JUN 25 1993 (11) START 0029092

Station # 12

# ENGINEERING DATA TRANSMITTAL

Page 1 of 1

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7. Abstract

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# 1.0 INTRODUCTION

This report presents a summary of data limitations and data validation performed on sediment samples collected for the Columbia River Sediment evaluation project. Fifty-two samples were analyzed for metals and radiochemistry parameters. A total of nine sample delivery groups (data packages) were validated. The analyses performed consisted of:

- Metals
- Gross alpha and beta radioactivity
- Alpha spectrometry analysis for selected plutonium, uranium and americium isotopes
- Gamma spectrometry for selected isotopes (see Section 3.0)
- Strontium-90
- Technetium-99

The primary laboratory used for analysis was Thermo Analytical Laboratories (TMA/Norcal) with Roy F. Weston laboratories and their subcontractor, EcoTek used as the QA laboratory for the analysis of split samples.

Data verification and validation was performed in accordance with the project statement of work (WHC 1993) and validation procedures (Bechtold 1992). As required by the task order and statement of work, 100% of the data were validated which consisted of verifying sample results against the raw data to assure accuracy of the reported results, recalculating 20% of all reported results and comparing with reported values, and by checking 100% of the associated quality control analyses (calibrations, blanks, spikes, duplicates and control samples). At the completion of verification and validation of each data package, data validation technical memoranda were prepared for each data package and transmitted with the original documentation to HASM for inclusion in the project QA record.

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The report is organized into sections as follows: section one is a summary of the objectives and scope of the Columbia River Sediment data validation project. Section two is the metals data validation summary and section 3 is the radiochemistry data validation summary. Appendix A provides a validated metals data summary, appendix B contains validated metals laboratory reports, appendix C contains a validated radiochemistry data summary and appendix D contains validated radiochemistry laboratory reports.

## 1.1 OBJECTIVES AND SCOPE

The objectives of the project were to verify and validate all sample analyses against defined laboratory performance criteria and project-specific data quality objectives to assure all data are acceptable for use in the Columbia River sediment evaluation project. For the purposes of this report, the validated results were reviewed against the following data quality indicators:

- Precision of laboratory and field duplicate measurements
- Accuracy in terms of laboratory spikes, tracer yields, control samples, laboratory and field blanks and proper reporting
- Representativeness in terms of field duplicate analyses
- Completeness in terms of the percentage of valid measurements versus the total number of measurements performed
- Comparability in terms of split samples and reporting units

## 1.2 SAMPLE CROSS REFERENCE

Table 1-1 provides a cross-reference list of all samples validated including sample locations (Figure 1-1), sample dates, sample depths and NAD 83 coordinates.

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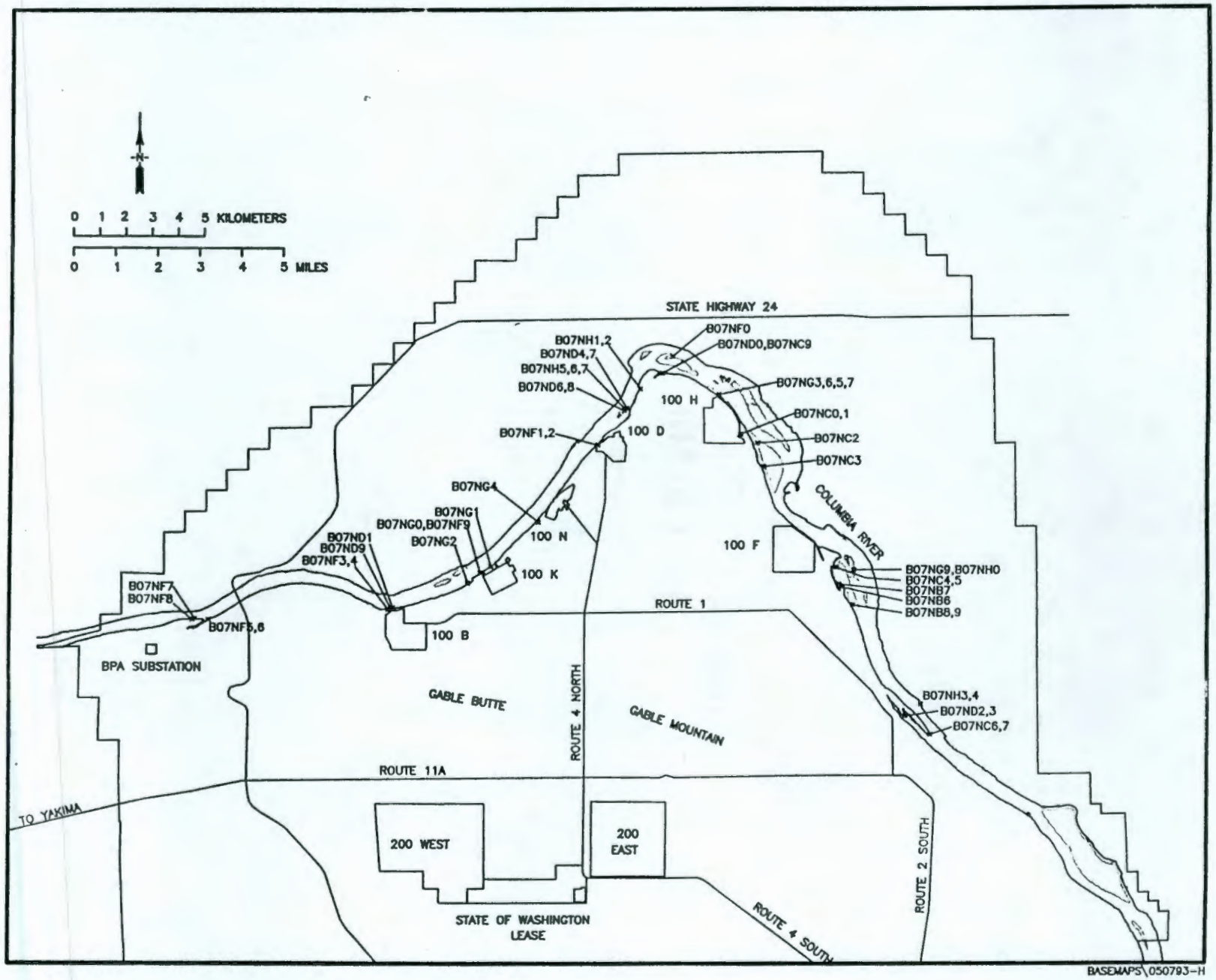


Figure 1-1. Sample Locations.

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**Table 1-1.** Columbia River Sediment Sample Cross Reference
(Sheet 1 of 2)

| HEIS NO. | SAMPLE DATE | SAMPLE LOCATION | SAMPLE INTERVAL, INCHES | | COMMENTS | NAD 83 COORD. | |
|---|---|---|---|---|---|---|---|
| | | | TOP | BOTTOM | | EASTING | NORTHING |
| B07NB6 | 12-Nov-92 | SITE F1 | 0 | 6 | | 582262.2 | 146193.7 |
| B07NB7 | 12-Nov-92 | SITE F2 | 0 | 6 | | 582149.9 | 146304.3 |
| B07NB8 | 12-Nov-92 | SITE F3 | 0 | 6 | | 582692.1 | 145485 |
| B07NB9 | 12-Nov-92 | SITE F3 | 12 | 24 | | 582692.1 | 145485 |
| B07NC0 | 13-Nov-92 | SITE H1 | 0 | 6 | | 578263 | 152108.2 |
| B07NC1 | 13-Nov-92 | SITE H1 | 12 | 18 | | 578263 | 152108.2 |
| B07NC2 | 13-Nov-92 | SITE H2 | 0 | 6 | | 578910.9 | 151754.4 |
| B07NC3 | 13-Nov-92 | SITE H3 | 0 | 6 | | 579164 | 150833.8 |
| B07NC4 | 16-Nov-92 | SITE F4 | 0 | 6 | | 582032.7 | 146961.3 |
| B07NC5 | 16-Nov-92 | SITE F4 | 12 | 16 | | 582032.7 | 146961.3 |
| B07NC6 | 16-Nov-92 | SITE HAN1 | 0 | 6 | | 585736.8 | 140407.7 |
| B07NC7 | 16-Nov-92 | SITE HAN1 | 12 | 16 | | 585736.8 | 140407.7 |
| B07NC8 | 19-Nov-92 | | | | Eq Blk | | |
| B07NC9 | 17-Nov-92 | SITE D/H | 12 | 18 | | 575174.1 | 154444.1 |
| B07ND0 | 17-Nov-92 | SITE D/H | 0 | 6 | | 575174.1 | 154444.1 |
| B07ND1 | 20-Nov-92 | SITE BC1 | 0 | 6 | Duplicate | | |
| B07ND2 | 17-Nov-92 | SITE HAN2 | 0 | 6 | | 584739.5 | 141117.5 |
| B07ND3 | 17-Nov-92 | SITE HAN2 | 12 | 18 | | 584739.5 | 141117.5 |
| B07ND4 | 19-Nov-92 | SITE DI1 | 0 | 6 | | 573793.6 | 153078 |
| B07ND5 | 19-Nov-92 | * | | | | | |
| B07ND6 | 19-Nov-92 | SITE DI2 | 0 | 6 | | 573687.5 | 152981.9 |
| B07ND7 | 19-Nov-92 | SITE DI1 | 0 | 6 | Duplicate | 573793.6 | 153078 |
| B07ND8 | 19-Nov-92 | SITE DI2 | 12 | 20 | | 573687.5 | 152981.9 |
| B07ND9 | 20-Nov-92 | SITE BC1 | 0 | 6 | | 564712 | 145348.6 |
| B07NF0 | 19-Nov-92 | SITE D4 | 0 | 6 | | 575580.4 | 155101.1 |
| B07NF1 | 19-Nov-92 | SITE D5 | 0 | 6 | | 572658.7 | 151684.5 |
| B07NF2 | 19-Nov-92 | SITE D5 | 12 | 18 | | 572658.7 | 151684.5 |
| B07NF3 | 20-Nov-92 | SITE BC2 | 0 | 6 | | 564535.5 | 145606.7 |
| B07NF4 | 20-Nov-92 | SITE BC2 | 12 | 18 | | 564535.5 | 145606.7 |
| B07NF5 | 20-Nov-92 | SITE VBU1 | 0 | 6 | | 557603.1 | 144860.7 |
| B07NF6 | 20-Nov-92 | SITE VBU1 | 12 | 22 | | 557603.1 | 144860.7 |
| B07NF7 | 20-Nov-92 | SITE VBU2 | 0 | 6 | | 557066.3 | 144898.2 |
| B07NF8 | 20-Nov-92 | SITE VBU3 | 0 | 3 | | 556975.5 | 144852.6 |
| B07NF9 | 21-Nov-92 | SITE KU1 | 12 | 18 | | 568105.9 | 146712.5 |
| B07NG0 | 21-Nov-92 | SITE KU1 | 0 | 6 | | 568105.9 | 146712.5 |
| B07NG1 | 21-Nov-92 | SITE K2 | 0 | 3 | | 568519.7 | 146960.5 |
| B07NG2 | 21-Nov-92 | SITE K3 | 0 | 6 | | 567619.7 | 146308.7 |

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**Table 1-1.** Columbia River Sediment Sample Cross Reference
(Sheet 2 of 2)

| HEIS NO. | SAMPLE DATE | SAMPLE LOCATION | SAMPLE INTERVAL, INCHES | | COMMENTS | NAD 83 COORD. | |
|---|---|---|---|---|---|---|---|
| | | | TOP | BOTTOM | | EASTING | NORTHING |
| B07NG3 | 22-Nov-92 | SITE HU1 | 0 | 6 | | 577389.5 | 153623.9 |
| B07NG4 | 22-Nov-92 | SITE N | 0 | 3 | | 570348.6 | 148672.4 |
| B07NG5 | 22-Nov-92 | SITE HU1 | 12 | 18 | | 577389.5 | 153623.9 |
| B07NG6 | 22-Nov-92 | SITE HU1 | 0 | 6 | Duplicate | 577389.5 | 153623.9 |
| B07NG7 | 22-Nov-92 | SITE HU1 | 12 | 18 | Split | 577389.5 | 153623.9 |
| B07NG8 | 23-Nov-92 | | | | Eq Blk | | |
| B07NG9 | 23-Nov-92 | SITE FI1 | 0 | 6 | | 582731.8 | 146871.7 |
| B07NH0 | 23-Nov-92 | SITE FI1 | 12 | 18 | | 582731.8 | 146871.7 |
| B07NH1 | 23-Nov-92 | SITE DA1 | 0 | 6 | * | 574306.1 | 153825.1 |
| B07NH2 | 23-Nov-92 | SITE DA1 | 12 | 20 | | 574306.1 | 153825.1 |
| B07NH3 | 23-Nov-92 | SITE FF1 | 0 | 6 | | 585380.6 | 141598.9 |
| B07NH4 | 23-Nov-92 | SITE FF1 | 12 | 20 | | 585380.6 | 141598.9 |
| B07NH5 | 24-Nov-92 | SITE DI3 | 0 | 6 | | 573711.3 | 153053.2 |
| B07NH6 | 24-Nov-92 | SITE DI3 | 0 | 6 | Duplicate | 573711.3 | 153053.2 |
| B07NH7 | 24-Nov-92 | SITE DI3 | 0 | 6 | Split | 573711.3 | 153053.2 |

* - SITE LOCATION NOT PROVIDED

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# 2.0 METALS DATA VALIDATION SUMMARY

## 2.1 SUMMARY

The following presents a summary of the metals data validation results and review against the data quality objectives. Where appropriate minor deficiencies are identified which resulted in qualification of associated data as estimated (J for detected values, UJ for undetected values) or undetected (U). No major deficiencies were identified during validation and data review which resulted in data rejection or qualification as unusable (R for detected values, UR for undetected values).

Precision

- Laboratory duplicate relative percent difference (RPD) results were acceptable
- Laboratory ICP serial dilution percent difference (%D) performance was acceptable with the exception of minor exceedances for copper, barium and zinc
- Laboratory GFAA duplicate injection performance was acceptable
- Field duplicate RPD values were acceptable with the exception of manganese as noted in the minor deficiencies
- Field split RPD values were acceptable with the exception of aluminum, chromium, iron and magnesium

Accuracy

- Laboratory spike recoveries were acceptable with the exception of some low recoveries for antimony, arsenic, selenium, silver, lead, and manganese
- Laboratory graphite furnace atomic absorption (GFAA) analytical spike recoveries were acceptable with the exception of some low recoveries for arsenic, lead, selenium, and thallium
- Laboratory blank results were acceptable with the exception that cadmium and silver were detected in blanks associated with several samples resulting in qualification of the associated results as undetected (U)
- Equipment blank results show low concentrations of arsenic, barium, calcium, chromium, cobalt, copper, lead, manganese, magnesium, potassium, sodium and zinc at levels near the instrument detection limit. Aluminum and iron were the only analytes detected at concentrations above the contract required detection limits (CRDL), however the field blank samples were identified as silica sand matrices which in the authors opinion do not provide comparable data on the cleanliness of the sampling equipment and containers. Qualification of data against the field blank results was not conducted

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- All sample results and detection limits were verified and recalculated as required against the raw data and no deficiencies were identified

Representativeness

- Field duplicate RPD values were acceptable as described above indicating sampling locations and technique were sufficient to provide comparable results

Completeness

- A total of 52 samples were validated as part of this project with a total of 1196 measurements reported. All measurements were deemed valid or qualified due to minor deficiencies. Since no measurements were rejected as part of the validation the completeness percentage for this data set is 100%.

