding Times	✓	

presertives used, holding time acceptable analyzed with in 6 months

2. Calibrations	✓	

Verified LCS against True value for Alpha and Beta verified Blanks used. acceptable calibration

3. Blanks	✓	

Requalify sample results with "U" qualifier for value less than 5X the Blank Results

4. Laboratory Control Standard	✓	

Values fall with in QC limits of 80-120% Recal 224 $2290/2380 \times 100 = 96.2$

5. Duplicate Analysis	✓	

acceptable and with in ± 20% of RPD

6. Matrix Spike Analysis		

N/A

7. Sample Results Verification	X	

Verified No transcription ERRORS made

SDG # 40335-6 Project No. 913-1101.211

	Acceptable YES	Acceptable NO
8. Other QC		✓
N/A		
9. Field Duplicates		✓
N/A		
10. Overall Assessment	✓	

1 requalify form 1's for Blanks

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ANALYSIS REPORT

DATE: 12/18/91 PAGE 1

DEBBIE GRIMM
CHEN-NORTHERN, INC.
P.O. BOX 30615
BILLINGS, MT 59107

Lab Job Number: 8734-40335-6
Date Samples Received: 10/23/91
Customer PO Number: PROJ# 913-1101

These samples to be disposed of 30 days after the date of this report.

ALR Designation -		8734-40335-6-1	8734-40335-6-2	8734-40335-6-3	8734-40335-6-4
Sponsor Designation -		TW-39-RFK	TW-12-RFK	TW-35-RFK	TW-45-RFK
Date Collected -		10/21/91	10/21/91	10/21/91	10/21/91
Determinations in pCi/L unless noted	5x Blank				
Gross Alpha - total	1-3	-1 ± 11 *U	9 ± 14 *	-5 ± 11 *	3 ± 5 *
Radium-226 - total	0.2	0.0 ± 0.3 *U	0.0 ± 0.2 *U	0.1 ± 0.2 *U	-0.1 ± 0.2 *U
Radium-228 - total	1-0	0.0 ± 0.5 *U	-0.3 ± 0.4 *U	0.1 ± 0.6 *U	0.1 ± 0.5 *U
Radon-222 - total	15-2	99 ± 25 *	240 ± 30 *	290 ± 30 *	59 ± 24 *
Uranium - total (mg/L)	---	<0.002	<0.002	0.004	<0.002

ALR Designation -	8734-40335-6-5	8734-40335-6-6
Sponsor Designation -	TW-10-RFK	TW-37-RFK
Date Collected -	10/21/91	10/21/91
Gross Alpha - total	4 ± 6 *	3 ± 8 *
Radium-226 - total	0.0 ± 0.4 *U	0.2 ± 0.3 *
Radium-228 - total	1.3 ± 0.6 *	0.2 ± 0.6 *U
Radon-222 - total	540 ± 30 *	680 ± 40 *
Uranium - total (mg/L)	<0.002	<0.002

* Variability of the radioactive disintegration process (counting error) at the 95% confidence level, 1.96σ.

By: Bud Summers
Radiochemistry Supervisor

BS/ep

Klowie 2/5/92

2/21/92

40335-12

RADIOCHEMICAL DATA ASSESSMENT SUMMARY

PROJECT NO. 913-1101.211 SITE Monsanto

LABORATORY ALR SAMPLES/MATRIX Water

TW-30, EB-01, TW-26

SDG # 40308-9 TW-13, TW-26D, TW-15

~~Hooper, TW-44, FB-04~~

DATA ASSESSMENT SUMMARY

	ALPHA SCINT.	L.B. SCINT.	GAMMA SPEC.	FLUOR.
1. HOLDING TIMES	0	0		0
2. CALIBRATIONS	0	0		0
3. BLANKS	0	0		0
4. LCS	0	0		0
5. DUPLICATE ANALYSIS	0	0		0
6. MATRIX SPIKE	N/A	N/A		N/A
7. SAMPLE VERIFICATION	0	0		0
8. OTHER QC	N/A	N/A		N/A
9. OVERALL ASSESSMENT	0	0		0

0 = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

NOTES:

Validated by: Kenny Lowe Date: 2/3/92

Reviewed by: [illegible] Date: 2/21/92

SDG # 40308-9 Project No. 913-1101.211

	Acceptable YES	NO
1. Holding Times		
Holding time acceptable for samples within 6 months		
2. Calibrations	✓	
verified std and blanks were used. results with in limits		
3. Blanks	✓	
Requalify results with "U" per 5x rule		
4. Laboratory Control Standard	✓	
all LCS within control limits of 80-120% R Recal Alpha 284/222 X 100 = 102		
5. Duplicate Analysis	✓	
Verified Results fall with in limits Results acceptable		
6. Matrix Spike Analysis		
N/A		
7. Sample Results Verification	✓	
Results verified no ~~transch~~ Wrong Transcribe error.		

SDG # 403089-3 Project No. 913-1101.211

	Acceptable YES	NO
8. Other QC		

N/A

9. Field Duplicates

Recal Field Dup Gross Alpha outside of RPD limits ~~Re Qualify~~ Flag

10. Overall Assessment

Requalify form 1's for blanks

Accu-Labs Research, Inc.

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ANALYSIS REPORT

DATE: 01/16/92 PAGE 1

DEBBIE GRIMM
CHEN-NORTHERN, INC.
P.O. BOX 30615
BILLINGS, MT 59107

Lab Job Number: 8734-40308-9
Date Samples Received: 10/22/91
Customer PO Number: PROJECT #913-1101

These samples to be disposed of 30 days after the date of this report.

ALR Designation -		8734-40308-9-1	8734-40308-9-2	8734-40308-9-3	8734-40308-9-4
Sponsor Designation -		TW-30-CCR	EB-01-CCR	TW-26-RFK	TW-13-RFK
Date Collected -		10/18/91	10/18/91	10/20/91	10/20/91
Determinations in pCi/L unless noted	5x Blank				
Gross Alpha - dissolved	0.8	12 ± 8 *	----	----	----
Gross Alpha - total		11 ± 8 *	1 ± 1 *	6 ± 6 *	8 ± 4 *
Radium-226 - dissolved	0.5	0.0 ± 0.2 * u	----	----	----
Radium-226 - total		0.1 ± 0.2 * u	0.0 ± 0.2 * u	0.4 ± 0.2 *	0.1 ± 0.2 * u
Radium-228 - dissolved	1.1	0.2 ± 0.5 * u	----	----	----
Radium-228 - total		-0.2 ± 0.5 * u	0.0 ± 0.5 * u	-0.1 ± 0.6 * u	0.6 ± 0.7 * u
Radon-222 - total	12.2	55 ± 18 *	13 ± 17 * u	94 ± 20 *	380 ± 30 *
Uranium - dissolved (mg/L)		<0.002	----	----	----
Uranium - total (mg/L)		<0.002	0.005	<0.002	<0.002

ALR Designation -	8734-40308-9-5	8734-40308-9-6	8734-40308-9-7	8734-40308-9-8
Sponsor Designation -	TW-26-RFK-D	TW-15-RFK	HOOPER	TW-44-RFK
Date Collected -	10/20/91	10/20/91	10/20/91	10/20/91
Gross Alpha - dissolved	----	----	----	6 ± 6 *
Gross Alpha - total	12 ± 7 *	7 ± 3 *	8 ± 7 *	79 ± 20 *
Radium-226 - dissolved	----	----	----	0.0 ± 0.2 * u
Radium-226 - total	0.5 ± 0.3 * u	0.0 ± 0.2 * u	0.0 ± 0.3 * u	0.4 ± 0.2 * u
Radium-228 - dissolved	----	----	----	-0.1 ± 0.7 * u
Radium-228 - total	0.1 ± 0.7 * u	0.4 ± 0.7 * u	0.1 ± 0.5 * u	0.1 ± 0.5 * u
Radon-222 - total	92 ± 20 *	520 ± 30 *	43 ± 19 *	77 ± 24 *
Uranium - dissolved (mg/L)	----	----	----	<0.002
Uranium - total (mg/L)	<0.002	<0.002	<0.002	<0.002

2/21/92

40308-12

Accu-Labs Research, Inc.

A N A L Y S I S R E P O R T

DATE: 01/16/92 PAGE 2

Lab Job Number 8734-40308-9

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40308-9-9
Sponsor Designation -	FB-04-RFK
Date Collected -	10/20/91

Determinations in pCi/L unless noted

Gross Alpha - total	1 ± 1 *
Radium-226 - total	0.0 ± 0.3 * u
Radium-228 - total	-0.2 ± 0.5 * u
Radon-222 - total	28 ± 22 *
Uranium - total (mg/L)	<0.002

* Variability of the radioactive disintegration process (counting error) at the 95% confidence level, 1.96σ.

By: Bud Summers

Bud Summers
Radiochemistry Supervisor

BS/ep

2/21/92

RADIOCHEMICAL DATA ASSESSMENT SUMMARY

PROJECT NO. 913-1101.211 SITE Monsanto

LABORATORY ALR SAMPLES/MATRIX water

PW-1, PW-2, PW-3, PW-4,

SDG # 40265 FB-4, Calf, Mormon B,

Mormon C, Homestead, TW-2

FB-02

DATA ASSESSMENT SUMMARY

	ALPHA SCINT.	L.B. SCINT.	GAMMA SPEC.	FLUOR.
1. HOLDING TIMES	0	0		0
2. CALIBRATIONS	0	0		0
3. BLANKS	0	0	LLaw	0
4. LCS	0	0	2/4/92	0
5. DUPLICATE ANALYSIS	~~N/a~~ Klowie 0	0		0
6. MATRIX SPIKE	0	0		0
7. SAMPLE VERIFICATION	0	0		0
8. OTHER QC	N/a	N/a		N/a
9. OVERALL ASSESSMENT	0	0		0

0 = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

NOTES:

Validated by: Kenny Louie Date: 2/4/92

Reviewed by: [illegible] Date: 2/21/92

SDG # 40265 Project No. 913-1101.211

	Acceptable YES	NO
1. Holding Times	X	

holding time acceptable compared Raw Data date vs COC date and within 6mo. and was preserved

2. Calibrations	X	

verifies std with in limits and Blanks and LCS, acceptable Data

3. Blanks	X	

Requalify Results with value less than 5X the Blank value with "U" Qualifier

4. Laboratory Control Standard	X	

all % R with in limits for aqueous samples Recal % R Alpha $^{194}/_{222} \times 100 = 87$ Uranium $^{217}/_{246} \times 100 = 88$

5. Duplicate Analysis	X	

Qualify Samples with "J" for RPD > 20%

6. Matrix Spike Analysis		

N/A

7. Sample Results Verification	X	

verified Results against raw Data

SDG # 40265-11 Project No. 913-1101.211

	Acceptable YES	NO
8. Other QC		

N/A

9. Field Duplicates		

N/A

10. Overall Assessment	+	

- Requalify form 1's for blanks
- Requalify form 1's for Replicate analysis

Accu-Labs Research, Inc.

3 Table Mountain Drive Golden, Colorado 80403-1650
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A N A L Y S I S R E P O R T

DATE: 12/09/91 PAGE 1

DEBBIE GRIMM
CHEN-NORTHERN, INC.
P.O. BOX 30615
BILLINGS, MT 59107

Lab Job Number: 8734-40265-11
Date Samples Received: 10/18/91
Customer PO Number: (none)

These samples to be disposed of 30 days after the date of this report.

	ALR Designation -	8734-40265-11-1	8734-40265-11-2	8734-40265-11-3	8734-40265-11-4
	Sponsor Designation -	PW-1-RFK	PW-2-RFK	PW-3-RFK	PW-4-RFK
	Comments -			2-20 ML VIALS BROKEN	
	Date Collected -	10/16/91	10/16/91	10/15/91	10/16/91
Determinations in pCi/L unless noted					
	5 r Blank				
Gross Alpha - total	30	-2 ± 6 * U	0 ± 6 * U	0 ± 6 * U	1 ± 6 * U
Radium-226 - total	1.9	-0.2 ± 0.6 * U	-0.4 ± 0.6 * U	-0.4 ± 0.5 * U	-0.5 ± 0.6 * U
Radium-228 - total	0.3	0.0 ± 0.4 * U	-0.3 ± 0.6 * U	-0.1 ± 0.6 * U	-0.3 ± 0.5 * U
Radon-222 - total	15-1	340 ± 30 * J	340 ± 30 * J	----	260 ± 30 * J
Uranium - total (mg/L)	- - -	<0.002	0.002	<0.002	0.002

	ALR Designation -	8734-40265-11-5	8734-40265-11-6	8734-40265-11-7	8734-40265-11-8
	Sponsor Designation -	FB-4-RFK	CALF SPRING	MORMON B	MORMON C
	Comments -	SUBSTITUTED FB-1-RFK			
	Date Collected -	10/16/91	10/16/91	10/16/91	10/16/91
Gross Alpha - total		0 ± 1 * U	-1 ± 6 * U	1 ± 8 * U	0 ± 7 * U
Radium-226 - total		-0.3 ± 0.6 * U	-0.1 ± 0.6 * U	-0.4 ± 0.6 * U	-0.5 ± 0.6 * U
Radium-228 - total		0.2 ± 0.5 * U	-0.2 ± 0.5 * U	-0.3 ± 0.5 * U	-0.1 ± 0.4 * U
Radon-222 - total		34 ± 23 * J	240 ± 30 * J	330 ± 30 * J	250 ± 30 * J
Uranium - total (mg/L)		<0.002	0.004	<0.002	<0.002

Klopie 2/4/92

2/21/92

40265-12

Accu-Labs Research, Inc.

A N A L Y S I S R E P O R T

DATE: 12/09/91 PAGE 2

Lab Job Number 8734-40265-11

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40265-11-9	8734-40265-11-10	8734-40265-11-11
Sponsor Designation -	HOMESTEAD	TW-2-RFK	FB-02-RFK
Comments -			
Date Collected -	10/17/91	10/17/91	10/17/91

Determinations in pCi/L unless noted

Gross Alpha - total	6 ± 8 *	1 ± 6 * U	0 ± 1 * U
Radium-226 - total	-0.4 ± 0.6 * U	-0.5 ± 0.7 * U	-0.5 ± 0.5 * U
Radium-228 - total	0.0 ± 0.5 * U	0.0 ± 0.5 * U	-0.4 ± 0.4 * U
Radon-222 - total	140 ± 20 * J	160 ± 20 * J	-12 ± 19 * U
Uranium - total (mg/L)	<0.002	<0.002	<0.002

* Variability of the radioactive disintegration process (counting error) at the 95% confidence level, 1.96σ.

By: Bud Summers

Bud Summers
Radiochemistry Supervisor

BS/ep

2/21/92

Klowe 2/4/92

40265-12

RADIOCHEMICAL DATA ASSESSMENT SUMMARY

PROJECT NO. 913-1101.211 SITE Monsanto

LABORATORY ALR SAMPLES/MATRIX Water

Boy Scout, Spring Box, Finch, Form A, Ledg A, Ledg B, Form B, EB-03, TW-38

SDG # 40392-9

DATA ASSESSMENT SUMMARY

	ALPHA SCINT.	L.B. SCINT.	~~GAMMA SPEC.~~	FLUOR.
1. HOLDING TIMES	0	0		0
2. CALIBRATIONS	0	0	Klein	0
3. BLANKS	0	0		0
4. LCS	0	0		0
5. DUPLICATE ANALYSIS	0	0		0
6. MATRIX SPIKE	N/A	N/A		N/a
7. SAMPLE VERIFICATION	0	0		0
8. OTHER QC	N/A	N/a		N/a
9. OVERALL ASSESSMENT	0	0		0

0 = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

NOTES:

alpha / Beta Recounted 3/4/92

Validated by: Kenny Louie Date: 2/4/92

Reviewed by: [signature] Date: 2/21/92

SDG # 40392 Project No. 913-1101.201

	Acceptable YES	NO
1. Holding Times	X	

holding time acceptable analyzed within 6 months, preserved ok

2. Calibrations	X	

Verified ~~Sample~~ LCS QA true value within limits for nuclides and Blanks verified with in limits

3. Blanks	X	

Qualify Results with value less than 5x the Blank value with "U" Qualifier

4. Laboratory Control Standard	X	

all LCS within QC limits of 80-120%
Recd Alpha 188/222 = 84 Recd Ra226 2590/2380 = 108.8

5. Duplicate Analysis	X	

Qualify sample results with "J" for sample associated for. RPD outside of limits 40392-7 Not within recovery limits

6. Matrix Spike Analysis		

N/A

7. Sample Results Verification	X	

Verified NO TRANSCRIBE ERROR

SDG # 40392-9 Project No. 913-1101.211

	Acceptable YES	NO
8. Other QC		
N/A		
9. Field Duplicates		
N/A		
10. Overall Assessment	X	

- Qualify form 1's for blank
- Qualify form 1's for Field Duplicate analysis, for value greater then RPD

Accu-Labs Research, Inc.
[illegible]3 Table Mountain Drive Golden, Colorado 80403-1650
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ANALYSIS REPORT

DATE: 01/06/92 PAGE 1

DEBBIE GRIMM
CHEN-NORTHERN, INC.
P.O. BOX 30615
BILLINGS, MT 59107

Lab Job Number: 8734-40392-9
Date Samples Received: 10/26/91
Customer PO Number: PROJECT #913-1101

These samples to be disposed of 30 days after the date of this report.

ALR Designation -		8734-40392-9-1	8734-40392-9-2	8734-40392-9-3	8734-40392-9-4
Sponsor Designation -		BOY SCOUT	SPRING BOX	FINCH	FORMATION A
Date Collected -		10/24/91	10/24/91	10/24/91	10/24/91
Determinations in pCi/L unless noted	5x Blank				
Gross Alpha - total	— — —	3 ± 3 *	1 ± 3 *	3 ± 5 *	0 ± 4 *
Radium-226 - total	0.7	0.2 ± 0.2 * U	0.1 ± 0.3 * U	0.1 ± 0.2 * U	3.4 ± 0.4 *
Radium-228 - total	0.4	0.2 ± 0.6 * U	-0.2 ± 0.6 * U	-0.3 ± 0.6 * U	0.7 ± 0.7 *
Radon-222 - total	17.2	32 ± 16 * ~~U~~ J	160 ± 30 * J	360 ± 40 * J	2200 ± 100 * J
Uranium - total (mg/L)	— — —	<0.002	<0.002	<0.002	<0.002

ALR Designation -	8734-40392-9-5	8734-40392-9-6	8734-40392-9-7	8734-40392-9-8
Sponsor Designation -	LEDGER A	LEDGER B	FORMATION B	EB-03-CCR
Date Collected -	10/24/91	10/24/91	10/24/91	10/24/91
Gross Alpha - total	1 ± 4 *	1 ± 3 *	6 ± 5 *	1 ± 1 *
Radium-226 - total	0.2 ± 0.2 * U	0.0 ± 0.2 * U	2.4 ± 0.4 *	0.1 ± 0.2 * U
Radium-228 - total	-0.2 ± 0.7 * U	0.7 ± 0.7 *	0.7 ± 0.8 *	0.3 ± 0.6 * U
Radon-222 - total	720 ± 40 * J	610 ± 40 * J	110 ± 30 * J	10 ± 26 * J
Uranium - total (mg/L)	0.002	<0.002	0.004	<0.002

[illegible] 2/21/92

Florie 2/4/92

40392-12

Accu-Labs Research, Inc.

A N A L Y S I S R E P O R T

DATE: 01/06/92 PAGE 2

Lab Job Number 8734-40392-9

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40392-9-9
Sponsor Designation -	TW-38-CCR
Date Collected -	10/24/91

Determinations in pCi/L unless noted

Gross Alpha - dissolved	-1 ± 5 *
Gross Alpha - total	5 ± 7 *
Radium-226 - dissolved	0.1 ± 0.2 * u
Radium-226 - total	1.0 ± 0.3 * J
Radium-228 - dissolved	0.5 ± 0.6 *
Radium-228 - total	3.4 ± 2.1 *
Radon-222 - total	130 ± 30 * J
Uranium - dissolved (mg/L)	<0.002
Uranium - total (mg/L)	<0.002

* Variability of the radioactive disintegration process (counting error) at the 95% confidence level, 1.96σ.

By: _____

Bud Summers
Radiochemistry Supervisor

BS/dh

2/21/92

Klowe 2/4/92

40392-12

RADIOCHEMICAL DATA ASSESSMENT SUMMARY

PROJECT NO. 913-1101-211 SITE Monsanto

LABORATORY ALR SAMPLES/MATRIX water

TW-50, Harris, Lewis,

SDG # 40377-5 TW16, [redacted]

DATA ASSESSMENT SUMMARY

	ALPHA SCINT.	L.B. SCINT.	GAMMA SPEC.	FLUOR.
1. HOLDING TIMES	0	0		0
2. CALIBRATIONS	0	0		0
3. BLANKS	0	0	None	0
4. LCS	0	0		0
5. DUPLICATE ANALYSIS	0	0		0
6. MATRIX SPIKE	N/A	N/A		N/A
7. SAMPLE VERIFICATION	0	0		0
8. OTHER QC	N/A	N/A		N/A
9. OVERALL ASSESSMENT	0	0		0

0 = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

NOTES:

- Radium 228 was Recalculated due to error on first calculation
- Sample #1 and 5 Gross Alpha were realiquoted Due to high salts
- All sample in set were high in salts Sample #2 Uranium was rerun to match Gross alpha value

Validated by: Kenny Louie Date: 2/4/92

Reviewed by: [signature] Date: 2/21/92

SDG # 40377 Project No. 913-1101.211

	Acceptable YES	NO
1. Holding Times	✓	

Holding Time acceptable for samples analyzed within 6 months.

2. Calibrations	+	

Verified Results for Alpha and Beta counts and efficiency Blanks verified from raw Data and std. verified from raw Data

3. Blanks	X	

Qualify Results with value less than 5x the Blank value with "U" Qualifier

4. Laboratory Control Standard	✓	

all LCS within QC limits of 80-120%
Recal Alpha 193/222 x 100 = 87
Recal Radio 2034/2442 x 100 = 83.

5. Duplicate Analysis	+	

acceptable Data no Requalifying

6. Matrix Spike Analysis		

N/A

7. Sample Results Verification	X	

Verified Results from Raw Data

SDG # 40377-5 Project No. 913-1101.201

	Acceptable YES	Acceptable NO
8. Other QC		
N/A		
9. Field Duplicates		
N/A		
10. Overall Assessment	X	

1 Qualify formal's for Blanks

Accu-Labs Research, Inc.

[illegible]63 Table Mountain Drive Golden, Colorado 80403-1650
[illegible]) 277-9514 FAX (303) 277-9512

ANALYSIS REPORT

DATE: 12/19/91 PAGE 1

DEBBIE GRIMM
CHEN-NORTHERN, INC.
P.O. BOX 30615
BILLINGS, MT 59107

Lab Job Number: 8734-40377-5
Date Samples Received: 10/25/91
Customer PO Number: PROJECT # 913-1101

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40377-5-1	8734-40377-5-2	8734-40377-5-3	8734-40377-5-4
Sponsor Designation -	TW-50-RFK	HARRIS	LEWIS	TW-16-RFK
Date Collected -	10/23/91	10/23/91	10/23/91	10/23/91
Determinations in pCi/L unless noted				
Gross Alpha - total	-4 ± 13 *	-3 ± 5 *	0 ± 9 *	-1 ± 8 *
Radium-226 - total	0.3 ± 0.2 * U	-0.1 ± 0.4 * U	0.0 ± 0.2 * U	0.0 ± 0.2 * U
Radium-228 - total	0.4 ± 0.6 * U	-0.2 ± 0.6 * U	0.0 ± 0.7 * U	0.2 ± 0.6 * U
Radon-222 - total	200 ± 30 *	260 ± 30 *	220 ± 30 *	120 ± 30 *
Uranium - total (mg/L)	<0.002	0.005	0.009	0.010

ALR Designation -	8734-40377-5-5
Sponsor Designation -	TW-18-RFK
Date Collected -	10/23/91
Gross Alpha - total	-7 ± 8 *
Radium-226 - total	0.2 ± 0.2 * U
Radium-228 - total	-0.1 ± 0.6 * U
Radon-222 - total	93 ± 26 *
Uranium - total (mg/L)	<0.002

* Variability of the radioactive disintegration process (counting error) at the 95% confidence level, 1.96σ.

By: Bud Summers
Bud Summers
Radiochemistry Supervisor

BS/ep

2/21/92

40377-12

RADIOCHEMICAL DATA ASSESSMENT SUMMARY

PROJECT NO. 913-1101.211 SITE Monsanto

LABORATORY ACR SAMPLES/MATRIX water

SDG # 40354-10 EB-02, TW-22, TW-23, FB05, SW, Mormon, TW-33, TW-48, TW-49, SW-49

DATA ASSESSMENT SUMMARY

	ALPHA SCINT.	L.B. SCINT.	GAMMA SPEC.	FLUOR.
1. HOLDING TIMES	0	0		0
2. CALIBRATIONS	0	0	Ulmie	0
3. BLANKS	0	0		0
4. LCS	0	0		0
5. DUPLICATE ANALYSIS	0	0		0
6. MATRIX SPIKE	N/A	N/A		N/A
7. SAMPLE VERIFICATION	0	0		0
8. OTHER QC	N/A	N/A		N/A
9. OVERALL ASSESSMENT	0	0		0

0 = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

NOTES:

Sample 2, 3, 5, 6, 7, 8, 9 and 10 high on Salts / case narrative

Validated by: Kenny Lowie Date: 2/4/92

Reviewed by: [illegible] Date: 2/21/92

SDG # 40354-10 Project No. 913-1101.211

	Acceptable YES	NO
1. Holding Times	✓	

acceptable, preservative used and analyzed within 6 months

2. Calibrations	✓	

Verifies that using True QA LCS, is within Limits, verifies Blanks within Limits.

3. Blanks	✓	

Requalify sample Results with "U" for Values ~~X5~~ <5x the Blank value

4. Laboratory Control Standard	✓	

Verifies %R with in QC limits
Recal LCS value for Alpha ^{230}Th 124 x 100 = 101.7
Data acceptable

5. Duplicate Analysis	✓	

Verifies Data ~~that~~ NO Transcription error all Dup with in QC limits for RPD sample results acceptable

6. Matrix Spike Analysis		

N/A

7. Sample Results Verification	✓	

verified NO Transcription error,

SDG # 40354-10 Project No. 913-1101-211

	Acceptable YES	NO
8. Other QC		

N/A

9. Field Duplicates		

No Field Dup sent in

10. Overall Assessment	X	

Requalify form 1's for Blanks

Accu-Labs Research, Inc.

4663 Table Mountain Drive Golden, Colorado 80403-1650
(303) 277-9514 FAX (303) 277-9512

ANALYSIS REPORT

DATE: 12/23/91 PAGE 1

DEBBIE GRIMM
CHEN-NORTHERN, INC.
P.O. BOX 30615
BILLINGS, MT 59107

Lab Job Number: 8734-40354-10
Date Samples Received: 10/24/91
Customer PO Number: PROJECT #913-1101

These samples to be disposed of 30 days after the date of this report.

ALR Designation -		8734-40354-10-1	8734-40354-10-2	8734-40354-10-3	8734-40354-10-4
Sponsor Designation -		EB-02-RFK	TW-22-RFK	TW-23-RFK	FB-05-RFK
Date Collected -		10/21/91	10/22/91	10/22/91	10/22/91
Determinations in pCi/L unless noted	5 x Blank				
Gross Alpha - dissolved	1.2	----	-1 ± 9 *	----	----
Gross Alpha - total		0 ± 1 * U	5 ± 11 *	-6 ± 10 *	-1 ± 1 * U
Radium-226 - dissolved	0.5	----	0.3 ± 0.3 * U	----	----
Radium-226 - total		0.1 ± 0.3 * U	0.6 ± 0.4 *	0.3 ± 0.4 * U	0.0 ± 0.3 * U
Radium-228 - dissolved	0.3	----	0.6 ± 0.5 *	----	----
Radium-228 - total		0.4 ± 0.8 *	0.4 ± 0.5 *	-0.2 ± 0.6 * U	0.4 ± 0.7 *
Radon-222 - total	17.3	51 ± 24 *	51 ± 24 *	63 ± 25 *	52 ± 25 *
Uranium - dissolved (mg/L)		----	0.008	----	----
Uranium - total (mg/L)		<0.002	<0.002	<0.002	<0.002

ALR Designation -	8734-40354-10-5	8734-40354-10-6	8734-40354-10-7	8734-40354-10-8
Sponsor Designation -	SOUTHWEST	MORMON	TW-33-RFK	TW-48-RFK
Date Collected -	10/22/91	10/22/91	10/22/91	10/23/91
Gross Alpha - dissolved	----	----	3 ± 7 *	----
Gross Alpha - total	-2 ± 9 *	-5 ± 7 *	5 ± 7 *	2 ± 6 *
Radium-226 - dissolved	----	----	0.0 ± 0.3 * U	----
Radium-226 - total	0.0 ± 0.4 * U	0.0 ± 0.4 * U	0.2 ± 0.4 * U	0.1 ± 0.4 * U
Radium-228 - dissolved	----	----	0.2 ± 0.7 * U	----
Radium-228 - total	0.4 ± 0.6 *	0.6 ± 0.5 *	0.5 ± 0.6 *	0.6 ± 0.5 *
Radon-222 - total	160 ± 30 *	130 ± 30 *	570 ± 40 *	270 ± 30 *
Uranium - dissolved (mg/L)	----	----	<0.002	----
Uranium - total (mg/L)	<0.002	<0.002	0.002	<0.002

Klonie 2/4/92 [illegible] 2/21/92

40354-12

A N A L Y S I S R E P O R T

DATE: 12/23/91 PAGE 2

Lab Job Number 8734-40354-10

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40354-10-9	8734-40354-10-10
Sponsor Designation -	TW-49-RFK	SW-49-RFK
Date Collected -	10/23/91	10/23/91

Determinations in pCi/L unless noted

Gross Alpha - total	-1 ± 6 * U	-5 ± 5 *
Radium-226 - total	0.0 ± 0.3 * U	-0.3 ± 0.4 * U
Radium-228 - total	-0.2 ± 0.5 * U	0.4 ± 0.6 *
Radon-222 - total	270 ± 30 *	210 ± 30 *
Uranium - total (mg/L)	0.010	<0.002

* Variability of the radioactive disintegration process (counting error) at the 95% confidence level, 1.96σ.

By: Bud Summers

Bud Summers
Radiochemistry Supervisor

BS/ep

Klowi 2/4/92

2/21/92

40354-12

APPENDIX S

ATTACHMENT 3

INORGANIC DATA ASSESSMENT SUMMARY
SEDIMENT, SOIL AND SOURCE SAMPLES

INORGANIC DATA ASSESSMENT SUMMARY

PROJECT NO. 913-1101.211 SITE Soda Springs

LABORATORY Chem-Northern SAMPLES/MATRIX See Attached

SDG # Parts 5,6,7,8,9 (Soils)

DATA ASSESSMENT SUMMARY

	ICP	AA	~~HG~~ Wet Chem	CYANIDE
1. HOLDING TIMES	O	O	M	
2. CALIBRATIONS	M	M	O	
3. BLANKS	O	O	O	
4. ICS	O			
5. LCS	M	O	O	
6. DUPLICATE ANALYSIS	M	O	O	
7. MATRIX SPIKE	M	M	N/A	
8. MSA		N/A		
9. SERIAL DILUTION	O			
10. SAMPLE VERIFICATION	O	O	O	
11. OTHER QC	O	O	O	
12. OVERALL ASSESSMENT	O	O	O	

[signature] 3/6/92

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

NOTES: Data as qualified is acceptable for use

Validated by: [signature] Date: 3/6/92

Reviewed by: _____ Date: _____

INORGANIC DATA ASSESSMENT SUMMARY

PROJECT NO. 913-1101.211 SITE Soda Springs

LABORATORY Chem-Northern SAMPLES/MATRIX

See Attached

SDG # Parts 5,6,7,8,9 (Soils)

DATA ASSESSMENT SUMMARY

	ICP	AA	~~HG~~ Wet Chem	CYANIDE
1. HOLDING TIMES	O	O	M	
2. CALIBRATIONS	M	M	O	
3. BLANKS	O	O	O	
4. ICS	O			
5. LCS	M	O	O	
6. DUPLICATE ANALYSIS	M	O	O	
7. MATRIX SPIKE	M	M	N/A	
8. MSA		N/A		
9. SERIAL DILUTION	O			
10. SAMPLE VERIFICATION	O	O	O	
11. OTHER QC	O	O	O	
12. OVERALL ASSESSMENT	O	O	O	

[illegible] 3/6/92

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

NOTES: Data as qualified is acceptable for use

Validated by: [illegible] Date: 3/6/92

Reviewed by: [illegible] Date: 4/17/92

SDG # Parts 5,6,7,8,9 Project No. 913-1101-211

	Acceptable YES	NO
1. Holding Times	✓	

All samples analyzed within holding times for metals and wetchem except COD (qualified UJ).

2. Calibrations	✓	

All ICV/CCVs acceptable except As CCV in Pt 5 and Cr ICV in Pt 6 (Qualified Jn UJ); Proper standards used, $r^2 \geq 0.995$.

3. Blanks	✓	

Methodblanks analyzed per batch; all results acceptable.

4. ICP Interference Check Sample (ICS)	✓	

ICS analyzed at proper frequency; results acceptable.

5. Laboratory Control Sample (LCS)	✓	

LCS for K, Al out on Pts 5,6; Al+K qualified as J where applicable. All other LCS ok.

6. Duplicate Sample Analysis	✓	

RPD's out for Fe, K, Zn, on Part 6; results qualified as J or UJ as applicable all other RPD's ok.

7. Matrix Spike Sample Analysis	✓	

Spike %R out for Se, Ag on Pt 5; Se & As on Pt 6; As, Cd & Cr on Pt. 7; and As, Cd, Se on Pt. 8; Results qualified as J or UJ as applicable. All other %R acceptable.

SDG # Pts 5,6,7,8,9 Project No. 913-1101-211

	Acceptable YES	Acceptable NO
8. Furnace Atomic Absorption QC		✓

Furnace Spikes not performed, however does not affect data since spike %R >30%; Duplicate injection %RSD acceptable.

9. ICP Serial Dilution	✓	

Results acceptable

10. Sample Result Verification	✓	

Results verified against raw data; corrections made where appropriate.

11. Field Duplicates	N/A	

12. Overall Assessment	✓	

Data as qualified are acceptable for use.

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121205

Matrix (Soil/Water): Soil

Sample ID: S-1A

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	21,500			P
7440-38-2	Arsenic	5.4	J		H
7440-41-7	Beryllium	3.5			P
7440-43-9	Cadmium	83.4			P
7440-47-3	Chromium	98.9			P
7440-50-8	Copper	40			P
7439-89-6	Iron	16,900			P
7439-92-1	Lead	53			F
7439-96-5	Manganese	387			P
7440-02-0	Nickel	55			P
7440-09-7	Potassium	5,200	J		A
7782-49-2	Selenium	1.4	J	N	H
7440-22-4	Silver	8.5	J	N	P
7440-23-5	Sodium	849			A
7440-62-2	Vanadium	155			P
7440-66-6	Zinc	1,740			P
	Fluoride	13.1			E
	Cation Exchange Capacity	14.3			A
	Nitrate/Nitrite as N	4.4			ACR
	pH	7.0			E

Cation Exchange Capacity is reported in meq/100 gm.

3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121208

Matrix (Soil/Water): Soil

Sample ID: S-4A

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	17,300			P
7440-38-2	Arsenic	6.9	J		H
7440-41-7	Beryllium	3.7			P
7440-43-9	Cadmium	39.0			P
7440-47-3	Chromium	121			P
7440-50-8	Copper	30			P
7439-89-6	Iron	24,100			P
7439-92-1	Lead	45			F
7439-96-5	Manganese	1,380			P
7440-02-0	Nickel	55			P
7440-09-7	Potassium	5,500	J		A
7782-49-2	Selenium	0.6	J	~~N~~	H
7440-22-4	Silver	4	J	~~N~~	P
7440-23-5	Sodium	1,050			A
7440-62-2	Vanadium	209			P
7440-66-6	Zinc	610			P
	Fluoride	18.1			E
	Cation Exchange Capacity	26.2			A
	Nitrate/Nitrite as N	4.2			ACR
	pH	7.4			E

Cation Exchange Capacity is reported in meq/100 gm.

3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121211

Matrix (Soil/Water): Soil

Sample ID: S-7A

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	18,500			P
7440-38-2	Arsenic	4.1	J		H
7440-41-7	Beryllium	1			P
7440-43-9	Cadmium	6.5			P
7440-47-3	Chromium	27			P
7440-50-8	Copper	17			P
7439-89-6	Iron	15,900			P
7439-92-1	Lead	22			F
7439-96-5	Manganese	593			P
7440-02-0	Nickel	14			P
7440-09-7	Potassium	7,700	J		A
7782-49-2	Selenium	1.2	J	~~N~~	H
7440-22-4	Silver	<3*	UJ	~~N~~	P
7440-23-5	Sodium	506			A
7440-62-2	Vanadium	29			P
7440-66-6	Zinc	140			P
	Fluoride	47.7			E
	Cation Exchange Capacity	Insufficient sample			A
	Nitrate/Nitrite as N	21			ACR
	pH	Insufficient sample			E

* The silver will be reanalyzed by furnace to achieve a lower detection limit.

Cation Exchange Capacity is reported in meq/100 gm.

3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121212

Matrix (Soil/Water): Soil

Sample ID: S-8A

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	21,900			P
7440-38-2	Arsenic	5.6	J		H
7440-41-7	Beryllium	2			P
7440-43-9	Cadmium	13.0			P
7440-47-3	Chromium	39			P
7440-50-8	Copper	17			P
7439-89-6	Iron	17,300			P
7439-92-1	Lead	24			F
7439-96-5	Manganese	411			P
7440-02-0	Nickel	30			P
7440-09-7	Potassium	4,600	J		A
7782-49-2	Selenium	1.0	J	N	H
7440-22-4	Silver	1.5	J	N	P
7440-23-5	Sodium	424			A
7440-62-2	Vanadium	63.3			P
7440-66-6	Zinc	210			P
	Fluoride	33.1			E
	Cation Exchange Capacity	17.6			A
	Nitrate/Nitrite as N	6.1			ACR
	pH	7.6			E

Cation Exchange Capacity is reported in meq/100 gm.

KWA
3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121213

Matrix (Soil/Water): Soil

Sample ID: S-8A-Dup

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	22,500			P
7440-38-2	Arsenic	6.6	J		H
7440-41-7	Beryllium	2			P
7440-43-9	Cadmium	14			P
7440-47-3	Chromium	42			P
7440-50-8	Copper	17			P
7439-89-6	Iron	17,700			P
7439-92-1	Lead	28			F
7439-96-5	Manganese	409			P
7440-02-0	Nickel	32			P
7440-09-7	Potassium	5,500	J		A
7782-49-2	Selenium	0.8	J	~~N~~	H
7440-22-4	Silver	1	J	~~N~~	P
7440-23-5	Sodium	399			A
7440-62-2	Vanadium	67.4			P
7440-66-6	Zinc	215			P
	Fluoride	33.1			E
	Cation Exchange Capacity	18.6			A
	Nitrate/Nitrite as N	5.1			ACR
	pH	7.5			E

Cation Exchange Capacity is reported in meq/100 gm.

Kmt 3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121215

Matrix (Soil/Water): Soil

Sample ID: S-10A

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	21,900			P
7440-38-2	Arsenic	9.0	J		H
7440-41-7	Beryllium	3.7			P
7440-43-9	Cadmium	76.7			P
7440-47-3	Chromium	150			P
7440-50-8	Copper	37			P
7439-89-6	Iron	17,600			P
7439-92-1	Lead	35			F
7439-96-5	Manganese	324			P
7440-02-0	Nickel	60			P
7440-09-7	Potassium	5,500	J		A
7782-49-2	Selenium	0.8	J	N	H
7440-22-4	Silver	6.0	J	N	P
7440-23-5	Sodium	2,270			A
7440-62-2	Vanadium	331			P
7440-66-6	Zinc	1,780			P
	Fluoride	42.2			E
	Cation Exchange Capacity	16.5			A
	Nitrate/Nitrite as N	5.2			ACR
	pH	7.5			E

Cation Exchange Capacity is reported in meq/100 gm.

3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121216

Matrix (Soil/Water): Soil

Sample ID: S-11A

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	20,700			P
7440-38-2	Arsenic	2.6	J		H
7440-41-7	Beryllium	2.5			P
7440-43-9	Cadmium	54.5			P
7440-47-3	Chromium	73.0			P
7440-50-8	Copper	20			P
7439-89-6	Iron	14,300			P
7439-92-1	Lead	5*	U		P
7439-96-5	Manganese	327			P
7440-02-0	Nickel	35			P
7440-09-7	Potassium	5,200	J		A
7782-49-2	Selenium	3.2	J	N	H
7440-22-4	Silver	3	J	N	P
7440-23-5	Sodium	500			A
7440-62-2	Vanadium	122			P
7440-66-6	Zinc	780			P
	Fluoride	34.5			E
	Cation Exchange Capacity	20.0			A
	Nitrate/Nitrite as N	7.5			ACR
	pH	6.5			E

* This lead value analyzed on the ICP. The sample was inadvertantly missed during the lead furnace run.

Cation Exchange Capacity is reported in meq/100 gm.

3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121217

Matrix (Soil/Water): Soil

Sample ID: S-12A

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	23,800			P
7440-38-2	Arsenic	9.2	J		H
7440-41-7	Beryllium	2.5			P
7440-43-9	Cadmium	49.2			P
7440-47-3	Chromium	81.5			P
7440-50-8	Copper	25			P
7439-89-6	Iron	16,700			P
7439-92-1	Lead	28			F
7439-96-5	Manganese	430			P
7440-02-0	Nickel	38			P
7440-09-7	Potassium	5,800	J		A
7782-49-2	Selenium	1.2	J	~~N~~	H
7440-22-4	Silver	3	J	~~N~~	P
7440-23-5	Sodium	500			A
7440-62-2	Vanadium	126			P
7440-66-6	Zinc	702			P
	Fluoride	40.5			E
	Cation Exchange Capacity	16.8			A
	Nitrate/Nitrite as N	14			ACR
	pH	6.7			E

Cation Exchange Capacity is reported in meq/100 gm.

Kwt 9/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121218

Matrix (Soil/Water): Soil

Sample ID: S-13A

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	26,200			P
7440-38-2	Arsenic	34	J		H
7440-41-7	Beryllium	3.7			P
7440-43-9	Cadmium	153			P
7440-47-3	Chromium	187			P
7440-50-8	Copper	42			P
7439-89-6	Iron	16,400			P
7439-92-1	Lead	61			F
7439-96-5	Manganese	411			P
7440-02-0	Nickel	60			P
7440-09-7	Potassium	8,000	J		A
7782-49-2	Selenium	1.4	J	~~N~~	H
7440-22-4	Silver	8.0	J	~~N~~	P
7440-23-5	Sodium	1,370			A
7440-62-2	Vanadium	371			P
7440-66-6	Zinc	2,460			P
	Fluoride	102.6			E
	Cation Exchange Capacity	15.7			A
	Nitrate/Nitrite as N	7.8			ACR
	pH	6.9			E

Cation Exchange Capacity is reported in meq/100 gm.

3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121219

Matrix (Soil/Water): Soil

Sample ID: S-14A

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	15,400			P
7440-38-2	Arsenic	22	J		H
7440-41-7	Beryllium	3.2			P
7440-43-9	Cadmium	102			P
7440-47-3	Chromium	141			P
7440-50-8	Copper	35			P
7439-89-6	Iron	10,200			P
7439-92-1	Lead	38			F
7439-96-5	Manganese	170			P
7440-02-0	Nickel	50			P
7440-09-7	Potassium	5,100	J		A
7782-49-2	Selenium	2.0	J	N	H
7440-22-4	Silver	6.0	J	N	P
7440-23-5	Sodium	1,690			A
7440-62-2	Vanadium	319			P
7440-66-6	Zinc	1,570			P
	Fluoride	60.4			E
	Cation Exchange Capacity	8.4			A
	Nitrate/Nitrite as N	7.8			ACR
	pH	7.3			E

Cation Exchange Capacity is reported in meq/100 gm.

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121220

Matrix (Soil/Water): Soil

Sample ID: S-15A

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	30,200			P
7440-38-2	Arsenic	4.2	J		H
7440-41-7	Beryllium	3.0			P
7440-43-9	Cadmium	10.9			P
7440-47-3	Chromium	24			P
7440-50-8	Copper	15			P
7439-89-6	Iron	14,000			P
7439-92-1	Lead	21			F
7439-96-5	Manganese	387			P
7440-02-0	Nickel	22			P
7440-09-7	Potassium	4,400	J		A
7782-49-2	Selenium	0.8	J	N	H
7440-22-4	Silver	2	J	N	P
7440-23-5	Sodium	250			A
7440-62-2	Vanadium	46			P
7440-66-6	Zinc	157			P
	Fluoride	35.9			E
	Cation Exchange Capacity	33.2			A
	Nitrate/Nitrite as N	14			ACR
	pH	7.8			E

Cation Exchange Capacity is reported in meq/100 gm.

3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121221

Matrix (Soil/Water): Soil

Sample ID: S-16A

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	24,800			P
7440-38-2	Arsenic	5.0	J		H
7440-41-7	Beryllium	1			P
7440-43-9	Cadmium	9.3			P
7440-47-3	Chromium	28			P
7440-50-8	Copper	20			P
7439-89-6	Iron	17,900			P
7439-92-1	Lead	22			F
7439-96-5	Manganese	522			P
7440-02-0	Nickel	30			P
7440-09-7	Potassium	5,300	J		A
7782-49-2	Selenium	0.8	J	N	H
7440-22-4	Silver	1	J	N	P
7440-23-5	Sodium	350			A
7440-62-2	Vanadium	44			P
7440-66-6	Zinc	155			P
	Fluoride	20.4			E
	Cation Exchange Capacity	22.8			A
	Nitrate/Nitrite as N	2.6			ACR
	pH	7.5			E

Cation Exchange Capacity is reported in meq/100 gm.

Knot 3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121222

Matrix (Soil/Water): Soil

Sample ID: S-1B

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	21,200			P
7440-38-2	Arsenic	4.2	J		H
7440-41-7	Beryllium	2.7			P
7440-43-9	Cadmium	21.6			P
7440-47-3	Chromium	38			P
7440-50-8	Copper	17			P
7439-89-6	Iron	18,400			P
7439-92-1	Lead	29			F
7439-96-5	Manganese	410			P
7440-02-0	Nickel	40			P
7440-09-7	Potassium	4,800	J		A
7782-49-2	Selenium	0.8	J	N	H
7440-22-4	Silver	2	J	N	P
7440-23-5	Sodium	672			A
7440-62-2	Vanadium	67.9			P
7440-66-6	Zinc	454			P
	Fluoride	10.7			E
	Cation Exchange Capacity	22.3			A
	Nitrate/Nitrite as N	9.3			ACR
	pH	7.6			E

Cation Exchange Capacity is reported in meq/100 gm.

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121533

Matrix (Soil/Water): Soil

Sample ID: Slag 1

Level (Low/Med):

Date Received: 10/31/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	15,900	J		P
7440-38-2	Arsenic	13	J	N	H
7440-41-7	Beryllium	4.5			P
7440-43-9	Cadmium	48.2			P
7440-47-3	Chromium	302	J		P
7440-50-8	Copper	67.4			P
7439-89-6	Iron	4,400	J		P
7439-92-1	Lead	26			F
7439-96-5	Manganese	140			P
7440-02-0	Nickel	65			P
7440-09-7	Potassium	5,650	J		A
7782-49-2	Selenium	0.6	UJ	N	H
7440-22-4	Silver	16			P
7440-23-5	Sodium	4,050			A
7440-62-2	Vanadium	492			P
7440-66-6	Zinc	839	J		P
	Fluoride	54.4			E
	Cation Exchange Capacity	5.7			A
	Nitrate/Nitrite as N	1.4			ACR
	pH	9.7			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121534

Matrix (Soil/Water): Soil

Sample ID: Slag 2

Level (Low/Med): --

Date Received: 10/31/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	19,200	J		P
7440-38-2	Arsenic	3.3	J	N	H
7440-41-7	Beryllium	5.0			P
7440-43-9	Cadmium	35			P
7440-47-3	Chromium	544	J		P
7440-50-8	Copper	68			P
7439-89-6	Iron	4,670	J		P
7439-92-1	Lead	12			F
7439-96-5	Manganese	115			P
7440-02-0	Nickel	89.9			P
7440-09-7	Potassium	6,690	J		A
7782-49-2	Selenium	1.2	J	N	H
7440-22-4	Silver	7.5			P
7440-23-5	Sodium	3,390			A
7440-62-2	Vanadium	574			P
7440-66-6	Zinc	307	J		P
	Fluoride	46.3			E
	Cation Exchange Capacity	3.2			A
	Nitrate/Nitrite as N	1.0	U		ACR
	pH	9.9			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121535

Matrix (Soil/Water): Soil

Sample ID: Slag 3

Level (Low/Med): --

Date Received: 10/31/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	17,200	J		P
7440-38-2	Arsenic	4.7	J	N	H
7440-41-7	Beryllium	4.7			P
7440-43-9	Cadmium	17.5			P
7440-47-3	Chromium	237	J		P
7440-50-8	Copper	22			P
7439-89-6	Iron	2,040	J		P
7439-92-1	Lead	5.6			F
7439-96-5	Manganese	130			P
7440-02-0	Nickel	32			P
7440-09-7	Potassium	6,790	J		A
7782-49-2	Selenium	1.7	J	N	H
7440-22-4	Silver	9.0			P
7440-23-5	Sodium	3,220			A
7440-62-2	Vanadium	262			P
7440-66-6	Zinc	5.1	J		P
	Fluoride	168			E
	Cation Exchange Capacity	5.9			A
	Nitrate/Nitrite as N	1.0	U		ACR
	pH	9.8			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121536

Matrix (Soil/Water): Soil

Sample ID: Dust 1

Level (Low/Med): --

Date Received: 10/31/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	5,350	J		P
7440-38-2	Arsenic	13	J	N	H
7440-41-7	Beryllium	1	U		P
7440-43-9	Cadmium	3.8			P
7440-47-3	Chromium	27	J		P
7440-50-8	Copper	8.0			P
7439-89-6	Iron	4,280	J		P
7439-92-1	Lead	4.4			F
7439-96-5	Manganese	42			P
7440-02-0	Nickel	15			P
7440-09-7	Potassium	799	J		A
7782-49-2	Selenium	0.6	J	N	H
7440-22-4	Silver	1			P
7440-23-5	Sodium	150			A
7440-62-2	Vanadium	37			P
7440-66-6	Zinc	62	J		P
	Fluoride	46.3			E
	Cation Exchange Capacity	3.2			A
	Nitrate/Nitrite as N	21			ACR
	pH	7.9			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121537

Matrix (Soil/Water): Soil

Sample ID: Dust 2

Level (Low/Med): --

Date Received: 10/31/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	14,500	J		P
7440-38-2	Arsenic	34	J	N	H
7440-41-7	Beryllium	4.2			P
7440-43-9	Cadmium	125			P
7440-47-3	Chromium	390	J		P
7440-50-8	Copper	40.5			P
7439-89-6	Iron	8,740	J		P
7439-92-1	Lead	38			F
7439-96-5	Manganese	105			P
7440-02-0	Nickel	69.9			P
7440-09-7	Potassium	5,390	J		A
7782-49-2	Selenium	0.6	UJ	N	H
7440-22-4	Silver	9.0			P
7440-23-5	Sodium	2,410			A
7440-62-2	Vanadium	549			P
7440-66-6	Zinc	1,790	J		P
	Fluoride	122			E
	Cation Exchange Capacity	8.2			A
	Nitrate/Nitrite as N	3.4			ACR
	pH	8.6			E

KMA 3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121538

Matrix (Soil/Water): Soil

Sample ID: Dust 3

Level (Low/Med): --

Date Received: 10/31/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	17,500	J		P
7440-38-2	Arsenic	85	J	~~N~~	H
7440-41-7	Beryllium	4.7			P
7440-43-9	Cadmium	504			P
7440-47-3	Chromium	509	J		P
7440-50-8	Copper	52			P
7439-89-6	Iron	10,000	J		P
7439-92-1	Lead	104			F
7439-96-5	Manganese	165			P
7440-02-0	Nickel	110			P
7440-09-7	Potassium	7,490	J		A
7782-49-2	Selenium	0.6	UJ	~~N~~	H
7440-22-4	Silver	17			P
7440-23-5	Sodium	2,760			A
7440-62-2	Vanadium	769			P
7440-66-6	Zinc	4,450	J		P
	Fluoride	240			E
	Cation Exchange Capacity	7.6			A
	Nitrate/Nitrite as N	3.7			ACR
	pH	8.0			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121539

Matrix (Soil/Water): Soil
Level (Low/Med): --
Solids: 100

Sample ID: Underflow - 1
Date Received: 10/31/91

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	23,700	J		P
7440-38-2	Arsenic	245	J	N	H
7440-41-7	Beryllium	6.0			P
7440-43-9	Cadmium	1,150			P
7440-47-3	Chromium	979	J		P
7440-50-8	Copper	84.4			P
7439-89-6	Iron	10,600	J		P
7439-92-1	Lead	200			F
7439-96-5	Manganese	210			P
7440-02-0	Nickel	170			P
7440-09-7	Potassium	13,200	J		A
7782-49-2	Selenium	0.6	UJ	N	H
7440-22-4	Silver	13			P
7440-23-5	Sodium	4,660			A
7440-62-2	Vanadium	1,500			P
7440-66-6	Zinc	9,990	J		P
	Fluoride	349			E
	Cation Exchange Capacity	12.3			A
	Nitrate/Nitrite as N	16			ACR
	pH	6.4			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121540

Matrix (Soil/Water): Soil

Sample ID: Underflow - 2

Level (Low/Med): --

Date Received: 10/31/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	26,500	J		P
7440-38-2	Arsenic	245	J	N	H
7440-41-7	Beryllium	5.5			P
7440-43-9	Cadmium	1,060			P
7440-47-3	Chromium	969	J		P
7440-50-8	Copper	81.9			P
7439-89-6	Iron	11,700	J		P
7439-92-1	Lead	170			F
7439-96-5	Manganese	222			P
7440-02-0	Nickel	170			P
7440-09-7	Potassium	13,200	J		A
7782-49-2	Selenium	0.6	UJ	N	H
7440-22-4	Silver	15			P
7440-23-5	Sodium	4,950			A
7440-62-2	Vanadium	1,600			P
7440-66-6	Zinc	10,900	J		P
	Fluoride	36.4			E
	Cation Exchange Capacity	13.8			A
	Nitrate/Nitrite as N	10			ACR
	pH	6.5			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121541

Matrix (Soil/Water): Soil

Sample ID: Underflow - 3

Level (Low/Med): --

Date Received: 10/31/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	2,780	J		P
7440-38-2	Arsenic	210	J	N	H
7440-41-7	Beryllium	5.7			P
7440-43-9	Cadmium	1,730			P
7440-47-3	Chromium	1,110	J		P
7440-50-8	Copper	82			P
7439-89-6	Iron	10,400	J		P
7439-92-1	Lead	135			F
7439-96-5	Manganese	105			P
7440-02-0	Nickel	112			P
7440-09-7	Potassium	13,600	J		A
7782-49-2	Selenium	0.6	UJ	N	H
7440-22-4	Silver	8.0			P
7440-23-5	Sodium	4,260			A
7440-62-2	Vanadium	1,810			P
7440-66-6	Zinc	8,190	J		P
	Fluoride	297			E
	Cation Exchange Capacity	16.0			A
	Nitrate/Nitrite as N	79			ACR
	pH	6.0			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121542

Matrix (Soil/Water): Soil

Sample ID: Slurry - 1

Level (Low/Med): --

Date Received: 10/31/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	15,030	J		P
7440-38-2	Arsenic	500	J	N	H
7440-41-7	Beryllium	3.7			P
7440-43-9	Cadmium	215			P
7440-47-3	Chromium	529	J		P
7440-50-8	Copper	56.9			P
7439-89-6	Iron	10,300	J		P
7439-92-1	Lead	75			F
7439-96-5	Manganese	80			P
7440-02-0	Nickel	90			P
7440-09-7	Potassium	6,090	J		A
7782-49-2	Selenium	0.6	UJ	N	H
7440-22-4	Silver	16			P
7440-23-5	Sodium	2,120			A
7440-62-2	Vanadium	649			P
7440-66-6	Zinc	3,160	J		P
	Fluoride	336			E
	Cation Exchange Capacity	6.4			A
	Nitrate/Nitrite as N	2.9			ACR
	pH	7.7			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121543

Matrix (Soil/Water): Soil

Level (Low/Med): --

Solids: 100

Sample ID: Slurry - 2

Date Received: 10/31/91

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	7,240	J		P
7440-38-2	Arsenic	11	J	N	H
7440-41-7	Beryllium	3.0			P
7440-43-9	Cadmium	19			P
7440-47-3	Chromium	137	J		P
7440-50-8	Copper	86.9			P
7439-89-6	Iron	7,540	J		P
7439-92-1	Lead	28			F
7439-96-5	Manganese	67			P
7440-02-0	Nickel	50			P
7440-09-7	Potassium	1,900	J		A
7782-49-2	Selenium	0.6	UJ	N	H
7440-22-4	Silver	3			P
7440-23-5	Sodium	729			A
7440-62-2	Vanadium	275			P
7440-66-6	Zinc	385	J		P
	Fluoride	104			E
	Cation Exchange Capacity	4.7			A
	Nitrate/Nitrite as N	1.0	U		ACR
	pH	7.8			E

KWA 3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121544

Matrix (Soil/Water): Soil

Level (Low/Med): --

Solids: 100

Sample ID: Slurry - 3

Date Received: 10/31/91

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	27,700	J		P
7440-38-2	Arsenic	185	J	N	H
7440-41-7	Beryllium	5.2			P
7440-43-9	Cadmium	620			P
7440-47-3	Chromium	964	J		P
7440-50-8	Copper	76.9			P
7439-89-6	Iron	12,200	J		P
7439-92-1	Lead	110			F
7439-96-5	Manganese	75			P
7440-02-0	Nickel	155			P
7440-09-7	Potassium	9,890	J		A
7782-49-2	Selenium	0.6	UJ	N	H
7440-22-4	Silver	29			P
7440-23-5	Sodium	2,970			A
7440-62-2	Vanadium	1,540			P
7440-66-6	Zinc	7,940	J		P
	Fluoride	205			E
	Cation Exchange Capacity	16.0			A
	Nitrate/Nitrite as N	6.2			ACR
	pH	7.4			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121545

Matrix (Soil/Water): Soil

Sample ID: S2-9A

Level (Low/Med): --

Date Received: 10/31/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	24,700	J		P
7440-38-2	Arsenic	10	J	N	H
7440-41-7	Beryllium	2.0			P
7440-43-9	Cadmium	30.5			P
7440-47-3	Chromium	100	J		P
7440-50-8	Copper	18			P
7439-89-6	Iron	20,400	J		P
7439-92-1	Lead	32			F
7439-96-5	Manganese	529			P
7440-02-0	Nickel	40			P
7440-09-7	Potassium	7,990	J		A
7782-49-2	Selenium	1.7	J	N	H
7440-22-4	Silver	2			P
7440-23-5	Sodium	410			A
7440-62-2	Vanadium	120			P
7440-66-6	Zinc	480	J		P
	Fluoride	54.4			E
	Cation Exchange Capacity	18.6			A
	Nitrate/Nitrite as N	2.1			ACR
	pH	7.8			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121546

Matrix (Soil/Water): Soil

Sample ID: S2-9B

Level (Low/Med): --

Date Received: 10/31/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	23,000	J		P
7440-38-2	Arsenic	10	J	N	H
7440-41-7	Beryllium	2.0			P
7440-43-9	Cadmium	29.7			P
7440-47-3	Chromium	97	J		P
7440-50-8	Copper	18			P
7439-89-6	Iron	20,000	J		P
7439-92-1	Lead	35			F
7439-96-5	Manganese	552			P
7440-02-0	Nickel	35			P
7440-09-7	Potassium	5,500	J		A
7782-49-2	Selenium	2.4	J	N	H
7440-22-4	Silver	2			P
7440-23-5	Sodium	400			A
7440-62-2	Vanadium	110			P
7440-66-6	Zinc	445	J		P
	Fluoride	59.0			E
	Cation Exchange Capacity	19.0			A
	Nitrate/Nitrite as N	7.1			ACR
	pH	7.4			E

3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121547

Matrix (Soil/Water): Soil

Level (Low/Med): --

Solids: 100

Sample ID: S2-11A

Date Received: 10/31/91

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	15,900	J		P
7440-38-2	Arsenic	19	J	~~N~~	H
7440-41-7	Beryllium	4.0			P
7440-43-9	Cadmium	168			P
7440-47-3	Chromium	325	J		P
7440-50-8	Copper	38			P
7439-89-6	Iron	9,990	J		P
7439-92-1	Lead	40			F
7439-96-5	Manganese	205			P
7440-02-0	Nickel	67			P
7440-09-7	Potassium	6,390	J		A
7782-49-2	Selenium	1.0	J	~~N~~	H
7440-22-4	Silver	13			P
7440-23-5	Sodium	2,280			A
7440-62-2	Vanadium	467			P
7440-66-6	Zinc	2,670	J		P
	Fluoride	28.6			E
	Cation Exchange Capacity	17.9			A
	Nitrate/Nitrite as N	Greater Than 10	J		ACR
	pH	6.7			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121548

Matrix (Soil/Water): Soil

Sample ID: S2-11B

Level (Low/Med): --

Date Received: 10/31/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	19,800	J		P
7440-38-2	Arsenic	7.0	J	N	H
7440-41-7	Beryllium	1.7			P
7440-43-9	Cadmium	14.5			P
7440-47-3	Chromium	60	J		P
7440-50-8	Copper	15			P
7439-89-6	Iron	17,600	J		P
7439-92-1	Lead	28			F
7439-96-5	Manganese	547			P
7440-02-0	Nickel	32			P
7440-09-7	Potassium	5,500	J		A
7782-49-2	Selenium	1.2	J	N	H
7440-22-4	Silver	1			P
7440-23-5	Sodium	310			A
7440-62-2	Vanadium	82			P
7440-66-6	Zinc	265	J		P
	Fluoride	41.5			E
	Cation Exchange Capacity	19.5			A
	Nitrate/Nitrite as N	2.4			ACR
	pH	7.1			E

3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121549

Matrix (Soil/Water): Soil

Sample ID: S2-6A

Level (Low/Med): --

Date Received: 10/31/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	17,400	J		P
7440-38-2	Arsenic	4.0	J	N	H
7440-41-7	Beryllium	1			P
7440-43-9	Cadmium	6.8			P
7440-47-3	Chromium	30	J		P
7440-50-8	Copper	12			P
7439-89-6	Iron	16,200	J		P
7439-92-1	Lead	25			F
7439-96-5	Manganese	569			P
7440-02-0	Nickel	27			P
7440-09-7	Potassium	4,790	J		A
7782-49-2	Selenium	0.6	UJ	N	H
7440-22-4	Silver	1	U		P
7440-23-5	Sodium	205			A
7440-62-2	Vanadium	40			P
7440-66-6	Zinc	130	J		P
	Fluoride	6.5			E
	Cation Exchange Capacity	26.0			A
	Nitrate/Nitrite as N	47			ACR
	pH	7.4			E

Dwt 3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121550

Matrix (Soil/Water): Soil

Level (Low/Med): --

Solids: 100

Sample ID: S2-6B

Date Received: 10/31/91

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	15,800	J		P
7440-38-2	Arsenic	4.0	J	N N	H
7440-41-7	Beryllium	1			P
7440-43-9	Cadmium	3.3			P
7440-47-3	Chromium	25	J		P
7440-50-8	Copper	12			P
7439-89-6	Iron	17,000	J		P
7439-92-1	Lead	24			F
7439-96-5	Manganese	594			P
7440-02-0	Nickel	25			P
7440-09-7	Potassium	4,300	J		A
7782-49-2	Selenium	0.6	UJ	~~N~~	H
7440-22-4	Silver	1	U		P
7440-23-5	Sodium	175			A
7440-62-2	Vanadium	22			P
7440-66-6	Zinc	80	J		P
	Fluoride	12.5			E
	Cation Exchange Capacity	20.3			A
	Nitrate/Nitrite as N	14			ACR
	pH	7.4			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121551

Matrix (Soil/Water): Soil

Sample ID: S2-5A

Level (Low/Med): --

Date Received: 10/31/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	16,200	J		P
7440-38-2	Arsenic	7.0	J	N	H
7440-41-7	Beryllium	1			P
7440-43-9	Cadmium	9.0			P
7440-47-3	Chromium	19	J		P
7440-50-8	Copper	14			P
7439-89-6	Iron	15,900	J		P
7439-92-1	Lead	21			F
7439-96-5	Manganese	540			P
7440-02-0	Nickel	46			P
7440-09-7	Potassium	4,500	J		A
7782-49-2	Selenium	0.6	UJ	~~N~~	H
7440-22-4	Silver	(0.4) 2	U		P
7440-23-5	Sodium	225			A
7440-62-2	Vanadium	40			P
7440-66-6	Zinc	91.9	J		P
	Fluoride	19.1			E
	Cation Exchange Capacity	17.2			A
	Nitrate/Nitrite as N	12			ACR
	pH	7.8			E

3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121552

Matrix (Soil/Water): Soil

Sample ID: S2-5B

Level (Low/Med): --

Date Received: 10/31/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	17,400	J		P
7440-38-2	Arsenic	6.0	J		H
7440-41-7	Beryllium	1	U		P
7440-43-9	Cadmium	9.2			P
7440-47-3	Chromium	18	J		P
7440-50-8	Copper	15			P
7439-89-6	Iron	16.600	J		P
7439-92-1	Lead	18			P
7439-96-5	Manganese	574			P
7440-02-0	Nickel	50			P
7440-09-7	Potassium	4,100	J		A
7782-49-2	Selenium	0.6	UJ	N	H
7440-22-4	Silver	(0.5) 2	U		P
7440-23-5	Sodium	224			A
7440-62-2	Vanadium	37			P
7440-66-6	Zinc	102	J		P
	Fluoride	11.5			E
	Cation Exchange Capacity	18.4			A
	Nitrate/Nitrite as N	8.3			ACR
	pH	6.9			E

3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121553

Matrix (Soil/Water): Soil

Sample ID: S2-3A

Level (Low/Med): --

Date Received: 10/31/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	15,600	J		P
7440-38-2	Arsenic	10	J	N	H
7440-41-7	Beryllium	4.0			P
7440-43-9	Cadmium	67.6			P
7440-47-3	Chromium	126	J		P
7440-50-8	Copper	41			P
7439-89-6	Iron	15,100	J		P
7439-92-1	Lead	68			F
7439-96-5	Manganese	703			P
7440-02-0	Nickel	87.3			P
7440-09-7	Potassium	5,600	J		A
7782-49-2	Selenium	0.8	J	N	H
7440-22-4	Silver	10			P
7440-23-5	Sodium	1,220			A
7440-62-2	Vanadium	324			P
7440-66-6	Zinc	927	J		P
	Fluoride	21.5			E
	Cation Exchange Capacity	30.6			A
	Nitrate/Nitrite as N	38			ACR
	pH	7.3			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121554

Matrix (Soil/Water): Soil
Level (Low/Med): --
Solids: 100

Sample ID: S2-3B
Date Received: 10/31/91

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	15,900	J		P
7440-38-2	Arsenic	9.0	J	N	H
7440-41-7	Beryllium	1			P
7440-43-9	Cadmium	16			P
7440-47-3	Chromium	15	J		P
7440-50-8	Copper	17			P
7439-89-6	Iron	16,100	J		P
7439-92-1	Lead	39			F
7439-96-5	Manganese	604			P
7440-02-0	Nickel	46			P
7440-09-7	Potassium	5,500	J		A
7782-49-2	Selenium	1.0	J	N	H
7440-22-4	Silver	2			P
7440-23-5	Sodium	424			A
7440-62-2	Vanadium	80			P
7440-66-6	Zinc	82.8	J		P
	Fluoride	34.2			E
	Cation Exchange Capacity	29.6			A
	Nitrate/Nitrite as N	18			ACR
	pH	7.1			E

3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121555

Matrix (Soil/Water): Soil

Level (Low/Med): --

Solids: 100

Sample ID: Back-1A

Date Received: 10/31/91

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	16,100	J		P
7440-38-2	Arsenic	5.0	J	~~N~~	H
7440-41-7	Beryllium	1	U		P
7440-43-9	Cadmium	5.5			P
7440-47-3	Chromium	15	J		P
7440-50-8	Copper	17			P
7439-89-6	Iron	16,100	J		P
7439-92-1	Lead	21			F
7439-96-5	Manganese	580			P
7440-02-0	Nickel	43			P
7440-09-7	Potassium	5,600	J		A
7782-49-2	Selenium	0.6	UJ	~~N~~	H
7440-22-4	Silver	(0.3) 2	U		P
7440-23-5	Sodium	(-) 300			A
7440-62-2	Vanadium	30			P
7440-66-6	Zinc	78.4	J		P
	Fluoride	5.4			E
	Cation Exchange Capacity	20.0			A
	Nitrate/Nitrite as N	1.3			ACR
	pH	7.5			E

KWA 3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121556

Matrix (Soil/Water): Soil

Sample ID: Back-1B

Level (Low/Med): --

Date Received: 10/31/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	15,400	J		P
7440-38-2	Arsenic	4.0	J	N	H
7440-41-7	Beryllium	1	U		P
7440-43-9	Cadmium	5.2			P
7440-47-3	Chromium	15	J		P
7440-50-8	Copper	16			P
7439-89-6	Iron	14,600	J		P
7439-92-1	Lead	20			F
7439-96-5	Manganese	580			P
7440-02-0	Nickel	52.9			P
7440-09-7	Potassium	4,800	J		A
7782-49-2	Selenium	0.6	UJ	N	H
7440-22-4	Silver	(0.2) 2	U		P
7440-23-5	Sodium	324			A
7440-62-2	Vanadium	27			P
7440-66-6	Zinc	76	J		P
	Fluoride	19.9			E
	Cation Exchange Capacity	18.9			A
	Nitrate/Nitrite as N	8.0			ACR
	pH	7.8			E

Kmt 3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121557

Matrix (Soil/Water): Soil

Sample ID: Back-2A

Level (Low/Med): --

Date Received: 10/31/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	16,500	J		P
7440-38-2	Arsenic	6.0	J	~~N~~	H
7440-41-7	Beryllium	1	U		P
7440-43-9	Cadmium	5.0			P
7440-47-3	Chromium	13	J		P
7440-50-8	Copper	18			P
7439-89-6	Iron	15,700	J		P
7439-92-1	Lead	25			F
7439-96-5	Manganese	564			P
7440-02-0	Nickel	42			P
7440-09-7	Potassium	5,200	J		A
7782-49-2	Selenium	0.6	UJ	~~N~~	H
7440-22-4	Silver	(0.2) ~~2~~	U		P
7440-23-5	Sodium	[illegible] 200			A
7440-62-2	Vanadium	27			P
7440-66-6	Zinc	77	J		P
	Fluoride	6.1			E
	Cation Exchange Capacity	22.0			A
	Nitrate/Nitrite as N	2.7			ACR
	pH	7.7			E

RWA 3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121558

Matrix (Soil/Water): Soil

Sample ID: Back-2B

Level (Low/Med): --

Date Received: 10/31/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	16,600	J		P
7440-38-2	Arsenic	5.0	J		H
7440-41-7	Beryllium	1	U		P
7440-43-9	Cadmium	5.2			P
7440-47-3	Chromium	16	J		P
7440-50-8	Copper	16			P
7439-89-6	Iron	16,500	J		P
7439-92-1	Lead	17			F
7439-96-5	Manganese	534			P
7440-02-0	Nickel	44			P
7440-09-7	Potassium	5,100	J		A
7782-49-2	Selenium	0.6	UJ	N	H
7440-22-4	Silver	(0.2) 2	U		P
7440-23-5	Sodium	324			A
7440-62-2	Vanadium	35			P
7440-66-6	Zinc	69.4	J		P
	Fluoride	66.1			E
	Cation Exchange Capacity	19.1			A
	Nitrate/Nitrite as N	7.6			ACR
	pH	8.3			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121559

Matrix (Soil/Water): Soil

Level (Low/Med): --

Solids: 100

Sample ID: Back-3A

Date Received: 10/31/91

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	16,000	J		P
7440-38-2	Arsenic	5.0	J	N (NS)	H
7440-41-7	Beryllium	1			P
7440-43-9	Cadmium	9.7			P
7440-47-3	Chromium	16	J		P
7440-50-8	Copper	16			P
7439-89-6	Iron	19,200	J		P
7439-92-1	Lead	39			F
7439-96-5	Manganese	476			P
7440-02-0	Nickel	30			P
7440-09-7	Potassium	4,000	J		A
7782-49-2	Selenium	0.8	J	N	H
7440-22-4	Silver	(0.3) 2	U		P
7440-23-5	Sodium	648			A
7440-62-2	Vanadium	42			P
7440-66-6	Zinc	123	J		P
	Fluoride	46.6			E
	Cation Exchange Capacity	25.4			A
	Nitrate/Nitrite as N	13			ACR
	pH	7.7			E

RWO 3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121560

Matrix (Soil/Water): Soil

Sample ID: Back-3B

Level (Low/Med): --

Date Received: 10/31/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	17,400	J		P
7440-38-2	Arsenic	5.0	J	~~N~~	H
7440-41-7	Beryllium	1			P
7440-43-9	Cadmium	7.0			P
7440-47-3	Chromium	15	J		P
7440-50-8	Copper	14			P
7439-89-6	Iron	23,000	J		P
7439-92-1	Lead	81			F
7439-96-5	Manganese	514			P
7440-02-0	Nickel	37			P
7440-09-7	Potassium	3,800	J		A
7782-49-2	Selenium	0.6	U	~~N~~	H
7440-22-4	Silver	(0.2) ~~2~~	U		P
7440-23-5	Sodium	NP 798			A
7440-62-2	Vanadium	42			P
7440-66-6	Zinc	78.3	J		P
	Fluoride	5.7			E
	Cation Exchange Capacity	22.3			A
	Nitrate/Nitrite as N	12			ACR
	pH	7.7			E