Comparability

- All results were reported in common units, milligrams per kilogram (mg/kg) to facilitate comparison of results

- CLP analytical protocols were used by the both primary and split laboratories allowing comparison of results and detection limits

## 2.2 CALIBRATIONS

Compliance with calibration requirements demonstrates the analytical instrument was capable of producing acceptable quantitative results prior to the analysis of samples.

### 2.2.1 Initial Calibrations

All initial calibration criteria as specified in the validation procedure were met.

### 2.2.2 Continuing Calibration

All continuing calibration criteria specified in the validation procedures were met.

## 2.3 BLANKS

A blank is an artificial sample designed to monitor the introduction of artifacts into the measurement process.

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### 2.3.1 Laboratory Blanks

A laboratory blank is a blank that is taken through sample preparation and analysis and is a test for contamination in sample preparation and analyses. Table 2-1 is a summary of the contaminants detected in the laboratory blanks for each data package.

For data package 9212L888-WES-914, no analytes were detected in the laboratory blanks.

### 2.3.2 Equipment Blanks

Samples B07NC8 and B07NG8 were identified as silica sand equipment blanks. Aluminum, barium, chromium, iron, lead, manganese and sodium were detected in the equipment blanks. Results of the equipment blanks are summarized in the Tables 2-2 and 2-3.

## 2.4 ACCURACY

Laboratory accuracy was assessed by evaluation of spike samples, control samples and GFAA analytical spikes as summarized in the following paragraphs.

### 2.4.1 Spike Sample Recovery

For data package B07NB6-TMA-351, the antimony spike results exceeded the QC limits of 75% to 125% with results qualified as estimated (J for detects and UJ for nondetects).

For data package 9212L888-WES-914, the arsenic, selenium and silver spike results exceeded the QC limits of 75% to 125% with results qualified as estimated (J for detects and UJ for nondetects).

For data package B07ND4-TMA-353, the antimony spike results exceeded the QC limits of 75% to 125% with results qualified as estimated (J for detects and UJ for nondetects).

For data package B07NC4-TMA-356, the antimony, lead, manganese and selenium spike results exceeded the QC limits of 75% to 125% with results qualified as estimated (J for detects and UJ for nondetects).

For data package B07NF9-TMA-354, the antimony and manganese spike results exceeded the QC limits of 75% to 125% with results qualified as estimated (J for detects and UJ for nondetects).

For data package B07NC8-TMA-355, the arsenic, antimony and manganese spike results exceeded the QC limits of 75% to 125% with results qualified as estimated (J for detects and UJ for nondetects).

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### 2.4.2 Laboratory Control Sample

The laboratory control sample (LCS) is a control sample of known composition and serves as a monitor of the overall performance of all steps in the analysis, including sample preparation.

All LCS recoveries were within control limits with the following exception:

For data package B07NF9-TMA-354, the laboratory control sample exceeded the QC limits of 80% to 120% for barium and the associated sample results were qualified as estimated (J).

### 2.4.3 ICP Interference Check Sample

Interference check samples (ICS) provide a means of monitoring for false identification and quantitation of ICP analytes during sample analysis. All ICS sample recoveries were within the control limit of 80% to 120%.

### 2.4.4 Graphite Furnace (GFAA) Analytical Spikes

Graphite furnace analytical spikes are conducted on every sample analyzed. The GFAA percent recoveries were within the limits of ≥ 85% and ≤ 115% with the following exceptions:

The analytical spike percent recoveries exceeded the QC limits for the samples and analytes shown in Table 2-4. Therefore, the associated sample results have been qualified as estimated (J for detects and UJ for nondetects).

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## 2.5 PRECISION

Precision was evaluated through the review of laboratory duplicate samples, serial dilutions and field duplicates. A summary of results of precision analyses are provided in the following sections.

### 2.5.1 Laboratory Duplicates

Laboratory duplicate relative percent differences (RPDs) were reviewed and recalculated to ensure samples were within control limits specified in the validation procedure. All duplicate samples analyzed were within the control limits.

### 2.5.2 ICP Serial Dilution

The ICP Serial Dilution is used to determine whether significant physical or chemical interferences exist due to sample matrix. All serial dilution percent differences were within a control limit of ± 10% with the following exception:

For data package B07NC4-TMA-356, the serial dilution result for copper exceeded the QC limit for analyte concentrations greater than 50 times the IDL. Results were qualified as estimated (J).

### 2.5.3 Field Duplicates

A total of four field duplicate samples were collected and analyzed. A summary of field duplicate samples is provided in Table 2-5. Field duplicates are not evaluated and sample results are not qualified in the same manner as laboratory duplicates because the field duplicate results are an indicator of the representativeness of field sampling procedures and handling and the homogeneity of the sample.

Field duplicate relative percent differences (RPDs) were reviewed and recalculated to ensure the samples were within control limits specified in the validation procedure. All samples analyzed were within the control limits with the exception of duplicate samples B07ND1/B07ND9 for which the manganese RPD was 75% for results greater than five times the CRQL.

## 2.6 SPLIT SAMPLES

A total of two split samples shown in Table 2-5 were collected. Evaluation of the split samples does not differ from the original samples. Field duplicate relative percent differences (RPDs) were reviewed and recalculated to ensure the samples were within control limits specified in the validation procedure. The RPDs were within control limits with the exception of the following:

- For split sample set B07NH5/B07NH7, aluminum, chromium, iron and magnesium RPDs were outside the control limits.
- For split sample set B07NG5/B07NG7, aluminum, chromium and iron RPDs were outside the control limits.

Field split sample RPDs outside the control limits are not used to qualify sample results.

## 2.7 METHOD OF STANDARD ADDITION (MSA)

The method of standard addition for analyte quantitation is necessary in GFAA analysis when sample absorbance is >50% of the analytical spike absorbance and the analytical spike recovery is outside of control limits. The MSA analyses were completed correctly with the exception of the following.

For data package B07NB6-TMA-351, the MSA correlation coefficient was <0.995 for selenium for samples B07NC0 and B07NC1. Sample results were qualified as estimated (J).

For data package 9212L888-WES-914, an MSA was performed and reported on sample B07NG7 for arsenic but was not required. The sample result was corrected on the results form to reflect the original correct concentration.

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For data package B07NC4-TMA-356, an MSA was performed on sample B07NC7 for lead but was not required. The sample result was corrected on the results form to reflect the original correct concentration.

For data package B07NF9-TMA-354, an MSA was required for sample B07NG3 for lead, but was not performed. The sample result was qualified as estimated (J).

## 2.8 HOLDING TIMES

The chain-of-custody forms and the analysis run logs were reviewed for the holding time from the date and time of collection to the date and time of analysis. All holding times were met with the following exception:

For data package 9212L888-WES-914, the holding time was exceeded for mercury analysis by one day. All mercury results were qualified as estimated (J for detects and UJ for nondetects).

## 2.9 SAMPLE RESULT VERIFICATION, QUANTITATION AND DETECTION LIMITS

A verification of all sample results was done with no errors noted except as previously identified. Sample results were recalculated at a frequency of 20% and detection limits were reviewed with no errors identified.

## 2.10 SYSTEM PERFORMANCE

The raw data was reviewed for anomalies that may occur as a result of problems with system performance and no anomalies were identified.

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**Table 2-1.** Laboratory Blank Contaminants

| Data Package | Analyte | Sample |
|---|---|---|
| B07NB6-TMA-351 | Cadmium | B07NB6,B07NC0,B07NC3 |
| | Silver | B07NB6,B07NB8,B07NC0,B07NC2 |
| | Antimony | B07NB8 |
| B07ND4-TMA-353 | Cadmium | B07ND4, B07ND5, B07ND7, B07NF0, B07NF1, B07NF2 |
| B07NC4-TMA-356 | Cadmium | B07NC7, B07NC9, B07ND0, B07ND2 |
| B07NF9-TMA-354 | Cadmium | B07NG0, B07NG1, B07NG5, B07NG7, B07NH0 |
| | Silver | B07NG0, B07NG1, B07NH2, B07NF9, B07NH6, B07NH5, B07NG8, B07NG9, B07NH1, B07NH3, B07NH5 |
| | Magnesium, Sodium, Vanadium, Zinc | B07NG8 |
| B07NC8-TMA-355 | Cobalt | B07NC8, B07ND1 |
| | Silver | B07ND9 |
| | Vanadium | B07ND9 |

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**Table 2-2.** Equipment Blank Results

| Sample B07NG8 | | | |
|---|---|---|---|
| Analyte | Concentration, mg/kg | Analyte | Concentration, mg/kg |
| Aluminum | 572 | Arsenic | 0.7 J |
| Barium | 13.6 J | Calcium | 162 B |
| Chromium | 1.2 B | Cobalt | 0.81 B |
| Iron | 1940 | Lead | 2.8 |
| Manganese | 58.6 J | Potassium | 147 B |

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**Table 2-3.** Equipment Blank Results

| Sample B07NC8 | | | |
|---|---|---|---|
| Analyte | Concentration, mg/kg | Analyte | Concentration, mg/kg |
| Aluminum | 387 | Arsenic | 0.57 BJ |
| Barium | 8.0 B | Calcium | 127 B |
| Copper | 1.3 B | Iron | 1940 |
| Lead | 1.7 J | Magnesium | 61.8 B |
| Manganese | 42.1 J | Potassium | 76.6 B |
| Sodium | 22.4 B | Zinc | 7.1 J |

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**Table 2-4.** GFAA Analytical Spike Recovery Exceedances

| Data Package | Analyte | Sample ID |
|---|---|---|
| B07NB6-TMA-351 | Thallium | B07NB7, B07NB6, B07NB8, B07NB9, B07NC0, B07NC1, B07NC2 |
| 9212L888-WES-914 | Arsenic | B07NG7 |
| | Thallium | B07NG7 |
| B07ND4-TMA-353 | Selenium | B07ND7, B07NF2 |
| | Thallium | B07NF1 |
| B07NC4-TMA-356 | Selenium | B07NC4, B07NC6, B07ND2, B07ND3 |
| | Lead | B07NC7 |
| B07NF9-TMA-354 | Selenium | B07NG1, B07NG2, B07NG4, B07NG6, B07NG9, B07NH2, B07NH3, B07NF9, B07NH5 |
| | Arsenic | B07NG8, B07NH0 |
| | Thallium | B07NG3, B07NG5, B07NG6, B07NG2 |
| B07NC8-TMA-355 | Arsenic | B07ND1 |
| | Selenium | B07ND9, B07NF7 |
| | Thallium | B07NC8, B07ND1, B07ND9, B07NF3, B07NF4, B07NF5, B07NF6, B07NF7, B07NF8 |
| | Lead | B07NF5, B07NC8 |

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**Table 2-5.** Metals Field Duplicate and Split Sample Results (Page 1 of 3)

| FIELD DUPLICATE RESULTS, mg/Kg | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| HEIS NO: | B07ND4 | | B07ND7 | | | B07ND9 | | B07ND1 | | |
| DATE: | 11/20/92 | | 11/20/92 | | | 11/20/92 | | 11/20/92 | | |
| LOCATION: | DI1 | | DI1 | | | BC1 | | BC1 | | |
| DEPTH: | 0"-6" | | 0"-6" | | | 0"-6" | | 0"-6" | | |
| COMMENTS: | | | DUPLICATE | | | | | DUPLICATE | | |
| PARAMETER | Result | Q | Result | Q | RPD | Result | Q | Result | Q | RPD |
| Aluminum | 5290.00 | | 6020.00 | | 13 | 3650.00 | | 4720.00 | | 26 |
| Antimony | 4.10 | UJ | 4.20 | UJ | NC | 3.80 | UJ | 4.70 | UJ | NC |
| Arsenic | 2.90 | B | 3.10 | | 7 | 1.60 | BJ | 1.89 | J | 17 |
| Barium | 45.50 | B | 53.10 | | 15 | 45.80 | | 58.30 | | 24 |
| Beryllium | 0.10 | U | 0.10 | U | NC | 0.09 | U | 0.11 | U | NC |
| Cadmium | 0.33 | U | 0.39 | U | NC | 0.22 | U | 0.28 | U | NC |
| Calcium | 3650.00 | | 3880.00 | | 6 | 1850.00 | | 2140.00 | | 15 |
| Chromium | 10.30 | | 12.90 | | 22 | 50.60 | | 47.60 | | 6 |
| Cobalt | 5.40 | B | 6.00 | B | 11 | 4.60 | B | 6.40 | U | 200 |
| Copper | 26.00 | | 27.50 | | 6 | 7.00 | | 10.20 | | 37 |
| Iron | 13100.00 | | 14200.00 | | 8 | 8690.00 | | 9700.00 | | 11 |
| Lead | 18.00 | | 20.60 | | 13 | 7.30 | | 9.00 | | 21 |
| Magnesium | 3800.00 | | 4230.00 | | 11 | 2210.00 | | 2630.00 | | 17 |
| Manganese | 193.00 | | 250.00 | | 26 | 100.00 | J | 220.00 | J | 75 |
| Mercury | 0.06 | U | 0.06 | U | NC | 0.06 | U | 0.07 | U | NC |
| Nickel | 10.00 | | 12.60 | | 23 | 9.30 | | 12.60 | | 30 |
| Potassium | 716.00 | B | 797.00 | B | 11 | 640.00 | B | 819.00 | B | 25 |
| Selenium | 3.40 | U | 0.66 | UJ | NC | 0.67 | UJ | 0.82 | U | NC |
| Silver | 0.61 | U | 0.63 | U | NC | 0.78 | U | 0.70 | U | NC |
| Sodium | 279.00 | B | 299.00 | B | 7 | 96.60 | B | 114.00 | B | 17 |
| Thallium | 0.30 | U | 0.39 | B | 200 | 0.30 | UJ | 0.37 | UJ | NC |
| Vanadium | 27.90 | | 30.00 | | 7 | 19.10 | | 23.40 | | 20 |
| Zinc | 192.00 | | 203.00 | | 6 | 73.10 | J | 83.10 | J | 13 |