RMA
3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121561

Matrix (Soil/Water): Soil

Sample ID: Back-3C

Level (Low/Med): --

Date Received: 10/31/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	16,700	J		P
7440-38-2	Arsenic	5.0	J	N	H
7440-41-7	Beryllium	2			P
7440-43-9	Cadmium	6.0			P
7440-47-3	Chromium	13	J		P
7440-50-8	Copper	15			P
7439-89-6	Iron	21,900	J		P
7439-92-1	Lead	25			F
7439-96-5	Manganese	493			P
7440-02-0	Nickel	37			P
7440-09-7	Potassium	3,900	J		A
7782-49-2	Selenium	0.6	UJ	N	H
7440-22-4	Silver	(.2) .2			P
7440-23-5	Sodium	972			A
7440-62-2	Vanadium	40			P
7440-66-6	Zinc	63.8	J		P
	Fluoride	3.9			E
	Cation Exchange Capacity	22.5			A
	Nitrate/Nitrite as N	13			ACR
	pH	7.7			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121488

Matrix (Soil/Water): Soil

Sample ID: Soda N

Level (Low/Med):

Date Received: 10/29/91

Solids: 17.4

Concentration Units (mg/l or mg/kg dry weight): mg/kg Dry Weight

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	7,280	J		P
7440-38-2	Arsenic	8.2	J		H
7440-41-7	Beryllium	2.7			P
7440-43-9	Cadmium	25.1	J		P
7440-47-3	Chromium	13	J		P
7440-50-8	Copper	7			P
7439-89-6	Iron	194,000	J		P
7439-92-1	Lead	11			P
7439-96-5	Manganese	1,200			P
7440-02-0	Nickel	82.3			P
7440-09-7	Potassium	13,500	J		A
7782-49-2	Selenium	1.0			H
7440-22-4	Silver	0.2			~~P~~ F
7440-23-5	Sodium	600			A
7440-62-2	Vanadium	94			P
7440-66-6	Zinc	100			P
	Fluoride	2.3			E
	Cation Exchange Capacity	33.2			A
	Nitrate/Nitrite as N				ACR
	pH	7.1			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121489

Matrix (Soil/Water): Soil
Level (Low/Med):
Solids: 10.1

Sample ID: Soda S
Date Received: 10/29/91

Concentration Units (mg/l or mg/kg dry weight): mg/kg Dry Weight

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	8,460	J		P
7440-38-2	Arsenic	15	J		H
7440-41-7	Beryllium	3			P
7440-43-9	Cadmium	29.6	J		P
7440-47-3	Chromium	19	J		P
7440-50-8	Copper	16			P
7439-89-6	Iron	197,000	J		P
7439-92-1	Lead	10			F
7439-96-5	Manganese	1,270			P
7440-02-0	Nickel	89			P
7440-09-7	Potassium	13,900	J		A
7782-49-2	Selenium	1.2			H
7440-22-4	Silver	0.5			~~P~~ F
7440-23-5	Sodium	800			A
7440-62-2	Vanadium	208			P
7440-66-6	Zinc	110			P
	Fluoride	1.7			E
	Cation Exchange Capacity	58.1			A
	Nitrate/Nitrite as N				ACR
	pH	7.6			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121490

Matrix (Soil/Water): Soil

Sample ID: Outflow

Level (Low/Med):

Date Received: 10/29/91

Solids: 13.8

Concentration Units (mg/l or mg/kg dry weight): mg/kg Dry Weight

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	7,680	J		P
7440-38-2	Arsenic	12	J		H
7440-41-7	Beryllium	3			P
7440-43-9	Cadmium	61.0	J		P
7440-47-3	Chromium	18	J		P
7440-50-8	Copper	22			P
7439-89-6	Iron	173,000	J		P
7439-92-1	Lead	11			F
7439-96-5	Manganese	693			P
7440-02-0	Nickel	153			P
7440-09-7	Potassium	10,200	J		A
7782-49-2	Selenium	0.8			H
7440-22-4	Silver	0.5			~~P~~ F
7440-23-5	Sodium	700			A
7440-62-2	Vanadium	114			P
7440-66-6	Zinc	170			P
	Fluoride	2.1			E
	Cation Exchange Capacity	65.1			A
	Nitrate/Nitrite as N				ACR
	pH	7.9			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121491

Matrix (Soil/Water): Soil

Sample ID: Up Near

Level (Low/Med):

Date Received: 10/29/91

Solids: 49.1

Concentration Units (mg/l or mg/kg dry weight): mg/kg Dry Weight

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	7,350	J		P
7440-38-2	Arsenic	5.4	J		H
7440-41-7	Beryllium	2			P
7440-43-9	Cadmium	13.9	J		P
7440-47-3	Chromium	8.5	J		P
7440-50-8	Copper	2			P
7439-89-6	Iron	110,000	J		P
7439-92-1	Lead	7.5			F
7439-96-5	Manganese	1,050			P
7440-02-0	Nickel	62			P
7440-09-7	Potassium	9,400	J		A
7782-49-2	Selenium	0.6	U		H
7440-22-4	Silver	0.1			~~P~~ F
7440-23-5	Sodium	500			A
7440-62-2	Vanadium	30			P
7440-66-6	Zinc	47			P
	Fluoride	4.9			E
	Cation Exchange Capacity	31.6			A
	Nitrate/Nitrite as N				ACR
	pH	7.1			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121492

Matrix (Soil/Water): Soil

Sample ID: Up Middle

Level (Low/Med):

Date Received: 10/29/91

Solids: 38.9

Concentration Units (mg/l or mg/kg dry weight): mg/kg Dry Weight

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	8,780	J		P
7440-38-2	Arsenic	8.6	J		H
7440-41-7	Beryllium	3.5			P
7440-43-9	Cadmium	8.3	J		P
7440-47-3	Chromium	9.5	J		P
7440-50-8	Copper	5			P
7439-89-6	Iron	95,800	J		P
7439-92-1	Lead	7.5			F
7439-96-5	Manganese	913			P
7440-02-0	Nickel	52			P
7440-09-7	Potassium	7,700	J		A
7782-49-2	Selenium	0.6	U		H
7440-22-4	Silver	0.1			~~P~~ F
7440-23-5	Sodium	400			A
7440-62-2	Vanadium	23			P
7440-66-6	Zinc	45			P
	Fluoride	2.2			E
	Cation Exchange Capacity	33.3			A
	Nitrate/Nitrite as N				ACR
	pH	7.5			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121493

Matrix (Soil/Water): Soil

Sample ID: Up Near

Level (Low/Med):

Date Received: 10/29/91

Solids: 40.5

Concentration Units (mg/l or mg/kg dry weight): mg/kg Dry Weight

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	3,300	J		P
7440-38-2	Arsenic	4.6	J		H
7440-41-7	Beryllium	4.0			P
7440-43-9	Cadmium	10.7	J		P
7440-47-3	Chromium	4	J		P
7440-50-8	Copper	1	U		P
7439-89-6	Iron	122,000	J		P
7439-92-1	Lead	1.8			F
7439-96-5	Manganese	481			P
7440-02-0	Nickel	52			P
7440-09-7	Potassium	14,200	J		A
7782-49-2	Selenium	0.6	U		H
7440-22-4	Silver	0.1			~~P~~ F KAS
7440-23-5	Sodium	900			A
7440-62-2	Vanadium	17			P
7440-66-6	Zinc	27			P
	Fluoride	3.3			E
	Cation Exchange Capacity	37.7			A
	Nitrate/Nitrite as N				ACR
	pH	7.6			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121223

Matrix (Soil/Water): Soil

Sample ID: S-2B

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	28,800			P
7440-38-2	Arsenic	4.6	J		H
7440-41-7	Beryllium	2			P
7440-43-9	Cadmium	55	J		P
7440-47-3	Chromium	57			P
7440-50-8	Copper	22			P
7439-89-6	Iron	25,900			P
7439-92-1	Lead	25			F
7439-96-5	Manganese	507			P
7440-02-0	Nickel	45			P
7440-09-7	Potassium	3,000			A
7782-49-2	Selenium	0.8	J	N	H
7440-22-4	Silver	8.5			P
7440-23-5	Sodium	674			A
7440-62-2	Vanadium	95			P
7440-66-6	Zinc	2,290			P
	Fluoride	73.9			E
	Cation Exchange Capacity	20.2			A
	Nitrate/Nitrite as N	2.1			ACR
	pH	7.3			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121224

Matrix (Soil/Water): Soil

Sample ID: S-3B

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	24,100			P
7440-38-2	Arsenic	6.0	J		H
7440-41-7	Beryllium	2			P
7440-43-9	Cadmium	13	J		P
7440-47-3	Chromium	52			P
7440-50-8	Copper	20			P
7439-89-6	Iron	34			P
7439-92-1	Lead	32			F
7439-96-5	Manganese	2,010			P
7440-02-0	Nickel	52			P
7440-09-7	Potassium	9,500			A
7782-49-2	Selenium	0.8	J	N	H
7440-22-4	Silver	1			P
7440-23-5	Sodium	648			A
7440-62-2	Vanadium	90			P
7440-66-6	Zinc	220			P
	Fluoride	25.0			E
	Cation Exchange Capacity	22.5			A
	Nitrate/Nitrite as N	4.3			ACR
	pH	7.6			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121225

Matrix (Soil/Water): Soil

Sample ID: S-4B

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	27,100			P
7440-38-2	Arsenic	6.6	J		H
7440-41-7	Beryllium	1			P
7440-43-9	Cadmium	9.9	J		P
7440-47-3	Chromium	32			P
7440-50-8	Copper	15			P
7439-89-6	Iron	55,500			P
7439-92-1	Lead	28			F
7439-96-5	Manganese	3,440			P
7440-02-0	Nickel	50			P
7440-09-7	Potassium	5,500			A
7782-49-2	Selenium	0.6	J	N	H
7440-22-4	Silver	1			P
7440-23-5	Sodium	375			A
7440-62-2	Vanadium	50			P
7440-66-6	Zinc	110			P
	Fluoride	24.8			E
	Cation Exchange Capacity	28.0			A
	Nitrate/Nitrite as N	2.5			ACR
	pH	7.9			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121226

Matrix (Soil/Water): Soil

Sample ID: S-5B

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	32,000			P
7440-38-2	Arsenic	4.6	J		H
7440-41-7	Beryllium	1			P
7440-43-9	Cadmium	6.4	J		P
7440-47-3	Chromium	32			P
7440-50-8	Copper	15			P
7439-89-6	Iron	28,600			P
7439-92-1	Lead	22			F
7439-96-5	Manganese	519			P
7440-02-0	Nickel	32			P
7440-09-7	Potassium	5,700			A
7782-49-2	Selenium	0.6	UJ	N	H
7440-22-4	Silver	1			P
7440-23-5	Sodium	225			A
7440-62-2	Vanadium	42			P
7440-66-6	Zinc	107			P
	Fluoride	12.6			E
	Cation Exchange Capacity	19.9			A
	Nitrate/Nitrite as N	2.8			ACR
	pH	7.2			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121227

Matrix (Soil/Water): Soil

Sample ID: S-6B

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	32,200			P
7440-38-2	Arsenic	3.6	J		H
7440-41-7	Beryllium	1			P
7440-43-9	Cadmium	5.4	J		P
7440-47-3	Chromium	32			P
7440-50-8	Copper	12			P
7439-89-6	Iron	28,000			P
7439-92-1	Lead	23			F
7439-96-5	Manganese	480			P
7440-02-0	Nickel	32			P
7440-09-7	Potassium	4,800			A
7782-49-2	Selenium	0.6	UJ	~~N~~	H
7440-22-4	Silver	1			P
7440-23-5	Sodium	300			A
7440-62-2	Vanadium	40			P
7440-66-6	Zinc	102			P
	Fluoride	39.1			E
	Cation Exchange Capacity	21.7			A
	Nitrate/Nitrite as N	2.9			ACR
	pH	8.0			E

Kurt 3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121231

Matrix (Soil/Water): Soil

Sample ID: S-10

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	29,500			P
7440-38-2	Arsenic	8.8	J		H
7440-41-7	Beryllium	2.5			P
7440-43-9	Cadmium	20.7	J		P
7440-47-3	Chromium	65			P
7440-50-8	Copper	17			P
7439-89-6	Iron	24,900			P
7439-92-1	Lead	27			F
7439-96-5	Manganese	436			P
7440-02-0	Nickel	37			P
7440-09-7	Potassium	4,900			A
7782-49-2	Selenium	1.8	J	N	H
7440-22-4	Silver	2			P
7440-23-5	Sodium	623			A
7440-62-2	Vanadium	97			P
7440-66-6	Zinc	334			P
	Fluoride	85.0			E
	Cation Exchange Capacity	15.7			A
	Nitrate/Nitrite as N	2.8			ACR
	pH	7.8			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121232

Matrix (Soil/Water): Soil

Sample ID: S-11

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	27,200			P
7440-38-2	Arsenic	5.6	J		H
7440-41-7	Beryllium	2			P
7440-43-9	Cadmium	16	J		P
7440-47-3	Chromium	55			P
7440-50-8	Copper	2			P
7439-89-6	Iron	20,000			P
7439-92-1	Lead	20			F
7439-96-5	Manganese	417			P
7440-02-0	Nickel	35			P
7440-09-7	Potassium	5,400			A
7782-49-2	Selenium	1.2	J	~~N~~	H
7440-22-4	Silver	1.5			P
7440-23-5	Sodium	300			A
7440-62-2	Vanadium	87			P
7440-66-6	Zinc	250			P
	Fluoride	24.8			E
	Cation Exchange Capacity	19.4			A
	Nitrate/Nitrite as N	5.6			ACR
	pH	7.0			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121236

Matrix (Soil/Water): Soil

Sample ID: S-15

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	45,100			P
7440-38-2	Arsenic	4.2	J		H
7440-41-7	Beryllium	3.5			P
7440-43-9	Cadmium	13.4	J		P
7440-47-3	Chromium	4.0			P
7440-50-8	Copper	17			P
7439-89-6	Iron	22,000			P
7439-92-1	Lead	20			F
7439-96-5	Manganese	449			P
7440-02-0	Nickel	35			P
7440-09-7	Potassium	4,900			A
7782-49-2	Selenium	0.8	J	~~N~~	H
7440-22-4	Silver	2			P
7440-23-5	Sodium	324			A
7440-62-2	Vanadium	75			P
7440-66-6	Zinc	180			P
	Fluoride	19.0			E
	Cation Exchange Capacity	34.5			A
	Nitrate/Nitrite as N	22			ACR
	pH	7.6			E

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INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121237

Matrix (Soil/Water): Soil

Sample ID: S-16

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	27,300			P
7440-38-2	Arsenic	3.8	J		H
7440-41-7	Beryllium	2			P
7440-43-9	Cadmium	8.9	J		P
7440-47-3	Chromium	37			P
7440-50-8	Copper	17			P
7439-89-6	Iron	22,100			P
7439-92-1	Lead	19			F
7439-96-5	Manganese	524			P
7440-02-0	Nickel	35			P
7440-09-7	Potassium	5,100			A
7782-49-2	Selenium	0.8	J	~~N~~	H
7440-22-4	Silver	1			P
7440-23-5	Sodium	324			A
7440-62-2	Vanadium	57			P
7440-66-6	Zinc	150			P
	Fluoride	12.6			E
	Cation Exchange Capacity	22.3			A
	Nitrate/Nitrite as N	6.8			ACR
	pH	7.4			E

[illegible] 3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121238

Matrix (Soil/Water): Soil

Sample ID: S-8

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	31,700			P
7440-38-2	Arsenic	6.4	J		H
7440-41-7	Beryllium	2			P
7440-43-9	Cadmium	13.1	J		P
7440-47-3	Chromium	60			P
7440-50-8	Copper	17			P
7439-89-6	Iron	24,000			P
7439-92-1	Lead	18			F
7439-96-5	Manganese	424			P
7440-02-0	Nickel	37			P
7440-09-7	Potassium	5,200			A
7782-49-2	Selenium	1.0	J	N	H
7440-22-4	Silver	1			P
7440-23-5	Sodium	399			A
7440-62-2	Vanadium	92			P
7440-66-6	Zinc	215			P
	Fluoride	25.8			E
	Cation Exchange Capacity	23.3			A
	Nitrate/Nitrite as N	19			ACR
	pH	7.4			E

3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121228

Matrix (Soil/Water): Soil

Sample ID: S-7

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	33,500			P
7440-38-2	Arsenic	3.8	J		H
7440-41-7	Beryllium	2			P
7440-43-9	Cadmium	6.4	J		P
7440-47-3	Chromium	32			P
7440-50-8	Copper	17			P
7439-89-6	Iron	30,500			P
7439-92-1	Lead	23			F
7439-96-5	Manganese	607			P
7440-02-0	Nickel	32			P
7440-09-7	Potassium	6,000			A
7782-49-2	Selenium	0.6	J	N	H
7440-22-4	Silver	1			P
7440-23-5	Sodium	350			A
7440-62-2	Vanadium	37			P
7440-66-6	Zinc	120			P
	Fluoride	10.0			E
	Cation Exchange Capacity	28.5			A
	Nitrate/Nitrite as N	2.3			ACR
	pH	7.4			E

3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121229

Matrix (Soil/Water): Soil

Sample ID: S-8

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	29,200			P
7440-38-2	Arsenic	6.7	J		H
7440-41-7	Beryllium	2			P
7440-43-9	Cadmium	13	J		P
7440-47-3	Chromium	57			P
7440-50-8	Copper	17			P
7439-89-6	Iron	24,600			P
7439-92-1	Lead	21			F
7439-96-5	Manganese	424			P
7440-02-0	Nickel	32			P
7440-09-7	Potassium	5,400			A
7782-49-2	Selenium	1.0	J	N	H
7440-22-4	Silver	1			P
7440-23-5	Sodium	349			A
7440-62-2	Vanadium	87			P
7440-66-6	Zinc	210			P
	Fluoride	23.0			E
	Cation Exchange Capacity	17.6			A
	Nitrate/Nitrite as N	9.8			ACR
	pH	7.6			E

3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121230

Matrix (Soil/Water): Soil

Sample ID: S-9

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	43,900			P
7440-38-2	Arsenic	10	J		H
7440-41-7	Beryllium	2.7			P
7440-43-9	Cadmium	32.5	J		P
7440-47-3	Chromium	120			P
7440-50-8	Copper	20			P
7439-89-6	Iron	31,900			P
7439-92-1	Lead	30			F
7439-96-5	Manganese	429			P
7440-02-0	Nickel	47			P
7440-09-7	Potassium	5,700			A
7782-49-2	Selenium	2.0	J	N	H
7440-22-4	Silver	3			P
7440-23-5	Sodium	499			A
7440-62-2	Vanadium	150			P
7440-66-6	Zinc	496			P
	Fluoride	47.2			E
	Cation Exchange Capacity	18.9			A
	Nitrate/Nitrite as N	5.8			ACR
	pH	7.8			E

3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121233

Matrix (Soil/Water): Soil

Sample ID: S-12

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	32,700			P
7440-38-2	Arsenic	8.8	J		H
7440-41-7	Beryllium	2			P
7440-43-9	Cadmium	38.0	J		P
7440-47-3	Chromium	90			P
7440-50-8	Copper	22			P
7439-89-6	Iron	21,800			P
7439-92-1	Lead	24			F
7439-96-5	Manganese	484			P
7440-02-0	Nickel	40			P
7440-09-7	Potassium	5,800			A
7782-49-2	Selenium	1.6	J	N	H
7440-22-4	Silver	2			P
7440-23-5	Sodium	449			A
7440-62-2	Vanadium	130			P
7440-66-6	Zinc	561			P
	Fluoride	40.6			E
	Cation Exchange Capacity	17.6			A
	Nitrate/Nitrite as N	6.8			ACR
	pH	7.0			E

3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121234

Matrix (Soil/Water): Soil

Sample ID: S-13

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	33,300			P
7440-38-2	Arsenic	6.6	J		H
7440-41-7	Beryllium	2.7			P
7440-43-9	Cadmium	67.3	J		P
7440-47-3	Chromium	130			P
7440-50-8	Copper	30			P
7439-89-6	Iron	23,500			P
7439-92-1	Lead	28			F
7439-96-5	Manganese	496			P
7440-02-0	Nickel	50			P
7440-09-7	Potassium	6,100			A
7782-49-2	Selenium	1.0	J	N	H
7440-22-4	Silver	4			P
7440-23-5	Sodium	598			A
7440-62-2	Vanadium	200			P
7440-66-6	Zinc	885			P
	Fluoride	1.0	U		E
	Cation Exchange Capacity	18.6			A
	Nitrate/Nitrite as N	2.1			ACR
	pH	7.3			E

RWS 3/5/92

INORGANIC ANALYSIS DATA SHEET

Lab Name: Chen-Northern, Inc.

Sample No. 121235

Matrix (Soil/Water): Soil

Sample ID: S-14

Level (Low/Med):

Date Received: 10/22/91

Solids: 100

Concentration Units (mg/l or mg/kg dry weight): mg/kg

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	Aluminum	29,800			P
7440-38-2	Arsenic	9.8	J		H
7440-41-7	Beryllium	2			P
7440-43-9	Cadmium	40.4	J		P
7440-47-3	Chromium	90			P
7440-50-8	Copper	25			P
7439-89-6	Iron	21,800			P
7439-92-1	Lead	22			F
7439-96-5	Manganese	462			P
7440-02-0	Nickel	47			P
7440-09-7	Potassium	5,700			A
7782-49-2	Selenium	1.5	J	N	H
7440-22-4	Silver	2			P
7440-23-5	Sodium	475			A
7440-62-2	Vanadium	140			P
7440-66-6	Zinc	542			P
	Fluoride	68.0			E
	Cation Exchange Capacity	17.6			A
	Nitrate/Nitrite as N	2.3			ACR
	pH	7.3			E

3/5/92

MONSANTO, INC.
ANALYTICAL RESULTS

February 14, 1992
Job No. 91-942
Sheet 2 of 3

Laboratory Number	Sample Identification	Date Sampled	BOD_5 mg/l	Chemical Oxygen Demand mg/l	Total Petroleum Hydrocarbons as Gasoline mg/l	Date Received
121383	TW-16-RFK	10/23/91	4	8 J	0.1 u	10/25/91
121384	TW-18-RFK	10/23/91	9	6 J	*	10/25/91
121484	TW-20-RFK	10/27/91	*	*	0.1 u	10/29/91
121318	TW-22-RFK	10/22/91	8	18 J	0.1 u	10/24/91
121319	TW-23-RFK	10/22/91	10	4	*	10/24/91
121200	TW-26-RFK	10/20/91	*	*	0.1 u	10/22/91
121198	TW-26-RFK Dup	10/20/91	*	*	0.1 u	10/22/91
121271	TW-37-RFK	10/21/91	5	4 uJ	*	10/23/91
121266	TW-39-RFK	10/21/91	*	*	0.1 u	10/23/91
121485	TW-40-RFK	10/27/91	*	*	0.1 u	10/29/91
121515	TW-41-RFK	10/29/91	*	*	0.1 u(0.1u)	10/30/91
121269	TW-45-RFK	10/21/91	7	16 J	*	10/23/91
121324	TW-48-RFK	10/23/91	10	10 J	*	10/24/91
121325	TW-49-RFK	10/23/91	4	4 uJ	*	10/24/91
121380	TW-50-RFK	10/23/91	6	14 J	0.1 u(0.1u)	10/25/91
121153	PW-1-RFK	10/16/91	*	*	0.1 u	10/18/91
121326	SW-49-RFK	10/23/91	4	4 J ~~(4uJ)~~ 4uJ	*	10/24/91

* Analysis not requested

u - None detected at this concentration

Values in parentheses are the results of duplicate analyses.

3/5/92

APPENDIX S

ATTACHMENT 4

RADIOCHEMICAL DATA ASSESSMENT SUMMARIES
SEDIMENT, SOIL AND SOURCE SAMPLES

RADIOCHEMICAL DATA ASSESSMENT SUMMARY

PROJECT NO. 913-1101.211 SITE Monsanto

LABORATORY ALR SAMPLES/MATRIX

SDG # 40306-34

DATA ASSESSMENT SUMMARY

	ALPHA SCINT.	L.B. SCINT.	GAMMA SPEC.	FLUOR.
1. HOLDING TIMES			O	
2. CALIBRATIONS			O'	
3. BLANKS			O	
4. LCS			O	
5. DUPLICATE ANALYSIS			O	
6. MATRIX SPIKE			N/A	
7. SAMPLE VERIFICATION			O	
8. OTHER QC			N/A	
9. OVERALL ASSESSMENT			O	

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

NOTES:

'Calibration is based on 2 sigma of Daily reliability per Conversation with Lab.

Validated by: Kenny Lowe Date: 3/2/92

Reviewed by: [illegible] Date: 3/6/92

SDG # 40306-34 Project No. 913-1101.211

	Acceptable YES	NO
1. Holding Times	X	

holding time acceptable analyzed within 6 months

2. Calibrations	X	

Verified Daily reliability was done for Gamma Spec

3. Blanks	X	

Contaminates founded in Blank will use 5x rule to qualify result

4. Laboratory Control Standard	X	

Verified % Recovery with in QC limits of 80-120% R

5. Duplicate Analysis	X	

Verified sample results with in RPD limits and with in LLD

6. Matrix Spike Analysis		

N/A

7. Sample Results Verification	X	

Verified sample results, NO ERRORS made

SDG # 40306-34 Project No. 913-1101.211

	Acceptable YES	NO
8. Other QC		
N/A		
9. Field Duplicates	X	
see attached sheet		
10. Overall Assessment		

Accu-Labs Research, Inc.

1663 Table Mountain Drive Golden, Colorado 80403-1650
(303) 277-9514 FAX (303) 277-9512

A N A L Y S I S R E P O R T

DATE: 02/18/92 PAGE 1

DEBBIE GRIMM
CHEN-NORTHERN, INC.
P.O. BOX 30615
BILLINGS, MT 59107

Lab Job Number: 8734-40306-34
Date Samples Received: 10/22/91
Customer PO Number: PROJ# 913-1101

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40306-34-1	8734-40306-34-2	8734-40306-34-3	8734-40306-34-4
Sponsor Designation -	S-1A	S-2A	S-3A	S-4A
Date Collected -	10/19/91	10/19/91	10/19/91	10/19/91
Determinations in pCi/g (dry) unless noted				
Polonium-210 - total	11 ± 2 *	----	----	5.5 ± 1.4 *
Thorium-228 - total	0.7 ± 0.2 *	----	----	0.7 ± 0.2 *
Thorium-230 - total	2.4 ± 0.3 *	----	----	9.1 ± 0.7 *
Thorium-232 - total	0.6 ± 0.2 *	----	----	0.8 ± 0.2 *
Lead-210 @ 46 KeV	7.2 ± 0.6 *	**	**	12 ± 1 *
~~Thorium-234 @ 63.3 KeV~~ Uranium	3.1 ± 0.7 *	**	**	8.6 ± 1.4 *
~~Thorium-234 @ 92.6 KeV~~	~~2.2 ± 0.3 *~~	**	**	~~3.5 ± 0.6 *~~
~~Sodium-226 @ 186.0 KeV~~	~~5.5 ± 0.8 *~~	**	**	~~15 ± 1 *~~
~~Lead-214 @ 295.2 KeV~~	~~3.4 ± 0.3 *~~	**	**	~~9.3 ± 0.4 *~~
~~Lead-214 @ 352.0 KeV~~	~~3.5 ± 0.2 *~~	**	**	~~9.5 ± 0.4 *~~
Radium-226 →	3.4 ± 0.4			9.2 ± 0.6
~~Bismuth-214 @ 609.4 KeV~~	~~3.4 ± 0.2 *~~	**	**	~~9.2 ± 0.4 *~~
~~Bismuth-214 @ 1120.4 KeV~~	~~3.4 ± 0.6 *~~	**	**	~~9.1 ± 0.8 *~~
~~Bismuth-214 @ 1764.7 KeV~~	~~3.4 ± 0.5 *~~	**	**	~~9.1 ± 0.8 *~~
~~Actinium-228 @ 338 KeV~~	~~1.2 ± 0.3 *~~	**	**	~~1.2 ± 0.4 *~~
~~Actinium-228 @ 911 KeV~~ Radium 228	1.2 ± 0.2 *	**	**	1.0 ± 0.3 *
~~Actinium-228 @ 968 KeV~~	~~0.8 ± 0.3 *~~	**	**	~~0.9 ± 0.4 *~~
~~Lead-212 @ 238 KeV~~	~~1.0 ± 0.1 *~~	**	**	~~0.8 ± 0.1 *~~
~~Bismuth-212 @ 727 KeV~~	~~1.4 ± 0.7 *~~	**	**	~~1.5 ± 0.7 *~~
~~Thallium-208 @ 583 KeV~~	~~1.1 ± 0.2 *~~	**	**	~~0.8 ± 0.2 *~~
~~Uranium-235 @ 143 KeV~~	~~0.3 ± 0.2 *~~	**	**	~~0.3 ± 0.2 *~~
K-40 @ 1460 KeV	14 ± 1 *	**	**	15 ± 1 *

MMA
2/20/92

40306-12

A N A L Y S I S R E P O R T

DATE: 02/18/92 PAGE 2

Lab Job Number 8734-40306-34

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40306-34-5	8734-40306-34-6	8734-40306-34-7	8734-40306-34-8
Sponsor Designation -	S-5A	S-6A	S-7A	S-8A
Date Collected -	10/19/91	10/19/91	10/19/91	10/19/91
Determinations in pCi/g (dry) unless noted				
Polonium-210 - total	----	----	2.7 ± 1.0 *	5.7 ± 1.3 *
Thorium-228 - total	----	----	0.9 ± 0.3 *	0.9 ± 0.3 *
Thorium-230 - total	----	----	1.8 ± 0.5 *	3.1 ± 0.5 *
Thorium-232 - total	----	----	0.9 ± 0.3 *	1.0 ± 0.3 *
Lead-210 @ 46 KeV	**	**	3.3 ± 0.4 *	6.0 ± 0.5 *
~~Thorium-234 @ 63.3 KeV~~ Uranium	**	**	1.3 ± 0.7 *	4.2 ± 0.8 *
~~Thorium-234 @ 92.6 KeV~~	~~**~~	~~**~~	~~1.8 ± 0.6 *~~	~~2.0 ± 0.4 *~~
~~Radium-226 @ 186.0 KeV~~	~~**~~	~~**~~	~~2.9 ± 0.6 *~~	~~6.1 ± 0.8 *~~
~~Lead-214 @ 295.2 KeV~~	~~**~~	~~**~~	~~1.8 ± 0.2 *~~	~~3.9 ± 0.4 *~~
~~Lead-214 @ 352.0 KeV~~	~~**~~	~~**~~	~~1.7 ± 0.1 *~~	~~4.2 ± 0.2 *~~
Radium-226			1.6 ± 0.2	4.0 ± 0.4
~~Bismuth-214 @ 609.4 KeV~~	~~**~~	~~**~~	~~1.6 ± 0.2 *~~	~~3.9 ± 0.2 *~~
~~Bismuth-214 @ 1120.4 KeV~~	~~**~~	~~**~~	~~2.0 ± 0.4 *~~	~~3.9 ± 0.6 *~~
~~Bismuth-214 @ 1764.7 KeV~~	~~**~~	~~**~~	~~1.1 ± 0.3 *~~	~~4.2 ± 0.5 *~~
~~Actinium-228 @ 338 KeV~~	~~**~~	~~**~~	~~1.2 ± 0.2 *~~	~~1.4 ± 0.3 *~~
~~Actinium-228 @ 911 KeV~~ Radium 228	**	**	1.1 ± 0.2 *	1.2 ± 0.2 *
~~Actinium-228 @ 968 KeV~~	~~**~~	~~**~~	~~1.0 ± 0.4 *~~	~~1.2 ± 0.3 *~~
~~Lead-212 @ 238 KeV~~	~~**~~	~~**~~	~~0.7 ± 0.1 *~~	~~1.0 ± 0.1 *~~
~~Bismuth-212 @ 727 KeV~~	~~**~~	~~**~~	~~1.5 ± 0.7 *~~	~~1.3 ± 0.9 *~~
~~Thallium-208 @ 583 KeV~~	~~**~~	~~**~~	~~1.1 ± 0.2 *~~	~~1.2 ± 0.2 *~~
~~Uranium-235 @ 143 KeV~~	~~**~~	~~**~~	~~0.0 ± 0.1 *~~	~~0.2 ± 0.2 *~~
K-40 @ 1460 KeV	**	**	18 ± 1 *	16 ± 1 *

MWA
2/20/92

Accu-Labs Research, Inc.

A N A L Y S I S R E P O R T

DATE: 02/18/92 PAGE 3

Lab Job Number 8734-40306-34

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40306-34-9	8734-40306-34-10	8734-40306-34-11	8734-40306-34-12
Sponsor Designation -	S-8A-DUP	S-9A	S-10A	S-11A
Date Collected -	10/19/91	10/19/91	10/19/91	10/19/91
Determinations in pCi/g (dry) unless noted				
Polonium-210 - total	5.7 ± 2.1 *	----	5.1 ± 2.3 *	----
Thorium-228 - total	1.2 ± 0.4 *	----	0.5 ± 0.2 *	----
Thorium-230 - total	2.8 ± 0.7 *	----	5.8 ± 0.5 *	----
Thorium-232 - total	0.6 ± 0.3 *	----	0.6 ± 0.2 *	----
Lead-210 @ 46 KeV	6.9 ± 0.5 *	**	21 ± 1 *	**
~~Thorium-234 @ 63.3 KeV~~ Uranium	4.1 ± 1.3 *	**	9.0 ± 1.1 *	**
~~Thorium-234 @ 92.6 KeV~~	~~3.4 ± 0.8 *~~	~~**~~	~~6.8 ± 1.3 *~~	~~**~~
~~Radium-226 @ 186.0 KeV~~	~~6.1 ± 0.7 *~~	~~**~~	~~15 ± 1 *~~	~~**~~
~~Lead-214 @ 295.2 KeV~~	~~4.1 ± 0.3 *~~	~~**~~	~~10 ± 1 *~~	~~**~~
~~Lead-214 @ 352.0 KeV~~	~~4.0 ± 0.2 *~~	~~**~~	~~11 ± 1 *~~	~~**~~
Radium-226 →	3.8 ± 0.3		10 ± 1	
~~Bismuth-214 @ 609.4 KeV~~	~~3.8 ± 0.2 *~~	~~**~~	~~10 ± 1 *~~	~~**~~
~~Bismuth-214 @ 1120.4 KeV~~	~~3.7 ± 0.5 *~~	~~**~~	~~10 ± 1 *~~	~~**~~
~~Bismuth-214 @ 1764.7 KeV~~	~~3.6 ± 0.4 *~~	~~**~~	~~9.3 ± 0.7 *~~	~~**~~
~~Actinium-228 @ 338 KeV~~	~~1.2 ± 0.3 *~~	~~**~~	~~1.0 ± 0.3 *~~	~~**~~
~~Actinium-228 @ 911 KeV~~ Radium-228	1.1 ± 0.3 *	**	0.9 ± 0.2 *	**
~~Actinium-228 @ 968 KeV~~	~~1.1 ± 0.4 *~~	~~**~~	~~0.7 ± 0.3 *~~	~~**~~
~~Lead-212 @ 238 KeV~~	~~1.2 ± 0.1 *~~	~~**~~	~~0.9 ± 0.1 *~~	~~**~~
~~Bismuth-212 @ 727 KeV~~	~~1.7 ± 0.6 *~~	~~**~~	~~1.3 ± 0.8 *~~	~~**~~
~~Thallium-208 @ 583 KeV~~	~~1.1 ± 0.2 *~~	~~**~~	~~1.0 ± 0.2 *~~	~~**~~
~~Uranium-235 @ 143 KeV~~	~~0.0 ± 0.1 *~~	~~**~~	~~0.5 ± 0.2 *~~	~~**~~
K-40 @ 1460 KeV	17 ± 1 *	**	13 ± 1 *	**

40306-12

KWA 2/20/92

Accu-Labs Research, Inc.

A N A L Y S I S R E P O R T

DATE: 02/18/92 PAGE 4

Lab Job Number 8734-40306-34

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40306-34-13	8734-40306-34-14	8734-40306-34-15	8734-40306-34-16
Sponsor Designation -	S-12A	S-13A	S-14A	S-15A
Date Collected -	10/19/91	10/19/91	10/19/91	10/19/91
Determinations in pCi/g (dry) unless noted				
Polonium-210 - total	18 ± 3 *	24 ± 6 *	77 ± 20 *	6.6 ± 0.9 *
Thorium-228 - total	1.0 ± 0.3 *	1.1 ± 0.3 *	0.4 ± 0.2 *	0.6 ± 0.2 *
Thorium-230 - total	5.0 ± 0.6 *	8.5 ± 0.7 *	12 ± 1 *	4.5 ± 0.6 *
Thorium-232 - total	1.0 ± 0.3 *	0.9 ± 0.2 *	0.4 ± 0.2 *	0.8 ± 0.2 *
Lead-210 @ 46 KeV	17 ± 1 *	65 ± 1 *	54 ± 1 *	7.0 ± 0.5 *
~~Thorium-234 @ 63.3 KeV~~ Uranium	5.2 ± 1.1 *	8.5 ± 1.1 *	11 ± 2 *	3.8 ± 0.8 *
~~Thorium-234 @ 92.6 KeV~~	~~3.8 ± 0.4 *~~	~~6.5 ± 1.3 *~~	~~6.1 ± 0.5 *~~	~~3.1 ± 0.8 *~~
~~Radium-226 @ 186.0 KeV~~	~~10 ± 1 *~~	~~14 ± 1 *~~	~~19 ± 1 *~~	~~7.3 ± 0.7 *~~
~~Lead-214 @ 295.2 KeV~~	~~5.9 ± 0.4 *~~	~~10 ± 1 *~~	~~13 ± 1 *~~	~~5.0 ± 0.3 *~~
~~Lead-214 @ 352.0 KeV~~	~~6.0 ± 0.3 *~~	~~10 ± 1 *~~	~~13 ± 1 *~~	~~5.2 ± 0.2 *~~
Radium-226 →	5.7 ± 0.5	9.6 ± 0.7	13 ± 1	4.85 ± 0.3
~~Bismuth-214 @ 609.4 KeV~~	~~5.5 ± 0.3 *~~	~~9.6 ± 0.3 *~~	~~13 ± 1 *~~	~~4.9 ± 0.2 *~~
~~Bismuth-214 @ 1120.4 KeV~~	~~5.4 ± 0.7 *~~	~~9.4 ± 0.7 *~~	~~12 ± 1 *~~	~~4.7 ± 0.5 *~~
~~Bismuth-214 @ 1764.7 KeV~~	~~5.9 ± 0.6 *~~	~~8.8 ± 0.7 *~~	~~12 ± 1 *~~	~~4.4 ± 0.5 *~~
~~Actinium-228 @ 338 KeV~~	~~1.4 ± 0.3 *~~	~~1.3 ± 0.3 *~~	~~0.6 ± 0.3 *~~	~~1.0 ± 0.3 *~~
~~Actinium-228 @ 911 KeV~~ Radium-228	1.4 ± 0.3 *	1.0 ± 0.3 *	0.7 ± 0.2 *	1.2 ± 0.2 *
~~Actinium-228 @ 968 KeV~~	~~1.2 ± 0.3 *~~	~~1.3 ± 0.4 *~~	~~0.8 ± 0.4 *~~	~~1.2 ± 0.4 *~~
~~Lead-212 @ 238 KeV~~	~~1.1 ± 0.1 *~~	~~1.1 ± 0.1 *~~	~~0.5 ± 0.1 *~~	~~1.0 ± 0.1 *~~
~~Bismuth-212 @ 727 KeV~~	~~1.7 ± 0.7 *~~	~~1.4 ± 0.8 *~~	~~0.0 ± 0.7 *~~	~~0.0 ± 0.5 *~~
~~Thallium-208 @ 583 KeV~~	~~1.1 ± 0.2 *~~	~~1.0 ± 0.2 *~~	~~0.5 ± 0.2 *~~	~~0.9 ± 0.2 *~~
~~Uranium-235 @ 143 KeV~~	~~0.4 ± 0.2 *~~	~~0.5 ± 0.2 *~~	~~0.6 ± 0.2 *~~	~~0.3 ± 0.1 *~~
K-40 @ 1460 KeV	18 ± 1 *	16 ± 1 *	7.3 ± 1.0 *	11 ± 1 *

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Accu-Labs Research, Inc.

A N A L Y S I S R E P O R T

DATE: 02/18/92 PAGE 5

Lab Job Number 8734-40306-34

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40306-34-17	8734-40306-34-18	8734-40306-34-19	8734-40306-34-20
Sponsor Designation -	S-16A	S-1B	S-2B	S-3B
Date Collected -	10/19/91	10/19/91	10/19/91	10/19/91
Determinations in pCi/g (dry) unless noted				
Polonium-210 - total	5.0 ± 0.8 *	9.1 ± 1.1 *	----	----
Thorium-228 - total	1.0 ± 0.3 *	1.1 ± 0.3 *	----	----
Thorium-230 - total	2.7 ± 0.4 *	4.2 ± 0.5 *	----	----
Thorium-232 - total	1.6 ± 0.3 *	1.3 ± 0.3 *	----	----
Lead-210 @ 46 KeV	3.7 ± 0.4 *	8.3 ± 0.6 *	**	**
~~Thorium-234 @ 63.3 KeV~~ Uranium	1.7 ± 0.6 *	3.0 ± 0.7 *	**	**
~~Thorium-234 @ 92.6 KeV~~	~~1.7 ± 0.4 *~~	~~2.5 ± 0.7 *~~	**	**
~~Radium-226 @ 186.0 KeV~~	~~3.3 ± 0.6 *~~	~~5.4 ± 0.7 *~~	**	**
~~Lead-214 @ 295.2 KeV~~	~~2.0 ± 0.3 *~~	~~3.3 ± 0.3 *~~	**	**
~~Lead-214 @ 352.0 KeV~~	~~2.2 ± 0.2 *~~	~~3.5 ± 0.2 *~~	**	**
Radium-226 →	2.3 ± 0.3	3.4 ± 0.3		
~~Bismuth-214 @ 609.4 KeV~~	~~2.1 ± 0.2 *~~	~~3.3 ± 0.2 *~~	**	**
~~Bismuth-214 @ 1120.4 KeV~~	~~2.3 ± 0.5 *~~	~~3.2 ± 0.5 *~~	**	**
~~Bismuth-214 @ 1764.7 KeV~~	~~1.7 ± 0.5 *~~	~~3.3 ± 0.4 *~~	**	**
~~Actinium-228 @ 338 KeV~~	~~1.2 ± 0.3 *~~	~~1.2 ± 0.3 *~~	**	**
~~Actinium-228 @ 911 KeV~~	1.4 ± 0.2 *	1.0 ± 0.3 *	**	**
~~Actinium-228 @ 968 KeV~~	~~1.5 ± 0.4 *~~	~~1.0 ± 0.3 *~~	**	**
~~Lead-212 @ 238 KeV~~	~~1.0 ± 0.1 *~~	~~0.8 ± 0.1 *~~	**	**
~~Bismuth-212 @ 727 KeV~~	~~2.2 ± 0.8 *~~	~~1.9 ± 0.7 *~~	**	**
~~Thallium-208 @ 583 KeV~~	~~1.3 ± 0.2 *~~	~~1.9 ± 0.8 *~~	**	**
~~Uranium-235 @ 143 KeV~~	~~0.0 ± 0.1 *~~	~~0.2 ± 0.2 *~~	**	**
K-40 @ 1460 KeV	19 ± 1 *	15 ± 1 *	**	**

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A N A L Y S I S R E P O R T

DATE: 02/18/92 PAGE 6

Lab Job Number 8734-40306-34

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40306-34-21	8734-40306-34-22	8734-40306-34-23	8734-40306-34-24
Sponsor Designation -	S-4B	S-5B	S-6B	S-7B
Date Collected -	10/19/91	10/19/91	10/19/91	10/19/91
Determinations in pCi/g (dry) unless noted				
Polonium-210 - total	2.6 ± 0.4 *	----	----	2.8 ± 0.6 *
Thorium-228 - total	1.4 ± 0.4 *	----	----	0.9 ± 0.3 *
Thorium-230 - total	2.6 ± 0.5 *	----	----	2.1 ± 0.4 *
Thorium-232 - total	0.0 ± 0.1 *	----	----	1.2 ± 0.3 *
Lead-210 @ 46 KeV	2.2 ± 0.4 *	**	**	2.9 ± 0.4 *
~~Thorium-234 @ 63.3 KeV~~ Uranium	2.0 ± 0.6 *	**	**	1.7 ± 0.6 *
~~Thorium-234 @ 92.6 KeV~~	~~1.4 ± 0.3 *~~	~~**~~	~~**~~	~~1.5 ± 0.3 *~~
~~Radium-226 @ 186.0 KeV~~	~~3.9 ± 0.7 *~~	~~**~~	~~**~~	~~2.7 ± 0.7 *~~
~~Lead-214 @ 295.2 KeV~~	~~1.8 ± 0.2 *~~	~~**~~	~~**~~	~~1.5 ± 0.3 *~~
~~Lead-214 @ 352.0 KeV~~	~~2.0 ± 0.2 *~~	~~**~~	~~**~~	~~1.4 ± 0.1 *~~
Radium-226	1.9 ± 0.3			1.5 ± 0.3
~~Bismuth-214 @ 609.4 KeV~~	~~1.9 ± 0.2 *~~	~~**~~	~~**~~	~~1.5 ± 0.2 *~~
~~Bismuth-214 @ 1120.4 KeV~~	~~1.9 ± 0.4 *~~	~~**~~	~~**~~	~~1.8 ± 0.5 *~~
~~Bismuth-214 @ 1764.7 KeV~~	~~1.7 ± 0.4 *~~	~~**~~	~~**~~	~~1.2 ± 0.5 *~~
~~Actinium-228 @ 338 KeV~~	~~1.2 ± 0.3 *~~	~~**~~	~~**~~	~~1.3 ± 0.3 *~~
~~Actinium-228 @ 911 KeV~~ Radium-228	1.3 ± 0.2 *	**	**	1.1 ± 0.2 *
~~Actinium-228 @ 968 KeV~~	~~1.6 ± 0.3 *~~	~~**~~	~~**~~	~~1.0 ± 0.3 *~~
~~Lead-212 @ 238 KeV~~	~~0.9 ± 0.1 *~~	~~**~~	~~**~~	~~1.0 ± 0.1 *~~
~~Bismuth-212 @ 727 KeV~~	~~1.6 ± 0.8 *~~	~~**~~	~~**~~	~~1.1 ± 0.8 *~~
~~Thallium-208 @ 583 KeV~~	~~1.3 ± 0.2 *~~	~~**~~	~~**~~	~~1.0 ± 0.2 *~~
~~Uranium-235 @ 143 KeV~~	~~0.0 ± 0.1 *~~	~~**~~	~~**~~	~~0.0 ± 0.1 *~~
K-40 @ 1460 KeV	16 ± 1 *	**	**	17 ± 1 *

[illegible]
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A N A L Y S I S R E P O R T

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Lab Job Number 8734-40306-34

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40306-34-25	8734-40306-34-26	8734-40306-34-27	8734-40306-34-28
Sponsor Designation -	S-8B	S-8B-DUP	S-9B	S-10B
Date Collected -	10/19/91	10/19/91	10/19/91	10/19/91
Determinations in pCi/g (dry) unless noted				
Polonium-210 - total	7.0 ± 0.9 *	5.5 ± 0.9 *	----	5.6 ± 1.0 *
Thorium-228 - total	1.0 ± 0.3 *	1.0 ± 0.3 *	----	1.2 ± 0.4 *
Thorium-230 - total	4.0 ± 0.6 *	3.9 ± 0.5 *	----	3.4 ± 0.5 *
Thorium-232 - total	1.0 ± 0.3 *	0.9 ± 0.2 *	----	1.1 ± 0.3 *
Lead-210 @ 46 KeV	6.5 ± 0.5 *	6.8 ± 0.6 *	**	5.8 ± 0.5 *
~~Thorium-234 @ 63.3 KeV~~ Uranium	3.1 ± 0.8 *	3.2 ± 0.7 *	**	2.9 ± 0.8 *
~~Thorium-234 @ 92.6 KeV~~	~~3.2 ± 0.9 *~~	~~2.2 ± 0.4 *~~	~~**~~	~~2.4 ± 0.7 *~~
~~Radium-226 @ 186.0 KeV~~	~~6.0 ± 0.8 *~~	~~5.2 ± 0.8 *~~	~~**~~	~~4.3 ± 0.7 *~~
~~Lead-214 @ 295.2 KeV~~	~~4.0 ± 0.3 *~~	~~3.9 ± 0.3 *~~	~~**~~	~~3.3 ± 0.3 *~~
~~Lead-214 @ 352.0 KeV~~	~~3.8 ± 0.2 *~~	~~3.4 ± 0.2 *~~	~~**~~	~~3.3 ± 0.2 *~~
Radium-226 →	3.7 ± 0.3	3.4 ± 0.4		3.2 ± 0.3
~~Bismuth-214 @ 609.4 KeV~~	~~3.8 ± 0.2 *~~	~~3.5 ± 0.2 *~~	~~**~~	~~3.1 ± 0.2 *~~
~~Bismuth-214 @ 1120.4 KeV~~	~~3.4 ± 0.6 *~~	~~3.5 ± 0.6 *~~	~~**~~	~~3.1 ± 0.5 *~~
~~Bismuth-214 @ 1764.7 KeV~~	~~3.6 ± 0.4 *~~	~~2.9 ± 0.5 *~~	~~**~~	~~3.3 ± 0.4 *~~
~~Actinium-228 @ 338 KeV~~	~~1.3 ± 0.2 *~~	~~1.3 ± 0.3 *~~	~~**~~	~~1.2 ± 0.3 *~~
~~Actinium-228 @ 911 KeV~~ Radium-228	1.1 ± 0.2 *	1.1 ± 0.2 *	**	1.2 ± 0.2 *
~~Actinium-228 @ 968 KeV~~	~~1.5 ± 0.4 *~~	~~1.1 ± 0.3 *~~	~~**~~	~~1.4 ± 0.4 *~~
~~Lead-212 @ 238 KeV~~	~~1.2 ± 0.1 *~~	~~1.0 ± 0.1 *~~	~~**~~	~~0.8 ± 0.1 *~~
~~Bismuth-212 @ 727 KeV~~	~~1.7 ± 0.7 *~~	~~2.3 ± 0.8 *~~	~~**~~	~~1.7 ± 0.6 *~~
~~Thallium-208 @ 583 KeV~~	~~1.1 ± 0.2 *~~	~~1.0 ± 0.2 *~~	~~**~~	~~1.2 ± 0.2 *~~
~~Uranium-235 @ 143 KeV~~	~~0.2 ± 0.1 *~~	~~0.3 ± 0.1 *~~	~~**~~	~~0.8 ± 0.1 *~~
K-40 @ 1460 KeV	16 ± 1 *	15 ± 1 *	**	16 ± 1 *

MMA 2/20/92

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A N A L Y S I S R E P O R T

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Lab Job Number 8734-40306-34

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40306-34-29	8734-40306-34-30	8734-40306-34-31	8734-40306-34-32
Sponsor Designation -	S-11B	S-12B	S-13B	S-14B
Date Collected -	10/19/91	10/19/91	10/19/91	10/19/91
Determinations in pCi/g (dry) unless noted				
Polonium-210 - total	4.1 ± 0.6 *	14 ± 1 *	34 ± 2 *	15 ± 1 *
Thorium-228 - total	1.1 ± 0.3 *	1.0 ± 0.3 *	2.3 ± 0.5 *	1.7 ± 0.4 *
Thorium-230 - total	3.4 ± 0.4 *	4.9 ± 0.5 *	18 ± 1 *	4.7 ± 0.7 *
Thorium-232 - total	1.3 ± 0.3 *	1.3 ± 0.3 *	4.6 ± 0.7 *	1.6 ± 0.4 *
Lead-210 @ 46 KeV	4.5 ± 0.5 *	13 ± 1 *	32 ± 1 *	15 ± 1 *
~~Thorium-234 @ 63.3 KeV~~ Uranium	3.2 ± 0.7 *	3.7 ± 0.8 *	6.4 ± 0.9 *	3.6 ± 0.8 *
~~Thorium-234 @ 92.6 KeV~~	~~2.2 ± 0.3 *~~	~~3.7 ± 0.8 *~~	~~4.0 ± 0.4 *~~	~~2.3 ± 0.4 *~~
~~Radium-226 @ 186.0 KeV~~	~~5.1 ± 0.8 *~~	~~7.4 ± 0.7 *~~	~~10 ± 1 *~~	~~6.5 ± 0.8 *~~
~~Lead-214 @ 295.2 KeV~~	~~3.1 ± 0.3 *~~	~~4.6 ± 0.4 *~~	~~6.7 ± 0.4 *~~	~~4.2 ± 0.4 *~~
~~Lead-214 @ 352.0 KeV~~	~~3.3 ± 0.2 *~~	~~4.8 ± 0.2 *~~	~~6.3 ± 0.3 *~~	~~4.5 ± 0.2~~
Radium-226 →	3.0 ± 0.4	4.5 ± 0.4	6.2 ± 0.5	4.2 ± 0.4
~~Bismuth-214 @ 609.4 KeV~~	~~3.2 ± 0.2 *~~	~~4.5 ± 0.2 *~~	~~6.4 ± 0.3 *~~	~~4.1 ± 0.2 *~~
~~Bismuth-214 @ 1120.4 KeV~~	~~2.7 ± 0.6 *~~	~~4.5 ± 0.6 *~~	~~6.0 ± 0.7 *~~	~~4.3 ± 0.6 *~~
~~Bismuth-214 @ 1764.7 KeV~~	~~2.9 ± 0.5 *~~	~~4.0 ± 0.5 *~~	~~5.8 ± 0.6 *~~	~~4.0 ± 0.6 *~~
~~Actinium-228 @ 338 KeV~~	~~1.1 ± 0.3 *~~	~~1.4 ± 0.2 *~~	~~1.3 ± 0.3 *~~	~~1.5 ± 0.3 *~~
~~Actinium-228 @ 911 KeV~~ Radium-228	1.2 ± 0.2 *	1.3 ± 0.2 *	1.4 ± 0.3 *	1.2 ± 0.3 *
~~Actinium-228 @ 968 KeV~~	~~1.1 ± 0.3 *~~	~~1.4 ± 0.5 *~~	~~1.5 ± 0.5 *~~	~~1.4 ± 0.4 *~~
~~Lead-212 @ 238 KeV~~	~~1.1 ± 0.1 *~~	~~1.3 ± 0.1 *~~	~~1.1 ± 0.1 *~~	~~1.9 ± 0.1 *~~
~~Bismuth-212 @ 727 KeV~~	~~1.4 ± 0.6 *~~	~~1.3 ± 0.6 *~~	~~1.9 ± 0.8 *~~	~~0.8 ± 0.5 *~~
~~Thallium-208 @ 583 KeV~~	~~1.2 ± 0.2 *~~	~~1.2 ± 0.2 *~~	~~1.1 ± 0.2 *~~	~~1.4 ± 1.0 *~~
~~Uranium-235 @ 143 KeV~~	~~0.3 ± 0.1 *~~	~~0.0 ± 0.1 *~~	~~0.5 ± 0.2 *~~	~~0.3 ± 0.1 *~~
K-40 @ 1460 KeV	19 ± 1 *	18 ± 1 *	18 ± 1 *	17 ± 1 *

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ANALYSIS REPORT

DATE: 02/18/92 PAGE 9

Lab Job Number 8734-40306-34

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40306-34-33	8734-40306-34-34
Sponsor Designation -	S-158	S-168
Date Collected -	10/19/91	10/19/91

Determinations in pCi/g (dry) unless noted

Polonium-210 - total	5.6 ± 0.7 *	4.9 ± 1.0 *
Thorium-228 - total	1.6 ± 0.4 *	1.4 ± 0.4 *
Thorium-230 - total	5.9 ± 0.7 *	2.3 ± 0.5 *
Thorium-232 - total	1.5 ± 0.3 *	1.2 ± 0.3 *
Lead-210 @ 46 KeV	7.0 ± 0.5 *	4.9 ± 0.4 *
~~Thorium-234 @ 63.3 KeV~~ Uranium	2.8 ± 0.7 *	1.6 ± 0.6 *
~~Thorium-234 @ 92.6 KeV~~	~~2.3 ± 0.8 *~~	~~1.8 ± 0.6 *~~
~~Radium-226 @ 186.0 KeV~~	~~4.8 ± 0.7 *~~	~~3.1 ± 0.6 *~~
~~Lead-214 @ 295.2 KeV~~	~~3.7 ± 0.3 *~~	~~2.1 ± 0.2 *~~
~~Lead-214 @ 352.0 KeV~~	~~3.8 ± 0.2 *~~	~~2.3 ± 0.1 *~~
Radium-226 →	3.7 ± 0.3	2.1 ± 0.2
~~Bismuth-214 @ 609.4 KeV~~	~~3.5 ± 0.2 *~~	~~2.0 ± 0.2 *~~
~~Bismuth-214 @ 1120.4 KeV~~	~~3.8 ± 0.5 *~~	~~2.4 ± 0.5 *~~
~~Bismuth-214 @ 1764.7 KeV~~	~~3.5 ± 0.4 *~~	~~1.8 ± 0.3 *~~
~~Actinium-228 @ 338 KeV~~	~~1.0 ± 0.2 *~~	~~1.4 ± 0.3 *~~
~~Actinium-228 @ 911 KeV~~ Radium-228	1.2 ± 0.2 *	1.3 ± 0.2 *
~~Actinium-228 @ 968 KeV~~	~~1.0 ± 0.4 *~~	~~1.4 ± 0.4 *~~
~~Lead-212 @ 238 KeV~~	~~1.1 ± 0.1 *~~	~~1.2 ± 0.1 *~~
~~Bismuth-212 @ 727 KeV~~	~~1.5 ± 0.8 *~~	~~1.5 ± 0.6 *~~
~~Thallium-208 @ 583 KeV~~	~~1.1 ± 0.2 *~~	~~1.1 ± 0.2 *~~
~~Uranium-235 @ 143 KeV~~	~~0.0 ± 0.1 *~~	~~0.0 ± 0.1 *~~
K-40 @ 1460 KeV	13 ± 1 *	18 ± 1 *

* Variability of the radioactive disintegration process (counting error) at the 95% confidence level, 1.96σ.

** Analysis cancelled by client.

Note: Gamma spec samples allowed to ingrow for 30 days before counting
Ra-226 not corrected for possible U-235 interference.

By: Bud Summers
Bud Summers
Radiochemistry Supervisor

BS/ep

KWB 2/20/92

40306-12

RADIOCHEMICAL DATA ASSESSMENT SUMMARY

PROJECT NO. 913-1101.211 SITE Monsanto

LABORATORY ALR SAMPLES/MATRIX 6 SAMPLES

SDG # 40422-6

DATA ASSESSMENT SUMMARY

	ALPHA SCINT.	L.B. SCINT.	GAMMA SPEC.	FLUOR.
1. HOLDING TIMES			O	
2. CALIBRATIONS			O	
3. BLANKS			O	
4. LCS			O	
5. DUPLICATE ANALYSIS			O	
6. MATRIX SPIKE			N/A	
7. SAMPLE VERIFICATION			O	
8. OTHER QC			N/A	
9. OVERALL ASSESSMENT			O	

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

NOTES: Corrected Transcription Error for Sample #3

Validated by: Kenney Lowe Date: 2/28/92

Reviewed by: [illegible] Date: 3/6/92

SDG # 40422-6 Project No. 913-1101.211

	Acceptable YES	NO
1. Holding Times	X	

Verified holding time with in 6 months and analyzed

2. Calibrations	X	

Verified Daily Reliability was Done
Verified Decay corrected reported close
reliability ~~is done and count 3~~ is based on 2σ

3. Blanks	X	

Verified blanks, ONE Contaminates
found in Th 234 at .02 will use 5x Rule
to Requalify Results

4. Laboratory Control Standard	X	

Verified 90 R with in 80-120%

5. Duplicate Analysis	X	

Verified that samples replicates are
within ± 35% RPD for Soils

6. Matrix Spike Analysis		

N/A

7. Sample Results Verification	X	

Verified sample results on
analysis report, NO Transcription
ERRORS

SDG # 40422-6 Project No. 913-1101.211

	Acceptable YES	NO
8. Other QC		
9. Field Duplicates		
10. Overall Assessment	X	

~~NO~~ CORRECT TRANSCRIPTION ERROR FOR Sample #3

Accu-Labs Research, Inc.

4663 Table Mountain Drive Golden, Colorado 80403-1650
(303) 277-9514 FAX (303) 277-9512

ANALYSIS REPORT

DATE: 02/11/92 PAGE 1

KATHY SMIT
CHEN-NORTHERN, INC.
P.O. BOX 30615
BILLINGS, MT 59107

Lab Job Number: 8734-40422-6
Date Samples Received: 10/29/91
Customer PO Number: PROJ# 913-1101

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40422-6-1	8734-40422-6-2	8734-40422-6-3	8734-40422-6-4
Sponsor Designation -	SODA N	SODA S	OUTFLOW	UP-NEAR
Date Collected -	10/25/91	10/25/91	10/25/91	10/25/91
Determinations in pCi/g (dry) unless noted				
Polonium-210 - total	0.5 ± 0.1 *	0.6 ± 0.2 *	3.3 ± 0.4 *	0.9 ± 0.2 *
Thorium-228 - total	0.3 ± 0.1 *	0.3 ± 0.1 *	0.5 ± 0.2 *	0.6 ± 0.2 *
Thorium-230 - total	1.4 ± 0.3 *	0.7 ± 0.2 *	0.9 ± 0.2 *	0.8 ± 0.2 *
Thorium-232 - total	0.3 ± 0.1 *	0.1 ± 0.1 *	0.4 ± 0.2 *	0.3 ± 0.1 *
Lead-210 @ 46 KeV	0.4 ± 0.3 *	0.5 ± 0.2 *	~~3.6~~ 1.8 ± 1.1 *	0.1 0.4 ± 0.3 *
Thorium-234 @ 63.3 KeV Uranium	0.6 ± 0.5 *	0.6 ± 0.4 *	0.0 ± 1.2 * U	0.5 ± 0.4 *
~~Thorium-234 @ 92.6 KeV~~	~~0.5 ± 0.2 *~~	~~0.5 ± 0.3 *~~	~~0.0 ± 0.7 *~~	~~0.7 ± 0.2 *~~
~~Radium-226 @ 186.0 KeV~~	~~1.1 ± 0.5 *~~	~~1.0 ± 0.5 *~~	~~2.1 ± 1.9 *~~	~~1.9 ± 0.5 *~~
~~Lead-214 @ 295.2 KeV~~	~~0.6 ± 0.2 *~~	~~0.7 ± 0.1 *~~	~~1.0 ± 0.6 *~~	~~0.7 ± 0.2 *~~
~~Lead-214 @ 352.0 KeV~~	~~0.5 ± 0.1 *~~	~~0.6 ± 0.1 *~~	~~0.9 ± 0.4 *~~	~~0.7 ± 0.1 *~~
Radium-226	0.6 ± 0.2	0.6 ± 0.2	0.8 ± 0.8	0.8 ± 0.2
~~Bismuth-214 @ 609.4 KeV~~	~~0.6 ± 0.1 *~~	~~0.6 ± 0.1 *~~	~~0.7 ± 0.5 *~~	~~0.8 ± 0.1 *~~
~~Bismuth-214 @ 1120.4 KeV~~	~~0.7 ± 0.4 *~~	~~0.6 ± 0.2 *~~	~~0.0 ± 1.3 *~~	~~0.8 ± 0.3 *~~
~~Bismuth-214 @ 1764.7 KeV~~	~~0.6 ± 0.3 *~~	~~0.5 ± 0.3 *~~	~~1.5 ± 1.0 *~~	~~0.8 ± 0.3 *~~
~~Actinium-228 @ 338 KeV~~	~~0.5 ± 0.2 *~~	~~0.4 ± 0.2 *~~	~~0.0 ± 0.7 *~~	~~1.0 ± 0.3 *~~
~~Actinium-228 @ 911 KeV~~ Radium 228	~~0.4 ± 0.2 *~~	~~0.4 ± 0.2 *~~	~~2.3 ± 0.8 *~~	~~1.0 ± 0.2 *~~
~~Actinium-228 @ 968 KeV~~	~~0.0 ± 0.2 *~~	~~0.3 ± 0.2 *~~	~~0.0 ± 1.3 *~~	~~0.9 ± 0.3 *~~
~~Lead-212 @ 238 KeV~~	~~0.3 ± 0.1 *~~	~~0.3 ± 0.1 *~~	~~0.4 ± 0.2 *~~	~~0.5 ± 0.1 *~~
~~Bismuth-212 @ 727 KeV~~	~~0.6 ± 0.4 *~~	~~0.0 ± 0.4 *~~	~~0.0 ± 2.2 *~~	~~1.1 ± 0.5 *~~
~~Thallium-208 @ 583 KeV~~	~~0.4 ± 0.1 *~~	~~0.3 ± 0.1 *~~	~~0.0 ± 0.5 *~~	~~0.6 ± 0.2 *~~
~~Uranium-235~~	~~0.0 ± 0.1 *~~	~~0.0 ± 0.1 *~~	~~0.0 ± 0.1 *~~	~~0.0 ± 0.1 *~~
K-40 @ 1460 KeV	5.4 ± 0.8 *	5.3 ± 0.8 *	8.3 ± 2.8 *	6.9 ± 0.8 *

Stet use 911 KeV values

MWA
2/17/92

40422-12

Accu-Labs Research, Inc.

ANALYSIS REPORT

DATE: 02/11/92 PAGE 2

Lab Job Number 8734-40422-6

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40422-6-5	8734-40422-6-6
Sponsor Designation -	UP-MIDDLE	UP-FAR
Date Collected -	10/25/91	10/25/91

Determinations in pCi/g (dry) unless noted

Polonium-210 - total	0.6 ± 0.2 *	0.5 ± 0.2 *
Thorium-228 - total	0.5 ± 0.2 *	0.4 ± 0.1 *
Thorium-230 - total	0.5 ± 0.2 *	0.4 ± 0.1 *
Thorium-232 - total	0.2 ± 0.1 *	0.2 ± 0.1 *
Lead-210 @ 46 KeV	0.8 ± 0.3 *	0.0 ± 0.3 *
~~Thorium-234 @ 63.3 KeV~~ Uranium	0.0 ± 0.4 * U	0.0 ± 0.3 * U
~~Thorium-234 @ 92.6 KeV~~	~~0.7 ± 0.4 *~~	~~0.3 ± 0.2 *~~
~~Radium-226 @ 186.0 KeV~~	~~1.1 ± 0.5 *~~	~~1.0 ± 0.5 *~~
~~Lead-214 @ 295.2 KeV~~	~~0.6 ± 0.1 *~~	~~0.3 ± 0.1 *~~
~~Lead-214 @ 352.0 KeV~~	~~0.8 ± 0.1 *~~	~~0.4 ± 0.1 *~~
Radium-226 →	0.6 ± 0.2	0.4 ± 0.2
~~Bismuth-214 @ 609.4 KeV~~	~~0.7 ± 0.1 *~~	~~0.3 ± 0.1 *~~
~~Bismuth-214 @ 1120.4 KeV~~	~~0.5 ± 0.3 *~~	~~0.4 ± 0.4 *~~
~~Bismuth-214 @ 1764.7 KeV~~	~~0.5 ± 0.2 *~~	~~0.6 ± 0.3 *~~
~~Actinium-228 @ 338 KeV~~	~~0.6 ± 0.2 *~~	~~0.5 ± 0.2 *~~
Actinium-228 @ 911 KeV Radium 228 →	0.6 ± 0.2 *	0.3 ± 0.2 *
~~Actinium-228 @ 968 KeV~~	~~0.6 ± 0.2 *~~	~~0.0 ± 0.2 *~~
~~Lead-212 @ 238 KeV~~	~~0.3 ± 0.1 *~~	~~0.2 ± 0.1 *~~
~~Bismuth-212 @ 727 KeV~~	~~0.0 ± 0.4 *~~	~~0.0 ± 0.4 *~~
~~Thallium-208 @ 583 KeV~~	~~0.5 ± 0.2 *~~	~~0.3 ± 0.1 *~~
~~Uranium-235~~	~~0.0 ± 0.1 *~~	~~0.0 ± 0.1 *~~
K-40 @ 1460 KeV	4.0 ± 0.6 *	3.3 ± 0.7 *

* Variability of the radioactive disintegration process (counting error) at the 95% confidence level, 1.96σ.

Note: Ra-226 @ 186 KeV was not corrected for possible U-235 interference.
Gamma spec samples allowed to ingrow for 30 days before counting.

By: Bud Summers

Bud Summers
Radiochemistry Supervisor

BS/dh

2/17/92

40422-12

RADIOCHEMICAL DATA ASSESSMENT SUMMARY

PROJECT NO. 913-1101:211 SITE Monsanto

LABORATORY ALR SAMPLES/MATRIX Slag 1

Slag 2 Slag 3 Dust 1

SDG # 40465-29 Dust 2 Dust 3

Underflow 1 Underflow 2

DATA ASSESSMENT SUMMARY

	ALPHA SCINT.	L.B. SCINT.	GAMMA SPEC.	FLUOR.
1. HOLDING TIMES			O	
2. CALIBRATIONS			O'	
3. BLANKS			O	
4. LCS			O	
5. DUPLICATE ANALYSIS			O	
6. MATRIX SPIKE			N/A	
7. SAMPLE VERIFICATION			O	
8. OTHER QC			N/A	
9. OVERALL ASSESSMENT			O	

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

NOTES:

#1 Daily Reliability is ~~Done~~ Calibrated for instrument with in Range of 2 sigma per ALR

Validated by: Kenney Irie Date: 3/2/92

Reviewed by: [illegible] Date: 3/5/92

SDG # 40465-829 Project No. 913-1101.211

	Acceptable YES	NO
1. Holding Times	X	

Verified holding time and analyzed within 6 months

2. Calibrations	X	

Verified Daily Reliability was Done
reliability is Done with in limits
of 2 sigma

3. Blanks	X	

Verified Blanks and requality sample analyte
less than 5x of Blank value

4. Laboratory Control Standard	X	

verified LCS with in control limits
of 80-120% R

5. Duplicate Analysis	X	

Verified Sample Results with in limits
of of RPD and LLD

6. Matrix Spike Analysis	X	

N/A

7. Sample Results Verification	X	

Verified sample results corrected
transcription error on form 1's

SDG # 40465-29 Project No. 913-1101-211

	Acceptable YES	NO
8. Other QC		

N/A

9. Field Duplicates		

N/A

10. Overall Assessment	X	

Data meets project DQO's and is acceptable for use

[illegible]
3/5/92

Accu-Labs Research, Inc.
4663 Table Mountain Drive Golden, Colorado 80403-1650
(303) 277-9514 FAX (303) 277-9512

ANALYSIS REPORT

DATE: 02/13/92 PAGE 1

KATHY SMIT
CHEN-NORTHERN, INC.
P.O. BOX 30615
BILLINGS, MT 59107

Lab Job Number: 8734-40465-29
Date Samples Received: 10/31/91
Customer PO Number: PROJ# 913-1101

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40465-29-1	8734-40465-29-2	8734-40465-29-3	8734-40465-29-4
Sponsor Designation -	SLAG-1	SLAG-2	SLAG-3	DUST-1
Date Collected -	10/28/91	10/28/91	10/28/91	10/28/91
Determinations in pCi/g (dry) unless noted				
Polonium-210 - total	7.0 ± 0.6 *	0.3 ± 0.4 * u	5.8 ± 0.6 *	1.0 ± 0.4 *
Thorium-228 - total	0.6 ± 0.3 *	0.3 ± 0.3 *	5.1 ± 2.9 *	0.1 ± 0.2 * u
Thorium-230 - total	46 ± 2 *	40 ± 3 *	430 ± 20 *	1.0 ± 0.3 * u
Thorium-232 - total	4.8 ± 0.8 *	0.1 ± 0.1 *	3.1 ± 2.1 *	0.1 ± 0.1 *
Lead-210 @ 46 KeV	6.6 ± 0.6 *	1.2 ± 0.3 *	6.6 ± 0.6 *	1.6 ± 0.3 *
~~Thorium-234 @ 63.3 KeV~~ Uranium	41 ± 5 *	47 ± 4 *	44 ± 5 *	1.3 ± 0.5 *
~~Thorium-234 @ 92.6 KeV~~	~~22 ± 1 *~~	~~29 ± 4 *~~	~~24 ± 1 *~~	~~0.6 ± 0.3 *~~
~~Radium-226 @ 186.0 KeV~~	~~68 ± 2 *~~	~~78 ± 2 *~~	~~73 ± 2 *~~	~~1.6 ± 0.5 *~~
~~Lead-214 @ 295.2 KeV~~	~~44 ± 1 *~~	~~56 ± 2 *~~	~~46 ± 2 *~~	~~1.1 ± 0.2 *~~
~~Lead-214 @ 352.0 KeV~~	~~46 ± 1 *~~	~~57 ± 1 *~~	~~50 ± 1 *~~	~~1.2 ± 0.1 *~~
Radium-226	43 ± 1	54 ± 2	46 ± 2	1.2 ± 0.2
~~Bismuth-214 @ 609.4 KeV~~	~~44 ± 1 *~~	~~54 ± 1 *~~	~~46 ± 1 *~~	~~1.2 ± 0.1 *~~
~~Bismuth-214 @ 1120.4 KeV~~	~~42 ± 2 *~~	~~54 ± 2 *~~	~~45 ± 2 *~~	~~1.4 ± 0.3 *~~
~~Bismuth-214 @ 1764.7 KeV~~	~~41 ± 2 *~~	~~51 ± 2 *~~	~~45 ± 2 *~~	~~1.0 ± 0.3 *~~
~~Actinium-228 @ 338 KeV~~	~~0.7 ± 0.4 *~~	~~0.9 ± 0.5 *~~	~~1.0 ± 0.4 *~~	~~0.0 ± 0.2 *~~
~~Actinium-228 @ 911 KeV~~ Radium 228	0.0 ± 0.3 *	0.0 ± 0.3 *	0.7 ± 0.3 *	0.2 ± 0.2 *
~~Actinium-228 @ 968 KeV~~	~~0.0 ± 0.6 *~~	~~0.0 ± 0.6 *~~	~~0.0 ± 0.6 *~~	~~0.0 ± 0.2 *~~
~~Lead-212 @ 238 KeV~~	~~0.0 ± 0.2 *~~	~~0.0 ± 0.2 *~~	~~0.0 ± 0.2 *~~	~~0.1 ± 0.1 *~~
~~Bismuth-212 @ 727 KeV~~	~~0.0 ± 1.0 *~~	~~0.0 ± 1.0 *~~	~~0.0 ± 1.0 *~~	~~0.0 ± 0.4 *~~
~~Thallium-208 @ 583 KeV~~	~~0.0 ± 0.2 *~~	~~0.0 ± 0.2 *~~	~~0.0 ± 0.2 *~~	~~0.2 ± 0.1 *~~
~~Uranium-235 @ 143 KeV~~	~~2.1 ± 0.4 *~~	~~2.6 ± 0.4 *~~	~~2.3 ± 0.4 *~~	~~0.0 ± 0.1 *~~
K-40 @ 1460 KeV	6.6 ± 1.4 *	6.7 ± 1.4 *	6.8 ± 1.4 *	1.6 ± 0.5 *

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Accu-Labs Research, Inc.