Q = data qualifier
RPD = relative percent difference
NC = not calculated



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**Table 2-5.** Metals Field Duplicate and Split Sample Results (Page 2 of 3)

| FIELD DUPLICATE RESULTS, mg/Kg | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| HEIS NO: | B07NG3 | | B07NG6 | | | B07NH5 | | B07NH6 | | |
| DATE: | 11/22/92 | | 11/22/92 | | | 11/24/92 | | 11/24/92 | | |
| LOCATION: | Site HU1 | | Site HU1 | | | Site DI3 | | Site DI3 | | |
| DEPTH: | 0-6" | | 0-6" | | | 0-6" | | 0-6" | | |
| COMMENTS: | | | DUPLICATE | | | | | DUPLICATE | | |
| PARAMETER | Result | Q | Result | Q | RPD | Result | Q | Result | Q | RPD |
| Aluminum | 7640.00 | | 7430.00 | | 3 | 4400.00 | | 5630.00 | | 25 |
| Antimony | 4.40 | UJ | 4.60 | UJ | NC | 3.90 | UJ | 4.20 | UJ | NC |
| Arsenic | 4.50 | | 3.90 | | 14 | 3.00 | | 2.80 | | 7 |
| Barium | 58.40 | J | 58.50 | J | NC | 42.30 | J | 53.30 | J | 23 |
| Beryllium | 0.10 | U | 0.11 | U | NC | 0.09 | U | 0.10 | U | NC |
| Cadmium | 2.00 | | 1.70 | | 16 | 0.23 | U | 0.25 | U | NC |
| Calcium | 3720.00 | | 3520.00 | | 6 | 2770.00 | | 3460.00 | | 22 |
| Chromium | 22.80 | | 21.70 | | 5 | 9.10 | | 11.30 | | 22 |
| Cobalt | 8.50 | B | 7.80 | B | 9 | 4.20 | B | 5.90 | B | 34 |
| Copper | 18.90 | | 18.40 | | 3 | 18.20 | | 23.70 | | 26 |
| Iron | 15500.00 | | 15000.00 | | 3 | 10200.00 | | 12500.00 | | 20 |
| Lead | 32.70 | J | 31.30 | | 4 | 24.10 | | 24.80 | | 3 |
| Magnesium | 4450.00 | | 4350.00 | | 2 | 3010.00 | | 3830.00 | | 24 |
| Manganese | 193.00 | J | 193.00 | J | 0 | 206.00 | J | 234.00 | J | 13 |
| Mercury | 0.07 | B | 0.08 | B | 13 | 0.06 | U | 0.06 | U | NC |
| Nickel | 13.80 | | 14.50 | | 5 | 8.40 | B | 11.20 | | 29 |
| Potassium | 1040.00 | B | 1050.00 | B | 1 | 560.00 | B | 726.00 | B | 26 |
| Selenium | 1.00 | U | 0.97 | UJ | NC | 0.81 | UJ | 0.89 | U | NC |
| Silver | 0.65 | U | 0.68 | U | NC | 0.61 | U | 0.89 | U | NC |
| Sodium | 205.00 | B | 209.00 | B | 2 | 199.00 | B | 272.00 | B | 31 |
| Thallium | 1.10 | UJ | 1.00 | UJ | NC | 0.85 | U | 0.94 | U | NC |
| Vanadium | 29.90 | | 28.70 | | 4 | 18.30 | | 23.60 | | 25 |
| Zinc | 397.00 | | 369.00 | | 7 | 185.00 | | 209.00 | | 12 |

Q = data qualifier
RPD = relative percent difference
NC = not calculated



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**Table 2-5.** Metals Field Duplicate and Split Sample Results (Page 3 of 3)

| FIELD SPLIT RESULTS, mg/Kg | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| HEIS NO: | B07NH5 | | B07NH7 | | | B07NG5 | | B07NG7 | | |
| DATE: | 11/24/92 | | 11/24/92 | | | 11/22/92 | | 11/22/92 | | |
| LOCATION: | Site DI3 | | Site DI3 | | | Site HU1 | | Site HU1 | | |
| DEPTH: | 0-6" | | 0-6" | | | 12-18" | | 12-18" | | |
| COMMENTS: | | | SPLIT | | | | | SPLIT | | |
| PARAMETER | Result | Q | Result | Q | RPD | Result | Q | Result | Q | RPD |
| Aluminum | 4400.00 | | 2460.00 | | 57 | 8620.00 | | 4830.00 | | 56 |
| Antimony | 3.90 | UJ | 14.70 | U | NC | 4.00 | UJ | 17.80 | U | NC |
| Arsenic | 3.00 | | 2.20 | BJ | 31 | 4.80 | | 4.30 | J | 11 |
| Barium | 42.30 | J | 36.20 | B | 16 | 88.5 | J | 76.50 | | 15 |
| Beryllium | 0.09 | U | 0.25 | U | NC | 0.09 | U | 0.42 | B | 200 |
| Cadmium | 0.23 | U | 1.72 | U | NC | 1.20 | U | 2.08 | U | NC |
| Calcium | 2770.00 | | 2740.00 | | 1 | 3970.00 | | 3280.00 | | 19 |
| Chromium | 9.10 | | 5.30 | | 53 | 20.8 | | 13.30 | | 44 |
| Cobalt | 4.20 | B | 3.30 | B | 24 | 8.60 | B | 7.00 | B | 21 |
| Copper | 18.20 | | 23.00 | | 23 | 21.50 | | 17.20 | | 22 |
| Iron | 10200.00 | | 6480.00 | J | 45 | 16700.00 | | 10500.00 | J | 46 |
| Lead | 24.10 | | 18.10 | | 28 | 27.80 | | 27.90 | | 0.4 |
| Magnesium | 3010.00 | | 1480.00 | | 68 | 4990.00 | | 3040.00 | | 49 |
| Manganese | 206.00 | J | 144.00 | | 35 | 182.00 | J | 130.00 | | 33 |
| Mercury | 0.06 | U | 0.06 | UJ | NC | 0.05 | U | 0.07 | UJ | NC |
| Nickel | 8.40 | B | 7.40 | B | 13 | 15.10 | | 11.80 | B | 25 |
| Potassium | 560.00 | B | 424.00 | B | 28 | 1420.00 | | 1080.00 | B | 27 |
| Selenium | 0.81 | UJ | 0.50 | UJ | 200 | 0.89 | U | 0.59 | UJ | NC |
| Silver | 0.61 | U | 5.30 | J | NC | 1.00 | U | 2.97 | UJ | NC |
| Sodium | 199.00 | B | 219.00 | B | 10 | 194.00 | B | 131.00 | B | 39 |
| Thallium | 0.85 | U | 0.52 | BJ | 200 | 0.94 | UJ | 0.59 | UJ | NC |
| Vanadium | 18.30 | | 6.50 | B | 95 | 33.90 | | 14.50 | B | 80 |
| Zinc | 185.00 | | 167.00 | | 10 | 253.00 | | 230.00 | | 10 |

Q = data qualifier
RPD = relative percent difference
NC = not calculated



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## 3.0 RADIOCHEMISTRY DATA VALIDATION SUMMARY

This section presents the results of the validation of the radiochemical analyses for the radioisotopes and analytical methods shown in the following table.

| Primary Laboratory - TMA | |
|---|---|
| Analytical Method | Radiochemical Analyte |
| Alpha Spectroscopy | Americium-241, Plutonium-238, 239/240 |
| Beta Counting | Strontium-90 |
| Gas Proportional Counting | Gross alpha, Gross Beta |
| Gamma Spectroscopy | Potassium-40, Iron-59, Chromium-51, Cobalt-60, Zinc-65, Ruthenium-106, Cesium-134, Cesium-137, Europium-152, Europium-154, Radium-226, Thorium-228, Thorium-232 |
| Secondary Laboratory - Ecotek | |
| Analytical Method | Radiochemical Analyte |
| Gas Proportional Counting | Gross Beta |
| Beta Counting | Strontium-90 |
| Alpha Spectroscopy | Americium-241, Plutonium-239/240 |
| Gamma Spectroscopy | Cobalt-58, Iron-59, Cobalt-60, Cesium-134, Cesium-137, Cerium-144, Europium-152, Europium-154, Europium-155, Radium-223, Potassium-40, Thorium-231, Thorium-234, Neptunium-237 |

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### 3.1 SUMMARY

The following presents a summary of the radiochemistry data validation results and review against the data quality objectives. Where appropriate minor deficiencies are identified which resulted in qualification of associated data as estimated (J for detected values, UJ for undetected values) or undetected (U) and major deficiencies are identified which resulted in qualification of associated data as unusable (R for detects, UR for undetected values).

Precision

- Laboratory duplicate relative percent difference (RPD) results were acceptable with the exception of minor exceedances for cesium-137, europium-152 and europium-154, americium-241 and gamma spectroscopy

- Field duplicate RPD values were acceptable

- Field split RPD values were acceptable with the exception minor exceedances of americium-241 and europium-154

Accuracy

- Tracer yield recoveries were acceptable with the exception of major exceedances for isotopic plutonium, americium and uranium

- Laboratory control sample recoveries were acceptable with the exception of major exceedances for uranium-235 and americium-241, and minor exceedances for gamma spectroscopy

- Laboratory blank results were acceptable with the exception of uranium-238 which was detected in the blanks associated with several samples resulting in qualification of the associated results as undetected (U)

- Equipment blank results show low concentrations of gross beta, potassium-40, radium-226, thorium-228 and thorium-232, however the field blank samples were identified as silica sand matrices which in the authors opinion do not provide comparable data on the cleanliness of the sampling equipment and containers. Qualification of data against the field blank results was not conducted

Sample Result Verification

- All sample results and minimum detectable activity (MDA) values were supported in the raw data. However, split sample MDA values and results for gross beta and strontium-90 and MDA values for isotopic uranium, isotopic plutonium and gamma spectroscopy could not be verified by recalculation, therefore the results required qualification as estimated

Representativeness

- Field duplicate RPD values were acceptable as described above indicating sampling locations and technique were sufficient to provide comparable results

Completeness

- A total of 52 samples were validated as part of this project with a total of 1146 measurements reported. Of the 1146 measurements reported, 1090 were deemed valid or qualified due to minor deficiencies. The completeness percentage for this data set is 95% which meets the completeness goal of 90%.

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Comparability

- All results were reported in common units, or picocuries per gram (pCi/g) to facilitate comparison of results.

- Similar analytical protocols were used by the both primary and split laboratories allowing comparison of results and detection limits

## 3.2 CALIBRATIONS

Initial and continuing calibration of all instruments were reviewed to ensure the instruments were calibrated prior to sample analysis. The calibrations were acceptable with the following exceptions:

For data package B07NB6-TMA-351, the gross alpha background QC value exceeded the control limits for samples B07NC1, B07NC4 and the reagent blank. Therefore, the sample results were qualified as estimated (J) for detects and unusable (UR) for non-detects.

For data package 30015-WES-1088, the background counts for isotopic uranium analysis were not provided, resulting in qualification of all associated results as estimated (J for detects, UJ for non-detects).

## 3.3 BLANKS

A blank is an artificial sample designed to monitor the introduction of artifacts into the measurement process. The following sections are a summary of the blank analysis and results.

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### 3.3.1 Laboratory Blanks

A laboratory blank is a blank that is taken through sample preparation and analysis and is a test for contamination in sample preparation and analyses. Laboratory blank results were acceptable with the following exception:

For data package 30015-WES-1088, uranium-238 sample results were less than five times the associated method blank results, resulting in qualification of all detected values as undetected (U).

### 3.3.2 Equipment Blanks

Two equipment blanks, B07NC8 and B07NG8 were collected and analyzed. Results of the equipment blank analysis are summarized in Tables 3-1 and 3-2.

## 3.4 ACCURACY

The goals for accuracy were met with the following exceptions:

### 3.4.1 Tracer Yield

For data package B07NC8-TMA-355, the plutonium-242 tracer recovery was below the 30% control limit for samples B07NF5 and B07NF6. Therefore, the associated sample results for plutonium 238, 239/240 have been qualified as unusable (R for detects and UR for non-detects).

For data package B07NC8-TMA-355, the americium-243 tracer recovery was below the 30% control limit for samples B07NF6 and B07ND9. Therefore, the associated sample results have been qualified as unusable (R for detects and UR for non-detects).

For data package B07NB6-TMA-351, the plutonium-242 tracer recovery was below the 30% control limit for samples B07NB7, B07NC2, B07NC7, B07ND1 and the reagent blank. Therefore, the associated sample results for plutonium 238, 239/240 have been qualified as unusable (R for detects and UR for non-detects).

For data package B07NB6-TMA-351, the americium-243 tracer recovery was below the 30% control limit for sample B07NB9. Therefore, the associated sample result has been qualified as unusable (R for detects and UR for non-detects).

For data package B07NF9-TMA-354, the uranium tracer recovery was below the 30% control limit for samples B07NG3 and B07NG4. Therefore, the associated sample result for uranium-233/234, 235 and 238 have been qualified as unusable (R for detects and UR for non-detects).

For data package 30015-WES-1088, the plutonium tracer recovery was below the 30% control limit for matrix spike samples, therefore accuracy could not be determined for the plutonium analysis.

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### 3.4.2 Laboratory Control Sample

The laboratory control sample results were within limits with the following exceptions:

For data package B07NB6-TMA-351, the laboratory control sample percent recovery for gross alpha was outside the control limit. Therefore, all associated sample results have been qualified as estimated (J for detects and UJ for non-detects).

For data package B07NB6-TMA-351, the laboratory control sample percent recovery for americium-241 was 0% which is below the lower control limit of 80%. Therefore, all associated sample results have been qualified as unusable (R for detects and UR for non-detects).

For data package 30015-WES-1088, an LCS was not analyzed for gamma spectroscopy, therefore all results have been qualified as estimated (J for detects, UJ for non-detects).

For data package B07NC8-TMA-355, the laboratory control sample percent recovery for uranium-235 exceeded the control limit. Therefore, all associated sample results have been qualified as unusable (R for detects, UR for non-detects).

## 3.5 PRECISION

The goals for precision were met with the following exceptions:

### 3.5.1 Replicate Sample

For data package B07NC8-TMA-355, the replicate sample relative percent differences (RPD) for cesium-137, europium-152 and europium-154 exceeded the control limits. Therefore, associated sample results have been qualified as estimated (J for detects and UJ for non-detects).

For data package B07NB6-TMA-351, the RPD value for cesium-137, was out of specified control limits. Therefore, associated sample results have been qualified as estimated (J for detects and UJ for non-detects).

For data package 30015-WES-1088, a replicate sample was not analyzed for gamma spectroscopy, therefore all sample results have been qualified as estimated (J for detects and UJ for non-detects).

For data package 30015-WES-1088, the RPDs were >35% for americium-241, therefore all sample results have been qualified as estimated (J for detects and UJ for non-detects).

### 3.5.2 Field Duplicates

A total of four duplicate samples were collected and analyzed and the results are summarized in Table 3-3. Field duplicates are not evaluated in the same manner as laboratory duplicates because the field duplicates results are an indicator of field sampling procedures, handling and homogeneity of the sample, in addition to laboratory sample handling and analysis.

All field duplicate RPDs were within control limits.

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## 3.6 SPLIT SAMPLES

Two split samples were collected and analyzed and the results are summarized in Table 3-3. Sample results were not qualified based on split sample comparability.

The split RPDs were within control limits with the exception of americium-241 and europium-154 for split set B07NH5/B07NH7.

## 3.7 HOLDING TIMES

The chain-of-custody forms and the analysis run logs were reviewed for holding time from the date and time of collection to the date and time of analysis. All holding times were met.