A N A L Y S I S R E P O R T

DATE: 02/13/92 PAGE 2

Lab Job Number 8734-40465-29

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40465-29-5	8734-40465-29-6	8734-40465-29-7	8734-40465-29-8
Sponsor Designation -	DUST-2	DUST-3	UNDERFLOW-1	UNDERFLOW-2
Date Collected -	10/28/91	10/28/91	10/28/91	10/28/91
Determinations in pCi/g (dry) unless noted				
Polonium-210 - total	48 ± 2 *	94 ± 2 *	260 ± 10 *	99 ± 5 *
Thorium-228 - total	0.4 ± 0.2 *	0.3 ± 0.2 *	0.4 ± 0.2 *	0.5 ± 0.3 *
Thorium-230 - total	33 ± 2 *	24 ± 2 *	39 ± 2 *	38 ± 2 *
Thorium-232 - total	0.4 ± 0.2 *	0.5 ± 0.3 *	0.6 ± 0.2 *	0.2 ± 0.2 *
Lead-210 @ 46 KeV	40 ± 1 *	100 ± 10 *	250 ± 10 *	260 ± 10 *
~~Thorium-234 @ 63.3 KeV~~ Uranium	35 ± 4 *	24 ± 3 *	31 ± 4 *	34 ± 4 *
~~Thorium-234 @ 92.6 KeV~~	~~17 ± 1 *~~	~~15 ± 2 *~~	~~19 ± 1 *~~	~~21 ± 3 *~~
~~Radium-226 @ 186.0 KeV~~	~~50 ± 2 *~~	~~38 ± 2 *~~	~~57 ± 2 *~~	~~51 ± 2 *~~
~~Lead-214 @ 295.2 KeV~~	~~33 ± 1 *~~	~~27 ± 1 *~~	~~36 ± 1 *~~	~~36 ± 1 *~~
~~Lead-214 @ 352.0 KeV~~	~~34 ± 1 *~~	~~27 ± 1 *~~	~~38 ± 1 *~~	~~38 ± 1 *~~
Radium 226	32 ± 1	26 ± 1	36 ± 1	35 ± 1
~~Bismuth-214 @ 609.4 KeV~~	~~32 ± 1 *~~	~~25 ± 1 *~~	~~36 ± 1 *~~	~~36 ± 1 *~~
~~Bismuth-214 @ 1120.4 KeV~~	~~32 ± 1 *~~	~~25 ± 1 *~~	~~35 ± 2 *~~	~~34 ± 1 *~~
~~Bismuth-214 @ 1764.7 KeV~~	~~30 ± 2 *~~	~~24 ± 1 *~~	~~34 ± 2 *~~	~~33 ± 1 *~~
~~Actinium-228 @ 338 KeV~~	~~0.0 ± 0.4 *~~	~~0.6 ± 0.4 *~~	~~1.0 ± 0.5 *~~	~~0.0 ± 0.4 *~~
~~Actinium-228 @ 911 KeV~~ Radium-228	0.0 ± 0.3 *	0.4 ± 0.2 *	0.6 ± 0.4 *	1.0 ± 0.4 *
~~Actinium-228 @ 968 KeV~~	~~0.0 ± 0.5 *~~	~~0.0 ± 0.4 *~~	~~0.0 ± 0.6 *~~	~~0.0 ± 0.5 *~~
~~Lead-212 @ 238 KeV~~	~~0.0 ± 0.2 *~~	~~0.0 ± 0.2 *~~	~~0.0 ± 0.2 *~~	~~0.0 ± 0.2 *~~
~~Bismuth-212 @ 727 KeV~~	~~0.0 ± 0.9 *~~	~~0.0 ± 0.7 *~~	~~0.0 ± 1.0 *~~	~~0.0 ± 0.8 *~~
~~Thallium-208 @ 583 KeV~~	~~0.0 ± 0.2 *~~	~~0.6 ± 0.2 *~~	~~0.0 ± 0.2 *~~	0.0 ± 0.2 *
~~Uranium-235 @ 143 KeV~~	~~1.5 ± 0.4 *~~	~~1.2 ± 0.2 *~~	~~1.5 ± 0.3 *~~	~~1.6 ± 0.3 *~~
K-40 @ 1460 KeV	7.2 ± 1.2 *	6.2 ± 1.0 *	9.4 ± 1.5 *	11 ± 1 *

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Accu-Labs Research, Inc.

A N A L Y S I S R E P O R T

DATE: 02/13/92 PAGE 3

Lab Job Number 8734-40465-29

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40465-29-9	8734-40465-29-10	8734-40465-29-11	8734-40465-29-12
Sponsor Designation -	UNDERFLOW-3	SLURRY-1	SLURRY-2	SLURRY-3
Date Collected -	10/28/91	10/28/91	10/28/91	10/28/91
Determinations in pCi/g (dry) unless noted				
Polonium-210 - total	120 ± 10 *	23 ± 1 *	24 ± 1 *	100 ± 10 *
Thorium-228 - total	0.4 ± 0.2 *	0.2 ± 0.2 * u	0.3 ± 0.2 *	0.6 ± 0.3 *
Thorium-230 - total	44 ± 2 *	9.1 ± 0.7 *	12 ± 1 *	19 ± 1 *
Thorium-232 - total	0.2 ± 0.1 *	0.3 ± 0.1 *	0.4 ± 0.2 *	1.6 ± 0.4 *
Lead-210 @ 46 KeV	240 ± 10 *	37 ± 1 *	29 ± 1 *	120 ± 10 *
~~Thorium-234 @ 63.3 KeV~~ Uranium	41 ± 5 *	10 ± 2 *	9.5 ± 1.7 *	15 ~~9.9~~ ± 1.6 *
~~Thorium-234 @ 92.6 KeV~~	~~21 ± 1 *~~	~~6.5 ± 1.2 *~~	~~6.1 ± 0.5 *~~	~~6.6 ± 1.2 *~~
~~Radium-226 @ 186.0 KeV~~	~~67 ± 2 *~~	~~15 ± 1 *~~	~~18 ± 1 *~~	~~16 ± 1 *~~
~~Lead-214 @ 295.2 KeV~~	~~42 ± 1 *~~	~~11 ± 1 *~~	~~12 ± 1 *~~	~~18 ± 1 *~~
~~Lead-214 @ 352.0 KeV~~	~~44 ± 1 *~~	~~11 ± 1 *~~	~~12 ± 1 *~~	~~18 ± 1 *~~
Radium-226	42 ± 1	10 ± 1	12 ± 1	17 ± 1
~~Bismuth-214 @ 609.4 KeV~~	~~42 ± 1 *~~	~~10 ± 1 *~~	~~12 ± 1 *~~	~~17 ± 1 *~~
~~Bismuth-214 @ 1120.4 KeV~~	~~41 ± 2 *~~	~~10 ± 1 *~~	~~11 ± 1 *~~	~~17 ± 1 *~~
~~Bismuth-214 @ 1764.7 KeV~~	~~39 ± 2 *~~	~~9.5 ± 0.7 *~~	~~11 ± 1 *~~	~~17 ± 1 *~~
~~Actinium-228 @ 338 KeV~~	~~1.0 ± 0.4 *~~	~~0.6 ± 0.3 *~~	~~0.0 ± 0.3 *~~	~~0.6 ± 0.3 *~~
~~Actinium-228 @ 911 KeV~~ Radium-228	0.4 ± 0.3 *	0.3 ± 0.2 *	0.0 ± 0.2 *	0.5 ± 0.3 *
~~Actinium-228 @ 968 KeV~~	~~0.0 ± 0.6 *~~	~~0.0 ± 0.3 *~~	~~0.5 ± 0.4 *~~	~~0.0 ± 0.4 *~~
~~Lead-212 @ 238 KeV~~	~~0.0 ± 0.2 *~~	~~0.3 ± 0.1 *~~	~~0.3 ± 0.1 *~~	~~0.4 ± 0.1 *~~
~~Bismuth-212 @ 727 KeV~~	~~0.0 ± 1.0 *~~	~~0.0 ± 0.6 *~~	~~0.0 ± 0.6 *~~	~~0.0 ± 0.7 *~~
~~Thallium-208 @ 583 KeV~~	~~0.5 ± 0.2 *~~	~~0.4 ± 0.2 *~~	~~0.0 ± 0.6 *~~	~~0.6 ± 0.2 *~~
~~Uranium-235 @ 143 KeV~~	~~2.1 ± 0.3 *~~	~~0.5 ± 0.2 *~~	~~0.7 ± 0.2 *~~	~~0.8 ± 0.3 *~~
K-40 @ 1460 KeV	9.5 ± 1.5 *	3.4 ± 0.8 *	4.9 ± 0.9 *	9.8 ± 1.2 *

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40465-12

Accu-Labs Research, Inc.

A N A L Y S I S R E P O R T

DATE: 02/13/92 PAGE 4

Lab Job Number 8734-40465-29

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40465-29-13	8734-40465-29-14	8734-40465-29-15	8734-40465-29-16
Sponsor Designation -	S2-9A	S2-9B	S2-11A	S2-11B
Date Collected -	10/28/91	10/28/91	10/28/91	10/28/91
Determinations in pCi/g (dry) unless noted				
Polonium-210 - total	15 ± 1 *	9.8 ± 0.8 *	45 ± 3 *	8.3 ± 0.7 *
Thorium-228 - total	1.0 ± 0.3 *	1.3 ± 0.3 *	0.4 ± 0.4 *	1.0 ± 0.3 *
Thorium-230 - total	3.5 ± 0.5 *	3.0 ± 0.4 *	18 ± 2 *	6.6 ± 0.6 *
Thorium-232 - total	1.3 ± 0.3 *	1.4 ± 0.3 *	0.4 ± 0.4 *	1.0 ± 0.2 *
Lead-210 @ 46 KeV	12 ± 1 *	10 ± 1 *	41 ± 1 *	5.5 ± 0.5 *
~~Thorium-234 @ 63.3 KeV~~ Uranium	3.6 ± 0.8 *	3.0 ± 0.6 *	16 ± 2 *	1.7 ± 0.6 *
~~Thorium-234 @ 92.6 KeV~~	~~3.3 ± 0.8 *~~	~~1.3 ± 0.4 *~~	~~11 ± 2 *~~	~~1.3 ± 0.3 *~~
~~Radium-226 @ 186.0 KeV~~	~~5.8 ± 0.7 *~~	~~5.6 ± 0.7 *~~	~~24 ± 1 *~~	~~3.0 ± 0.6 *~~
~~Lead-214 @ 295.2 KeV~~	~~3.4 ± 0.2 *~~	~~3.4 ± 0.3 *~~	~~18 ± 1 *~~	~~1.9 ± 0.3 *~~
~~Lead-214 @ 352.0 KeV~~	~~3.6 ± 0.2 *~~	~~3.2 ± 0.2 *~~	~~18 ± 1 *~~	~~1.9 ± 0.2 *~~
Radium-226	3.4 ± 0.3	3.2 ± 0.4	17 ± 1	1.8 ± 0.3
~~Bismuth-214 @ 609.4 KeV~~	~~3.6 ± 0.2 *~~	~~3.3 ± 0.2 *~~	~~18 ± 1 *~~	~~1.8 ± 0.2 *~~
~~Bismuth-214 @ 1120.4 KeV~~	~~3.3 ± 0.5 *~~	~~3.2 ± 0.5 *~~	~~17 ± 1 *~~	~~1.7 ± 0.4 *~~
~~Bismuth-214 @ 1764.7 KeV~~	~~2.9 ± 0.4 *~~	~~2.9 ± 0.6 *~~	~~16 ± 1 *~~	~~1.8 ± 0.3 *~~
~~Actinium-228 @ 338 KeV~~	~~1.4 ± 0.3 *~~	~~1.4 ± 0.3 *~~	~~1.2 ± 0.4 *~~	~~1.4 ± 0.3 *~~
~~Actinium-228 @ 911 KeV~~ Radium-228	1.0 ± 0.2 *	1.5 ± 0.2 *	0.4 ± 0.3 *	1.1 ± 0.2 *
~~Actinium-228 @ 968 KeV~~	~~1.5 ± 0.4 *~~	~~1.7 ± 0.4 *~~	~~1.0 ± 0.4 *~~	~~0.9 ± 0.4 *~~
~~Lead-212 @ 238 KeV~~	~~1.2 ± 0.1 *~~	~~1.2 ± 0.1 *~~	~~0.6 ± 0.1 *~~	~~1.1 ± 0.1 *~~
~~Bismuth-212 @ 727 KeV~~	~~1.4 ± 0.6 *~~	~~2.1 ± 0.6 *~~	~~0.0 ± 0.7 *~~	~~1.9 ± 0.7 *~~
~~Thallium-208 @ 583 KeV~~	~~1.2 ± 0.2 *~~	~~1.1 ± 0.2 *~~	~~0.4 ± 0.2 *~~	~~1.0 ± 0.2 *~~
~~Uranium-235 @ 143 KeV~~	~~0.0 ± 0.1 *~~	~~0.3 ± 0.1 *~~	~~1.0 ± 0.2 *~~	~~0.0 ± 0.1 *~~
K-40 @ 1460 KeV	18 ± 1 *	18 ± 1 *	10 ± 1 *	17 ± 1 *

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2/17/92

40465-12

Accu-Labs Research, Inc.

A N A L Y S I S R E P O R T

DATE: 02/13/92 PAGE 5

Lab Job Number 8734-40465-29

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40465-29-17	8734-40465-29-18	8734-40465-29-19	8734-40465-29-20
Sponsor Designation -	S2-6A	S2-6B	S2-5A	S2-5B
Date Collected -	10/28/91	10/28/91	10/28/91	10/28/91
Determinations in pCi/g (dry) unless noted				
Polonium-210 - total	6.5 ± 0.9 *	2.5 ± 0.5 *	1.6 ± 0.4 *	2.5 ± 0.5 *
Thorium-228 - total	1.1 ± 0.3 *	1.1 ± 0.3 *	1.4 ± 0.3 *	1.5 ± 0.4 *
Thorium-230 - total	1.5 ± 0.3 *	1.5 ± 0.3 *	1.8 ± 0.3 *	1.6 ± 0.4 *
Thorium-232 - total	1.1 ± 0.2 *	1.1 ± 0.3 *	1.1 ± 0.2 *	0.0 ± 0.1 *
Lead-210 @ 46 KeV	10 ± 1 *	1.8 ± 0.4 *	2.6 ± 0.4 *	2.6 ± 0.4 *
~~Thorium-234 @ 63.3 KeV~~ Uranium	4.8 ± 0.9 *	1.5 ± 0.6 *	1.4 ± 0.7 *	2.0 ± 0.7 *
~~Thorium-234 @ 92.6 KeV~~	~~4.0 ± 0.9 *~~	~~1.4 ± 0.3 *~~	~~2.2 ± 0.7 *~~	~~1.4 ± 0.3 *~~
~~Radium-226 @ 186.0 KeV~~	~~7.5 ± 0.7 *~~	~~2.4 ± 0.7 *~~	~~2.3 ± 0.6 *~~	~~2.7 ± 0.7 *~~
~~Lead-214 @ 295.3 KeV~~	~~5.5 ± 0.4 *~~	~~1.4 ± 0.2 *~~	~~1.7 ± 0.2 *~~	~~1.4 ± 0.2 *~~
~~Lead-214 @ 352.0 KeV~~	~~5.5 ± 0.4 *~~	~~1.4 ± 0.1 *~~	~~1.5 ± 0.1 *~~	~~1.6 ± 0.1 *~~
Radium-226 →	5.3 ± 0.4	1.4 ± 0.3	1.5 ± 0.2	1.4 ± 0.2
~~Bismuth-214 @ 609.4 KeV~~	~~5.5 ± 0.2 *~~	~~1.4 ± 0.2 *~~	~~1.5 ± 0.2 *~~	~~1.4 ± 0.1 *~~
~~Bismuth-214 @ 1120.4 KeV~~	~~5.0 ± 0.2 *~~	~~1.5 ± 0.5 *~~	~~1.5 ± 0.4 *~~	~~1.6 ± 0.4 *~~
~~Bismuth-214 @ 1764.7 KeV~~	~~5.1 ± 0.6 *~~	~~1.4 ± 0.4 *~~	~~1.5 ± 0.3 *~~	~~1.1 ± 0.4 *~~
~~Actinium-228 @ 338 KeV~~	~~1.1 ± 0.3 *~~	~~1.4 ± 0.2 *~~	~~1.6 ± 0.3 *~~	~~1.6 ± 0.3 *~~
~~Actinium-228 @ 911 KeV~~ Radium-228	1.2 ± 0.2 *	1.5 ± 0.3 *	1.4 ± 0.2 *	1.3 ± 0.3 *
~~Actinium-228 @ 968 KeV~~	~~1.0 ± 0.3 *~~	~~1.3 ± 0.3 *~~	~~1.6 ± 0.4 *~~	~~1.4 ± 0.4 *~~
~~Lead-212 @ 238 KeV~~	~~1.2 ± 0.1 *~~	~~1.0 ± 0.1 *~~	~~1.1 ± 0.1 *~~	~~1.0 ± 0.1 *~~
~~Bismuth-212 @ 727 KeV~~	~~1.2 ± 0.5 *~~	~~1.0 ± 0.0 *~~	~~1.3 ± 0.6 *~~	~~1.0 ± 0.0 *~~
~~Thallium-208 @ 583 KeV~~	~~1.1 ± 0.2 *~~	~~1.2 ± 0.2 *~~	~~1.3 ± 0.2 *~~	~~1.2 ± 0.2 *~~
~~Uranium-235 @ 143 KeV~~	~~0.2 ± 0.2 *~~	~~0.0 ± 0.1 *~~	~~0.2 ± 0.1 *~~	~~0.1 ± 0.1 *~~
K-40 @ 1460 KeV	17 ± 1 *	18 ± 1 *	19 ± 1 *	19 ± 1 *

2/17/92

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A N A L Y S I S R E P O R T

DATE: 02/13/92 PAGE 6

Lab Job Number 8734-40465-29

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40465-29-21	8734-40465-29-22	8734-40465-29-23	8734-40465-29-24
Sponsor Designation -	S2-3A	S2-3B	BACK-1A	BACK-1B
Date Collected -	10/28/91	10/28/91	10/28/91	10/28/91
Determinations in pCi/g (dry) unless noted				
Polonium-210 - total	23 ± 1 *	5.3 ± 0.9 *	2.0 ± 0.5 *	2.2 ± 0.5 *
Thorium-228 - total	0.7 ± 0.3 *	1.0 ± 0.3 *	1.6 ± 0.4 *	1.4 ± 0.3 *
Thorium-230 - total	16 ± 1 *	3.3 ± 0.5 *	1.4 ± 0.4 *	1.5 ± 0.3 *
Thorium-232 - total	0.7 ± 0.3 *	1.3 ± 0.3 *	1.7 ± 0.4 *	1.2 ± 0.3 *
Lead-210 @ 46 KeV	24 ± 1 *	4.6 ± 0.4 *	2.0 ± 0.4 *	2.0 ± 0.3 *
~~Thorium-234 @ 63.3 KeV~~ Uranium	10 ± 2 *	2.6 ± 0.7 *	1.4 ± 0.9 *	0.0 ± 0.5 *
~~Thorium-234 @ 92.6 KeV~~	~~7.6 ± 1.4 *~~	~~2.5 ± 0.7 *~~	~~1.1 ± 0.3 *~~	~~1.5 ± 0.6 *~~
~~Radium-226 @ 186.0 KeV~~	~~18 ± 1 *~~	~~4.7 ± 0.7 *~~	~~2.2 ± 0.6 *~~	~~1.9 ± 0.6 *~~
~~Lead-214 @ 295.2 KeV~~	~~13 ± 1 *~~	~~3.1 ± 0.2 *~~	~~1.3 ± 0.2 *~~	~~1.3 ± 0.2 *~~
~~Lead-214 @ 352.0 KeV~~	~~13 ± 1 *~~	~~2.9 ± 0.2 *~~	~~1.3 ± 0.1 *~~	~~1.3 ± 0.1 *~~
Radium-226 →	12 ± 1	2.9 ± 0.3	1.3 ± 0.3	1.3 ± 0.2
~~Bismuth-214 @ 609.4 KeV~~	~~12 ± 1 *~~	~~3.0 ± 0.2 *~~	~~1.3 ± 0.2 *~~	~~1.3 ± 0.1 *~~
~~Bismuth-214 @ 1120.4 KeV~~	~~12 ± 1 *~~	~~2.9 ± 0.4 *~~	~~1.1 ± 0.4 *~~	~~1.4 ± 0.4 *~~
~~Bismuth-214 @ 1764.7 KeV~~	~~11 ± 1 *~~	~~2.6 ± 0.4 *~~	~~1.3 ± 0.4 *~~	~~1.4 ± 0.3 *~~
~~Actinium-228 @ 338 KeV~~	~~0.7 ± 0.4 *~~	~~1.0 ± 0.3 *~~	~~1.4 ± 0.3 *~~	~~1.3 ± 0.3 *~~
~~Actinium-228 @ 911 KeV~~ Radium-228	0.7 ± 0.2 *	1.2 ± 0.2 *	1.4 ± 0.2 *	1.5 ± 0.2 *
~~Actinium-228 @ 968 KeV~~	~~0.6 ± 0.5 *~~	~~1.2 ± 0.3 *~~	~~1.3 ± 0.3 *~~	~~1.4 ± 0.4 *~~
~~Lead-212 @ 238 KeV~~	~~0.7 ± 0.1 *~~	~~0.8 ± 0.1 *~~	~~1.0 ± 0.1 *~~	~~1.2 ± 0.1 *~~
~~Bismuth-212 @ 727 KeV~~	~~0.0 ± 0.6 *~~	~~2.0 ± 0.6 *~~	~~2.0 ± 0.8 *~~	~~2.2 ± 0.7 *~~
~~Thallium-208 @ 583 KeV~~	~~0.7 ± 0.2 *~~	~~1.0 ± 0.2 *~~	~~1.3 ± 0.2 *~~	~~1.3 ± 0.2 *~~
~~Uranium-235 @ 143 KeV~~	~~0.6 ± 0.2 *~~	~~0.2 ± 0.1 *~~	~~0.0 ± 0.1 *~~	~~0.0 ± 0.1 *~~
K-40 @ 1460 KeV	12 ± 1 *	17 ± 1 *	20 ± 1 *	19 ± 1 *

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Accu-Labs Research, Inc.

A N A L Y S I S R E P O R T

DATE: 02/13/92 PAGE 7

Lab Job Number 8734-40465-29

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40465-29-25	8734-40465-29-26	8734-40465-29-27	8734-40465-29-28
Sponsor Designation -	BACK-2A	BACK-2B	BACK-3A	BACK-3B
Date Collected -	10/28/91	10/28/91	10/28/91	10/28/91
Determinations in pCi/g (dry) unless noted				
Polonium-210 - total	2.8 ± 0.4 *	1.8 ± 0.5 *	3.8 ± 0.7 *	1.4 ± 0.3 *
Thorium-228 - total	1.4 ± 0.3 *	1.3 ± 0.3 *	0.9 ± 0.2 *	0.9 ± 0.2 *
Thorium-230 - total	1.5 ± 0.3 *	1.2 ± 0.3 *	0.8 ± 0.3 *	0.9 ± 0.2 *
Thorium-232 - total	1.0 ± 0.3 *	1.6 ± 0.3 *	0.9 ± 0.2 *	1.0 ± 0.2 *
Lead-210 @ 46 KeV	2.7 ± 0.4 *	1.6 ± 0.3 *	3.0 ± 0.4 *	1.2 ± 0.3 *
~~Thorium-234 @ 63.3 KeV~~ Uranium	1.1 ± 0.5 *	1.1 ± 0.5 *	0.9 ± 0.5 *	1.2 ± 0.6 *
~~Thorium-234 @ 92.6 KeV~~	~~0.6 ± 0.3 *~~	~~1.6 ± 0.6 *~~	~~1.1 ± 0.3 *~~	~~1.7 ± 0.3 *~~
~~Radium-226 @ 186.0 KeV~~	~~1.6 ± 0.6 *~~	~~2.0 ± 0.5 *~~	~~1.4 ± 0.6 *~~	~~1.8 ± 0.6 *~~
~~Lead-214 @ 295.2 KeV~~	~~1.2 ± 0.3 *~~	~~1.2 ± 0.2 *~~	~~1.0 ± 0.2 *~~	~~0.9 ± 0.2 *~~
~~Lead-214 @ 352.0 KeV~~	~~1.1 ± 0.1 *~~	~~1.2 ± 0.1 *~~	~~1.0 ± 0.1 *~~	~~1.1 ± 0.1 *~~
Radium-226 →	1.1 ± 0.3	1.2 ± 0.2	0.8 ± 0.2	1.0 ± 0.2
~~Bismuth-214 @ 609.4 KeV~~	~~1.1 ± 0.1 *~~	~~1.2 ± 0.1 *~~	~~1.0 ± 0.2 *~~	~~1.0 ± 0.1 *~~
~~Bismuth-214 @ 1120.4 KeV~~	~~1.1 ± 0.5 *~~	~~1.3 ± 0.4 *~~	~~0.0 ± 0.3 *~~	~~1.1 ± 0.4 *~~
~~Bismuth-214 @ 1764.7 KeV~~	~~0.8 ± 0.4 *~~	~~1.2 ± 0.3 *~~	~~0.8 ± 0.4 *~~	~~0.9 ± 0.3 *~~
~~Actinium-228 @ 338 KeV~~	~~1.4 ± 0.3 *~~	~~1.2 ± 0.3 *~~	~~1.0 ± 0.2 *~~	~~1.0 ± 0.3 *~~
~~Actinium-228 @ 911 KeV~~ Radium-228	1.4 ± 0.2 *	1.4 ± 0.2 *	1.1 ± 0.2 *	1.2 ± 0.2 *
~~Actinium-228 @ 968 KeV~~	~~1.0 ± 0.3 *~~	~~1.7 ± 0.4 *~~	~~1.1 ± 0.3 *~~	~~1.3 ± 0.4 *~~
~~Lead-212 @ 238 KeV~~	~~1.0 ± 0.1 *~~	~~1.1 ± 0.1 *~~	~~0.8 ± 0.1 *~~	~~0.9 ± 0.1 *~~
~~Bismuth-212 @ 727 KeV~~	~~1.4 ± 0.6 *~~	~~2.1 ± 0.7 *~~	~~1.6 ± 0.7 *~~	~~0.0 ± 0.5 *~~
~~Thallium-208 @ 583 KeV~~	~~1.4 ± 0.2 *~~	~~1.2 ± 0.2 *~~	~~1.1 ± 0.2 *~~	~~1.2 ± 0.2 *~~
~~Uranium-235 @ 143 KeV~~	~~0.0 ± 0.1 *~~	~~0.0 ± 0.1 *~~	~~0.0 ± 0.1 *~~	~~0.0 ± 0.1 *~~
K-40 @ 1460 KeV	18 ± 1 *	19 ± 1 *	14 ± 1 *	15 ± 1 *

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A N A L Y S I S R E P O R T

DATE: 02/13/92 PAGE 8

Lab Job Number 8734-40465-29

These samples to be disposed of 30 days after the date of this report.

ALR Designation -	8734-40465-29-29
Sponsor Designation -	BACK-3C
Date Collected -	10/28/91

Determinations in pCi/g (dry) unless noted

Polonium-210 - total	1.0 ± 0.2 *
Thorium-228 - total	0.9 ± 0.3 *
Thorium-230 - total	0.8 ± 0.3 *
Thorium-232 - total	1.0 ± 0.3 *
Lead-210 @ 46 KeV	1.1 ± 0.3 *
~~Thorium-234 @ 63.3 KeV~~ Uranium	0.8 ± 0.5 *
~~Thorium-234 @ 92.6 KeV~~	~~0.5 ± 0.3 *~~
~~Radium-226 @ 186.0 KeV~~	~~0.9 ± 0.6 *~~
~~Lead-214 @ 295.2 KeV~~	~~1.0 ± 0.2 *~~
~~Lead-214 @ 352.0 KeV~~	~~1.1 ± 0.1 *~~
Radium-226	0.9 ± 0.2
~~Bismuth-214 @ 609.4 KeV~~	~~0.9 ± 0.1 *~~
~~Bismuth-214 @ 1120.4 KeV~~	~~0.9 ± 0.4 *~~
~~Bismuth-214 @ 1764.7 KeV~~	~~0.0 ± 0.3 *~~
~~Actinium-228 @ 338 KeV~~	~~1.2 ± 0.2 *~~
~~Actinium-228 @ 911 KeV~~ Radium-228	1.0 ± 0.2 *
~~Actinium-228 @ 968 KeV~~	~~0.7 ± 0.4 *~~
~~Lead-212 @ 238 KeV~~	~~0.0 ± 0.1 *~~
~~Bismuth-212 @ 727 KeV~~	~~1.5 ± 0.6 *~~
~~Thallium-208 @ 583 KeV~~	~~1.0 ± 0.2 *~~
~~Uranium-235 @ 143 KeV~~	~~0.0 ± 0.1 *~~
K-40 @ 1460 KeV	15 ± 1 *

* Variability of the radioactive disintegration process (counting error) at the 95% confidence level, 1.96σ.

By: Bud Summers

Bud Summers
Radiochemistry Supervisor

BS/ep

2/17/92

40465-12

APPENDIX S

ATTACHMENT 5

SPLIT SAMPLE CHEMICAL AND RADIOCHEMICAL DATA ASSESSMENT SUMMARY

INORGANIC DATA ASSESSMENT SUMMARY

PROJECT NO. 913-1101-211 SITE Monsanto

LABORATORY Core SAMPLES/MATRIX 3 waters, DOC-S, TW-18, TW-21 (Soil S-11B-S

SDG # 912524, 912523, 912489, 912500

DATA ASSESSMENT SUMMARY

	ICP	AA	HG	~~CYANIDE~~ Wet Chem.
1. HOLDING TIMES		O		O
2. CALIBRATIONS		X		X
3. BLANKS		O		O
4. ICS				
5. LCS		O		O
6. DUPLICATE ANALYSIS		O		O
7. MATRIX SPIKE		O		O
8. MSA		N/A		
9. SERIAL DILUTION				
10. SAMPLE VERIFICATION		X		X
11. OTHER QC		X		X
12. OVERALL ASSESSMENT		O		O

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

NOTES: ICP or GFAA not used.
X- Raw data not provided.

Validated by: [signature] Date: 3/7/92

Reviewed by: _____ Date: _____

SDG # 912524,23,89,2500 Project No. 913-1101-211

	Acceptable YES	NO
1. Holding Times	✓	

Analyses completed in holding times.

2. Calibrations		✓

Raw calibration data not provided

3. Blanks	✓	

Method blanks analyzed where appropriate

4. ICP Interference Check Sample (ICS)		✓

ICP not performed

5. Laboratory Control Sample (LCS)	✓	

LCS for metals ok

6. Duplicate Sample Analysis	✓	

Duplicate results ok.

7. Matrix Spike Sample Analysis	✓	

Spikes conducted for metals and %R ok.

SDG # 912524, 23, 89, 2500 Project No. 913-1101-211

	Acceptable YES	Acceptable NO
8. Furnace Atomic Absorption QC		✓

GFAA not conducted

9. ICP Serial Dilution		✓

ICP technique not used

10. Sample Result Verification		✓

No raw data provided.

11. Field Duplicates		✓

N/A not conducted.

12. Overall Assessment	✓	

Analyses conducted using standard methods. Results may not be comparable to ICP/GFAA methods.

Work plan detection limits not met for most of metals since flame AA was employed.

RADIOCHEMICAL DATA ASSESSMENT SUMMARY

PROJECT NO. 913-1101.211 SITE Monsanto

LABORATORY Core SAMPLES/MATRIX 3 waters DOC-S; TW-18; TW-21 1 Soil S-116-S

SDG # 912524, 23, 89, 2500

DATA ASSESSMENT SUMMARY

	ALPHA SCINT.	L.B. SCINT.	GAMMA SPEC.	FLUOR.
1. HOLDING TIMES	O	O		O
2. CALIBRATIONS	X	X		~~X~~ O X
3. BLANKS	X	X		X
4. LCS	X[1]	X		O
5. DUPLICATE ANALYSIS	O	O		O
6. MATRIX SPIKE	X[2]	X		X
7. SAMPLE VERIFICATION	X	X		X
8. OTHER QC	X	X		X
9. OVERALL ASSESSMENT	O	O		X

[illegible] 3/7/92

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

NOTES: No raw data provided; only duplicates reported for ~~Ra~~ Rn 222, 226 & Alpha (also LCS and spike).

X- Data not provided
X[1]- Alpha LCS acceptable
X[2]- Alpha Spike acceptable.

Validated by: [illegible] Date: 3/7/92

Reviewed by: Kenny [illegible] Date: 4/17/92

SDG # 912524, 23, 89, 2500 Project No. 913-1101-211

	Acceptable YES	NO
1. Holding Times	✓	

Analyses completed within holding time

2. Calibrations		✓

no data provided

3. Blanks		✓

no data provided

4. Laboratory Control Standard		✓

no data provided
LCS for alpha ok

5. Duplicate Analysis	✓	

Duplicate results for RN-222, 226 and alpha

6. Matrix Spike Analysis		✓

no data provided
Spike for alpha ok

7. Sample Results Verification		✓

no raw data provided

SDG # 912524,23,89,500 Project No. 913-1101-211

	Acceptable YES	Acceptable NO
8. Other QC		✓

Not applicable

9. Field Duplicates		✓

not applicable

10. Overall Assessment		✓

No raw data provided, however results are comparable to 1° lab results.