## 3.8 SAMPLE RESULT VERIFICATION, QUANTITATION AND MINIMUM DETECTABLE ACTIVITIES

Samples were recalculated at a frequency of 20% and were verified at a frequency of 100% with no errors identified. In addition, the quantitation limits and minimum detectable Activities (MDAs) were reviewed with no problems noted with the following exceptions:

For data package 30015-WES-1088, sample results and MDAs could not be verified by recalculation for gross beta and strontium-90 analyses because the laboratory did not provide the necessary standard operating procedures (SOPs). Therefore, all sample results have been qualified as estimated (J for detects, UJ for non-detects). In addition, MDA values could not be verified for uranium-235, uranium-238, plutonium-239/240 and gamma spectroscopy, therefore all MDA results have been qualified as estimated (UJ). All QC samples were reviewed for this data package with results deemed valid.

## 3.9 SYSTEM PERFORMANCE

The raw data was reviewed for anomalies that may occur as a result of system performance with no problems identified.

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**Table 3-1.** Radiochemistry Equipment Blank Results

| Sample B07NC8 | |
|---|---|
| Radiochemical Analyte | Concentration, pCi/g |
| Gross Beta | 27 |
| Potassium-40 | 22 |
| Radium-228 | 0.28 |
| Thorium-228 | 0.55 |
| Thorium-232 | 0.51 |

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**Table 3-2.** Radiochemistry Equipment Blank Results

| Sample B07NG8 | |
|---|---|
| Radiochemical Analyte | Concentration, pCi/g |
| Gross Beta | 30 |
| Uranium-233/234 | 0.22 J |
| Uranium-238 | 0.20 J |
| Potassium-40 | 23 |
| Radium-226 | 0.24 |
| Thorium-228 | 0.46 |
| Thorium-232 | 0.34 |

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**Table 3-3.** Radiochemistry Field Duplicate and Split Sample Results (Sheet 1 of 3)

| FIELD DUPLICATE SAMPLE RESULTS, pCi/g | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| HEIS NO: | B07ND9 | | B07ND1 | | | B07ND4 | | B07ND7 | | |
| DATE: | 11/20/92 | | 11/20/92 | | | 11/19/92 | | 11/19/92 | | |
| LOCATION: | Site BC1 | | Site BC1 | | | Site DI1 | | Site DI1 | | |
| DEPTH: | 0-6" | | 0-6" | | | 0-6" | | 0-6" | | |
| COMMENTS: | | | DUPLICATE | | | | | DUPLICATE | | |
| PARAMETER | Result | Q | Result | Q | RPD | Result | Q | Result | Q | RPD |
| Gross Alpha | 5.000 | U | 6.700 | J | 200 | 4.900 | J | 4.5 | J | 9 |
| Gross Beta | 14.000 | | 13.000 | | 7 | 17.000 | | 13 | | 27 |
| Uranium-233/234 | 0.450 | | 0.590 | | 27 | 0.580 | | 0.44 | | 27 |
| Uranium-235 | 0.300 | UR | 0.200 | UR | NC | 0.200 | UR | 0.2 | UR | NC |
| Uranium-238 | 0.260 | J | 0.440 | | 51 | 0.680 | | 0.44 | | 43 |
| Plutonium-238 | 0.020 | U | .060 | U | NC | 0.050 | U | 0.03 | U | NC |
| Plutonium-239 | 0.020 | U | 0.040 | U | NC | 0.030 | U | 0.01 | U | NC |
| Americium-241 | 0.100 | UR | 0.030 | U | NC | 0.060 | U | 0.03 | U | NC |
| Strontium-90 | 0.200 | U | 0.200 | U | NC | 0.200 | U | 0.2 | U | NC |
| Potassium-40 | 12.000 | | 12.000 | | 0 | 14.000 | | 13 | | 7 |
| Iron-59 | 0.100 | U | 0.300 | U | NC | 0.300 | U | 0.3 | U | NC |
| Chromium-51 | 0.800 | U | 2.000 | U | NC | 2.000 | U | 2 | U | NC |
| Cobalt-60 | 0.020 | U | 0.050 | U | NC | 0.180 | | 0.19 | | 5 |
| Zinc-65 | 0.060 | U | 0.100 | U | NC | 0.200 | U | 0.2 | U | NC |
| Ruthenium-106 | 0.200 | U | 0.400 | U | NC | 0.400 | U | 0.4 | U | NC |
| Cesium-134 | 0.040 | U | 0.050 | U | NC | 0.050 | U | 0.06 | U | NC |
| Cesium-137 | 0.031 | J | 0.050 | UJ | 200 | 0.560 | J | 0.62 | J | 10 |
| Europium-152 | 0.050 | UJ | 0.090 | UJ | NC | 0.220 | J | 0.25 | J | 13 |
| Europium-154 | 0.030 | UJ | 0.060 | UJ | NC | 0.100 | UJ | 0.2 | UJ | NC |
| Radium-226 | 0.520 | | 0.510 | | 2 | 0.460 | | 0.48 | | 4 |
| Thorium-228 | 0.820 | | 1.100 | | 29 | 0.500 | | 0.53 | | 6 |
| Thorium-232 | 0.790 | | 0.750 | | 5 | 0.580 | | 0.5 | | 15 |

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**Table 3-3.** Radiochemistry Field Duplicate and Split Sample Results (Sheet 2 of 3)

| FIELD DUPLICATE SAMPLE RESULTS, pCi/g | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| HEIS NO: | B07NG3 | | B07NG6 | | | B07NH5 | | B07NH6 | | |
| DATE: | 11/22/92 | | 11/22/92 | | | 11/24/92 | | 11/24/92 | | |
| LOCATION: | Site HU1 | | Site HU1 | | | Site DI3 | | Site DI3 | | |
| DEPTH: | 0-6" | | 0-6" | | | 0-6" | | 0-6" | | |
| COMMENTS: | | | DUPLICATE | | | | | DUPLICATE | | |
| PARAMETER | Result | Q | Result | Q | RPD | Result | Q | Result | Q | RPD |
| Gross Alpha | 6.000 | U | 5.000 | U | NC | 5.300 | J | 5.000 | U | 200 |
| Gross Beta | 14.000 | | 9.300 | J | 40 | 17.000 | | 16.000 | | 6 |
| Uranium-233/234 | 0.450 | R | 0.850 | | NC | 0.490 | | 0.440 | | 11 |
| Uranium-235 | 0.300 | UR | 0.200 | U | NC | 0.200 | U | 0.200 | U | NC |
| Uranium-238 | 0.750 | R | 0.710 | | NC | 0.300 | | 0.360 | | 18 |
| Plutonium-238 | 0.040 | U | 0.040 | U | NC | 0.050 | U | 0.070 | U | NC |
| Plutonium-239 | 0.020 | U | 0.020 | U | NC | 0.020 | U | 0.030 | U | NC |
| Americium-241 | 0.030 | U | 0.040 | U | NC | 0.030 | U | 0.060 | U | NC |
| Strontium-90 | 0.800 | U | 0.800 | U | NC | 0.700 | U | 0.700 | U | NC |
| Potassium-40 | 15.000 | | 14.000 | | 7 | 15.000 | | 13.000 | | 14 |
| Iron-59 | 0.500 | U | 0.500 | U | NC | 0.400 | U | 0.400 | U | NC |
| Chromium-51 | 3.000 | U | 4.000 | U | NC | 2.000 | U | 3.000 | U | NC |
| Cobalt-60 | 0.380 | | 0.370 | | 3 | 0.250 | | 0.200 | | 22 |
| Zinc-65 | 0.200 | U | 0.200 | U | NC | 0.200 | U | 0.200 | U | NC |
| Ruthenium-106 | 0.600 | U | 0.600 | U | NC | 0.500 | U | 0.500 | U | NC |
| Cesium-134 | 0.070 | U | 0.080 | U | NC | 0.060 | U | 0.060 | U | NC |
| Cesium-137 | 0.760 | | 0.790 | | 4 | 0.500 | | 0.540 | | 8 |
| Europium-152 | 0.500 | | 0.560 | | 11 | 0.320 | | 0.320 | | 0 |
| Europium-154 | 0.200 | U | 0.200 | U | NC | 0.200 | U | 0.200 | U | NC |
| Radium-226 | 0.640 | | 0.660 | | 3 | 0.590 | | 0.540 | | 9 |
| Thorium-228 | 0.850 | | 0.900 | | 6 | 0.780 | | 0.590 | | 28 |
| Thorium-232 | 0.840 | | 0.940 | | 11 | 0.510 | | 0.600 | | 16 |

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**Table 3-3.** Radiochemistry Field Duplicate and Split Sample Results (Sheet 3 of 3)

| FIELD SPLIT SAMPLE RESULTS, pCi/g | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| HEIS NO: | B07NG5 | | B07NG7 | | | B07NH5 | | B07NH7 | | |
| DATE: | 11/22/92 | | 11/22/92 | | | 11/24/92 | | 11/24/92 | | |
| LOCATION: | Site HU1 | | Site HU1 | | | Site DI3 | | Site DI3 | | |
| DEPTH: | 12-18" | | 12-18" | | | 0-6" | | 0-6" | | |
| COMMENTS: | | | Split | | | | | Split | | |
| PARAMETER | Result | Q | Result | Q | RPD | Result | Q | Result | Q | RPD |
| Gross Alpha | 5.000 | U | NR | | NC | 5.300 | J | NR | | NC |
| Gross Beta | 13.000 | | 16.000 | J | 21 | 17.000 | | 15.700 | J | 8 |
| Uranium-233/234 | 0.490 | | NR | | NC | 0.490 | | NR | | NC |
| Uranium-235 | 0.100 | U | 0.022 | J | 200 | 0.200 | U | 0.017 | J | 200 |
| Uranium-238 | 0.410 | | 0.464 | UJ | 200 | 0.300 | | 0.365 | UJ | 200 |
| Plutonium-238 | 0.040 | U | NR | | NC | 0.050 | U | NR | | NC |
| Plutonium-239 | 0.020 | U | 0.071 | | 200 | 0.020 | U | 0.187 | UJ | NC |
| Americium-241 | 0.040 | U | 0.080 | UJ | NC | 0.030 | U | 0.242 | J | 200 |
| Strontium-90 | 0.900 | U | 0.914 | UJ | NC | 0.700 | U | 0.837 | UJ | NC |
| Potassium-40 | 14.000 | | 15.200 | J | 8 | 15.000 | | 17.800 | J | 17 |
| Iron-59 | 0.500 | U | 0.054 | UJ | NC | 0.400 | U | 0.054 | UJ | NC |
| Chromium-51 | 3.000 | U | NR | | NC | 2.000 | U | NR | | NC |
| Cobalt-60 | 0.120 | | 0.111 | J | 8 | 0.250 | | 0.216 | J | 15 |
| Zinc-65 | 0.200 | U | NR | | NC | 0.200 | U | NR | | NC |
| Ruthenium-106 | 0.600 | U | NR | | NC | 0.500 | U | NR | | NC |
| Cesium-134 | 0.070 | U | 0.008 NR | UJ | NC | 0.060 | U | 0.006 | UJ | NC |
| Cesium-137 | 1.500 | | 1.610 | J | 7 | 0.500 | | 0.519 | J | 4 |
| Europium-152 | 1.500 | | 1.330 | J | 12 | 0.320 | | 0.269 | J | 17 |
| Europium-154 | 0.210 | | 0.141 | J | 39 | 0.200 | U | 0.041 | J | 200 |
| Radium-226 | 0.650 | | NR | | NC | 0.590 | | NR | | NC |
| Thorium-228 | 0.880 | | NR | | NC | 0.780 | | NR | | NC |
| Thorium-232 | 0.930 | | NR | | NC | 0.510 | | NR | | NC |
| Europium-155 | NR | | 0.035 | UJ | NC | NR | | 0.043 | J | NC |
| Cobalt-58 | NR | | 0.017 | UJ | NC | NR | | 0.014 | UJ | NC |
| Cerium-144 | NR | | 0.060 | UJ | NC | NR | | 0.050 | UJ | NC |
| Neptunium-237 | NR | | 0.606 | J | NC | NR | | 0.482 | J | NC |
| Thorium-231 | NR | | 0.454 | J | NC | NR | | 0.294 | J | NC |
| Thorium-234 | NR | | 0.812 | J | NC | NR | | 0.687 | J | NC |
| Radium-228 | NR | | NR | | NC | NR | | 54.200 | J | NC |
| Radium-223 | NR | | 6.96 | UJ | NC | NR | | 0.032 | UJ | NC |

NR - NOT REPORTED NC - NOT CALCULATED

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## 4.0 REFERENCES

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# APPENDIX A - VALIDATED METALS SUMMARY

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| Parameter | Samp# / Date / Site / Depth / Type | B07NC8 11-19-92 Eq Blk 0.00 - 0.00 Eq Blk | | B07NG8 11-23-92 Eq Blk 0.00 - 0.00 Eq Blk | | B07ND1 11-20-92 SITE BC1 0.00 - 6.00 Duplicate | | B07ND9 11-20-92 SITE BC1 0.00 - 6.00 | | B07NF3 11-20-92 SITE BC2 0.00 - 6.00 | | B07NF4 11-20-92 SITE BC2 12.00 - 18.00 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Units | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Inorganics | | | | | | | | | | | | | |
| ALUMINUM | MG/KG | 387.000 | | 572.000 | | 4720.000 | | 3650.000 | | 5670.000 | | 7460.000 | |
| ANTIMONY | MG/KG | 3.200 | UJ | 4.400 | UJ | 4.700 | UJ | 3.800 | UJ | 4.800 | UJ | 3.900 | UJ |
| ARSENIC | MG/KG | 0.570 | BJ | 0.700 | J | 1.890 | J | 1.600 | BJ | 1.200 | BJ | 1.200 | BJ |
| BARIUM | MG/KG | 8.000 | B | 13.600 | J | 58.300 | | 45.800 | | 50.400 | B | 71.800 | |
| BERYLLIUM | MG/KG | 0.080 | U | 0.100 | U | 0.110 | U | 0.090 | U | 0.110 | U | 0.090 | U |
| CADMIUM | MG/KG | 0.190 | U | 0.260 | U | 0.280 | U | 0.220 | U | 0.280 | U | 0.230 | U |
| CALCIUM | MG/KG | 127.000 | B | 162.000 | B | 2140.000 | | 1850.000 | | 2960.000 | | 3110.000 | |
| CHROMIUM | MG/KG | 0.850 | U | 1.200 | B | 47.600 | | 50.600 | | 65.200 | | 131.000 | |
| COBALT | MG/KG | 0.600 | U | 0.810 | B | 6.400 | U | 4.600 | B | 5.400 | B | 7.300 | B |
| COPPER | MG/KG | 1.300 | B | 0.910 | U | 10.200 | | 7.000 | | 11.500 | | 19.200 | |
| IRON | MG/KG | 1940.000 | | 1940.000 | | 9700.000 | | 8690.000 | | 10900.000 | | 14100.000 | |
| LEAD | MG/KG | 1.700 | J | 2.800 | | 9.000 | | 7.300 | | 19.300 | | 39.200 | |
| MAGNESIUM | MG/KG | 61.800 | B | 88.600 | U | 2630.000 | | 2210.000 | | 3400.000 | | 3950.000 | |
| MANGANESE | MG/KG | 42.100 | J | 58.600 | J | 220.000 | J | 100.000 | J | 110.000 | J | 140.000 | J |
| MERCURY | MG/KG | 0.040 | U | 0.060 | U | 0.070 | U | 0.060 | U | 0.070 | U | 0.060 | U |
| NICKEL | MG/KG | 1.000 | U | 1.400 | U | 12.600 | | 9.300 | | 11.200 | B | 15.200 | |
| POTASSIUM | MG/KG | 76.600 | B | 147.000 | B | 819.000 | B | 640.000 | B | 789.000 | B | 1150.000 | |
| SELENIUM | MG/KG | 0.580 | U | 0.920 | U | 0.820 | U | 0.670 | UJ | 0.820 | U | 0.630 | U |
| SILVER | MG/KG | 0.470 | U | 0.860 | U | 0.700 | U | 0.780 | U | 0.710 | U | 0.570 | U |
| SODIUM | MG/KG | 22.400 | B | 51.600 | U | 114.000 | B | 96.600 | B | 167.000 | B | 145.000 | B |
| THALLIUM | MG/KG | 0.260 | UJ | 0.970 | U | 0.370 | UJ | 0.300 | UJ | 0.370 | UJ | 0.280 | UJ |
| VANADIUM | MG/KG | 1.800 | U | 1.800 | U | 23.400 | | 19.100 | | 28.200 | | 34.800 | |
| ZINC | MG/KG | 7.100 | J | 8.300 | U | 83.100 | J | 73.100 | J | 159.000 | J | 192.000 | J |