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CORE LABORATORIES

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A N A L Y T I C A L R E P O R T

Job Number: 912524
Prepared For:

GOLDER ASSOCIATES
KENT ANGELOS
REDMOND
REDMOND, WA

Date: 11/27/91

Signature

Date: 12/7/91

Name:

Title: Lab Supervisor

Core Laboratories, Inc.
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Casper, WY 82601

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CORE LABORATORIES

LABORATORY TESTS RESULTS
11/27/91

JOB NUMBER: 912524 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

CLIENT I.D.....: 913-1101 MONSANTO/SODA SPRINGS
DATE SAMPLED.....: 10/25/91
TIME SAMPLED.....: 16:30
WORK DESCRIPTION...: DOC-S

LABORATORY I.D...: 912524-0001
DATE RECEIVED....: 10/30/91
TIME RECEIVED....: 15:30
REMARKS.....: WATER

TEST DESCRIPTION	FINAL RESULT	DETECTION LIMIT	UNITS OF MEASURE	TEST METHOD	DATE	TECHNICIAN
Radon 222	205	1	pCi/l		11/14/91	DF
Radon 222 error, +/-	168		pCi/l		11/14/91	DF
Radon 222 LLD	272		pCi/l		11/14/91	DF
Gross Alpha, total	4.1		pCi/l	EPA 900.0	11/27/91	DF
Gross Alpha, total, error, +/-	11.1		pCi/l		11/27/91	DF
Gross Alpha, total, LLD	17.7		pCi/l		11/27/91	DF
Radium 226, total	0.3		pCi/l	EPA 903.1	11/25/91	DF
Radium 226, total, error, +/-	0.3		pCi/l		11/25/91	DF
Radium 226, total, LLD	0.2		pCi/l		11/25/91	DF
Radium 228, total	ND		pCi/l	EPA 904.0	11/08/91	DF
Radium 228, total, error, +/-	4.7		pCi/l		11/08/91	DF
Radium 228, total, LLD	8.3		pCi/l		11/08/91	DF
Conductivity	1430	1	umho/cm @77F	120.1 (1)	11/11/91	JL
pH	7.30	0.01	pH units	150.1 (1)	10/30/91	JL
Total Dissolved Solids (TDS)	910	10	mg/l	160.1 (1)	11/11/91	JL
Bicarbonate (HCO3), dissolved	1000	5	mg/l	310.1 (1)	10/31/91	JL
Carbonate (CO3), dissolved	<1	1	mg/l	310.1 (1)	10/31/91	JL
Hydroxide (OH), dissolved	<1	1	mg/l	310.1 (1)	10/31/91	JL
Sulfate (SO4), dissolved	55	2	mg/l	375.2 (1)	10/23/91	JL
Chloride (Cl), dissolved	11	0.5	mg/l	325.1 (1)	10/25/91	JL
Fluoride (F), dissolved	0.4	0.1	mg/l	340.2 (1)	11/21/91	CP
Nitrate/Nitrite (as N), diss.	<0.1	0.1	mg/l	352.1+354.1 (1)	11/06/91	CP
Phosphorus, Total, as P, diss.	0.33	0.03	mg/l	365.2 (1)	11/06/91	CP

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CORE LABORATORIES

LABORATORY TESTS RESULTS
11/27/91

JOB NUMBER: 912524 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

CLIENT I.D.....: 913-1101 MONSANTO/SODA SPRINGS
DATE SAMPLED.....: 10/25/91
TIME SAMPLED.....: 16:30
WORK DESCRIPTION...: DOC-S

LABORATORY I.D....: 912524-0001
DATE RECEIVED....: 10/30/91
TIME RECEIVED....: 15:30
REMARKS.....: WATER

TEST DESCRIPTION	FINAL RESULT	DETECTION LIMIT	UNITS OF MEASURE	TEST METHOD	DATE	TECHNICIAN
Ammonia (NH3-N), total	0.4	0.1	mg/l	350.3 (1)	11/13/91	CP
Calcium (Ca), dissolved	120	1	mg/l	215.1 (1)	11/19/91	CP
Magnesium (Mg), dissolved	138	0.1	mg/l	242.1 (1)	11/19/91	CP
Potassium (K), dissolved	11.2	0.5	mg/l	258.1 (1)	11/19/91	CP
Sodium (Na), dissolved	30	10	mg/l	273.1 (1)	11/19/91	CP
Aluminum (Al), total	0.2	0.1	mg/l	3010/7020 (2)	11/15/91	CP
Arsenic (As), total	<0.002	0.002	mg/l	7061 (2)	11/07/91	TS
Beryllium (Be), total	<0.01	0.01	mg/l	3010/7090 (2)	11/18/91	CP
Cadmium (Cd), total	0.01	0.01	mg/l	3010/7130 (2)	10/31/91	CP
Chromium (Cr), total	0.07	0.05	mg/l	3010/7190 (2)	11/04/91	CP
Copper (Cu), total	<0.01	0.01	mg/l	3010/7210 (2)	10/31/91	CP
Iron (Fe), total	8.38	0.05	mg/l	3010/7380 (2)	11/15/91	CP
Lead (Pb), total	0.07	0.05	mg/l	3010/7420 (2)	10/31/91	CP
Manganese (Mn), total	0.33	0.05	mg/l	3010/7460 (2)	11/04/91	CP
Nickel (Ni), total	0.08	0.05	mg/l	3010/7520 (2)	10/31/91	CP
Selenium (Se), total	<0.001	0.001	mg/l	7741 (2)	11/07/91	TS
Silver (Ag), total	<0.05	0.05	mg/l	3010/7760 (2)	11/04/91	CP
Uranium (U), total	0.001	0.001	mg/l	EPA 908.1	11/23/91	DF
Vanadium (V), total	0.25	0.05	mg/l	3010/7910 (2)	11/04/91	CP
Zinc (Zn), total	<0.1	0.1	mg/l	3010/7950 (2)	11/15/91	CP

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(307) 235-5741

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CORE LABORATORIES

QUALITY ASSURANCE REPORT
11/27/91

JOB NUMBER: 912524 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Chloride (Cl), dissolved REPORTING LIMIT/DF: 0.5 UNITS:mg/l				DATE/TIME ANALYZED:10/25/91 11:38 METHOD REFERENCE :325.3 (1)					QC BATCH NUMBER:117219 TECHNICIAN:JL	
SPIKE	ANALYTICAL	912445-6	2050					1550	500	100
DUPLICATE	ANALYTICAL	912436-1	1380	1380	0					
PARAMETER:Carbonate (CO3), dissolved REPORTING LIMIT/DF: 1 UNITS:mg/l				DATE/TIME ANALYZED:10/31/91 14:15 METHOD REFERENCE :310.1 (1)					QC BATCH NUMBER:117384 TECHNICIAN:JL	
DUPLICATE	ANALYTICAL	912395-1	<1	<1	NC					
PARAMETER:Bicarbonate (HCO3), dissolved REPORTING LIMIT/DF: 5 UNITS:mg/l				DATE/TIME ANALYZED:10/31/91 14:16 METHOD REFERENCE :310.1 (1)					QC BATCH NUMBER:117385 TECHNICIAN:JL	
DUPLICATE	ANALYTICAL	912395-1	317	317	0					
PARAMETER:Hydroxide (OH), dissolved REPORTING LIMIT/DF: 1 UNITS:mg/l				DATE/TIME ANALYZED:10/31/91 14:18 METHOD REFERENCE :310.1 (1)					QC BATCH NUMBER:117386 TECHNICIAN:JL	
[illegible]LICATE	ANALYTICAL	912395-1	<1	<1	NC					
PARAMETER:Nickel (Ni), total REPORTING LIMIT/DF: 0.05 UNITS:mg/l				DATE/TIME ANALYZED:10/31/91 10:28 METHOD REFERENCE :3010/7520 (2)					QC BATCH NUMBER:117403 TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	DIGESTION	DBLANK	<0.05							
STANDARD	ICV	ICAP-19	1.01			1.00	101			
STANDARD	CCV	ICAP-19	0.99			1.00	99			
STANDARD	CCV	ICAP-19	1.02			1.00	102			
SPIKE	ANALYTICAL	912523-1	1.01					0.07	1.00	94
DUPLICATE	DIGESTION	912523-1	<0.05	<0.05	NC					
PARAMETER:Cadmium (Cd), total REPORTING LIMIT/DF: 0.01 UNITS:mg/l				DATE/TIME ANALYZED:10/31/91 10:46 METHOD REFERENCE :3010/7130 (2)					QC BATCH NUMBER:117406 TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.01							
BLANK	CALIBRATE	CCB	0.01							
BLANK	CALIBRATE	CCB	0.02							
BLANK	DIGESTION	DBLANK	0.01							
STANDARD	ICV	ICAP-19	0.97			1.00	97			
STANDARD	CCV	ICAP-19	0.98			1.00	98			
STANDARD	CCV	ICAP-19	0.96			1.00	96			
SPIKE	ANALYTICAL	912494-1	0.96					0.02	1.00	94
SPIKE	ANALYTICAL	912523-1	0.96					0.01	1.00	95
DUPLICATE	DIGESTION	912494-1	0.02	0.02	0.00					
DUPLICATE	DIGESTION	912523-1	0.01	0.01	0.00					

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QUALITY ASSURANCE REPORT
11/27/91

JOB NUMBER: 912524 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Copper (Cu), total				DATE/TIME ANALYZED:10/31/91 10:56						QC BATCH NUMBER:117408
REPORTING LIMIT/DF: 0.01 UNITS:mg/l				METHOD REFERENCE :3010/7210 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	0.01							
BLANK	CALIBRATE	CCB	<0.01							
BLANK	CALIBRATE	CCB	0.01							
BLANK	DIGESTION	DBLANK	0.01							
STANDARD	ICV	ICAP-19	1.03			1.00	103			
STANDARD	CCV	ICAP-19	1.04			1.00	104			
STANDARD	CCV	ICAP-19	1.03			1.00	103			
SPIKE	ANALYTICAL	912523-1	1.01					0.01	1.00	100
DUPLICATE	DIGESTION	912523-1	0.01	0.01	0.00					
PARAMETER:Lead (Pb), total				DATE/TIME ANALYZED:10/31/91 11:06						QC BATCH NUMBER:117410
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7420 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	DIGESTION	DBLANK	0.07							
STANDARD	ICV	ICAP-19	1.00			1.00	100			
STANDARD	CCV	ICAP-19	0.95			1.00	95			
STANDARD	CCV	ICAP-19	1.00			1.00	100			
SPIKE	ANALYTICAL	912494-1	1.21					0.28	1.00	93
SPIKE	ANALYTICAL	912523-1	1.01					0.12	1.00	89
DUPLICATE	ANALYTICAL	912494-1	0.26	0.28	7					
DUPLICATE	ANALYTICAL	912523-1	0.12	0.08	0.04					
PARAMETER:Silver (Ag), total				DATE/TIME ANALYZED:11/04/91 11:06						QC BATCH NUMBER:117453
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7760 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	DIGESTION	DBLANK	<0.05							
STANDARD	ICV	ICAP-7	1.99			2.00	100			
STANDARD	CCV	ICAP-7	1.98			2.00	99			
STANDARD	CCV	ICAP-7	1.73			2.00	87			
SPIKE	ANALYTICAL	912494-1	0.86					0.48	0.50	76
SPIKE	ANALYTICAL	912523-1	2.04					0.05	2.00	100
DUPLICATE	DIGESTION	912494-1	0.49	0.48	2					
DUPLICATE	DIGESTION	912523-1	0.05	0.04	0.01					
PARAMETER:Chromium (Cr), total				DATE/TIME ANALYZED:11/04/91 11:21						QC BATCH NUMBER:117462
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7190 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	CALIBRATE	CCB	0.07							

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QUALITY ASSURANCE REPORT
11/27/91

JOB NUMBER: 912524 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Chromium (Cr), total				DATE/TIME ANALYZED:11/04/91 11:21						QC BATCH NUMBER:117462
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7190 (2)						TECHNICIAN:CP
BLANK	DIGESTION	DBLANK	0.07							
STANDARD	ICV	ICAP-19	0.95			1.00	95			
STANDARD	CCV	ICAP-19	0.96			1.00	96			
STANDARD	CCV	ICAP-19	0.97			1.00	97			
SPIKE	ANALYTICAL	912494-1	1.05					0.09	1.00	96
DUPLICATE	DIGESTION	912494-1	0.10	0.08	0.02					
DUPLICATE	DIGESTION	912523-1	0.07	0.07	0.00					
PARAMETER:Manganese (Mn), total				DATE/TIME ANALYZED:11/04/91 11:30						QC BATCH NUMBER:117465
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7460 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	DIGESTION	DBLANK	<0.05							
STANDARD	ICV	ICAP-19	1.04			1.00	104			
STANDARD	CCV	ICAP-19	1.04			1.00	104			
STANDARD	CCV	ICAP-19	1.02			1.00	102			
SPIKE	ANALYTICAL	912523-1	1.38					0.36	1.00	102
DUPLICATE	DIGESTION	912523-1	0.36	0.36	0					
PARAMETER:Vanadium (V), total				DATE/TIME ANALYZED:11/04/91 15:56						QC BATCH NUMBER:117493
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7910 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	0.12							
BLANK	DIGESTION	DBLANK	0.20							
STANDARD	ICV	ICAP-19	1.02			1.00	102			
STANDARD	CCV	ICAP-19	1.04			1.00	104			
SPIKE	ANALYTICAL	912489-1	1.24					0.24	1.00	100
PARAMETER:Nitrate/Nitrite (as N), diss.				DATE/TIME ANALYZED:11/06/91 10:32						QC BATCH NUMBER:117586
REPORTING LIMIT/DF: 0.1 UNITS:mg/l				METHOD REFERENCE :352.1+354.1 (1)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.1							
SPIKE	ANALYTICAL	912523-1	<0.1					<0.1	<0.1	NC
DUPLICATE	ANALYTICAL	912523-1	<0.1	<0.1	NC					
PARAMETER:Phosphorus, Total, as P, diss.				DATE/TIME ANALYZED:11/06/91 16:26						QC BATCH NUMBER:117608
REPORTING LIMIT/DF: 0.03 UNITS:mg/l				METHOD REFERENCE :365.2 (1)						TECHNICIAN:CP
BLANK	DIGESTION	ICB	<0.03							
BLANK	DIGESTION	CCB	<0.03							
BLANK	CALIBRATE	CCB	<0.03							
STANDARD	ICV	WP1188-1	0.14			0.15	93			
STANDARD	CCV	WP1188-1	0.14			0.15	93			

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JOB NUMBER: 912524 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Phosphorus, Total, as P, diss. DATE/TIME ANALYZED:11/06/91 16:26 QC BATCH NUMBER:117608 REPORTING LIMIT/DF: 0.03 UNITS:mg/l METHOD REFERENCE :365.2 (1) TECHNICIAN:CP										
SPIKE	ANALYTICAL	912523-1	0.11					0.06	0.05	100
DUPLICATE	ANALYTICAL	912523-1	0.06	0.06	0.00					
PARAMETER:Selenium (Se), total DATE/TIME ANALYZED:11/07/91 13:35 QC BATCH NUMBER:117644 REPORTING LIMIT/DF: 0.001 UNITS:mg/l METHOD REFERENCE :7741 (1) TECHNICIAN:TS										
BLANK	PREP	REAGENT	<0.001							
STANDARD	PREP	WS378-5	0.006			0.007	86			
SPIKE	ANALYTICAL	912523-1	0.006					<.001	0.005	120
DUPLICATE	ANALYTICAL	912523-1	<0.001	<0.001	NC					
PARAMETER:Arsenic (As), total DATE/TIME ANALYZED:11/07/91 15:48 QC BATCH NUMBER:117655 REPORTING LIMIT/DF: 0.002 UNITS:mg/l METHOD REFERENCE :7061 (2) TECHNICIAN:TS										
BLANK	PREP	REAGENT	<0.002							
STANDARD	PREP	WS378-4	0.028			0.025	112			
[illegible]KE	ANALYTICAL	912489-1	0.007					0.001	0.005	120
[illegible]LICATE	ANALYTICAL	912489-1	<0.002	<0.002	NC					
PARAMETER:Radium 228, total DATE/TIME ANALYZED:11/08/91 10:44 QC BATCH NUMBER:117687 REPORTING LIMIT/DF: UNITS:pCi/l METHOD REFERENCE :EPA 904.0 TECHNICIAN:DF										
STANDARD	prep	ISO #69B	10.0			11.8	85			
SPIKE	prep	912328-16	12.6					1.4	11.8	95
DUPLICATE	prep	912421-1	0.4	0.5	22					
DUPLICATE	prep	912328-10	5.7	2.4	81					
PARAMETER:Conductivity DATE/TIME ANALYZED:11/11/91 13:03 QC BATCH NUMBER:117714 REPORTING LIMIT/DF: 1 UNITS:umho/cm @77F METHOD REFERENCE :120.1 (1) TECHNICIAN:JL										
DUPLICATE	ANALYTICAL	912580-1	9360	9370	0					
PARAMETER:Total Dissolved Solids (TDS) DATE/TIME ANALYZED:11/11/91 14:09 QC BATCH NUMBER:117724 REPORTING LIMIT/DF: 10 UNITS:mg/l METHOD REFERENCE :160.1 (1) TECHNICIAN:JL										
DUPLICATE	ANALYTICAL	912552-1	1390	1416	2					
PARAMETER:Ammonia (NH3-N), total DATE/TIME ANALYZED:11/13/91 15:40 QC BATCH NUMBER:117796 REPORTING LIMIT/DF: 0.1 UNITS:mg/l METHOD REFERENCE :350.3 (1) TECHNICIAN:CP										
BLANK	REAGENT	RBLANK	<0.1							
BLANK	REAGENT	RBLANK	<0.1							
STANDARD	ICV	WP689-2	5.7			5.5	104			
STANDARD	CCV	WP689-2	5.5			5.5	100			
STANDARD	CCV	WP689-2	5.5			5.5	100			
SPIKE	ANALYTICAL	912489-1	0.7					0.2	0.5	100

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JOB NUMBER: 912524 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Ammonia (NH3-N), total				DATE/TIME ANALYZED:11/13/91 15:40						QC BATCH NUMBER:117796
REPORTING LIMIT/DF: 0.1 UNITS:mg/l				METHOD REFERENCE :350.3 (1)						TECHNICIAN:CP
SPIKE	ANALYTICAL	912592-2	5.8					2.9	2.5	116
DUPLICATE	ANALYTICAL	912489-1	0.2	0.2	0.0					
DUPLICATE	ANALYTICAL	912592-2	2.9	3.0	3					
PARAMETER:Radon 222				DATE/TIME ANALYZED:11/14/91 09:48						QC BATCH NUMBER:117811
REPORTING LIMIT/DF: 1 UNITS:pCi/l				METHOD REFERENCE :						TECHNICIAN:DF
DUPLICATE	prep	912382-1	3880	3913	1					
DUPLICATE	prep	912424-1	16258	15646	4					
DUPLICATE	prep	912489-1	143	222	43					
DUPLICATE	prep	912443-3	505	186	92					
DUPLICATE	prep	912443-14	484	400	19					
DUPLICATE	prep	912523-1	292	473	47					
DUPLICATE	prep	912524-1	205	212	3					
DUPLICATE	prep	912585-1	430	384	11					
AMETER:Radon 222 error, +/-				DATE/TIME ANALYZED:11/14/91 09:52						QC BATCH NUMBER:117812
ORTING LIMIT/DF: UNITS:pCi/l				METHOD REFERENCE :						TECHNICIAN:DF
PARAMETER:Radon 222 LLD				DATE/TIME ANALYZED:11/14/91 09:54						QC BATCH NUMBER:117813
REPORTING LIMIT/DF: UNITS:pCi/l				METHOD REFERENCE :						TECHNICIAN:DF
PARAMETER:Fluoride (F), dissolved				DATE/TIME ANALYZED:11/21/91 10:44						QC BATCH NUMBER:117903
REPORTING LIMIT/DF: 0.1 UNITS:mg/l				METHOD REFERENCE :340.2 (1)						TECHNICIAN:CP
BLANK	REAGENT	BLK	<0.1							
BLANK	REAGENT	BLK	<0.1							
STANDARD	ICV	EPA #378	0.9			0.9	100			
STANDARD	CCV	EPA #378	0.9			0.9	100			
STANDARD	CCV	EPA #378	0.9			0.9	100			
SPIKE	ANALYTICAL	912488-1	0.8					0.3	0.5	100
DUPLICATE	ANALYTICAL	012488-1	0.3	0.3	0.0					
PARAMETER:Aluminum (Al), total				DATE/TIME ANALYZED:11/15/91 14:24						QC BATCH NUMBER:117949
REPORTING LIMIT/DF: 0.1 UNITS:mg/l				METHOD REFERENCE :3010/7020 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	0.1							
BLANK	CALIBRATE	CCB	0.2							
BLANK	DIGESTION	DBLANK	0.2							
STANDARD	ICV	ICAP-19	5.0			5.0	100			
STANDARD	CCV	ICAP-19	4.8			5.0	96			
SPIKE	ANALYTICAL	912524-1	1.2					0.2	1.0	100
DUPLICATE	ANALYTICAL	912524-1	0.1	0.2	0.1					

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ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Iron (Fe), total				DATE/TIME ANALYZED:11/15/91 14:35						QC BATCH NUMBER:117951
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7380 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
STANDARD	ICV	ICAP-19	2.08			2.00	104			
STANDARD	CCV	ICAP-19	1.86			2.00	93			
SPIKE	ANALYTICAL	912524-1	2.73					1.68	1.00	105
SPIKE	ANALYTICAL	912593-1	2.40					1.29	1.00	111
DUPLICATE	ANALYTICAL	912524-1	1.68	1.62	4					
DUPLICATE	ANALYTICAL	912593-1	1.29	1.24	4					
PARAMETER:Zinc (Zn), total				DATE/TIME ANALYZED:11/15/91 14:48						QC BATCH NUMBER:117953
REPORTING LIMIT/DF: 0.1 UNITS:mg/l				METHOD REFERENCE :3010/7950 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.1							
BLANK	CALIBRATE	CCB	<0.1							
BLANK	CALIBRATE	CCB	<0.1							
BLANK	DIGESTION	DBLANK	<0.1							
STANDARD	ICV	ICAP-19	0.9			1.0	90			
STANDARD	CCV	ICAP-19	0.9			1.0	90			
STANDARD	CCV	ICAP-19	0.9			1.0	90			
SPIKE	ANALYTICAL	912524-1	0.9					0.0	1.0	90
DUPLICATE	ANALYTICAL	912524-1	<0.1	<0.1	NC					
PARAMETER:Beryllium (Be), total				DATE/TIME ANALYZED:11/18/91 15:45						QC BATCH NUMBER:117960
REPORTING LIMIT/DF: 0.01 UNITS:mg/l				METHOD REFERENCE :3010/7090 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.01							
BLANK	CALIBRATE	CCB	<0.01							
BLANK	CALIBRATE	CCB	<0.01							
STANDARD	ICV	ICAP-19	0.98			1.00	98			
STANDARD	CCV	ICAP-19	0.96			1.00	96			
STANDARD	CCV	ICAP-19	0.95			1.00	95			
SPIKE	ANALYTICAL	912489-1	0.81					0.00	1.00	81
DUPLICATE	ANALYTICAL	912489-1	<0.01	<0.01	NC					
PARAMETER:Calcium (Ca), dissolved				DATE/TIME ANALYZED:11/19/91 16:10						QC BATCH NUMBER:117975
REPORTING LIMIT/DF: 1 UNITS:mg/l				METHOD REFERENCE :215.1 (1)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<1							
BLANK	CALIBRATE	CCB	<1							
BLANK	CALIBRATE	CCB	1							
STANDARD	ICV	ICAP-7	30			30	100			
STANDARD	CCV	ICAP-7	31			30	103			
STANDARD	CCV	ICAP-7	32			30	107			
SPIKE	ANALYTICAL	912489-1	20					6	15	93
DUPLICATE	ANALYTICAL	912489-1	6	6	0					

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QUALITY ASSURANCE REPORT
11/27/91

JOB NUMBER: 912524 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Uranium (U), total REPORTING LIMIT/DF: 0.001 UNITS:mg/l				DATE/TIME ANALYZED:11/23/91 12:39 METHOD REFERENCE :						QC BATCH NUMBER:117991 TECHNICIAN:DF
STANDARD	prep	ISO #94C	0.087			0.084	104			
STANDARD	prep	ISO #94B	0.848			0.848	100			
DUPLICATE	prep	912524-1	0.001	0.001	0.000					
PARAMETER:Radium 226, total REPORTING LIMIT/DF: UNITS:pCi/l				DATE/TIME ANALYZED:11/25/91 14:15 METHOD REFERENCE :EPA 903.1						QC BATCH NUMBER:118101 TECHNICIAN:DF
DUPLICATE	prep	912524-1	0.3	0.3	0					
DUPLICATE	prep	912425-1	0.5	0.3	50					
PARAMETER:Radium 226, total, error, +/- REPORTING LIMIT/DF: UNITS:pCi/l				DATE/TIME ANALYZED:11/25/91 14:20 METHOD REFERENCE :						QC BATCH NUMBER:118102 TECHNICIAN:DF
PARAMETER:Radium 226, total, LLD REPORTING LIMIT/DF: UNITS:pCi/l				DATE/TIME ANALYZED:11/25/91 14:22 METHOD REFERENCE :						QC BATCH NUMBER:118103 TECHNICIAN:DF
PARAMETER:Potassium (K), dissolved REPORTING LIMIT/DF: 0.5 UNITS:mg/l				DATE/TIME ANALYZED:11/19/91 09:59 METHOD REFERENCE :258.1 (1)						QC BATCH NUMBER:118134 TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.5							
BLANK	CALIBRATE	CCB	<0.5							
BLANK	CALIBRATE	CCB	<0.5							
STANDARD	ICV	ICAP-7	39.7			40.0	99			
STANDARD	CCV	ICAP-7	40.0			40.0	100			
STANDARD	CCV	ICAP-7	39.8			40.0	100			
SPIKE	ANALYTICAL	912489-1	18.9					2.1	20.0	84
DUPLICATE	ANALYTICAL	912489-1	2.1	2.0	0.1					
PARAMETER:Magnesium (Mg), dissolved REPORTING LIMIT/DF: 0.1 UNITS:mg/l				DATE/TIME ANALYZED:11/19/91 10:07 METHOD REFERENCE :242.1 (1)						QC BATCH NUMBER:118136 TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.1							
BLANK	CALIBRATE	CCB	<0.1							
BLANK	CALIBRATE	CCB	<0.1							
STANDARD	ICV	ICAP-7	10.1			10.0	101			
STANDARD	CCV	ICAP-7	10.2			10.0	102			
STANDARD	CCV	ICAP-7	10.3			10.0	103			
SPIKE	ANALYTICAL	912489-1	11.3					2.6	10.0	87
DUPLICATE	ANALYTICAL	912489-1	2.6	2.7	4					
PARAMETER:Sodium (Na), dissolved REPORTING LIMIT/DF: 10 UNITS:mg/l				DATE/TIME ANALYZED:11/19/91 10:17 METHOD REFERENCE :273.1 (1)						QC BATCH NUMBER:118138 TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<10							

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QUALITY ASSURANCE REPORT
11/27/91

JOB NUMBER: 912524 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Sodium (Na), dissolved REPORTING LIMIT/DF: 10 UNITS:mg/l				DATE/TIME ANALYZED:11/19/91 10:17 METHOD REFERENCE :273.1 (1)					QC BATCH NUMBER:118138 TECHNICIAN:CP	
BLANK	CALIBRATE	CCB	<10							
BLANK	CALIBRATE	CCB	<10							
STANDARD	ICV	ICAP-7	102			100	102			
STANDARD	CCV	ICAP-7	104			100	104			
STANDARD	CCV	ICAP-7	104			100	104			
DUPLICATE	ANALYTICAL	912489-1	40	40	0					
PARAMETER:Sulfate (SO4), dissolved REPORTING LIMIT/DF: 10 UNITS:mg/l				DATE/TIME ANALYZED:10/23/91 13:24 METHOD REFERENCE :375.4 (1)					QC BATCH NUMBER:118147 TECHNICIAN:JL	
SPIKE	ANALYTICAL	912488-1	73					23	50	100
DUPLICATE	ANALYTICAL	912445-9	10	10	0					
PARAMETER:pH REPORTING LIMIT/DF: 0.01 UNITS:pH units				DATE/TIME ANALYZED:10/30/91 13:42 METHOD REFERENCE :150.1 (1)					QC BATCH NUMBER:118150 TECHNICIAN:JL	
[illegible]LICATE	ANALYTICAL	912524-1	7.30	7.30	0					
PARAMETER:Gross Alpha, total REPORTING LIMIT/DF: UNITS:pCi/l				DATE/TIME ANALYZED:11/27/91 09:35 METHOD REFERENCE :EPA 900.0					QC BATCH NUMBER:118155 TECHNICIAN:DF	
STANDARD	prep	ISO #178.1	39.5			46.2	85			
SPIKE	prep	912610-3	56.0					1.3	46.1	119
DUPLICATE	prep	912610-10	3.3	2.8	16					
PARAMETER:Gross Alpha, total, error, +/- REPORTING LIMIT/DF: UNITS:pCi/l				DATE/TIME ANALYZED:11/27/91 09:38 METHOD REFERENCE :					QC BATCH NUMBER:118156 TECHNICIAN:DF	
PARAMETER:Gross Alpha, total, LLD REPORTING LIMIT/DF: UNITS:pCi/l				DATE/TIME ANALYZED:11/27/91 09:40 METHOD REFERENCE :					QC BATCH NUMBER:118157 TECHNICIAN:DF	

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QUALITY ASSURANCE FOOTER
11/27/91

NC = Not Calculable due to values lower than the detection limit
ND = Not detected at level in limits column
Quality Control Acceptance Criteria:

Blanks.....:	Analyzed Value less than or equal to the Detection Limit
Reference Standards:	100 +/- 10 Percent Recovery
Duplicates.....:	20% Relative Percent Difference, or +/- the Detection Limit
Spikes.....:	100 +/- 25 Percent Recovery

(1) EPA 600/4-79-020, Methods for Chemical Analysis of Water and Wastes, March 1983
(2) EPA SW-846, Test Methods for Evaluating Solid Waste, Third Edition, November 1986
(3) Standards Methods for the Examination of Water and Wastewater, 16th, 1985
(4) EPA/6004-80-032, Prescribed Procedures for Measurement of Radioactivity in Drinking Water, August 1980
(5) Federal Register, Friday, October 26, 1984 (40 CFR Part 136)
(6) EPA 600/8-78-017, Microbiological Methods for Monitoring the Environment, December 1978

NOTE - Data reported in QA report may differ from values on data page due to dilution of sample into analytical ranges.

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A N A L Y T I C A L R E P O R T

Job Number: 912523
Prepared For:

GOLDER ASSOCIATES
KENT ANGELOS
4104 148th AVENUE NE
REDMOND, WA 98052

Date: 02/11/92

Shari Davis
Signature

2/11/92
Date:

Name: Shari Davis

Core Laboratories, Inc.
420 West First Street
Casper, WY 82601

Title: Laboratory Manager

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LABORATORY TESTS RESULTS
02/11/92

JOB NUMBER: 912523 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

CLIENT I.D.....: 913-1101 MONSANTO/SODA SPRINGS
DATE SAMPLED.....: 10/23/91
TIME SAMPLED.....: 16:56
WORK DESCRIPTION...: TW-18-RFK-S

LABORATORY I.D...: 912523-0001
DATE RECEIVED....: 10/25/91
TIME RECEIVED....: :
REMARKS.....: WATER

TEST DESCRIPTION	FINAL RESULT	DETECTION LIMIT	UNITS OF MEASURE	TEST METHOD	DATE	TECHNICIAN
Tritium	2350		pCi/l	EPA 906.0	02/06/92	DF
Tritium error, +/-	716		pCi/l		02/06/92	DF
Tritium LLD	1270		pCi/l		02/06/92	DF
Radon 222	292	1	pCi/l		11/14/91	DF
Radon 222 error, +/-	239		pCi/l		11/14/91	DF
Radon 222 LLD	386		pCi/l		11/14/91	DF
Carbon 14	2380		pCi/l	LIQ. SCINTILLATION	02/06/92	DF
Carbon 14, error+/-	509		pCi/l	LIQ. SCINTILLATION	02/06/92	DF
Carbon 14, LLD	791		pCi/l	LIQ. SCINTILLATION	02/06/92	DF
Gross Alpha, total	20.2		pCi/l	EPA 900.0	01/30/91	DB
Gross Alpha, total, error, +/-	18.8		pCi/l		01/30/91	DB
Gross Alpha, total, LLD	26.9		pCi/l		01/30/91	DB
Radium 226, total	0.1		pCi/l	EPA 903.1	01/16/92	DF
Radium 226, total, error, +/-	0.2		pCi/l		01/16/92	DF
Radium 226, total, LLD	0.2		pCi/l		01/16/92	DF
Radium 228, total	ND		pCi/l	EPA 904.0	01/16/92	DF
Radium 228, total, error, +/-	4.2		pCi/l		01/16/92	DF
Radium 228, total, LLD	8.3		pCi/l		01/16/92	DF
Biochemical Oxygen Demand (BOD)	9	2	mg/l	405.1 (1)	10/27/91	CP
Chemical Oxygen Demand (COD)	5	5	mg/l	410.4 (mod). (1)	11/05/91	CP
Conductivity	1780	1	umho/cm @77F	120.1 (1)	10/25/91	JL
pH	7.80	0.01	pH units	150.1 (1)	10/25/91	JL
Total Dissolved Solids (TDS)	1180	10	mg/l	160.1 (1)	11/11/91	JL

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REMARKS.....: WATER

TEST DESCRIPTION	FINAL RESULT	DETECTION LIMIT	UNITS OF MEASURE	TEST METHOD	DATE	TECHNICIAN
Bicarbonate (HCO3), dissolved	1330	5	mg/l	310.1 (1)	10/25/91	JL
Carbonate (CO3), dissolved	<1	1	mg/l	310.1 (1)	10/25/91	JL
Hydroxide (OH), dissolved	<1	1	mg/l	310.1 (1)	10/25/91	JL
Sulfate (SO4), dissolved	53	2	mg/l	375.4 (1)	10/30/91	JL
Chloride (Cl), dissolved	14.0	0.5	mg/l	325.3 (1)	10/30/91	JL
Fluoride (F), dissolved	0.2	0.1	mg/l	340.2 (1)	11/14/91	CP
Nitrate/Nitrite (as N), diss.	<0.1	0.1	mg/l	352.1+354.1 (1)	11/06/91	CP
Phosphorus, Total, as P, diss.	0.59	0.03	mg/l	365.2 (1)	11/06/91	CP
Ammonia (NH3-N), total	0.2	0.1	mg/l	350.3 (1)	11/13/91	CP
Aluminum (Al), total	<1	1	mg/l	3010/7020 (2)	11/15/91	CP
Arsenic (As), total	0.003	0.002	mg/l	7061 (2)	12/20/91	TS
Beryllium (Be), total	<0.01	0.01	mg/l	3010/7090 (2)	11/18/91	CP
Cadmium (Cd), total	0.01	0.01	mg/l	3010/7130 (2)	10/31/91	CP
Calcium (Ca), total	97	1	mg/l	3010/7140 (2)	11/19/91	CP
Chromium (Cr), total	0.07	0.05	mg/l	3010/7190 (2)	11/04/91	CP
Copper (Cu), total	0.01	0.01	mg/l	3010/7210 (2)	10/31/91	CP
Iron (Fe), total	8.27	0.05	mg/l	3010/7380 (2)	11/15/91	CP
Lead (Pb), total	0.12	0.05	mg/l	3010/7420 (2)	10/31/91	CP
Magnesium (Mg), total	218	0.1	mg/l	3010/7450 (2)	11/19/91	CP
Manganese (Mn), total	0.36	0.05	mg/l	3010/7460 (2)	11/04/91	CP
Nickel (Ni), total	0.07	0.05	mg/l	3010/7520 (2)	10/31/91	CP
Potassium (K), total	16.0	0.5	mg/l	3010/7610 (2)	11/19/91	CP
Selenium (Se), total	<0.001	0.001	mg/l	7741 (2)	11/07/91	TS

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WORK DESCRIPTION...: TW-18-RFK-S

LABORATORY I.D...: 912523-0001
DATE RECEIVED....: 10/25/91
TIME RECEIVED....: :
REMARKS.....: WATER

TEST DESCRIPTION	FINAL RESULT	DETECTION LIMIT	UNITS OF MEASURE	TEST METHOD	DATE	TECHNICIAN
Silver (Ag), total	0.05	0.05	mg/l	3010/7760 (2)	11/04/91	CP
Sodium (Na), total	40	10	mg/l	3010/7770 (2)	11/19/91	CP
Uranium (U), total	0.004	0.001	mg/l		02/07/92	DB
Vanadium (V), total	0.24	0.05	mg/l	3010/7910 (2)	11/04/91	CP
Zinc (Zn), total	<0.1	0.1	mg/l	3010/7950 (2)	11/15/91	CP

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JOB NUMBER: 912523 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Nickel (Ni), total				DATE/TIME ANALYZED:10/31/91 10:28						QC BATCH NUMBER:117403
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7520 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	DIGESTION	DBLANK	<0.05							
STANDARD	ICV	ICAP-19	1.01			1.00	101			
STANDARD	CCV	ICAP-19	0.99			1.00	99			
STANDARD	CCV	ICAP-19	1.02			1.00	102			
SPIKE	ANALYTICAL	912523-1	1.01					0.07	1.00	94
DUPLICATE	DIGESTION	912523-1	<0.05	<0.05	NC					
PARAMETER:Cadmium (Cd), total				DATE/TIME ANALYZED:10/31/91 10:46						QC BATCH NUMBER:117406
REPORTING LIMIT/DF: 0.01 UNITS:mg/l				METHOD REFERENCE :3010/7130 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.01							
BLANK	CALIBRATE	CCB	0.01							
BLANK	CALIBRATE	CCB	0.02							
BLANK	DIGESTION	DBLANK	0.01							
STANDARD	ICV	ICAP-19	0.97			1.00	97			
STANDARD	CCV	ICAP-19	0.98			1.00	98			
STANDARD	CCV	ICAP-19	0.96			1.00	96			
SPIKE	ANALYTICAL	912494-1	0.96					0.02	1.00	94
SPIKE	ANALYTICAL	912523-1	0.96					0.01	1.00	95
DUPLICATE	DIGESTION	912494-1	0.02	0.02	0.00					
DUPLICATE	DIGESTION	912523-1	0.01	0.01	0.00					
PARAMETER:Copper (Cu), total				DATE/TIME ANALYZED:10/31/91 10:56						QC BATCH NUMBER:117408
REPORTING LIMIT/DF: 0.01 UNITS:mg/l				METHOD REFERENCE :3010/7210 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	0.01							
BLANK	CALIBRATE	CCB	<0.01							
BLANK	CALIBRATE	CCB	0.01							
BLANK	DIGESTION	DBLANK	0.01							
STANDARD	ICV	ICAP-19	1.03			1.00	103			
STANDARD	CCV	ICAP-19	1.04			1.00	104			
STANDARD	CCV	ICAP-19	1.03			1.00	103			
SPIKE	ANALYTICAL	912523-1	1.01					0.01	1.00	100
DUPLICATE	DIGESTION	912523-1	0.01	0.01	0.00					
PARAMETER:Lead (Pb), total				DATE/TIME ANALYZED:10/31/91 11:06						QC BATCH NUMBER:117410
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7420 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	DIGESTION	DBLANK	0.07							
STANDARD	ICV	ICAP-19	1.00			1.00	100			

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QUALITY ASSURANCE REPORT
02/11/92

JOB NUMBER: 912523 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Lead (Pb), total				DATE/TIME ANALYZED:10/31/91 11:06					QC BATCH NUMBER:117410	
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7420 (2)					TECHNICIAN:CP	
STANDARD	CCV	ICAP-19	0.95			1.00	95			
STANDARD	CCV	ICAP-19	1.00			1.00	100			
SPIKE	ANALYTICAL	912494-1	1.21					0.28	1.00	93
SPIKE	ANALYTICAL	912523-1	1.01					0.12	1.00	89
DUPLICATE	ANALYTICAL	912494-1	0.26	0.28	7					
DUPLICATE	ANALYTICAL	912523-1	0.12	0.08	0.04					
PARAMETER:Biochemical Oxygen Demand (BOD)				DATE/TIME ANALYZED:10/27/91 13:55					QC BATCH NUMBER:117415	
REPORTING LIMIT/DF: 2 UNITS:mg/l				METHOD REFERENCE :405.1 (1)					TECHNICIAN:CP	
PARAMETER:Silver (Ag), total				DATE/TIME ANALYZED:11/04/91 11:06					QC BATCH NUMBER:117453	
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7760 (2)					TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	DIGESTION	DBLANK	<0.05							
STANDARD	ICV	ICAP-7	1.99			2.00	100			
STANDARD	CCV	ICAP-7	1.98			2.00	99			
STANDARD	CCV	ICAP-7	1.73			2.00	87			
SPIKE	ANALYTICAL	912494-1	0.86					0.48	0.50	76
SPIKE	ANALYTICAL	912523-1	2.04					0.05	2.00	100
DUPLICATE	DIGESTION	912494-1	0.49	0.48	2					
DUPLICATE	DIGESTION	912523-1	0.05	0.04	0.01					
PARAMETER:Chromium (Cr), total				DATE/TIME ANALYZED:11/04/91 11:21					QC BATCH NUMBER:117462	
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7190 (2)					TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	CALIBRATE	CCB	0.07							
BLANK	DIGESTION	DBLANK	0.07							
STANDARD	ICV	ICAP-19	0.95			1.00	95			
STANDARD	CCV	ICAP-19	0.96			1.00	96			
STANDARD	CCV	ICAP-19	0.97			1.00	97			
SPIKE	ANALYTICAL	912494-1	1.05					0.09	1.00	96
DUPLICATE	DIGESTION	912494-1	0.10	0.08	0.02					
DUPLICATE	DIGESTION	912523-1	0.07	0.07	0.00					
PARAMETER:Manganese (Mn), total				DATE/TIME ANALYZED:11/04/91 11:30					QC BATCH NUMBER:117465	
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7460 (2)					TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							

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QUALITY ASSURANCE REPORT
02/11/92

JOB NUMBER: 912523 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Manganese (Mn), total				DATE/TIME ANALYZED:11/04/91 11:30					QC BATCH NUMBER:117465	
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7460 (2)					TECHNICIAN:CP	
BLANK	DIGESTION	DBLANK	<0.05							
STANDARD	ICV	ICAP-19	1.04			1.00	104			
STANDARD	CCV	ICAP-19	1.04			1.00	104			
STANDARD	CCV	ICAP-19	1.02			1.00	102			
SPIKE	ANALYTICAL	912523-1	1.38					0.36	1.00	102
DUPLICATE	DIGESTION	912523-1	0.36	0.36	0					
PARAMETER:Vanadium (V), total				DATE/TIME ANALYZED:11/04/91 15:56					QC BATCH NUMBER:117493	
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7910 (2)					TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	0.12							
BLANK	DIGESTION	DBLANK	0.20							
STANDARD	ICV	ICAP-19	1.02			1.00	102			
STANDARD	CCV	ICAP-19	1.04			1.00	104			
SPIKE	ANALYTICAL	912489-1	1.24					0.24	1.00	100
PARAMETER:Chemical Oxygen Demand (COD)				DATE/TIME ANALYZED:11/05/91 08:19					QC BATCH NUMBER:117563	
REPORTING LIMIT/DF: 5 UNITS:mg/l				METHOD REFERENCE :410.4 (mod) (1)					TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<5							
SPIKE	ANALYTICAL	912523-1	63					5	50	116
DUPLICATE	ANALYTICAL	912523-1	5	5	0					
PARAMETER:Nitrate/Nitrite (as N), diss.				DATE/TIME ANALYZED:11/06/91 10:32					QC BATCH NUMBER:117586	
REPORTING LIMIT/DF: 0.1 UNITS:mg/l				METHOD REFERENCE :352.1+354.1 (1)					TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.1							
SPIKE	ANALYTICAL	912523-1	<0.1					<0.1	<0.1	NC
DUPLICATE	ANALYTICAL	912523-1	<0.1	<0.1	NC					
PARAMETER:Phosphorus, Total, as P, diss.				DATE/TIME ANALYZED:11/06/91 16:26					QC BATCH NUMBER:117608	
REPORTING LIMIT/DF: 0.03 UNITS:mg/l				METHOD REFERENCE :365.2 (1)					TECHNICIAN:CP	
BLANK	DIGESTION	ICB	<0.03							
BLANK	DIGESTION	CCB	<0.03							
BLANK	CALIBRATE	CCB	<0.03							
STANDARD	ICV	WP1188-1	0.14			0.15	93			
STANDARD	CCV	WP1188-1	0.14			0.15	93			
SPIKE	ANALYTICAL	912523-1	0.11					0.06	0.05	100
DUPLICATE	ANALYTICAL	912523-1	0.06	0.06	0.00					
PARAMETER:Selenium (Se), total				DATE/TIME ANALYZED:11/07/91 13:35					QC BATCH NUMBER:117644	
REPORTING LIMIT/DF: 0.001 UNITS:mg/l				METHOD REFERENCE :7741 (1)					TECHNICIAN:TS	
BLANK	PREP	REAGENT	<0.001							

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02/11/92

JOB NUMBER: 912523 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Selenium (Se), total REPORTING LIMIT/DF: 0.001 UNITS:mg/l				DATE/TIME ANALYZED:11/07/91 13:35 METHOD REFERENCE :7741 (1)					QC BATCH NUMBER:117644 TECHNICIAN:TS	
STANDARD	PREP	WS378-5	0.006			0.007	86			
SPIKE	ANALYTICAL	912523-1	0.006					<.001	0.005	120
DUPLICATE	ANALYTICAL	912523-1	<0.001	<0.001	NC					
PARAMETER:Total Dissolved Solids (TDS) REPORTING LIMIT/DF: 10 UNITS:mg/l				DATE/TIME ANALYZED:11/11/91 14:09 METHOD REFERENCE :160.1 (1)					QC BATCH NUMBER:117724 TECHNICIAN:JL	
DUPLICATE	ANALYTICAL	912552-1	1390	1416	2					
PARAMETER:Ammonia (NH3-N), total REPORTING LIMIT/DF: 0.1 UNITS:mg/l				DATE/TIME ANALYZED:11/13/91 15:40 METHOD REFERENCE :350.3 (1)					QC BATCH NUMBER:117796 TECHNICIAN:CP	
BLANK	REAGENT	RBLANK	<0.1							
BLANK	REAGENT	RBLANK	<0.1							
STANDARD	ICV	WP689-2	5.7			5.5	104			
STANDARD	CCV	WP689-2	5.5			5.5	100			
STANDARD	CCV	WP689-2	5.5			5.5	100			
SPIKE	ANALYTICAL	912489-1	0.7					0.2	0.5	100
SPIKE	ANALYTICAL	912592-2	5.8					2.9	2.5	116
DUPLICATE	ANALYTICAL	912489-1	0.2	0.2	0.0					
DUPLICATE	ANALYTICAL	912592-2	2.9	3.0	3					
PARAMETER:Radon 222 REPORTING LIMIT/DF: 1 UNITS:pCi/l				DATE/TIME ANALYZED:11/14/91 09:48 METHOD REFERENCE :					QC BATCH NUMBER:117811 TECHNICIAN:DF	
DUPLICATE	prep	912382-1	3880	3913	1					
DUPLICATE	prep	912424-1	16300	15600	4					
DUPLICATE	prep	912489-1	143	222	43					
DUPLICATE	prep	912443-3	505	186	92					
DUPLICATE	prep	912443-14	484	400	19					
DUPLICATE	prep	912523-1	292	473	47					
DUPLICATE	prep	912524-1	205	212	3					
DUPLICATE	prep	912585-1	430	384	11					
PARAMETER:Fluoride (F), dissolved REPORTING LIMIT/DF: 0.1 UNITS:mg/l				DATE/TIME ANALYZED:11/14/91 10:17 METHOD REFERENCE :340.2 (1)					QC BATCH NUMBER:117970 TECHNICIAN:CP	
BLANK	REAGENT	RBLK	<0.1							
BLANK	REAGENT	RBLK	<0.1							
STANDARD	ICV	EPA #378	0.9			0.9	100			
STANDARD	CCV	EPA #378	0.9			0.9	100			
STANDARD	CCV	EPA #378	0.9			0.9	100			
SPIKE	ANALYTICAL	912488-1	0.8					0.3	0.5	100
DUPLICATE	ANALYTICAL	912488-1	0.3	0.3	0.0					

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JOB NUMBER: 912523 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Arsenic (As), total REPORTING LIMIT/DF: 0.002 UNITS:mg/l				DATE/TIME ANALYZED:12/20/91 13:14 METHOD REFERENCE :7061 (2)					QC BATCH NUMBER:118003 TECHNICIAN:	
BLANK	PREP	REAGENT	<0.002							
STANDARD	PREP	WS378-4	0.028			0.025	112			
SPIKE	ANALYTICAL	912489-1	0.006					<0.002	0.005	120
DUPLICATE	ANALYTICAL	912489-1	<0.002	<0.002	NC					
PARAMETER:Calcium (Ca), total REPORTING LIMIT/DF: 1 UNITS:mg/l				DATE/TIME ANALYZED:11/19/91 11:20 METHOD REFERENCE :3010/7140 (2)					QC BATCH NUMBER:118669 TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<1							
BLANK	CALIBRATE	CCB	1							
STANDARD	ICV	ICAP-7	30			30	100			
STANDARD	CCV	ICAP-7	31			30	103			
SPIKE	ANALYTICAL	912489-1	20					6	15	93
DUPLICATE	ANALYTICAL	912489-1	6	6	0					
PARAMETER:Magnesium (Mg), total REPORTING LIMIT/DF: 0.1 UNITS:mg/l				DATE/TIME ANALYZED:11/19/91 11:31 METHOD REFERENCE :3010/7450 (2)					QC BATCH NUMBER:118678 TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.1							
BLANK	CALIBRATE	CCB	<0.1							
STANDARD	ICV	ICAP-7	10.1			10.0	101			
STANDARD	CCV	ICAP-7	10.2			10.0	102			
SPIKE	ANALYTICAL	912489-1	11.3					2.6	10.0	87
DUPLICATE	ANALYTICAL	912489-1	2.6	2.7	4					
PARAMETER:Sodium (Na), total REPORTING LIMIT/DF: 10 UNITS:mg/l				DATE/TIME ANALYZED:11/19/91 11:35 METHOD REFERENCE :3010/7770 (2)					QC BATCH NUMBER:118680 TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<10							
BLANK	CALIBRATE	CCB	<10							
STANDARD	ICV	ICAP-7	100			100	100			
STANDARD	CCV	ICAP-7	100			100	100			
SPIKE	ANALYTICAL	912489-1	110					40	60	117
DUPLICATE	ANALYTICAL	912523-1	40	50	10					
DUPLICATE	ANALYTICAL	912489-1	40	40	0					
PARAMETER:Aluminum (Al), total REPORTING LIMIT/DF: 1 UNITS:mg/l				DATE/TIME ANALYZED:11/15/91 13:33 METHOD REFERENCE :3010/7020 (2)					QC BATCH NUMBER:118686 TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<1							
BLANK	CALIBRATE	CCB	<1							
BLANK	DIGESTION	DBLANK	<1							
STANDARD	ICV	ICAP-20	5			5	100			
STANDARD	CCV	ICAP-20	5			5	100			
SPIKE	ANALYTICAL	912524-1	1					<1	1	100
DUPLICATE	ANALYTICAL	912524-1	<1	<1	NC					

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QUALITY ASSURANCE REPORT
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JOB NUMBER: 912523 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Aluminum (Al), total				DATE/TIME ANALYZED:11/15/91 13:33						QC BATCH NUMBER:118686
REPORTING LIMIT/DF: 1	UNITS:mg/l			METHOD REFERENCE :3010/7020 (2)						TECHNICIAN:CP
PARAMETER:Iron (Fe), total				DATE/TIME ANALYZED:11/15/91 13:39						QC BATCH NUMBER:118688
REPORTING LIMIT/DF: 0.05	UNITS:mg/l			METHOD REFERENCE :3010/7380 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
STANDARD	ICV	ICAP-19	2.08			2.00	104			
STANDARD	CCV	ICAP-19	1.86			2.00	93			
SPIKE	ANALYTICAL	912524-1	2.73					1.68	1.00	105
DUPLICATE	ANALYTICAL	912524-1	1.68	1.62	4					
PARAMETER:Zinc (Zn), total				DATE/TIME ANALYZED:11/15/91 13:46						QC BATCH NUMBER:118689
REPORTING LIMIT/DF: 0.1	UNITS:mg/l			METHOD REFERENCE :3010/7950 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.1							
BLANK	CALIBRATE	CCB	<0.1							
STANDARD	ICV	ICAP-19	0.9			1.0	90			
STANDARD	CCV	ICAP-19	0.9			1.0	90			
SPIKE	ANALYTICAL	912524-1	1.0					<0.1	1.0	100
DUPLICATE	ANALYTICAL	912524-1	<0.1	<0.1	NC					
PARAMETER:Beryllium (Be), total				DATE/TIME ANALYZED:11/18/91 13:49						QC BATCH NUMBER:118690
REPORTING LIMIT/DF: 0.01	UNITS:mg/l			METHOD REFERENCE :3010/7090 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.01							
BLANK	CALIBRATE	CCB	<0.01							
STANDARD	ICV	ICAP-19	0.98			1.00	98			
STANDARD	CCV	ICAP-19	0.96			1.00	96			
SPIKE	ANALYTICAL	912489-1	0.81					<0.01	1.00	81
DUPLICATE	ANALYTICAL	912489-1	<0.01	<0.01	NC					
PARAMETER:Carbonate (CO3), dissolved				DATE/TIME ANALYZED:10/25/91 14:21						QC BATCH NUMBER:118696
REPORTING LIMIT/DF: 1	UNITS:mg/l			METHOD REFERENCE :310.1 (1)						TECHNICIAN:JL
DUPLICATE	ANALYTICAL	912523-1	<1	<1	NC					
PARAMETER:Bicarbonate (HCO3), dissolved				DATE/TIME ANALYZED:10/25/91 14:23						QC BATCH NUMBER:118697
REPORTING LIMIT/DF: 5	UNITS:mg/l			METHOD REFERENCE :310.1 (1)						TECHNICIAN:JL
DUPLICATE	ANALYTICAL	912523-1	1330	1324	0					
PARAMETER:Hydroxide (OH), dissolved				DATE/TIME ANALYZED:10/25/91 14:25						QC BATCH NUMBER:118698
REPORTING LIMIT/DF: 1	UNITS:mg/l			METHOD REFERENCE :310.1 (1)						TECHNICIAN:JL
DUPLICATE	ANALYTICAL	912523-1	<1	<1	NC					

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JOB NUMBER: 912523 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:pH REPORTING LIMIT/DF: 0.01 UNITS:pH units				DATE/TIME ANALYZED:10/25/91 14:27 METHOD REFERENCE :150.1 (1)					QC BATCH NUMBER:118700 TECHNICIAN:JL	
DUPLICATE	ANALYTICAL	912523-1	7.80	7.80	0					
PARAMETER:Conductivity REPORTING LIMIT/DF: 1 UNITS:umho/cm @77F				DATE/TIME ANALYZED:10/25/91 15:14 METHOD REFERENCE :120.1 (1)					QC BATCH NUMBER:118708 TECHNICIAN:JL	
DUPLICATE	ANALYTICAL	912523-1	1780	1780	0					
PARAMETER:Chloride (Cl), dissolved REPORTING LIMIT/DF: 0.5 UNITS:mg/l				DATE/TIME ANALYZED:10/30/91 15:15 METHOD REFERENCE :325.3 (1)					QC BATCH NUMBER:118709 TECHNICIAN:JL	
SPIKE	ANALYTICAL	912505-10	4250					3750	500	100
DUPLICATE	ANALYTICAL	912505-10	3750	3750	0					
PARAMETER:Sulfate (SO4), dissolved REPORTING LIMIT/DF: 10 UNITS:mg/l				DATE/TIME ANALYZED:10/30/91 15:19 METHOD REFERENCE :375.4 (1)					QC BATCH NUMBER:118710 TECHNICIAN:JL	
[illegible]LICATE	ANALYTICAL	912528-2	219	206	6					
PARAMETER:Radium 226, total REPORTING LIMIT/DF: UNITS:pCi/l				DATE/TIME ANALYZED:01/16/92 11:14 METHOD REFERENCE :EPA 903.1					QC BATCH NUMBER:119058 TECHNICIAN:DF	
SPIKE	prep	912562-4	29.9					0.3	23.8	124
DUPLICATE	prep	912562-7	ND	0.1	0					
DUPLICATE	prep	912524-1	0.3	0.3	0					
PARAMETER:Radium 228, total REPORTING LIMIT/DF: UNITS:pCi/l				DATE/TIME ANALYZED:01/16/92 11:16 METHOD REFERENCE :EPA 904.0					QC BATCH NUMBER:119061 TECHNICIAN:DF	
PARAMETER:Gross Alpha, total REPORTING LIMIT/DF: UNITS:pCi/l				DATE/TIME ANALYZED:01/30/91 14:56 METHOD REFERENCE :EPA 900.0					QC BATCH NUMBER:119501 TECHNICIAN:DB	
DUPLICATE	prep	920078-1	1630	1675	3					
DUPLICATE	prep	920120-1	ND	ND	0					
DUPLICATE	prep	920079-5	ND	ND	0					
PARAMETER:Carbon 14 REPORTING LIMIT/DF: UNITS:pCi/l				DATE/TIME ANALYZED:02/06/92 11:12 METHOD REFERENCE :LIQ. SCINTILLATION					QC BATCH NUMBER:119698 TECHNICIAN:DF	
DUPLICATE	prep	912523-1	2380	2110	12					
PARAMETER:Tritium REPORTING LIMIT/DF: UNITS:pCi/l				DATE/TIME ANALYZED:02/06/92 11:15 METHOD REFERENCE :EPA 906.0					QC BATCH NUMBER:119702 TECHNICIAN:DF	
DUPLICATE	prep	912523-1	2350	2900	21					

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ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Uranium (U), total				DATE/TIME ANALYZED:02/07/92 13:23						QC BATCH NUMBER:119793
REPORTING LIMIT/DF: 0.001 UNITS:mg/l				METHOD REFERENCE :						TECHNICIAN:
BLANK	prep	DIH20	<0.001							
STANDARD	prep	U308	0.089			0.085	105			
STANDARD	prep	U308	0.829			0.848	98			
STANDARD	prep	U308	8.10			8.48	96			
SPIKE	prep	912523-1	0.474					0.002	0.424	111
SPIKE	prep	920146-1	0.428					0.009	0.424	99
PARAMETER:Potassium (K), total				DATE/TIME ANALYZED:11/19/91 14:38						QC BATCH NUMBER:119801
REPORTING LIMIT/DF: 0.5 UNITS:mg/l				METHOD REFERENCE :3010/7610 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.5							
BLANK	CALIBRATE	CCB	<0.5							
BLANK	DIGESTION	DBLK	<0.5							
BLANK	CALIBRATE	CCB	<0.5							
STANDARD	ICV	ICAP-7	39.7			40.0	99			
STANDARD	CCV	ICAP-7	40.0			40.0	100			
STANDARD	CCV	ICAP-7	39.8			40.0	100			
SPIKE	ANALYTICAL	912489-1	30.1					17.2	15.0	86
DUPLICATE	ANALYTICAL	912489-1	17.2	17.2	0					

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QUALITY ASSURANCE FOOTER
02/11/92

NC = Not Calculable due to values lower than the detection limit
ND = Not detected at level in limits column
Quality Control Acceptance Criteria:

Blanks.....:	Analyzed Value less than or equal to the Detection Limit
Reference Standards:	100 +/- 10 Percent Recovery
Duplicates.....:	20% Relative Percent Difference, or +/- the Detection Limit
Spikes.....:	100 +/- 25 Percent Recovery

(1) EPA 600/4-79-020, Methods for Chemical Analysis of Water and Wastes, March 1983
(2) EPA SW-846, Test Methods for Evaluating Solid Waste, Third Edition, November 1986
(3) Standards Methods for the Examination of Water and Wastewater, 16th, 1985
(4) EPA/6004-80-032, Prescribed Procedures for Measurement of Radioactivity in Drinking Water, August 1980
(5) Federal Register, Friday, October 26, 1984 (40 CFR Part 136)
(6) EPA 600/8-78-017, Microbiological Methods for Monitoring the Environment, December 1978

NOTE - Data reported in QA report may differ from values on data page due to dilution of sample into analytical ranges.

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A N A L Y T I C A L R E P O R T

Job Number: 912489
Prepared For:

GOLDER ASSOCIATES
KENT ANGELOS
4104 148th AVENUE NE
REDMOND, WA 98052

Date: 02/11/92

Shari Davis
Signature

2/11/92
Date:

Name: Shari Davis

Core Laboratories, Inc.
420 West First Street
Casper, WY 82601

Title: Laboratory Manager

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LABORATORY TESTS RESULTS
02/11/92

JOB NUMBER: 912489 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

CLIENT I.D.....: 913-1101 STATION:TW-21
DATE SAMPLED.....: 10/18/91
TIME SAMPLED.....: 09:10
WORK DESCRIPTION...: TW-21-RFK-S

LABORATORY I.D...: 912489-0001
DATE RECEIVED....: 10/21/91
TIME RECEIVED....: 09:40
REMARKS.....: WATER

TEST DESCRIPTION	FINAL RESULT	DETECTION LIMIT	UNITS OF MEASURE	TEST METHOD	DATE	TECHNICIAN
Tritium	2800		pCi/l	EPA 906.0	02/06/92	DF
Tritium error, +/-	751		pCi/l		02/06/92	DF
Tritium LLD	1280		pCi/l		02/06/92	DF
Radon 222	222	1	pCi/l		11/14/91	DF
Radon 222 error, +/-	152		pCi/l		11/14/91	DF
Radon 222 LLD	245		pCi/l		11/14/91	DF
Carbon 14	2140		pCi/l	LIQ. SCINTILLATION	02/06/92	DF
Carbon 14, error+/-	486		pCi/l	LIQ. SCINTILLATION	02/06/92	DF
Carbon 14, LLD	772		pCi/l	LIQ. SCINTILLATION	02/06/92	DF
Gross Alpha, total	ND		pCi/l	EPA 900.0	11/13/91	DF
Gross Alpha, total, error, +/-	20.2		pCi/l		11/13/91	DF
Gross Alpha, total, LLD	32.6		pCi/l		11/13/91	DF
Radium 226, total	ND		pCi/l	EPA 903.1	01/31/92	DF
Radium 226, total, error, +/-	0.1		pCi/l		01/31/92	DF
Radium 226, total, LLD	0.2		pCi/l		01/31/92	DF
Radium 228, total	ND		pCi/l	EPA 904.0	01/31/92	DF
Radium 228, total, error, +/-	1.5		pCi/l		01/31/92	DF
Radium 228, total, LLD	2.6		pCi/l		01/31/92	DF
Conductivity	1470	1	umho/cm @77F	120.1 (1)	10/23/91	JL
pH	9.35	0.01	pH units	150.1 (1)	10/29/91	JL
Total Dissolved Solids (TDS)	1280	10	mg/l	160.1 (1)	10/30/91	JL
Bicarbonate (HCO3), dissolved	7[illegible]2	5	mg/l	310.1 (1)	10/25/91	JL
Carbonate (CO3), dissolved	264	1	mg/l	310.1 (1)	10/25/91	JL

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LABORATORY TESTS RESULTS
02/11/92

JOB NUMBER: 912489 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

CLIENT I.D.....: 913-1101 STATION:TW-21
DATE SAMPLED.....: 10/18/91
TIME SAMPLED.....: 09:10
WORK DESCRIPTION...: TW-21-RFK-S

LABORATORY I.D...: 912489-0001
DATE RECEIVED....: 10/21/91
TIME RECEIVED....: 09:40
REMARKS.....: WATER

TEST DESCRIPTION	FINAL RESULT	DETECTION LIMIT	UNITS OF MEASURE	TEST METHOD	DATE	TECHNICIAN
Hydroxide (OH), dissolved	<1	1	mg/l	310.1 (1)	10/25/91	JL
Sulfate (SO4), dissolved	94	10	mg/l	375.4 (1)	01/08/92	JL
Chloride (Cl), dissolved	19.0	0.5	mg/l	325.3 (1)	10/23/91	JL
Fluoride (F), dissolved	0.2	0.1	mg/l	340.2 (1)	11/14/91	CP
Nitrate/Nitrite (as N), diss.	<0.1	0.1	mg/l	352.1+354.1 (1)	10/29/91	CP
Phosphorus, Total, as P, diss.	0.75	0.03	mg/l	365.2 (1)	11/06/91	CP
Ammonia (NH3-N), total	0.2	0.1	mg/l	350.3 (1)	11/13/91	CP
[illegible]ium (Ca), dissolved	60	1	mg/l	215.1 (1)	11/19/91	CP
Magnesium (Mg), dissolved	265	0.1	mg/l	242.1 (1)	11/19/91	CP
Potassium (K), dissolved	17.2	0.5	mg/l	258.1 (1)	11/19/91	CP
Sodium (Na), dissolved	40	10	mg/l	273.1 (1)	11/19/91	CP
Aluminum (Al), total	<1	1	mg/l	3010/7020 (2)	11/15/91	CP
Arsenic (As), total	<0.002	0.002	mg/l	7061 (2)	11/07/91	TS
Beryllium (Be), total	<0.01	0.01	mg/l	3010/7090 (2)	11/18/91	CP
Cadmium (Cd), total	0.02	0.01	mg/l	3010/7130 (2)	10/31/91	CP
Chromium (Cr), total	0.07	0.05	mg/l	3010/7190 (2)	11/04/91	CP
Copper (Cu), total	0.01	0.01	mg/l	3010/7210 (2)	10/31/91	CP
Iron (Fe), total	8.41	0.05	mg/l	3010/7380 (2)	11/15/91	CP
Lead (Pb), total	0.09	0.05	mg/l	3010/7420 (2)	10/31/91	CP
Manganese (Mn), total	0.22	0.05	mg/l	3010/7460 (2)	11/04/91	CP
Nickel (Ni), total	0.07	0.05	mg/l	3010/7520 (2)	10/31/91	CP
Selenium (Se), total	<0.001	0.001	mg/l	7741 (2)	11/07/91	TS
Silver (Ag), total	0.09	0.05	mg/l	3010/7760 (2)	11/04/91	CP

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LABORATORY TESTS RESULTS
02/11/92

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DATE RECEIVED....: 10/21/91
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REMARKS.....: WATER

TEST DESCRIPTION	FINAL RESULT	DETECTION LIMIT	UNITS OF MEASURE	TEST METHOD	DATE	TECHNICIAN
Uranium (U), total	0.006	0.001	mg/l		10/31/91	DB
Vanadium (V), total	0.24	0.05	mg/l	3010/7910 (2)	11/04/91	CP
Zinc (Zn), total	<0.1	0.1	mg/l	3010/7950 (2)	11/15/91	CP

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QUALITY ASSURANCE REPORT
02/11/92

JOB NUMBER: 912489 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Nitrate/Nitrite (as N), diss. REPORTING LIMIT/DF: 0.1 UNITS:mg/l				DATE/TIME ANALYZED:10/29/91 14:50 METHOD REFERENCE :352.1+354.1 (1)					QC BATCH NUMBER:117277 TECHNICIAN:CP	
BLANK	CALIBRATE	BLANK A	<0.1							
BLANK	REAGENT	BLANK B	<0.1							
BLANK	REAGENT	BLANK B	<0.1							
BLANK	CALIBRATE	BLANK A	<0.1							
STANDARD	ICV	WP689-2	1.7			1.6	106			
STANDARD	CCV	WP689-2	1.7			1.6	106			
SPIKE	ANALYTICAL	912489-1	0.5					<0.1	0.5	100
DUPLICATE	ANALYTICAL	912489-1	<0.1	<0.1	NC					
PARAMETER:Total Dissolved Solids (TDS) REPORTING LIMIT/DF: 10 UNITS:mg/l				DATE/TIME ANALYZED:10/30/91 13:34 METHOD REFERENCE :160.1 (1)					QC BATCH NUMBER:117320 TECHNICIAN:JL	
DUPLICATE	ANALYTICAL	912489-1	1280	1290	1					
PARAMETER:Nickel (Ni), total REPORTING LIMIT/DF: 0.05 UNITS:mg/l				DATE/TIME ANALYZED:10/31/91 10:28 METHOD REFERENCE :3010/7520 (2)					QC BATCH NUMBER:117403 TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	DIGESTION	DBLANK	<0.05							
STANDARD	ICV	ICAP-19	1.01			1.00	101			
STANDARD	CCV	ICAP-19	0.99			1.00	99			
STANDARD	CCV	ICAP-19	1.02			1.00	102			
SPIKE	ANALYTICAL	912523-1	1.01					0.07	1.00	94
DUPLICATE	DIGESTION	912523-1	<0.05	<0.05	NC					
PARAMETER:Cadmium (Cd), total REPORTING LIMIT/DF: 0.01 UNITS:mg/l				DATE/TIME ANALYZED:10/31/91 10:46 METHOD REFERENCE :3010/7130 (2)					QC BATCH NUMBER:117406 TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.01							
BLANK	CALIBRATE	CCB	0.01							
BLANK	CALIBRATE	CCB	0.02							
BLANK	DIGESTION	DBLANK	0.01							
STANDARD	ICV	ICAP-19	0.97			1.00	97			
STANDARD	CCV	ICAP-19	0.98			1.00	98			
STANDARD	CCV	ICAP-19	0.96			1.00	96			
SPIKE	ANALYTICAL	912494-1	0.96					0.02	1.00	94
SPIKE	ANALYTICAL	912523-1	0.96					0.01	1.00	95
DUPLICATE	DIGESTION	912494-1	0.02	0.02	0.00					
DUPLICATE	DIGESTION	912523-1	0.01	0.01	0.00					
PARAMETER:Copper (Cu), total REPORTING LIMIT/DF: 0.01 UNITS:mg/l				DATE/TIME ANALYZED:10/31/91 10:56 METHOD REFERENCE :3010/7210 (2)					QC BATCH NUMBER:117408 TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	0.01							

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QUALITY ASSURANCE REPORT
02/11/92

JOB NUMBER: 912489 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Copper (Cu), total				DATE/TIME ANALYZED:10/31/91 10:56						QC BATCH NUMBER:117408
REPORTING LIMIT/DF: 0.01 UNITS:mg/l				METHOD REFERENCE :3010/7210 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	CCB	<0.01							
BLANK	CALIBRATE	CCB	0.01							
BLANK	DIGESTION	DBLANK	0.01							
STANDARD	ICV	ICAP-19	1.03			1.00	103			
STANDARD	CCV	ICAP-19	1.04			1.00	104			
STANDARD	CCV	ICAP-19	1.03			1.00	103			
SPIKE	ANALYTICAL	912523-1	1.01					0.01	1.00	100
DUPLICATE	DIGESTION	912523-1	0.01	0.01	0.00					
PARAMETER:Lead (Pb), total				DATE/TIME ANALYZED:10/31/91 11:06						QC BATCH NUMBER:117410
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7420 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	DIGESTION	DBLANK	0.07							
STANDARD	ICV	ICAP-19	1.00			1.00	100			
STANDARD	CCV	ICAP-19	0.95			1.00	95			
STANDARD	CCV	ICAP-19	1.00			1.00	100			
SPIKE	ANALYTICAL	912494-1	1.21					0.28	1.00	93
SPIKE	ANALYTICAL	912523-1	1.01					0.12	1.00	89
DUPLICATE	ANALYTICAL	912494-1	0.26	0.28	7					
DUPLICATE	ANALYTICAL	912523-1	0.12	0.08	0.04					
PARAMETER:Silver (Ag), total				DATE/TIME ANALYZED:11/04/91 11:06						QC BATCH NUMBER:117453
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7760 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	DIGESTION	DBLANK	<0.05							
STANDARD	ICV	ICAP-7	1.99			2.00	100			
STANDARD	CCV	ICAP-7	1.98			2.00	99			
STANDARD	CCV	ICAP-7	1.73			2.00	87			
SPIKE	ANALYTICAL	912494-1	0.86					0.48	0.50	76
SPIKE	ANALYTICAL	912523-1	2.04					0.05	2.00	100
DUPLICATE	DIGESTION	912494-1	0.49	0.48	2					
DUPLICATE	DIGESTION	912523-1	0.05	0.04	0.01					
PARAMETER:Chromium (Cr), total				DATE/TIME ANALYZED:11/04/91 11:21						QC BATCH NUMBER:117462
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7190 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	CALIBRATE	CCB	0.07							
BLANK	DIGESTION	DBLANK	0.07							

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QUALITY ASSURANCE REPORT
02/11/92

JOB NUMBER: 912489 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Chromium (Cr), total REPORTING LIMIT/DF: 0.05 UNITS:mg/l				DATE/TIME ANALYZED:11/04/91 11:21 METHOD REFERENCE :3010/7190 (2)					QC BATCH NUMBER:117462 TECHNICIAN:CP	
STANDARD	ICV	ICAP-19	0.95			1.00	95			
STANDARD	CCV	ICAP-19	0.96			1.00	96			
STANDARD	CCV	ICAP-19	0.97			1.00	97			
SPIKE	ANALYTICAL	912494-1	1.05					0.09	1.00	96
DUPLICATE	DIGESTION	912494-1	0.10	0.08	0.02					
DUPLICATE	DIGESTION	912523-1	0.07	0.07	0.00					
PARAMETER:Manganese (Mn), total REPORTING LIMIT/DF: 0.05 UNITS:mg/l				DATE/TIME ANALYZED:11/04/91 11:30 METHOD REFERENCE :3010/7460 (2)					QC BATCH NUMBER:117465 TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	DIGESTION	DBLANK	<0.05							
STANDARD	ICV	ICAP-19	1.04			1.00	104			
STANDARD	CCV	ICAP-19	1.04			1.00	104			
STANDARD	CCV	ICAP-19	1.02			1.00	102			
SPIKE	ANALYTICAL	912523-1	1.38					0.36	1.00	102
DUPLICATE	DIGESTION	912523-1	0.36	0.36	0					
PARAMETER:Calcium (Ca), total REPORTING LIMIT/DF: 0.5 UNITS:mg/l				DATE/TIME ANALYZED:11/04/91 15:48 METHOD REFERENCE :3010/7140 (2)					QC BATCH NUMBER:117492 TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.5							
BLANK	CALIBRATE	CCB	<0.5							
STANDARD	ICV	ICAP-7	41.2			40.0	103			
STANDARD	CCV	ICAP-7	42.5			40.0	106			
SPIKE	ANALYTICAL	912489-1	30.7					5.9	25.0	99
DUPLICATE	ANALYTICAL	912489-1	5.9	5.8	2					
PARAMETER:Vanadium (V), total REPORTING LIMIT/DF: 0.05 UNITS:mg/l				DATE/TIME ANALYZED:11/04/91 15:56 METHOD REFERENCE :3010/7910 (2)					QC BATCH NUMBER:117493 TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	0.12							
BLANK	DIGESTION	DBLANK	0.20							
STANDARD	ICV	ICAP-19	1.02			1.00	102			
STANDARD	CCV	ICAP-19	1.04			1.00	104			
SPIKE	ANALYTICAL	912489-1	1.24					0.24	1.00	100
PARAMETER:Phosphorus, Total, as P, diss. REPORTING LIMIT/DF: 0.03 UNITS:mg/l				DATE/TIME ANALYZED:11/06/91 16:26 METHOD REFERENCE :365.2 (1)					QC BATCH NUMBER:117608 TECHNICIAN:CP	
BLANK	DIGESTION	ICB	<0.03							
BLANK	DIGESTION	CCB	<0.03							
BLANK	CALIBRATE	CCB	<0.03							

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QUALITY ASSURANCE REPORT
02/11/92

JOB NUMBER: 912489 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Phosphorus, Total, as P, diss.				DATE/TIME ANALYZED:11/06/91 16:26						QC BATCH NUMBER:117608
REPORTING LIMIT/DF: 0.03 UNITS:mg/l				METHOD REFERENCE :365.2 (1)						TECHNICIAN:CP
STANDARD	ICV	WP1188-1	0.14			0.15	93			
STANDARD	CCV	WP1188-1	0.14			0.15	93			
SPIKE	ANALYTICAL	912523-1	0.11					0.06	0.05	100
DUPLICATE	ANALYTICAL	912523-1	0.06	0.06	0.00					
PARAMETER:Selenium (Se), total				DATE/TIME ANALYZED:11/07/91 13:35						QC BATCH NUMBER:117644
REPORTING LIMIT/DF: 0.001 UNITS:mg/l				METHOD REFERENCE :7741 (1)						TECHNICIAN:TS
BLANK	PREP	REAGENT	<0.001							
STANDARD	PREP	WS378-5	0.006			0.007	86			
SPIKE	ANALYTICAL	912523-1	0.006					<.001	0.005	120
DUPLICATE	ANALYTICAL	912523-1	<0.001	<0.001	NC					
PARAMETER:Arsenic (As), total				DATE/TIME ANALYZED:11/07/91 15:48						QC BATCH NUMBER:117655
REPORTING LIMIT/DF: 0.002 UNITS:mg/l				METHOD REFERENCE :7061 (2)						TECHNICIAN:TS
[illegible]NK	PREP	REAGENT	<0.002							
[illegible]ANDARD	PREP	WS378-4	0.028			0.025	112			
SPIKE	ANALYTICAL	912489-1	0.007					0.001	0.005	120
DUPLICATE	ANALYTICAL	912489-1	<0.002	<0.002	NC					
PARAMETER:Gross Alpha, total				DATE/TIME ANALYZED:11/13/91 13:05						QC BATCH NUMBER:117772
REPORTING LIMIT/DF: UNITS:pCi/l				METHOD REFERENCE :EPA 900.0						TECHNICIAN:DF
SPIKE	prep	912535-3	38					2.0	46	78
SPIKE	prep	912461-5	37					0.0	46	80
DUPLICATE	prep	912461-1	0.0	4.0	4					
DUPLICATE	prep	912464-1	0.9	0.0	200					
PARAMETER:Ammonia (NH3-N), total				DATE/TIME ANALYZED:11/13/91 15:40						QC BATCH NUMBER:117796
REPORTING LIMIT/DF: 0.1 UNITS:mg/l				METHOD REFERENCE :350.3 (1)						TECHNICIAN:CP
BLANK	REAGENT	RBLANK	<0.1							
BLANK	REAGENT	RBLANK	<0.1							
STANDARD	ICV	WP689-2	5.7			5.5	104			
STANDARD	CCV	WP689-2	5.5			5.5	100			
STANDARD	CCV	WP689-2	5.5			5.5	100			
SPIKE	ANALYTICAL	912489-1	0.7					0.2	0.5	100
SPIKE	ANALYTICAL	912592-2	5.8					2.9	2.5	116
DUPLICATE	ANALYTICAL	912489-1	0.2	0.2	0.0					
DUPLICATE	ANALYTICAL	912592-2	2.9	3.0	3					
PARAMETER:Radon 222				DATE/TIME ANALYZED:11/14/91 09:48						QC BATCH NUMBER:117811
REPORTING LIMIT/DF: 1 UNITS:pCi/l				METHOD REFERENCE :						TECHNICIAN:DF
DUPLICATE	prep	912382-1	3880	3913	1					