| Parameter | Samp# / Date / Site / Depth / Type | B07ND0 11-17-92 SITE D/H 0.00 - 6.00 | | B07NC9 11-17-92 SITE D/H 12.00 - 18.00 | | B07NF0 11-19-92 SITE D4 0.00 - 6.00 | | B07NF1 11-19-92 SITE D5 0.00 - 6.00 | | B07NF2 11-19-92 SITE D5 12.00 - 18.00 | | B07NH1 11-23-92 SITE DA1 0.00 - 6.00 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Units | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Inorganics | | | | | | | | | | | | | |
| ALUMINUM | MG/KG | 5340.000 | | 5960.000 | | 7400.000 | | 5220.000 | | 9680.000 | | 8030.000 | |
| ANTIMONY | MG/KG | 6.800 | BJ | 3.600 | UJ | 7.500 | UJ | 3.800 | UJ | 4.300 | UJ | 4.200 | UJ |
| ARSENIC | MG/KG | 2.300 | B | 6.300 | | 1.900 | B | 2.000 | B | 4.400 | | 6.100 | |
| BARIUM | MG/KG | 40.900 | B | 83.000 | | 55.200 | B | 52.800 | | 89.300 | | 73.200 | J |
| BERYLLIUM | MG/KG | 0.200 | B | 0.310 | B | 0.180 | U | 0.110 | B | 0.100 | U | 0.100 | U |
| CADMIUM | MG/KG | 0.870 | U | 0.910 | U | 3.400 | U | 1.100 | U | 1.700 | U | 1.600 | |
| CALCIUM | MG/KG | 3180.000 | | 2750.000 | | 5070.000 | | 3990.000 | | 4470.000 | | 4260.000 | |
| CHROMIUM | MG/KG | 15.000 | | 17.900 | | 14.100 | | 47.000 | | 21.900 | | 22.300 | |
| COBALT | MG/KG | 5.400 | B | 8.300 | B | 5.700 | B | 8.800 | B | 8.800 | B | 7.700 | B |
| COPPER | MG/KG | 23.300 | J | 22.300 | J | 23.100 | | 15.900 | | 21.300 | | 23.800 | |
| IRON | MG/KG | 11500.000 | | 16200.000 | | 13900.000 | | 17800.000 | | 18500.000 | | 16700.000 | |
| LEAD | MG/KG | 23.300 | J | 11.900 | J | 32.000 | | 18.600 | | 27.300 | | 59.800 | |
| MAGNESIUM | MG/KG | 3130.000 | | 3380.000 | | 3870.000 | | 3700.000 | | 5230.000 | | 4640.000 | |
| MANGANESE | MG/KG | 168.000 | J | 244.000 | J | 181.000 | | 207.000 | | 209.000 | | 202.000 | J |
| MERCURY | MG/KG | 0.070 | U | 0.050 | U | 0.100 | B | 0.060 | U | 0.060 | U | 0.070 | B |
| NICKEL | MG/KG | 12.000 | | 14.900 | | 11.200 | B | 7.900 | B | 16.200 | | 14.300 | |
| POTASSIUM | MG/KG | 614.000 | B | 552.000 | B | 962.000 | B | 661.000 | B | 1500.000 | | 993.000 | B |
| SELENIUM | MG/KG | 1.100 | UJ | 0.870 | UJ | 1.200 | U | 0.690 | U | 0.780 | UJ | 0.860 | U |
| SILVER | MG/KG | 1.000 | U | 0.890 | U | 1.100 | U | 0.810 | J | 0.640 | U | 1.400 | U |
| SODIUM | MG/KG | 242.000 | B | 122.000 | B | 364.000 | B | 213.000 | B | 237.000 | B | 224.000 | B |
| THALLIUM | MG/KG | 1.100 | U | 0.870 | U | 0.820 | B | 0.610 | J | 0.460 | B | 0.910 | U |
| VANADIUM | MG/KG | 26.800 | | 36.600 | | 35.900 | | 44.400 | | 40.600 | | 35.400 | |
| ZINC | MG/KG | 221.000 | | 279.000 | | 377.000 | | 221.000 | | 257.000 | | 294.000 | |

| Parameter | Sampl# / Date / Site / Depth / Type | B07NH2 11-23-92 SITE DA1 12.00 - 20.00 | | B07ND4 11-19-92 SITE DI1 0.00 - 6.00 | | B07ND7 11-19-92 SITE DI1 0.00 - 6.00 Duplicate | | B07ND6 11-19-92 SITE DI2 0.00 - 6.00 | | B07ND8 11-19-92 SITE DI2 12.00 - 20.00 | | B07NH5 11-24-92 SITE DI3 0.00 - 6.00 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Units | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Inorganics | | | | | | | | | | | | | |
| ALUMINUM | MG/KG | 11100.000 | | 5290.000 | | 6020.000 | | 5580.000 | | 5260.000 | | 4400.000 | |
| ANTIMONY | MG/KG | 4.700 | J | 4.100 | UJ | 4.200 | UJ | 3.300 | UJ | 3.400 | UJ | 3.900 | UJ |
| ARSENIC | MG/KG | 6.000 | | 2.900 | B | 3.100 | | 2.700 | | 2.200 | | 3.000 | |
| BARIUM | MG/KG | 111.000 | J | 45.500 | B | 53.100 | | 51.900 | | 40.000 | B | 42.300 | J |
| BERYLLIUM | MG/KG | 0.540 | B | 0.100 | U | 0.100 | U | 0.080 | U | 0.080 | U | 0.090 | U |
| CADMIUM | MG/KG | 0.200 | U | 0.330 | U | 0.390 | U | 0.200 | U | 0.200 | U | 0.230 | U |
| CALCIUM | MG/KG | 2830.000 | | 3650.000 | | 3880.000 | | 9120.000 | | 2140.000 | | 2770.000 | |
| CHROMIUM | MG/KG | 31.900 | | 10.300 | | 12.900 | | 10.600 | | 9.200 | | 9.100 | |
| COBALT | MG/KG | 9.700 | B | 5.400 | B | 6.000 | B | 5.100 | B | 4.000 | B | 4.200 | B |
| COPPER | MG/KG | 31.100 | | 26.000 | | 27.500 | | 20.700 | | 6.900 | | 18.200 | |
| IRON | MG/KG | 31100.000 | | 13100.000 | | 14200.000 | | 13400.000 | | 11400.000 | | 10200.000 | |
| LEAD | MG/KG | 11.400 | | 18.000 | | 20.600 | | 23.600 | | 3.400 | | 24.100 | |
| MAGNESIUM | MG/KG | 3880.000 | | 3800.000 | | 4230.000 | | 3840.000 | | 3690.000 | | 3010.000 | |
| MANGANESE | MG/KG | 168.000 | J | 193.000 | | 250.000 | | 195.000 | | 164.000 | | 206.000 | J |
| MERCURY | MG/KG | 0.050 | U | 0.060 | U | 0.060 | U | 0.050 | U | 0.050 | U | 0.060 | U |
| NICKEL | MG/KG | 21.600 | | 10.000 | | 12.600 | | 10.500 | | 10.700 | | 8.400 | B |
| POTASSIUM | MG/KG | 619.000 | B | 716.000 | B | 797.000 | B | 653.000 | B | 563.000 | B | 560.000 | B |
| SELENIUM | MG/KG | 0.740 | UJ | 3.400 | U | 0.660 | UJ | 0.580 | U | 0.580 | U | 0.810 | UJ |
| SILVER | MG/KG | 0.940 | U | 0.610 | U | 0.630 | U | 0.490 | U | 0.500 | U | 0.610 | U |
| SODIUM | MG/KG | 113.000 | B | 279.000 | B | 299.000 | B | 224.000 | B | 103.000 | B | 199.000 | B |
| THALLIUM | MG/KG | 0.780 | UJ | 0.300 | U | 0.390 | B | 0.260 | U | 0.260 | U | 0.850 | U |
| VANADIUM | MG/KG | 86.200 | | 27.900 | | 30.000 | | 26.900 | | 23.200 | | 18.300 | |
| ZINC | MG/KG | 85.100 | | 192.000 | | 203.000 | | 144.000 | | 26.800 | | 185.000 | |

| Parameter | Samp# / Date / Site / Depth / Type | B07NH6 11-24-92 SITE DI3 0.00 - 6.00 Duplicate | | B07NH7 11-24-92 SITE DI3 0.00 - 6.00 Split | | B07NB7 11-12-92 SITE F2 0.00 - 6.00 | | B07NB8 11-12-92 SITE F3 0.00 - 6.00 | | B07NB9 11-12-92 SITE F3 12.00 - 24.00 | | B07NC4 11-16-92 SITE F4 0.00 - 6.00 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Units | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Inorganics | | | | | | | | | | | | | |
| ALUMINUM | MG/KG | 5630.000 | | 2460.000 | | 7380.000 | | 7260.000 | | 8490.000 | | 6030.000 | |
| ANTIMONY | MG/KG | 4.200 | UJ | 14.700 | U | 4.700 | UJ | 4.300 | UJ | 4.000 | UJ | 4.100 | UJ |
| ARSENIC | MG/KG | 2.800 | | 2.200 | BJ | 6.000 | | 5.400 | | 6.200 | | 5.700 | |
| BARIUM | MG/KG | 53.300 | J | 36.200 | B | 68.400 | | 56.100 | | 70.300 | | 56.100 | |
| BERYLLIUM | MG/KG | 0.100 | U | 0.250 | U | 0.460 | B | 0.530 | B | 0.630 | B | 0.220 | B |
| CADMIUM | MG/KG | 0.250 | U | 1.720 | U | 0.280 | U | 0.240 | U | 0.240 | U | 0.410 | U |
| CALCIUM | MG/KG | 3460.000 | | 2740.000 | | 4180.000 | | 4100.000 | | 4300.000 | | 4850.000 | |
| CHROMIUM | MG/KG | 11.300 | | 5.300 | | 17.700 | | 28.100 | | 45.700 | | 16.800 | |
| COBALT | MG/KG | 5.900 | B | 3.300 | B | 7.600 | B | 8.100 | B | 8.900 | B | 7.700 | B |
| COPPER | MG/KG | 23.700 | | 23.000 | | 51.400 | | 37.400 | | 42.100 | | 69.600 | J |
| IRON | MG/KG | 12500.000 | | 6480.000 | J | 16100.000 | | 17400.000 | | 18300.000 | | 19300.000 | |
| LEAD | MG/KG | 24.800 | | 18.100 | | 49.700 | | 31.400 | | 44.300 | | 50.000 | J |
| MAGNESIUM | MG/KG | 3830.000 | | 1480.000 | | 4440.000 | | 4630.000 | | 5140.000 | | 3690.000 | |
| MANGANESE | MG/KG | 234.000 | J | 144.000 | | 165.000 | | 197.000 | | 254.000 | | 179.000 | J |
| MERCURY | MG/KG | 0.060 | U | 0.060 | UJ | 0.060 | U | 0.080 | B | 0.090 | B | 0.060 | U |
| NICKEL | MG/KG | 11.200 | | 7.400 | B | 14.000 | | 12.800 | | 16.300 | | 11.100 | |
| POTASSIUM | MG/KG | 726.000 | B | 424.000 | B | 1010.000 | B | 1080.000 | B | 1200.000 | | 887.000 | B |
| SELENIUM | MG/KG | 0.890 | U | 0.500 | UJ | 0.750 | U | 0.730 | U | 0.840 | B | 1.000 | UJ |
| SILVER | MG/KG | 0.890 | U | 5.300 | J | 0.980 | U | 0.800 | U | 0.760 | U | 0.990 | U |
| SODIUM | MG/KG | 272.000 | B | 219.000 | B | 227.000 | B | 215.000 | B | 209.000 | B | 346.000 | B |
| THALLIUM | MG/KG | 0.940 | U | 0.520 | BJ | 0.980 | UJ | 0.960 | UJ | 0.940 | UJ | 1.000 | U |
| VANADIUM | MG/KG | 23.600 | | 6.500 | B | 33.200 | | 38.300 | | 39.100 | | 43.700 | |
| ZINC | MG/KG | 209.000 | | 167.000 | | 309.000 | | 246.000 | | 195.000 | | 315.000 | |