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QUALITY ASSURANCE REPORT
02/11/92

JOB NUMBER: 912489 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Radon 222				DATE/TIME ANALYZED:11/14/91 09:48					QC BATCH NUMBER:117811	
REPORTING LIMIT/DF: 1	UNITS:pCi/l			METHOD REFERENCE :					TECHNICIAN:DF	
DUPLICATE	prep	912424-1	16300	15600	4					
DUPLICATE	prep	912489-1	143	222	43					
DUPLICATE	prep	912443-3	505	186	92					
DUPLICATE	prep	912443-14	484	400	19					
DUPLICATE	prep	912523-1	292	473	47					
DUPLICATE	prep	912524-1	205	212	3					
DUPLICATE	prep	912585-1	430	384	11					
PARAMETER:pH				DATE/TIME ANALYZED:10/29/91 09:10					QC BATCH NUMBER:117941	
REPORTING LIMIT/DF: 0.01	UNITS:pH units			METHOD REFERENCE :150.1 (1)					TECHNICIAN:JL	
DUPLICATE	ANALYTICAL	912489-1	9.32	9.35	0					
PARAMETER:Fluoride (F), dissolved				DATE/TIME ANALYZED:11/14/91 10:17					QC BATCH NUMBER:117970	
REPORTING LIMIT/DF: 0.1	UNITS:mg/l			METHOD REFERENCE :340.2 (1)					TECHNICIAN:CP	
BLANK	REAGENT	RBLK	<0.1							
BLANK	REAGENT	RBLK	<0.1							
STANDARD	ICV	EPA #378	0.9			0.9	100			
STANDARD	CCV	EPA #378	0.9			0.9	100			
STANDARD	CCV	EPA #378	0.9			0.9	100			
SPIKE	ANALYTICAL	912488-1	0.8					0.3	0.5	100
DUPLICATE	ANALYTICAL	912488-1	0.3	0.3	0.0					
PARAMETER:Calcium (Ca), dissolved				DATE/TIME ANALYZED:11/19/91 11:16					QC BATCH NUMBER:118667	
REPORTING LIMIT/DF: 1	UNITS:mg/l			METHOD REFERENCE :215.1 (1)					TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<1							
BLANK	CALIBRATE	CCB	1							
STANDARD	ICV	ICAP-7	30			30	100			
STANDARD	CCV	ICAP-7	31			30	103			
SPIKE	ANALYTICAL	912489-1	20					6	15	93
DUPLICATE	ANALYTICAL	912489-1	6	6	0					
PARAMETER:Potassium (K), dissolved				DATE/TIME ANALYZED:11/19/91 11:23					QC BATCH NUMBER:118673	
REPORTING LIMIT/DF: 0.01	UNITS:mg/l			METHOD REFERENCE :258.1 (1)					TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.01							
BLANK	CALIBRATE	CCB	<0.01							
STANDARD	ICV	ICAP-7	39.7			40.0	99			
STANDARD	CCV	ICAP-7	40.0			40.0	100			
SPIKE	ANALYTICAL	912489-1	30.1					17.2	15.0	86
DUPLICATE	ANALYTICAL	912489-1	17.2	17.2	0					

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QUALITY ASSURANCE REPORT
02/11/92

JOB NUMBER: 912489 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Magnesium (Mg), dissolved				DATE/TIME ANALYZED:11/19/91 11:27						QC BATCH NUMBER:118677
REPORTING LIMIT/DF: 0.1 UNITS:mg/l				METHOD REFERENCE :242.1 (1)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.1							
BLANK	CALIBRATE	CCB	<0.1							
STANDARD	ICV	ICAP-7	10.1			10.0	101			
STANDARD	CCV	ICAP-7	10.2			10.0	102			
SPIKE	ANALYTICAL	912489-1	11.3					2.6	10.0	87
DUPLICATE	ANALYTICAL	912489-1	2.6	2.7	4					
PARAMETER:Sodium (Na), dissolved				DATE/TIME ANALYZED:11/19/91 11:39						QC BATCH NUMBER:118684
REPORTING LIMIT/DF: 10 UNITS:mg/l				METHOD REFERENCE :273.1 (1)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<10							
BLANK	CALIBRATE	CCB	<10							
STANDARD	ICV	ICAP-7	100			100	100			
STANDARD	CCV	ICAP-7	100			100	100			
SPIKE	ANALYTICAL	912489-1	110					40	60	117
DUPLICATE	ANALYTICAL	912489-1	40	40	0					
PARAMETER:Aluminum (Al), total				DATE/TIME ANALYZED:11/15/91 13:33						QC BATCH NUMBER:118686
REPORTING LIMIT/DF: 1 UNITS:mg/l				METHOD REFERENCE :3010/7020 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<1							
BLANK	CALIBRATE	CCB	<1							
BLANK	DIGESTION	DBLANK	<1							
STANDARD	ICV	ICAP-20	5			5	100			
STANDARD	CCV	ICAP-20	5			5	100			
SPIKE	ANALYTICAL	912524-1	1					<1	1	100
DUPLICATE	ANALYTICAL	912524-1	<1	<1	NC					
PARAMETER:Iron (Fe), total				DATE/TIME ANALYZED:11/15/91 13:39						QC BATCH NUMBER:118688
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7380 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
STANDARD	ICV	ICAP-19	2.08			2.00	104			
STANDARD	CCV	ICAP-19	1.86			2.00	93			
SPIKE	ANALYTICAL	912524-1	2.73					1.68	1.00	105
DUPLICATE	ANALYTICAL	912524-1	1.68	1.62	4					
PARAMETER:Zinc (Zn), total				DATE/TIME ANALYZED:11/15/91 13:46						QC BATCH NUMBER:118689
REPORTING LIMIT/DF: 0.1 UNITS:mg/l				METHOD REFERENCE :3010/7950 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.1							
BLANK	CALIBRATE	CCB	<0.1							
STANDARD	ICV	ICAP-19	0.9			1.0	90			
STANDARD	CCV	ICAP-19	0.9			1.0	90			
SPIKE	ANALYTICAL	912524-1	1.0					<0.1	1.0	100

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QUALITY ASSURANCE REPORT
02/11/92

JOB NUMBER: 912489 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Zinc (Zn), total REPORTING LIMIT/DF: 0.1 UNITS:mg/l				DATE/TIME ANALYZED:11/15/91 13:46 METHOD REFERENCE :3010/7950 (2)					QC BATCH NUMBER:118689 TECHNICIAN:CP	
DUPLICATE	ANALYTICAL	912524-1	<0.1	<0.1	NC					
PARAMETER:Beryllium (Be), total REPORTING LIMIT/DF: 0.01 UNITS:mg/l				DATE/TIME ANALYZED:11/18/91 13:49 METHOD REFERENCE :3010/7090 (2)					QC BATCH NUMBER:118690 TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.01							
BLANK	CALIBRATE	CCB	<0.01							
STANDARD	ICV	ICAP-19	0.98			1.00	98			
STANDARD	CCV	ICAP-19	0.96			1.00	96			
SPIKE	ANALYTICAL	912489-1	0.81					<0.01	1.00	81
DUPLICATE	ANALYTICAL	912489-1	<0.01	<0.01	NC					
PARAMETER:Carbonate (CO3), dissolved REPORTING LIMIT/DF: 1 UNITS:mg/l				DATE/TIME ANALYZED:10/25/91 14:21 METHOD REFERENCE :310.1 (1)					QC BATCH NUMBER:118696 TECHNICIAN:JL	
DUPLICATE	ANALYTICAL	912523-1	<1	<1	NC					
PARAMETER:Bicarbonate (HCO3), dissolved REPORTING LIMIT/DF: 5 UNITS:mg/l				DATE/TIME ANALYZED:10/25/91 14:23 METHOD REFERENCE :310.1 (1)					QC BATCH NUMBER:118697 TECHNICIAN:JL	
DUPLICATE	ANALYTICAL	912523-1	1330	1324	0					
PARAMETER:Hydroxide (OH), dissolved REPORTING LIMIT/DF: 1 UNITS:mg/l				DATE/TIME ANALYZED:10/25/91 14:25 METHOD REFERENCE :310.1 (1)					QC BATCH NUMBER:118698 TECHNICIAN:JL	
DUPLICATE	ANALYTICAL	912523-1	<1	<1	NC					
PARAMETER:Chloride (Cl), dissolved REPORTING LIMIT/DF: 0.5 UNITS:mg/l				DATE/TIME ANALYZED:10/23/91 15:06 METHOD REFERENCE :325.3 (1)					QC BATCH NUMBER:118703 TECHNICIAN:JL	
SPIKE	ANALYTICAL	912445-6	2050					1550	500	100
DUPLICATE	ANALYTICAL	912445-4	1100	1100	0					
PARAMETER:Sulfate (SO4), dissolved REPORTING LIMIT/DF: 10 UNITS:mg/l				DATE/TIME ANALYZED:01/08/92 15:11 METHOD REFERENCE :375.4 (1)					QC BATCH NUMBER:118705 TECHNICIAN:JL	
DUPLICATE	ANALYTICAL	912471-4	32	34	2					
PARAMETER:Conductivity REPORTING LIMIT/DF: 1 UNITS:umho/cm @77F				DATE/TIME ANALYZED:10/23/91 15:13 METHOD REFERENCE :120.1 (1)					QC BATCH NUMBER:118707 TECHNICIAN:JL	
DUPLICATE	ANALYTICAL	912445-9	11900	11800	1					
PARAMETER:Uranium (U), total REPORTING LIMIT/DF: 0.001 UNITS:mg/l				DATE/TIME ANALYZED:10/31/91 10:47 METHOD REFERENCE :					QC BATCH NUMBER:119382 TECHNICIAN:DB	
BLANK	prep	DIH2O	<0.001							

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QUALITY ASSURANCE REPORT
02/11/92

JOB NUMBER: 912489 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Uranium (U), total REPORTING LIMIT/DF: 0.001 UNITS:mg/l				DATE/TIME ANALYZED:10/31/91 10:47 METHOD REFERENCE :						QC BATCH NUMBER:119382 TECHNICIAN:DB
STANDARD	prep	U308	0.094			0.085	111			
PARAMETER:Radium 226, total REPORTING LIMIT/DF: UNITS:pCi/l				DATE/TIME ANALYZED:01/31/92 11:10 METHOD REFERENCE :EPA 903.1						QC BATCH NUMBER:119532 TECHNICIAN:DF
DUPLICATE	prep	912489-1	ND	ND	0					
PARAMETER:Radium 228, total REPORTING LIMIT/DF: UNITS:pCi/l				DATE/TIME ANALYZED:01/31/92 11:14 METHOD REFERENCE :EPA 904.0						QC BATCH NUMBER:119535 TECHNICIAN:DF
DUPLICATE	prep	912489-1	ND	ND	0					
PARAMETER:Carbon 14 REPORTING LIMIT/DF: UNITS:pCi/l				DATE/TIME ANALYZED:02/06/92 11:12 METHOD REFERENCE :LIQ. SCINTILLATION						QC BATCH NUMBER:119698 TECHNICIAN:DF
DUPLICATE	prep	912523-1	2380	2110	12					
PARAMETER:Tritium REPORTING LIMIT/DF: UNITS:pCi/l				DATE/TIME ANALYZED:02/06/92 11:15 METHOD REFERENCE :EPA 906.0						QC BATCH NUMBER:119702 TECHNICIAN:DF
DUPLICATE	prep	912523-1	2350	2900	21					

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02/11/92

NC = Not Calculable due to values lower than the detection limit
ND = Not detected at level in limits column
Quality Control Acceptance Criteria:

Blanks.....:	Analyzed Value less than or equal to the Detection Limit
Reference Standards:	100 +/- 10 Percent Recovery
Duplicates.....:	20% Relative Percent Difference, or +/- the Detection Limit
Spikes.....:	100 +/- 25 Percent Recovery

(1) EPA 600/4-79-020, Methods for Chemical Analysis of Water and Wastes, March 1983
(2) EPA SW-846, Test Methods for Evaluating Solid Waste, Third Edition, November 1986
(3) Standards Methods for the Examination of Water and Wastewater, 16th, 1985
(4) EPA/6004-80-032, Prescribed Procedures for Measurement of Radioactivity in Drinking Water, August 1980
(5) Federal Register, Friday, October 26, 1984 (40 CFR Part 136)
(6) EPA 600/8-78-017, Microbiological Methods for Monitoring the Environment, December 1978

NOTE - Data reported in QA report may differ from values on data page due to dilution of sample into analytical ranges.

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A N A L Y T I C A L R E P O R T

Job Number: 912500
Prepared For:

GOLDER ASSOCIATES
KENT ANGELOS
4104 148th AVENUE NE
REDMOND, WA 98052

Date: 02/12/92

Shari Davis
Signature

2/12/92
Date:

Name: Shari Davis

Core Laboratories, Inc.
420 West First Street
Casper, WY 82601

Title: Laboratory Manager

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LABORATORY TESTS RESULTS
02/12/92

JOB NUMBER: 912500 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

CLIENT I.D.....: 913-1101 / S-11
DATE SAMPLED.....: 10/19/91
TIME SAMPLED.....: 14:15
WORK DESCRIPTION...: S-11B-S

LABORATORY I.D...: 912500-0001
DATE RECEIVED....: 10/22/91
TIME RECEIVED....: 16:30
REMARKS.....: SOIL

TEST DESCRIPTION	FINAL RESULT	DETECTION LIMIT	UNITS OF MEASURE	TEST METHOD	DATE	TECHNICIAN
Potassium 40 by HPGe gamma	18.5		pCi/gm		02/06/92	MJN
Lead 210, total	4.4		pCi/gm		01/22/92	DF
Lead 210, total, error, +/-	1.9		pCi/gm		01/22/92	DF
Lead 210, total, LLD	2.8		pCi/gm		01/22/92	DF
Radium 226, total	3.7		pCi/gm	EPA 903.1	12/31/91	DF
Radium 226, total, error, +/-	0.8		pCi/gm		12/31/91	DF
Radium 226, total, LLD	0.2		pCi/gm		12/31/91	DF
um 228, total	4.1		pCi/gm	EPA 904.0	12/31/91	DF
Radium 228, total, error, +/-	1.8		pCi/gm		12/31/91	DF
Radium 228, total, LLD	2.6		pCi/gm		12/31/91	DF
Thorium 230, total	3.7		pCi/gm		02/06/92	MJN
Thorium 230, total, error, +/-	0.8		pCi/gm		02/06/92	MJN
Thorium 230, total, LLD	0.3		pCi/gm		02/06/92	MJN
Thorium 232, total	1.4		pCi/gm		02/06/92	MJN
Thorium 232, total, error, +/-	0.6		pCi/gm		02/06/92	MJN
Thorium 232, total, LLD	0.4		pCi/gm		02/06/92	MJN
Thorium 228, total	1.5		pCi/gm		02/06/92	MJN
Thorium 228, total,error, +/-	0.6		pCi/gm		02/06/92	MJN
Thorium 228, total, LLD	0.4		pCi/gm		02/06/92	MJN
Cation Exchange Capacity	<10	10	meq/l	9081 (2)	01/13/92	CP
pH 1:1 Aqueous	6.75	0.01	pH units	9045 (2)	11/21/91	TS
Fluoride (F), dissolved	6.7	0.1	mg/kg	340.2 (1)	11/14/91	CP
Nitrate/Nitrite (as N), diss.	<0.1	0.1	mg/l (1:1)	352.1+354.1 (1)	11/14/91	CP

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LABORATORY TESTS RESULTS
02/12/92

JOB NUMBER: 912500 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

CLIENT I.D.....: 913-1101 / S-11
DATE SAMPLED.....: 10/19/91
TIME SAMPLED.....: 14:15
WORK DESCRIPTION...: S-11B-S

LABORATORY I.D...: 912500-0001
DATE RECEIVED....: 10/22/91
TIME RECEIVED....: 16:30
REMARKS.....: SOIL

TEST DESCRIPTION	FINAL RESULT	DETECTION LIMIT	UNITS OF MEASURE	TEST METHOD	DATE	TECHNICIAN
Aluminum (Al), total	12600	50	mg/kg	3050/7020 (2)	11/15/91	CP
Arsenic (As), total	4.3	0.1	mg/kg	7061 (2)	11/07/91	TS
Beryllium (Be), total	0.7	0.5	mg/kg	3010/7090 (2)	11/18/91	CP
Cadmium (Cd), total	19.3	0.5	mg/kg	3050/7130 (2)	10/31/91	CP
Chromium (Cr), total	30.3	2.5	mg/kg	3010/7190 (2)	11/04/91	CP
Copper (Cu), total	17.8	0.5	mg/kg	3050/7210 (2)	10/31/91	CP
Iron (Fe), total	11800	2.5	mg/kg	3050/7380 (2)	11/15/91	CP
[illegible] (Pb), total	21.9	2.5	mg/kg	3050/7420 (2)	10/31/91	CP
Manganese (Mn), total	463	2.5	mg/kg	3010/7460 (2)	11/04/91	CP
Nickel (Ni), total	23.6	2.5	mg/kg	3050/7520 (2)	10/31/91	CP
Potassium (K), total	3530	25	mg/kg	3050/7610 (2)	11/19/91	CP
Selenium (Se), total	2.81	0.05	mg/kg	7741 (2)	11/07/91	TS
Silver (Ag), total	6.7	2.5	mg/kg	3050/7760 (2)	11/04/91	CP
Sodium (Na), total	680	0.5	mg/kg	3050/7770 (2)	02/12/92	CP
Uranium (U), total	0.056	0.001	mg/gm	EPA 908.1	11/07/91	DB
Vanadium (V), total	78.5	2.5	mg/kg	3050/7910 (2)	11/04/91	CP
Zinc (Zn), total	209	5	mg/kg	3050/7950 (2)	11/15/91	CP

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QUALITY ASSURANCE REPORT
02/12/92

JOB NUMBER: 912500 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Nickel (Ni), total				DATE/TIME ANALYZED:10/31/91 10:28					QC BATCH NUMBER:117403	
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7520 (2)					TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	DIGESTION	DBLANK	<0.05							
STANDARD	ICV	ICAP-19	1.01			1.00	101			
STANDARD	CCV	ICAP-19	0.99			1.00	99			
STANDARD	CCV	ICAP-19	1.02			1.00	102			
SPIKE	ANALYTICAL	912523-1	1.01					0.07	1.00	94
DUPLICATE	DIGESTION	912523-1	<0.05	<0.05	NC					
PARAMETER:Cadmium (Cd), total				DATE/TIME ANALYZED:10/31/91 10:46					QC BATCH NUMBER:117406	
REPORTING LIMIT/DF: 0.01 UNITS:mg/l				METHOD REFERENCE :3010/7130 (2)					TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.01							
BLANK	CALIBRATE	CCB	0.01							
BLANK	CALIBRATE	CCB	0.02							
BLANK	DIGESTION	DBLANK	0.01							
STANDARD	ICV	ICAP-19	0.97			1.00	97			
STANDARD	CCV	ICAP-19	0.98			1.00	98			
STANDARD	CCV	ICAP-19	0.96			1.00	96			
SPIKE	ANALYTICAL	912494-1	0.96					0.02	1.00	94
SPIKE	ANALYTICAL	912523-1	0.96					0.01	1.00	95
DUPLICATE	DIGESTION	912494-1	0.02	0.02	0.00					
DUPLICATE	DIGESTION	912523-1	0.01	0.01	0.00					
PARAMETER:Copper (Cu), total				DATE/TIME ANALYZED:10/31/91 10:56					QC BATCH NUMBER:117408	
REPORTING LIMIT/DF: 0.01 UNITS:mg/l				METHOD REFERENCE :3010/7210 (2)					TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	0.01							
BLANK	CALIBRATE	CCB	<0.01							
BLANK	CALIBRATE	CCB	0.01							
BLANK	DIGESTION	DBLANK	0.01							
STANDARD	ICV	ICAP-19	1.03			1.00	103			
STANDARD	CCV	ICAP-19	1.04			1.00	104			
STANDARD	CCV	ICAP-19	1.03			1.00	103			
SPIKE	ANALYTICAL	912523-1	1.01					0.01	1.00	100
DUPLICATE	DIGESTION	912523-1	0.01	0.01	0.00					
PARAMETER:Lead (Pb), total				DATE/TIME ANALYZED:10/31/91 11:06					QC BATCH NUMBER:117410	
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7420 (2)					TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	DIGESTION	DBLANK	0.07							
STANDARD	ICV	ICAP-19	1.00			1.00	100			

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QUALITY ASSURANCE REPORT
02/12/92

JOB NUMBER: 912500 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Lead (Pb), total				DATE/TIME ANALYZED:10/31/91 11:06						QC BATCH NUMBER:117410
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7420 (2)						TECHNICIAN:CP
STANDARD	CCV	ICAP-19	0.95			1.00	95			
STANDARD	CCV	ICAP-19	1.00			1.00	100			
SPIKE	ANALYTICAL	912494-1	1.21					0.28	1.00	93
SPIKE	ANALYTICAL	912523-1	1.01					0.12	1.00	89
DUPLICATE	ANALYTICAL	912494-1	0.26	0.28	7					
DUPLICATE	ANALYTICAL	912523-1	0.12	0.08	0.04					
PARAMETER:Silver (Ag), total				DATE/TIME ANALYZED:11/04/91 11:06						QC BATCH NUMBER:117453
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7760 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	DIGESTION	DBLANK	<0.05							
STANDARD	ICV	ICAP-7	1.99			2.00	100			
STANDARD	CCV	ICAP-7	1.98			2.00	99			
STANDARD	CCV	ICAP-7	1.73			2.00	87			
SPIKE	ANALYTICAL	912494-1	0.86					0.48	0.50	76
SPIKE	ANALYTICAL	912523-1	2.04					0.05	2.00	100
DUPLICATE	DIGESTION	912494-1	0.49	0.48	2					
DUPLICATE	DIGESTION	912523-1	0.05	0.04	0.01					
PARAMETER:Chromium (Cr), total				DATE/TIME ANALYZED:11/04/91 11:21						QC BATCH NUMBER:117462
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7190 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	CALIBRATE	CCB	0.07							
BLANK	DIGESTION	DBLANK	0.07							
STANDARD	ICV	ICAP-19	0.95			1.00	95			
STANDARD	CCV	ICAP-19	0.96			1.00	96			
STANDARD	CCV	ICAP-19	0.97			1.00	97			
SPIKE	ANALYTICAL	912494-1	1.05					0.09	1.00	96
DUPLICATE	DIGESTION	912494-1	0.10	0.08	0.02					
DUPLICATE	DIGESTION	912523-1	0.07	0.07	0.00					
PARAMETER:Manganese (Mn), total				DATE/TIME ANALYZED:11/04/91 11:30						QC BATCH NUMBER:117465
REPORTING LIMIT/DF: 0.05 UNITS:mg/l				METHOD REFERENCE :3010/7460 (2)						TECHNICIAN:CP
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
BLANK	DIGESTION	DBLANK	<0.05							
STANDARD	ICV	ICAP-19	1.04			1.00	104			
STANDARD	CCV	ICAP-19	1.04			1.00	104			
STANDARD	CCV	ICAP-19	1.02			1.00	102			

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QUALITY ASSURANCE REPORT
02/12/92

JOB NUMBER: 912500 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Manganese (Mn), total REPORTING LIMIT/DF: 0.05 UNITS:mg/l				DATE/TIME ANALYZED:11/04/91 11:30 METHOD REFERENCE :3010/7460 (2)					QC BATCH NUMBER:117465 TECHNICIAN:CP	
SPIKE	ANALYTICAL	912523-1	1.38					0.36	1.00	102
DUPLICATE	DIGESTION	912523-1	0.36	0.36	0					
PARAMETER:Vanadium (V), total REPORTING LIMIT/DF: 0.05 UNITS:mg/l				DATE/TIME ANALYZED:11/04/91 15:56 METHOD REFERENCE :3010/7910 (2)					QC BATCH NUMBER:117493 TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	0.12							
BLANK	DIGESTION	DBLANK	0.20							
STANDARD	ICV	ICAP-19	1.02			1.00	102			
STANDARD	CCV	ICAP-19	1.04			1.00	104			
SPIKE	ANALYTICAL	912489-1	1.24					0.24	1.00	100
PARAMETER:Selenium (Se), total REPORTING LIMIT/DF: 0.001 UNITS:mg/l				DATE/TIME ANALYZED:11/07/91 13:35 METHOD REFERENCE :7741 (1)					QC BATCH NUMBER:117644 TECHNICIAN:TS	
BLANK	PREP	REAGENT	<0.001							
STANDARD	PREP	WS378-5	0.006			0.007	86			
SPIKE	ANALYTICAL	912523-1	0.006					<.001	0.005	120
DUPLICATE	ANALYTICAL	912523-1	<0.001	<0.001	NC					
PARAMETER:Arsenic (As), total REPORTING LIMIT/DF: 0.002 UNITS:mg/l				DATE/TIME ANALYZED:11/07/91 15:48 METHOD REFERENCE :7061 (2)					QC BATCH NUMBER:117655 TECHNICIAN:TS	
BLANK	PREP	REAGENT	<0.002							
STANDARD	PREP	WS378-4	0.028			0.025	112			
SPIKE	ANALYTICAL	912489-1	0.007					0.001	0.005	120
DUPLICATE	ANALYTICAL	912489-1	<0.002	<0.002	NC					
PARAMETER:Nitrate/Nitrite (as N), diss. REPORTING LIMIT/DF: 0.1 UNITS:mg/l				DATE/TIME ANALYZED:11/14/91 10:57 METHOD REFERENCE :352.1+354.1 (1)					QC BATCH NUMBER:117816 TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.1							
SPIKE	ANALYTICAL	912488-1	0.163					0.113	0.05	100
DUPLICATE	ANALYTICAL	912488-1	0.113	0.113	0.0					
PARAMETER:pH 1:1 Aqueous REPORTING LIMIT/DF: 0.01 UNITS:pH units				DATE/TIME ANALYZED:11/21/91 16:37 METHOD REFERENCE :9045 (2)					QC BATCH NUMBER:117891 TECHNICIAN:TS	
DUPLICATE	ANALYTICAL	912582-2	6.40	6.40	0					
PARAMETER:Fluoride (F), dissolved REPORTING LIMIT/DF: 0.1 UNITS:mg/l				DATE/TIME ANALYZED:11/14/91 10:17 METHOD REFERENCE :340.2 (1)					QC BATCH NUMBER:117970 TECHNICIAN:CP	
BLANK	REAGENT	RBLK	<0.1							
BLANK	REAGENT	RBLK	<0.1							

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QUALITY ASSURANCE REPORT
02/12/92

JOB NUMBER: 912500 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Fluoride (F), dissolved REPORTING LIMIT/DF: 0.1 UNITS:mg/l				DATE/TIME ANALYZED:11/14/91 10:17 METHOD REFERENCE :340.2 (1)				QC BATCH NUMBER:117970 TECHNICIAN:CP		
STANDARD	ICV	EPA #378	0.9			0.9	100			
STANDARD	CCV	EPA #378	0.9			0.9	100			
STANDARD	CCV	EPA #378	0.9			0.9	100			
SPIKE	ANALYTICAL	912488-1	0.8					0.3	0.5	100
DUPLICATE	ANALYTICAL	912488-1	0.3	0.3	0.0					
PARAMETER:Radium 228, total REPORTING LIMIT/DF: UNITS:pCi/l				DATE/TIME ANALYZED:12/31/91 08:53 METHOD REFERENCE :EPA 904.0				QC BATCH NUMBER:118416 TECHNICIAN:DF		
DUPLICATE	prep	912500-1	4.1	2.3	56					
PARAMETER:Radium 226, total REPORTING LIMIT/DF: UNITS:pCi/l				DATE/TIME ANALYZED:12/31/91 08:55 METHOD REFERENCE :EPA 903.1				QC BATCH NUMBER:118419 TECHNICIAN:DF		
DUPLICATE	prep	912500-1	3.7	3.5	6					
PARAMETER:Aluminum (Al), total REPORTING LIMIT/DF: 1 UNITS:mg/l				DATE/TIME ANALYZED:11/15/91 13:36 METHOD REFERENCE :3010/7020 (2)				QC BATCH NUMBER:118687 TECHNICIAN:CP		
BLANK	CALIBRATE	ICB	<1							
BLANK	CALIBRATE	CCB	<1							
STANDARD	ICV	ICAP-20	5			5	100			
STANDARD	CCV	ICAP-20	5			5	100			
PARAMETER:Iron (Fe), total REPORTING LIMIT/DF: 0.05 UNITS:mg/l				DATE/TIME ANALYZED:11/15/91 13:39 METHOD REFERENCE :3010/7380 (2)				QC BATCH NUMBER:118688 TECHNICIAN:CP		
BLANK	CALIBRATE	ICB	<0.05							
BLANK	CALIBRATE	CCB	<0.05							
STANDARD	ICV	ICAP-19	2.08			2.00	104			
STANDARD	CCV	ICAP-19	1.86			2.00	93			
SPIKE	ANALYTICAL	912524-1	2.73					1.68	1.00	105
DUPLICATE	ANALYTICAL	912524-1	1.68	1.62	4					
PARAMETER:Zinc (Zn), total REPORTING LIMIT/DF: 0.1 UNITS:mg/l				DATE/TIME ANALYZED:11/15/91 13:46 METHOD REFERENCE :3010/7950 (2)				QC BATCH NUMBER:118689 TECHNICIAN:CP		
BLANK	CALIBRATE	ICB	<0.1							
BLANK	CALIBRATE	CCB	<0.1							
STANDARD	ICV	ICAP-19	0.9			1.0	90			
STANDARD	CCV	ICAP-19	0.9			1.0	90			
SPIKE	ANALYTICAL	912524-1	1.0					<0.1	1.0	100
DUPLICATE	ANALYTICAL	912524-1	<0.1	<0.1	NC					

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QUALITY ASSURANCE REPORT
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JOB NUMBER: 912500 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Beryllium (Be), total REPORTING LIMIT/DF: 0.01 UNITS:mg/l				DATE/TIME ANALYZED:11/18/91 13:49 METHOD REFERENCE :3010/7090 (2)					QC BATCH NUMBER:118690 TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.01							
BLANK	CALIBRATE	CCB	<0.01							
STANDARD	ICV	ICAP-19	0.98			1.00	98			
STANDARD	CCV	ICAP-19	0.96			1.00	96			
SPIKE	ANALYTICAL	912489-1	0.81					<0.01	1.00	81
DUPLICATE	ANALYTICAL	912489-1	<0.01	<0.01	NC					
PARAMETER:Lead 210, total REPORTING LIMIT/DF: UNITS:pCi/l				DATE/TIME ANALYZED:01/22/92 16:28 METHOD REFERENCE :					QC BATCH NUMBER:119204 TECHNICIAN:DF	
DUPLICATE	prep	920011-10	1.4	1.7	19					
DUPLICATE	prep	912500-1	4.4	4.6	4					
PARAMETER:Uranium (U), total REPORTING LIMIT/DF: 0.001 UNITS:mg/l				DATE/TIME ANALYZED:11/07/91 10:12 METHOD REFERENCE :					QC BATCH NUMBER:119380 TECHNICIAN:DB	
BLANK	prep	DIH20	<0.001							
STANDARD	prep	U308	0.094			0.085	111			
STANDARD	prep	U308	8.44			8.48	100			
SPIKE	prep	912269-10	0.584					0.142	0.424	104
DUPLICATE	prep	912500-1	0.056	0.054	4					
PARAMETER:Cation Exchange Capacity REPORTING LIMIT/DF: 10 UNITS:meq/l				DATE/TIME ANALYZED:01/13/92 15:39 METHOD REFERENCE :9081 (2)					QC BATCH NUMBER:119657 TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<10							
BLANK	CALIBRATE	CCB	<10							
STANDARD	ICV	ICAP-7	419			400	105			
STANDARD	CCV	ICAP-7	409			400	102			
SPIKE	ANALYTICAL	912500-1	230					195	40	88
DUPLICATE	REAGENT	912500-1	197	192	3					
PARAMETER:Potassium 40 by HPGe gamma REPORTING LIMIT/DF: 1 UNITS:pCi/gm				DATE/TIME ANALYZED:02/06/92 16:04 METHOD REFERENCE :					QC BATCH NUMBER:119728 TECHNICIAN:MJN	
DUPLICATE	prep	912500-1	18.5	14.9	22					
PARAMETER:Thorium 230, total REPORTING LIMIT/DF: UNITS:pCi/g				DATE/TIME ANALYZED:02/06/92 16:25 METHOD REFERENCE :					QC BATCH NUMBER:119734 TECHNICIAN:MJN	
STANDARD	prep	912500	11.1			10.9	102			
DUPLICATE	prep	912500-1	3.7	4.0	8					
PARAMETER:Thorium 232, total REPORTING LIMIT/DF: UNITS:pCi/g				DATE/TIME ANALYZED:02/06/92 16:27 METHOD REFERENCE :					QC BATCH NUMBER:119738 TECHNICIAN:MJN	
STANDARD	prep	912500	23.2			21.0	110			

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QUALITY ASSURANCE REPORT
02/12/92

JOB NUMBER: 912500 CUSTOMER: GOLDER ASSOCIATES ATTN: KENT ANGELOS

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Thorium 232, total REPORTING LIMIT/DF: UNITS:pCi/g				DATE/TIME ANALYZED:02/06/92 16:27 METHOD REFERENCE :					QC BATCH NUMBER:119738 TECHNICIAN:MJN	
DUPLICATE	prep	912500-1	1.4	1.1	24					
PARAMETER:Thorium 228, total REPORTING LIMIT/DF: UNITS:pCi/g				DATE/TIME ANALYZED:02/06/92 16:31 METHOD REFERENCE :					QC BATCH NUMBER:119742 TECHNICIAN:MJN	
STANDARD	prep	912500	20.2			21.0	96			
PARAMETER:Sodium (Na), total REPORTING LIMIT/DF: 0.01 UNITS:mg/l				DATE/TIME ANALYZED:02/12/92 09:12 METHOD REFERENCE :3010/7770 (2)					QC BATCH NUMBER:119916 TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.01							
BLANK	CALIBRATE	CCB	<0.01							
STANDARD	ICV	ICAP-7	0.50			0.50	100			
STANDARD	CCV	ICAP-7	0.51			0.50	102			
SPIKE	ANALYTICAL	912500-1	0.98					0.68	0.30	100
DUPLICATE	ANALYTICAL	912500-1	0.68	0.68	0					
PARAMETER:Potassium (K), total REPORTING LIMIT/DF: 0.5 UNITS:mg/l				DATE/TIME ANALYZED:11/19/91 09:15 METHOD REFERENCE :3010/7610 (2)					QC BATCH NUMBER:119917 TECHNICIAN:CP	
BLANK	CALIBRATE	ICB	<0.5							
BLANK	CALIBRATE	CCB	<0.5							
STANDARD	ICV	ICAP-7	39.7			40.0	99			
STANDARD	CCV	ICAP-7	40.0			40.0	100			
SPIKE	ANALYTICAL	912489-1	30.1					17.2	15.0	86
DUPLICATE	ANALYTICAL	912489-1	17.2	17.2	0					

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QUALITY ASSURANCE FOOTER
02/12/92

NC = Not Calculable due to values lower than the detection limit
ND = Not detected at level in limits column
Quality Control Acceptance Criteria:

Blanks.....:	Analyzed Value less than or equal to the Detection Limit
Reference Standards:	100 +/- 10 Percent Recovery
Duplicates.....:	20% Relative Percent Difference, or +/- the Detection Limit
Spikes.....:	100 +/- 25 Percent Recovery

(1) EPA 600/4-79-020, Methods for Chemical Analysis of Water and Wastes, March 1983
(2) EPA SW-846, Test Methods for Evaluating Solid Waste, Third Edition, November 1986
(3) Standards Methods for the Examination of Water and Wastewater, 16th, 1985
(4) EPA/6004-80-032, Prescribed Procedures for Measurement of Radioactivity in Drinking Water, August 1980
(5) Federal Register, Friday, October 26, 1984 (40 CFR Part 136)
(6) EPA 600/8-78-017, Microbiological Methods for Monitoring the Environment, December 1978

NOTE - Data reported in QA report may differ from values on data page due to dilution of sample into analytical ranges.

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