| Parameter | Sampl# | B07NC5 | | B07NH3 | | B07NH4 | | B07NG9 | | B07NH0 | | B07NC0 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Date | 11-16-92 | | 11-23-92 | | 11-23-92 | | 11-23-92 | | 11-23-92 | | 11-13-92 | |
| | Site | SITE F4 | | SITE FF1 | | SITE FF1 | | SITE FI1 | | SITE FI1 | | SITE H1 | |
| | Depth | 12.00 - 16.00 | | 0.00 - 6.00 | | 12.00 - 20.00 | | 0.00 - 6.00 | | 12.00 - 18.00 | | 0.00 - 6.00 | |
| | Type | | | | | | | | | | | | |
| | Units | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Inorganics | | | | | | | | | | | | | |
| ALUMINUM | MG/KG | 5940.000 | | 6410.000 | | 7700.000 | | 6700.000 | | 5040.000 | | 9060.000 | |
| ANTIMONY | MG/KG | 3.500 | UJ | 4.100 | UJ | 4.200 | UJ | 4.000 | UJ | 4.200 | UJ | 3.600 | UJ |
| ARSENIC | MG/KG | 3.000 | | 4.500 | | 3.500 | | 4.900 | | 4.900 | J | 7.900 | |
| BARIUM | MG/KG | 48.800 | | 100.000 | J | 97.100 | J | 48.700 | J | 48.100 | J | 89.500 | |
| BERYLLIUM | MG/KG | 0.240 | B | 0.100 | U | 0.100 | U | 0.090 | U | 0.100 | U | 0.570 | B |
| CADMIUM | MG/KG | 0.350 | U | 0.240 | U | 0.250 | U | 0.530 | U | 0.380 | U | 1.200 | U |
| CALCIUM | MG/KG | 1760.000 | | 5450.000 | | 6210.000 | | 4060.000 | | 2300.000 | | 4530.000 | |
| CHROMIUM | MG/KG | 16.100 | | 10.100 | | 12.500 | | 15.400 | | 12.500 | | 22.600 | |
| COBALT | MG/KG | 7.200 | B | 8.000 | B | 7.200 | B | 6.600 | B | 4.800 | B | 8.500 | B |
| COPPER | MG/KG | 27.200 | J | 13.400 | | 16.500 | | 29.300 | | 12.800 | | 34.000 | |
| IRON | MG/KG | 22000.000 | | 12800.000 | | 13400.000 | | 14700.000 | | 11700.000 | | 17300.000 | |
| LEAD | MG/KG | 3.800 | J | 22.600 | | 12.100 | | 49.700 | | 11.100 | | 43.400 | |
| MAGNESIUM | MG/KG | 2890.000 | | 3940.000 | | 4420.000 | | 4190.000 | | 3760.000 | | 5320.000 | |
| MANGANESE | MG/KG | 146.000 | J | 344.000 | J | 286.000 | J | 156.000 | J | 170.000 | J | 284.000 | |
| MERCURY | MG/KG | 0.050 | U | 0.060 | U | 0.070 | U | 0.070 | U | 0.060 | U | 0.060 | B |
| NICKEL | MG/KG | 16.100 | | 10.400 | | 9.900 | B | 11.700 | | 13.900 | | 16.200 | |
| POTASSIUM | MG/KG | 573.000 | B | 952.000 | B | 1210.000 | B | 855.000 | B | 570.000 | B | 1550.000 | |
| SELENIUM | MG/KG | 0.890 | UJ | 0.850 | UJ | 0.870 | U | 0.880 | UJ | 0.830 | U | 1.800 | J |
| SILVER | MG/KG | 1.500 | B | 0.770 | U | 0.630 | U | 1.300 | U | 0.620 | U | 1.000 | U |
| SODIUM | MG/KG | 98.300 | B | 144.000 | B | 141.000 | B | 291.000 | B | 147.000 | B | 225.000 | B |
| THALLIUM | MG/KG | 0.890 | U | 0.890 | U | 0.920 | U | 0.930 | U | 0.880 | U | 0.820 | UJ |
| VANADIUM | MG/KG | 40.300 | | 25.400 | | 25.900 | | 29.800 | | 21.100 | | 35.300 | |
| ZINC | MG/KG | 27.600 | | 82.000 | | 96.000 | | 296.000 | | 97.300 | | 287.000 | |

| Parameter | Samp# / Date / Site / Depth / Type | B07NC1 11-13-92 SITE H1 12.00 - 18.00 | | B07NC2 11-13-92 SITE H2 0.00 - 6.00 | | B07NC3 11-13-92 SITE H3 0.00 - 6.00 | | B07NC6 11-16-92 SITE HAN1 0.00 - 6.00 | | B07NC7 11-16-92 SITE HAN1 12.00 - 16.00 | | B07ND2 11-17-92 SITE HAN2 0.00 - 6.00 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Units | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Inorganics | | | | | | | | | | | | | |
| ALUMINUM | MG/KG | 9690.000 | | 5480.000 | | 5790.000 | | 5930.000 | | 6030.000 | | 6790.000 | |
| ANTIMONY | MG/KG | 3.500 | UJ | 4.400 | UJ | 4.900 | UJ | 3.700 | BJ | 3.400 | UJ | 3.800 | UJ |
| ARSENIC | MG/KG | 12.600 | | 2.400 | B | 4.500 | | 2.500 | | 5.600 | | 3.400 | |
| BARIUM | MG/KG | 82.300 | | 54.300 | | 44.300 | B | 48.800 | B | 48.200 | | 63.500 | |
| BERYLLIUM | MG/KG | 0.210 | B | 0.420 | B | 0.500 | B | 0.180 | B | 0.170 | B | 0.290 | B |
| CADMIUM | MG/KG | 0.200 | U | 0.260 | U | 0.630 | U | 0.370 | U | 0.990 | U | 1.400 | U |
| CALCIUM | MG/KG | 2790.000 | | 3780.000 | | 3940.000 | | 2960.000 | | 3040.000 | | 4060.000 | |
| CHROMIUM | MG/KG | 28.900 | | 18.800 | | 28.300 | | 13.400 | | 13.200 | | 20.000 | |
| COBALT | MG/KG | 9.400 | B | 6.200 | B | 5.900 | B | 5.900 | B | 6.400 | B | 6.700 | B |
| COPPER | MG/KG | 42.700 | | 32.600 | | 26.100 | | 23.900 | J | 24.500 | J | 29.100 | J |
| IRON | MG/KG | 29700.000 | | 13500.000 | | 13600.000 | | 12800.000 | | 13000.000 | | 13700.000 | |
| LEAD | MG/KG | 16.400 | | 35.700 | | 28.300 | | 14.900 | J | 39.100 | J | 42.800 | J |
| MAGNESIUM | MG/KG | 3610.000 | | 3450.000 | | 3620.000 | | 3830.000 | | 3810.000 | | 3920.000 | |
| MANGANESE | MG/KG | 296.000 | | 206.000 | | 117.000 | | 161.000 | J | 146.000 | J | 130.000 | J |
| MERCURY | MG/KG | 0.060 | B | 0.060 | U | 0.080 | U | 0.060 | U | 0.680 | | 0.080 | B |
| NICKEL | MG/KG | 22.600 | | 9.800 | B | 10.000 | B | 13.000 | | 12.400 | | 11.800 | |
| POTASSIUM | MG/KG | 541.000 | B | 687.000 | B | 706.000 | B | 697.000 | B | 822.000 | B | 802.000 | B |
| SELENIUM | MG/KG | 0.600 | UJ | 0.830 | B | 1.100 | B | 0.900 | UJ | 0.930 | UJ | 0.970 | UJ |
| SILVER | MG/KG | 1.800 | U | 0.770 | U | 0.730 | U | 0.880 | U | 0.820 | U | 0.920 | U |
| SODIUM | MG/KG | 137.000 | B | 249.000 | B | 267.000 | B | 161.000 | B | 155.000 | B | 198.000 | B |
| THALLIUM | MG/KG | 0.780 | UJ | 0.940 | UJ | 1.000 | U | 0.900 | U | 0.930 | U | 0.970 | U |
| VANADIUM | MG/KG | 83.200 | | 28.900 | | 41.000 | | 25.200 | | 25.300 | | 33.600 | |
| ZINC | MG/KG | 79.400 | | 168.000 | | 141.000 | | 123.000 | | 219.000 | | 293.000 | |

| Parameter | Samp# / Date / Site / Depth / Type | B07ND3 11-17-92 SITE HAN2 12.00 - 18.00 | | B07NG3 11-22-92 SITE HU1 0.00 - 6.00 | | B07NG6 11-22-92 SITE HU1 0.00 - 6.00 Duplicate | | B07NG5 11-22-92 SITE HU1 12.00 - 18.00 | | B07NG7 11-22-92 SITE HU1 12.00 - 18.00 Split | | B07NG1 11-21-92 SITE K2 0.00 - 3.00 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Units | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Inorganics | | | | | | | | | | | | | |
| ALUMINUM | MG/KG | 7430.000 | | 7640.000 | | 7430.000 | | 8620.000 | | 4830.000 | | 6040.000 | |
| ANTIMONY | MG/KG | 3.600 | UJ | 4.400 | UJ | 4.600 | UJ | 4.000 | UJ | 17.800 | U | 4.800 | UJ |
| ARSENIC | MG/KG | 3.200 | | 4.500 | | 3.900 | | 4.800 | | 4.300 | J | 6.000 | |
| BARIUM | MG/KG | 68.200 | | 58.400 | J | 58.500 | J | 88.500 | J | 76.500 | | 58.000 | J |
| BERYLLIUM | MG/KG | 0.340 | B | 0.100 | U | 0.110 | U | 0.090 | U | 0.420 | B | 0.110 | U |
| CADMIUM | MG/KG | 0.610 | U | 2.000 | | 1.700 | | 1.200 | U | 2.080 | U | 0.650 | U |
| CALCIUM | MG/KG | 3610.000 | | 3720.000 | | 3520.000 | | 3970.000 | | 3280.000 | | 3580.000 | |
| CHROMIUM | MG/KG | 17.600 | | 22.800 | | 21.700 | | 20.800 | | 13.300 | | 24.300 | |
| COBALT | MG/KG | 8.500 | B | 8.500 | B | 7.800 | B | 8.600 | B | 7.000 | B | 6.700 | B |
| COPPER | MG/KG | 25.400 | J | 18.900 | | 18.400 | | 21.500 | | 17.200 | | 23.200 | |
| IRON | MG/KG | 18800.000 | | 15500.000 | | 15000.000 | | 16700.000 | | 10500.000 | J | 14900.000 | |
| LEAD | MG/KG | 17.100 | J | 32.700 | J | 31.300 | | 27.800 | | 27.900 | | 30.500 | |
| MAGNESIUM | MG/KG | 4090.000 | | 4450.000 | | 4350.000 | | 4990.000 | | 3040.000 | | 3870.000 | |
| MANGANESE | MG/KG | 155.000 | J | 193.000 | J | 193.000 | J | 182.000 | J | 130.000 | | 231.000 | J |
| MERCURY | MG/KG | 0.060 | U | 0.070 | B | 0.080 | B | 0.050 | U | 0.070 | UJ | 0.070 | U |
| NICKEL | MG/KG | 15.000 | | 13.800 | | 14.500 | | 15.100 | | 11.800 | B | 12.300 | |
| POTASSIUM | MG/KG | 864.000 | B | 1040.000 | B | 1050.000 | B | 1420.000 | | 1080.000 | B | 831.000 | B |
| SELENIUM | MG/KG | 0.910 | UJ | 1.000 | U | 0.970 | UJ | 0.890 | U | 0.590 | UJ | 1.000 | UJ |
| SILVER | MG/KG | 0.870 | U | 0.650 | U | 0.680 | U | 1.000 | U | 2.970 | UJ | 0.890 | U |
| SODIUM | MG/KG | 179.000 | B | 205.000 | B | 209.000 | B | 194.000 | B | 131.000 | B | 237.000 | B |
| THALLIUM | MG/KG | 0.910 | U | 1.100 | UJ | 1.000 | UJ | 0.940 | UJ | 0.590 | UJ | 1.100 | U |
| VANADIUM | MG/KG | 43.600 | | 29.900 | | 28.700 | | 33.900 | | 14.500 | B | 31.800 | |
| ZINC | MG/KG | 155.000 | | 397.000 | | 369.000 | | 253.000 | | 230.000 | | 209.000 | |

| Parameter | Samp# / Date / Site / Depth / Type | B07NG2 11-21-92 SITE K3 0.00 - 6.00 | | B07NG0 11-21-92 SITE KU1 0.00 - 6.00 | | B07NF9 11-22-92 SITE KU1 12.00 - 18.00 | | B07NG4 11-22-92 SITE N 0.00 - 3.00 | | B07NF5 11-20-92 SITE VBU1 0.00 - 6.00 | | B07NF6 11-20-92 SITE VBU1 12.00 - 22.00 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Units | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Inorganics | | | | | | | | | | | | | |
| ALUMINUM | MG/KG | 7550.000 | | 7250.000 | | 9850.000 | | 5110.000 | | 7470.000 | | 5990.000 | |
| ANTIMONY | MG/KG | 3.700 | UJ | 5.100 | UJ | 4.900 | UJ | 4.500 | UJ | 4.200 | UJ | 4.200 | UJ |
| ARSENIC | MG/KG | 2.900 | | 5.100 | | 6.200 | | 10.700 | | 9.400 | J | 1.900 | BJ |
| BARIUM | MG/KG | 55.100 | J | 61.300 | J | 87.500 | J | 60.500 | J | 70.900 | | 57.000 | |
| BERYLLIUM | MG/KG | 0.090 | U | 0.120 | U | 0.120 | U | 0.110 | U | 0.100 | U | 0.100 | U |
| CADMIUM | MG/KG | 0.220 | U | 1.500 | U | 5.600 | | 0.270 | U | 0.300 | B | 0.250 | U |
| CALCIUM | MG/KG | 3760.000 | | 4070.000 | | 5040.000 | | 3310.000 | | 3480.000 | | 2760.000 | |
| CHROMIUM | MG/KG | 18.800 | | 25.800 | | 64.100 | | 56.400 | | 15.000 | | 13.200 | |
| COBALT | MG/KG | 6.700 | B | 7.300 | B | 10.100 | B | 6.700 | B | 7.200 | B | 6.400 | B |
| COPPER | MG/KG | 17.700 | | 20.500 | | 42.700 | | 14.900 | | 24.700 | | 9.900 | |
| IRON | MG/KG | 15400.000 | | 15300.000 | | 17600.000 | | 15800.000 | | 15400.000 | | 12600.000 | |
| LEAD | MG/KG | 10.600 | | 40.200 | | 59.300 | | 23.900 | | 57.700 | J | 5.800 | |
| MAGNESIUM | MG/KG | 4640.000 | | 4320.000 | | 5520.000 | | 3310.000 | | 4540.000 | | 4060.000 | |
| MANGANESE | MG/KG | 222.000 | J | 203.000 | J | 173.000 | J | 305.000 | J | 189.000 | J | 160.000 | J |
| MERCURY | MG/KG | 0.060 | U | 0.060 | U | 0.090 | B | 0.070 | U | 0.060 | U | 0.060 | U |
| NICKEL | MG/KG | 15.200 | | 13.700 | | 19.100 | | 10.900 | | 15.600 | | 13.100 | |
| POTASSIUM | MG/KG | 877.000 | B | 1010.000 | B | 1650.000 | | 630.000 | B | 1100.000 | B | 836.000 | B |
| SELENIUM | MG/KG | 0.830 | UJ | 1.100 | U | 1.100 | UJ | 0.920 | UJ | 0.700 | U | 0.720 | U |
| SILVER | MG/KG | 0.550 | U | 0.920 | U | 1.400 | U | 0.660 | U | 0.620 | U | 0.630 | U |
| SODIUM | MG/KG | 168.000 | B | 232.000 | B | 213.000 | B | 166.000 | B | 138.000 | B | 102.000 | B |
| THALLIUM | MG/KG | 0.880 | U | 1.100 | U | 1.100 | U | 0.970 | U | 0.310 | UJ | 0.320 | UJ |
| VANADIUM | MG/KG | 30.500 | | 30.800 | | 41.700 | | 32.700 | | 28.900 | | 23.800 | |
| ZINC | MG/KG | 94.800 | | 378.000 | | 454.000 | | 152.000 | | 226.000 | J | 43.700 | J |

| Parameter | Samp# / Date / Site / Depth / Type | B07NF7 11-20-92 SITE VBU2 0.00 - 6.00 | | B07NF8 11-20-92 SITE VBU3 0.00 - 3.00 | | B07NB6 11-12-92 SITE_F1 0.00 - 6.00 | | B07ND5 11-19-92 Unknown 0.00 - 0.00 | |
|---|---|---|---|---|---|---|---|---|---|
| | Units | Result | Q | Result | Q | Result | Q | Result | Q |
| Inorganics | | | | | | | | | |
| ALUMINUM | MG/KG | 4790.000 | | 5040.000 | | 7230.000 | | 5740.000 | |
| ANTIMONY | MG/KG | 4.000 | UJ | 4.000 | UJ | 4.500 | UJ | 4.000 | UJ |
| ARSENIC | MG/KG | 2.400 | J | 5.800 | J | 7.400 | | 3.500 | |
| BARIUM | MG/KG | 33.100 | B | 51.000 | | 73.000 | | 50.900 | |
| BERYLLIUM | MG/KG | 0.100 | U | 0.100 | U | 0.430 | B | 0.100 | U |
| CADMIUM | MG/KG | 0.650 | B | 0.620 | B | 0.410 | U | 0.450 | U |
| CALCIUM | MG/KG | 3640.000 | | 3300.000 | | 3730.000 | | 4020.000 | |
| CHROMIUM | MG/KG | 14.800 | | 11.200 | | 15.200 | | 9.400 | |
| COBALT | MG/KG | 6.300 | B | 6.300 | B | 8.000 | B | 5.400 | B |
| COPPER | MG/KG | 20.400 | | 20.600 | | 62.900 | | 34.200 | |
| IRON | MG/KG | 14900.000 | | 13200.000 | | 15900.000 | | 13100.000 | |
| LEAD | MG/KG | 15.300 | | 27.000 | | 55.700 | | 21.600 | |
| MAGNESIUM | MG/KG | 3440.000 | | 3290.000 | | 4440.000 | | 3870.000 | |
| MANGANESE | MG/KG | 160.000 | J | 263.000 | J | 194.000 | | 251.000 | |
| MERCURY | MG/KG | 0.050 | U | 0.060 | U | 0.070 | U | 0.060 | U |
| NICKEL | MG/KG | 12.400 | | 11.000 | | 14.100 | | 8.900 | B |
| POTASSIUM | MG/KG | 565.000 | B | 659.000 | B | 955.000 | B | 736.000 | B |
| SELENIUM | MG/KG | 0.690 | U | 0.690 | UJ | 0.790 | U | 0.720 | U |
| SILVER | MG/KG | 0.590 | U | 0.590 | UJ | 0.990 | U | 0.590 | U |
| SODIUM | MG/KG | 208.000 | B | 213.000 | B | 215.000 | B | 339.000 | B |
| THALLIUM | MG/KG | 0.350 | BJ | 0.560 | BJ | 1.000 | UJ | 0.320 | U |
| VANADIUM | MG/KG | 40.300 | | 27.600 | | 28.600 | | 26.400 | |
| ZINC | MG/KG | 151.000 | J | 205.000 | J | 335.000 | | 216.000 | |

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# APPENDIX B - VALIDATED METALS LABORATORY REPORTS

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WESTINGHOUSE/HANFORD
1

# INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07NC8

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-191SAS No.: SDG No.: B07NC8

Matrix (soil/water): SOIL Lab Sample ID: 12020-01S

Level (low/med): LOW Date Received: 12/01/92

% Solids: 100.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 387 | | | P | |
| 7440-36-0 | Antimony | 3.2 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 0.57 | ~~B~~ | N | F | BJ |
| 7440-39-3 | Barium | 8.0 | B | | P | |
| 7440-41-7 | Beryllium | 0.08 | U | | P | |
| 7440-43-9 | Cadmium | 0.19 | U | | P | |
| 7440-70-2 | Calcium | 127 | B | | P | |
| 7440-47-3 | Chromium | 0.85 | U | | P | |
| 7440-48-4 | Cobalt | 0.60 | ~~B~~ | | P | U |
| 7440-50-8 | Copper | 1.3 | B | | P | |
| 7439-89-6 | Iron | 1940 | | | P | |
| 7439-92-1 | Lead | 1.7 | — | W | F | J |
| 7439-95-4 | Magnesium | 61.8 | B | | P | |
| 7439-96-5 | Manganese | 42.1 | — | N | P | J |
| 7439-97-6 | Mercury | 0.04 | U | | CV | |
| 7440-02-0 | Nickel | 1.0 | U | | P | |
| 7440-09-7 | Potassium | 76.6 | B | | P | |
| 7782-49-2 | Selenium | 0.58 | U | | F | |
| 7440-22-4 | Silver | 0.47 | U | | P | |
| 7440-23-5 | Sodium | 22.4 | B | | P | |
| 7440-28-0 | Thallium | 0.26 | ~~U~~ | W | F | UJ |
| 7440-62-2 | Vanadium | 1.8 | ~~B~~ | | P | U |
| 7440-66-6 | Zinc | 7.1 | — | E | P | J |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROCKS

93/3/1/93

002

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WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

B07NG8

INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-009SAS No.: SDG No.: B07NF9

Matrix (soil/water): SOIL Lab Sample ID: 12032-08S

Level (low/med): LOW Date Received: 12/03/92

% Solids: 74.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 572 | | | P | |
| 7440-36-0 | Antimony | 4.4 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 0.70 | ~~B~~ | | F | |
| 7440-39-3 | Barium | 13.6 | ~~B~~ | E | P | UJ |
| 7440-41-7 | Beryllium | 0.10 | U | | P | |
| 7440-43-9 | Cadmium | 0.26 | U | | P | |
| 7440-70-2 | Calcium | 162 | B | | P | |
| 7440-47-3 | Chromium | 1.2 | B | | P | |
| 7440-48-4 | Cobalt | 0.81 | B | | P | |
| 7440-50-8 | Copper | 0.91 | U | | P | |
| 7439-89-6 | Iron | 1940 | | | P | |
| 7439-92-1 | Lead | 2.8 | | | F | |
| 7439-95-4 | Magnesium | 88.6 | ~~B~~ | | P | UJ |
| 7439-96-5 | Manganese | 58.6 | — | N | P | |
| 7439-97-6 | Mercury | 0.06 | U | | CV | |
| 7440-02-0 | Nickel | 1.4 | U | | P | |
| 7440-09-7 | Potassium | 147 | B | | P | |
| 7782-49-2 | Selenium | 0.92 | U | | F | |
| 7440-22-4 | Silver | 0.86 | ~~B~~ | | P | U |
| 7440-23-5 | Sodium | 51.6 | ~~B~~ | | P | U |
| 7440-28-0 | Thallium | 0.97 | U | | F | |
| 7440-62-2 | Vanadium | 1.8 | ~~B~~ | | P | U |
| 7440-66-6 | Zinc | 8.3 | — | | P | U |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

8/16/93

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WESTINGHOUSE/HANFORD

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SAMPLE NUMBER:

B07ND1

# INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-191SAS No.: SDG No.: B07NC8

Matrix (soil/water): SOIL Lab Sample ID: 12020-02S

Level (low/med): LOW Date Received: 12/01/92

% Solids: 67.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 4720 | | | P | Q |
| 7440-36-0 | Antimony | 4.7 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 1.89 ~~0.54~~ | ~~U~~ | +N | F | J |
| 7440-39-3 | Barium | 58.3 | | | P | |
| 7440-41-7 | Beryllium | 0.11 | U | | P | |
| 7440-43-9 | Cadmium | 0.28 | U | | P | |
| 7440-70-2 | Calcium | 2140 | | | P | |
| 7440-47-3 | Chromium | 47.6 | | | P | |
| 7440-48-4 | Cobalt | 6.4 | ~~B~~ | | P | U |
| 7440-50-8 | Copper | 10.2 | | | P | |
| 7439-89-6 | Iron | 9700 | | | P | |
| 7439-92-1 | Lead | 9.0 | | | F | |
| 7439-95-4 | Magnesium | 2630 | | | P | |
| 7439-96-5 | Manganese | 220 | | N | P | J |
| 7439-97-6 | Mercury | 0.07 | U | | CV | |
| 7440-02-0 | Nickel | 12.6 | | | P | |
| 7440-09-7 | Potassium | 819 | B | | P | |
| 7782-49-2 | Selenium | 0.82 | U | | F | |
| 7440-22-4 | Silver | 0.70 | U | | P | |
| 7440-23-5 | Sodium | 114 | B | | P | |
| 7440-28-0 | Thallium | 0.37 | ~~U~~ | W | F | UJ |
| 7440-62-2 | Vanadium | 23.4 | | | P | |
| 7440-66-6 | Zinc | 83.1 | | E | P | J |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROCKS AND WOOD

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WESTINGHOUSE/HANFORD
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# INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07ND9

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-191SAS No.: SDG No.: B07NC8

Matrix (soil/water): SOIL Lab Sample ID: 12020-03S

Level (low/med): LOW Date Received: 12/01/92

% Solids: 81.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 3650 | | | P | |
| 7440-36-0 | Antimony | 3.8 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 1.6 | ~~B~~ | N | F | BJ |
| 7440-39-3 | Barium | 45.8 | | | P | |
| 7440-41-7 | Beryllium | 0.09 | U | | P | |
| 7440-43-9 | Cadmium | 0.22 | U | | P | |
| 7440-70-2 | Calcium | 1850 | | | P | |
| 7440-47-3 | Chromium | 50.6 | | | P | |
| 7440-48-4 | Cobalt | 4.6 | B | | P | |
| 7440-50-8 | Copper | 7.0 | | | P | |
| 7439-89-6 | Iron | 8690 | | | P | |
| 7439-92-1 | Lead | 7.3 | | | F | |
| 7439-95-4 | Magnesium | 2210 | | | P | |
| 7439-96-5 | Manganese | 100 | — | N | P | J |
| 7439-97-6 | Mercury | 0.06 | U | | CV | |
| 7440-02-0 | Nickel | 9.3 | | | P | |
| 7440-09-7 | Potassium | 640 | B | | P | |
| 7782-49-2 | Selenium | 0.67 | ~~U~~ | W | F | UJ |
| 7440-22-4 | Silver | 0.78 | ~~B~~ | | P | U |
| 7440-23-5 | Sodium | 96.6 | B | | P | |
| 7440-28-0 | Thallium | 0.30 | ~~U~~ | W | F | UJ |
| 7440-62-2 | Vanadium | 19.1 | | | P | |
| 7440-66-6 | Zinc | 73.1 | — | E | P | J |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROCKS AND WOOD

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WESTINGHOUSE/HANFORD
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# INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07NF3

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-191SAS No.: SDG No.: B07NC8

Matrix (soil/water): SOIL Lab Sample ID: 12020-04S

Level (low/med): LOW Date Received: 12/01/92

% Solids: 67.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5670 | | | P | |
| 7440-36-0 | Antimony | 4.8 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 1.2 | ~~B~~ | N | F | BJ |
| 7440-39-3 | Barium | 50.4 | B | | P | |
| 7440-41-7 | Beryllium | 0.11 | U | | P | |
| 7440-43-9 | Cadmium | 0.28 | U | | P | |
| 7440-70-2 | Calcium | 2960 | | | P | |
| 7440-47-3 | Chromium | 65.2 | | | P | |
| 7440-48-4 | Cobalt | 5.4 | B | | P | |
| 7440-50-8 | Copper | 11.5 | | | P | |
| 7439-89-6 | Iron | 10900 | | | P | |
| 7439-92-1 | Lead | 19.3 | | | F | |
| 7439-95-4 | Magnesium | 3400 | | | P | |
| 7439-96-5 | Manganese | 110 | | N | P | J |
| 7439-97-6 | Mercury | 0.07 | U | | CV | |
| 7440-02-0 | Nickel | 11.2 | B | | P | |
| 7440-09-7 | Potassium | 789 | B | | P | |
| 7782-49-2 | Selenium | 0.82 | U | | F | |
| 7440-22-4 | Silver | 0.71 | U | | P | |
| 7440-23-5 | Sodium | 167 | B | | P | |
| 7440-28-0 | Thallium | 0.37 | ~~W~~ | W | F | UJ |
| 7440-62-2 | Vanadium | 28.2 | | | P | |
| 7440-66-6 | Zinc | 159 | | E | P | J |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROCKS

GJ 3/31/93

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WESTINGHOUSE/HANFORD

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# INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07NF4

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-191SAS No.: SDG No.: B07NC8

Matrix (soil/water): SOIL Lab Sample ID: 12020-05S

Level (low/med): LOW Date Received: 12/01/92

% Solids: 85.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 7460 | | | P | Q |
| 7440-36-0 | Antimony | 3.9 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 1.2 | ~~B~~ | N | F | BJ |
| 7440-39-3 | Barium | 71.8 | | | P | |
| 7440-41-7 | Beryllium | 0.09 | U | | P | |
| 7440-43-9 | Cadmium | 0.23 | U | | P | |
| 7440-70-2 | Calcium | 3110 | | | P | |
| 7440-47-3 | Chromium | 131 | | | P | |
| 7440-48-4 | Cobalt | 7.3 | B | | P | |
| 7440-50-8 | Copper | 19.2 | | | P | |
| 7439-89-6 | Iron | 14100 | | | P | |
| 7439-92-1 | Lead | 39.2 | | | F | |
| 7439-95-4 | Magnesium | 3950 | | | P | |
| 7439-96-5 | Manganese | 140 | | N | P | J |
| 7439-97-6 | Mercury | 0.06 | U | | CV | |
| 7440-02-0 | Nickel | 15.2 | | | P | |
| 7440-09-7 | Potassium | 1150 | | | P | |
| 7782-49-2 | Selenium | 0.63 | U | | F | |
| 7440-22-4 | Silver | 0.57 | U | | P | |
| 7440-23-5 | Sodium | 145 | B | | P | |
| 7440-28-0 | Thallium | 0.28 | ~~U~~ | W | F | UJ |
| 7440-62-2 | Vanadium | 34.8 | | | P | |
| 7440-66-6 | Zinc | 192 | | E | P | J |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROCKS

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SAMPLE NUMBER:

B07ND0

INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-156$AS No.: SDG No.: B07NC4

Matrix (soil/water): SOIL Lab Sample ID: 11276-06S

Level (low/med): LOW Date Received: 11/21/92

% Solids: 67.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5340 | | | P | |
| 7440-36-0 | Antimony | 6.8 | ~~B~~ | N | P | BJ |
| 7440-38-2 | Arsenic | 2.3 | B | | F | |
| 7440-39-3 | Barium | 40.9 | B | | P | |
| 7440-41-7 | Beryllium | 0.20 | B | | P | |
| 7440-43-9 | Cadmium | 0.87 | ~~B~~ | | P | U |
| 7440-70-2 | Calcium | 3180 | | | P | |
| 7440-47-3 | Chromium | 15.0 | | | P | |
| 7440-48-4 | Cobalt | 5.4 | B | | P | |
| 7440-50-8 | Copper | 23.3 | — | E | P | J |
| 7439-89-6 | Iron | 11500 | | * | P | |
| 7439-92-1 | Lead | 23.3 | — | N | F | J |
| 7439-95-4 | Magnesium | 3130 | | | P | |
| 7439-96-5 | Manganese | 168 | — | N | P | J |
| 7439-97-6 | Mercury | 0.07 | U | | CV | |
| 7440-02-0 | Nickel | 12.0 | | | P | |
| 7440-09-7 | Potassium | 614 | B | | P | |
| 7782-49-2 | Selenium | 1.1 | ~~U~~ | N | F | UJ |
| 7440-22-4 | Silver | 1.0 | U | | P | |
| 7440-23-5 | Sodium | 242 | B | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | F | |
| 7440-62-2 | Vanadium | 26.8 | | * | P | |
| 7440-66-6 | Zinc | 221 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts:

Comments:

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SAMPLE NUMBER:

B07NC9

# INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-156$AS No.: SDG No.: B07NC4

Matrix (soil/water): SOIL Lab Sample ID: 11276-05S

Level (low/med): LOW Date Received: 11/21/92

% Solids: 81.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5960 | | | P | |
| 7440-36-0 | Antimony | 3.6 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 6.3 | | | F | |
| 7440-39-3 | Barium | 83.0 | | | P | |
| 7440-41-7 | Beryllium | 0.31 | B | | P | |
| 7440-43-9 | Cadmium | 0.91 | ~~B~~ | | P | U |
| 7440-70-2 | Calcium | 2750 | | | P | |
| 7440-47-3 | Chromium | 17.9 | | | P | |
| 7440-48-4 | Cobalt | 8.3 | B | | P | |
| 7440-50-8 | Copper | 22.3 | — | E | P | J |
| 7439-89-6 | Iron | 16200 | | * | P | |
| 7439-92-1 | Lead | 11.9 | — | N | F | J |
| 7439-95-4 | Magnesium | 3380 | | | P | |
| 7439-96-5 | Manganese | 244 | — | N | P | J |
| 7439-97-6 | Mercury | 0.05 | U | | CV | |
| 7440-02-0 | Nickel | 14.9 | | | P | |
| 7440-09-7 | Potassium | 552 | B | | P | |
| 7782-49-2 | Selenium | 0.87 | ~~U~~ | N | F | UJ |
| 7440-22-4 | Silver | 0.89 | U | | P | |
| 7440-23-5 | Sodium | 122 | B | | P | |
| 7440-28-0 | Thallium | 0.87 | U | | F | |
| 7440-62-2 | Vanadium | 36.6 | | * | P | |
| 7440-66-6 | Zinc | 279 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07NF0

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-183SAS No.: SDG No.: B07ND4

Matrix (soil/water): SOIL Lab Sample ID: 11332-06S

Level (low/med): LOW Date Received: 11/25/92

% Solids: 43.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 7400 | | | P | |
| 7440-36-0 | Antimony | 7.5 | ~~UJ~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 1.9 | B | | F | |
| 7440-39-3 | Barium | 55.2 | B | | P | |
| 7440-41-7 | Beryllium | 0.18 | U | | P | |
| 7440-43-9 | Cadmium | 3.4 | - | | P | ~~J~~ U |
| 7440-70-2 | Calcium | 5070 | | | P | |
| 7440-47-3 | Chromium | 14.1 | | | P | |
| 7440-48-4 | Cobalt | 5.7 | B | | P | |
| 7440-50-8 | Copper | 23.1 | | | P | |
| 7439-89-6 | Iron | 13900 | | | P | |
| 7439-92-1 | Lead | 32.0 | | | F | |
| 7439-95-4 | Magnesium | 3870 | | | P | |
| 7439-96-5 | Manganese | 181 | | | P | |
| 7439-97-6 | Mercury | 0.10 | B | | CV | |
| 7440-02-0 | Nickel | 11.2 | B | | P | |
| 7440-09-7 | Potassium | 962 | B | | P | |
| 7782-49-2 | Selenium | 1.2 | U | | F | |
| 7440-22-4 | Silver | 1.1 | U | | P | |
| 7440-23-5 | Sodium | 364 | B | | P | |
| 7440-28-0 | Thallium | 0.82 | B | | F | |
| 7440-62-2 | Vanadium | 35.9 | | | P | |
| 7440-66-6 | Zinc | 377 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07NF1

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-183SAS No.: SDG No.: B07ND4

Matrix (soil/water): SOIL Lab Sample ID: 11332-07S

Level (low/med): LOW Date Received: 11/25/92

% Solids: 78.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5220 | | | P | |
| 7440-36-0 | Antimony | 3.8 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 2.0 | B | | F | |
| 7440-39-3 | Barium | 52.8 | | | P | |
| 7440-41-7 | Beryllium | 0.11 | B | | P | |
| 7440-43-9 | Cadmium | 1.1 | ~~B~~ | | P | ~~J~~ U |
| 7440-70-2 | Calcium | 3990 | | | P | |
| 7440-47-3 | Chromium | 47.0 | | | P | |
| 7440-48-4 | Cobalt | 8.8 | B | | P | |
| 7440-50-8 | Copper | 15.9 | | | P | |
| 7439-89-6 | Iron | 17800 | | | P | |
| 7439-92-1 | Lead | 18.6 | | | F | |
| 7439-95-4 | Magnesium | 3700 | | | P | |
| 7439-96-5 | Manganese | 207 | | | P | |
| 7439-97-6 | Mercury | 0.06 | U | | CV | |
| 7440-02-0 | Nickel | 7.9 | B | | P | |
| 7440-09-7 | Potassium | 661 | B | | P | |
| 7782-49-2 | Selenium | 0.69 | U | | F | |
| 7440-22-4 | Silver | 0.81 | ~~B~~ | | P | J |
| 7440-23-5 | Sodium | 213 | B | | P | |
| 7440-28-0 | Thallium | 0.61 | ~~B~~ | W | F | J |
| 7440-62-2 | Vanadium | 44.4 | | | P | |
| 7440-66-6 | Zinc | 221 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts:

Comments:

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SAMPLE NUMBER:

B07NF2

INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-183SAS No.: SDG No.: B07ND4

Matrix (soil/water): SOIL Lab Sample ID: 11332-08S

Level (low/med): LOW Date Received: 11/25/92

% Solids: 70.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 9680 | | | P | |
| 7440-36-0 | Antimony | 4.3 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 4.4 | | | F | |
| 7440-39-3 | Barium | 89.3 | | | P | |
| 7440-41-7 | Beryllium | 0.10 | U | | P | |
| 7440-43-9 | Cadmium | 1.7 | ~~U~~ | | P | ~~J~~U |
| 7440-70-2 | Calcium | 4470 | | | P | |
| 7440-47-3 | Chromium | 21.9 | | | P | |
| 7440-48-4 | Cobalt | 8.8 | B | | P | |
| 7440-50-8 | Copper | 21.3 | | | P | |
| 7439-89-6 | Iron | 18500 | | | P | |
| 7439-92-1 | Lead | 27.3 | | | F | |
| 7439-95-4 | Magnesium | 5230 | | | P | |
| 7439-96-5 | Manganese | 209 | | | P | |
| 7439-97-6 | Mercury | 0.06 | U | | CV | |
| 7440-02-0 | Nickel | 16.2 | | | P | |
| 7440-09-7 | Potassium | 1500 | | | P | |
| 7782-49-2 | Selenium | 0.78 | ~~U~~ | | F | UJ |
| 7440-22-4 | Silver | 0.64 | U | | P | |
| 7440-23-5 | Sodium | 237 | B | | P | |
| 7440-28-0 | Thallium | 0.46 | B | | F | |
| 7440-62-2 | Vanadium | 40.6 | | | P | |
| 7440-66-6 | Zinc | 257 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
WOOD

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WESTINGHOUSE/HANFORD
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SAMPLE NUMBER:

B07NH1

INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-009SAS No.: SDG No.: B07NF9

Matrix (soil/water): SOIL Lab Sample ID: 12032-11S

Level (low/med): LOW Date Received: 12/03/92

% Solids: 76.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 8030 | | | P | |
| 7440-36-0 | Antimony | 4.2 | | N | P | UJ |
| 7440-38-2 | Arsenic | 6.1 | | | F | |
| 7440-39-3 | Barium | 73.2 | | E | P | J |
| 7440-41-7 | Beryllium | 0.10 | U | | P | |
| 7440-43-9 | Cadmium | 1.6 | | | P | |
| 7440-70-2 | Calcium | 4260 | | | P | |
| 7440-47-3 | Chromium | 22.3 | | | P | |
| 7440-48-4 | Cobalt | 7.7 | B | | P | |
| 7440-50-8 | Copper | 23.8 | | | P | |
| 7439-89-6 | Iron | 16700 | | | P | |
| 7439-92-1 | Lead | 59.8 | | | F | |
| 7439-95-4 | Magnesium | 4640 | | | P | |
| 7439-96-5 | Manganese | 202 | | N | P | J |
| 7439-97-6 | Mercury | 0.07 | B | | CV | |
| 7440-02-0 | Nickel | 14.3 | | | P | |
| 7440-09-7 | Potassium | 993 | B | | P | |
| 7782-49-2 | Selenium | 0.86 | U | | F | |
| 7440-22-4 | Silver | 1.4 | B | | P | U |
| 7440-23-5 | Sodium | 224 | B | | P | |
| 7440-28-0 | Thallium | 0.91 | U | | F | |
| 7440-62-2 | Vanadium | 35.4 | | | P | |
| 7440-66-6 | Zinc | 294 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROOTS

5/16/93

93012968.1564

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

B07NH2

# INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-009SAS No.: SDG No.: B07NF9

Matrix (soil/water): SOIL Lab Sample ID: 12032-12S

Level (low/med): LOW Date Received: 12/03/92

% Solids: 95.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 11100 | | | P | Q |
| 7440-36-0 | Antimony | 4.7 | ~~B~~ | N | P | J |
| 7440-38-2 | Arsenic | 6.0 | | S | F | |
| 7440-39-3 | Barium | 111 | | E | P | J |
| 7440-41-7 | Beryllium | 0.54 | B | | P | |
| 7440-43-9 | Cadmium | 0.20 | U | | P | |
| 7440-70-2 | Calcium | 2830 | | | P | |
| 7440-47-3 | Chromium | 31.9 | | | P | |
| 7440-48-4 | Cobalt | 9.7 | B | | P | |
| 7440-50-8 | Copper | 31.1 | | | P | |
| 7439-89-6 | Iron | 31100 | | | P | |
| 7439-92-1 | Lead | 11.4 | | | F | |
| 7439-95-4 | Magnesium | 3880 | | | P | |
| 7439-96-5 | Manganese | 168 | | N | P | J |
| 7439-97-6 | Mercury | 0.05 | U | | CV | |
| 7440-02-0 | Nickel | 21.6 | | | P | |
| 7440-09-7 | Potassium | 619 | B | | P | |
| 7782-49-2 | Selenium | 0.74 | ~~U~~ | W | F | UJ |
| 7440-22-4 | Silver | 0.94 | ~~B~~ | | P | U |
| 7440-23-5 | Sodium | 113 | B | | P | |
| 7440-28-0 | Thallium | 0.78 | ~~U~~ | W | F | UJ |
| 7440-62-2 | Vanadium | 86.2 | | | P | |
| 7440-66-6 | Zinc | 85.1 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROOTS AND STONES

5/4/6/93

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9312968.1565

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07ND4

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-183SAS No.: SDG No.: B07ND4

Matrix (soil/water): SOIL Lab Sample ID: 11332-01S

Level (low/med): LOW Date Received: 11/25/92

% Solids: 76.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5290 | | | P | |
| 7440-36-0 | Antimony | 4.1 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 2.9 | B | | F | |
| 7440-39-3 | Barium | 45.5 | B | | P | |
| 7440-41-7 | Beryllium | 0.10 | U | | P | |
| 7440-43-9 | Cadmium | 0.33 | ~~B~~ | | P | U |
| 7440-70-2 | Calcium | 3650 | | | P | |
| 7440-47-3 | Chromium | 10.3 | | | P | |
| 7440-48-4 | Cobalt | 5.4 | B | | P | |
| 7440-50-8 | Copper | 26.0 | | | P | |
| 7439-89-6 | Iron | 13100 | | | P | |
| 7439-92-1 | Lead | 18.0 | | S | F | |
| 7439-95-4 | Magnesium | 3800 | | | P | |
| 7439-96-5 | Manganese | 193 | | | P | |
| 7439-97-6 | Mercury | 0.06 | U | | CV | |
| 7440-02-0 | Nickel | 10.0 | | | P | |
| 7440-09-7 | Potassium | 716 | B | | P | |
| 7782-49-2 | Selenium | 3.4 | U | | F | |
| 7440-22-4 | Silver | 0.61 | U | | P | |
| 7440-23-5 | Sodium | 279 | B | | P | |
| 7440-28-0 | Thallium | 0.30 | U | | F | |
| 7440-62-2 | Vanadium | 27.9 | | | P | |
| 7440-66-6 | Zinc | 192 | | | P | |
| | Cyanide | | | | NR | |

Color Before: GREY Clarity Before: Texture: COARSE

Color After: GREY Clarity After: Artifacts:

Comments:

g 4/8/93

FORM I - IN ILM02.0



9312968.1566

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07ND7

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-183SAS No.: SDG No.: B07ND4

Matrix (soil/water): SOIL Lab Sample ID: 11332-04S

Level (low/med): LOW Date Received: 11/25/92

% Solids: 78.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 6020 | | | P | Q |
| 7440-36-0 | Antimony | 4.2 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 3.1 | | | F | |
| 7440-39-3 | Barium | 53.1 | | | P | |
| 7440-41-7 | Beryllium | 0.10 | U | | P | |
| 7440-43-9 | Cadmium | 0.39 | ~~B~~ | | P | U |
| 7440-70-2 | Calcium | 3880 | | | P | |
| 7440-47-3 | Chromium | 12.9 | | | P | |
| 7440-48-4 | Cobalt | 6.0 | B | | P | |
| 7440-50-8 | Copper | 27.5 | | | P | |
| 7439-89-6 | Iron | 14200 | | | P | |
| 7439-92-1 | Lead | 20.6 | | S | F | |
| 7439-95-4 | Magnesium | 4230 | | | P | |
| 7439-96-5 | Manganese | 250 | | | P | |
| 7439-97-6 | Mercury | 0.06 | U | | CV | |
| 7440-02-0 | Nickel | 12.6 | | | P | |
| 7440-09-7 | Potassium | 797 | B | | P | |
| 7782-49-2 | Selenium | 0.66 | ~~U~~ | W | F | UJ |
| 7440-22-4 | Silver | 0.63 | U | | P | |
| 7440-23-5 | Sodium | 299 | B | | P | |
| 7440-28-0 | Thallium | 0.39 | B | | F | |
| 7440-62-2 | Vanadium | 30.0 | | | P | |
| 7440-66-6 | Zinc | 203 | | | P | |
| | Cyanide | | | | NR | |

Color Before: GREY Clarity Before: Texture: COARSE

Color After: GREY Clarity After: Artifacts:

Comments:

gj 4/8/93

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93129968.1567

SAMPLE NUMBER:

B07ND6

INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-183SAS No.: SDG No.: B07ND4

Matrix (soil/water): SOIL Lab Sample ID: 11332-03S

Level (low/med): LOW Date Received: 11/25/92

% Solids: 96.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5580 | | | P | |
| 7440-36-0 | Antimony | 3.3 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 2.7 | | | F | |
| 7440-39-3 | Barium | 51.9 | | | P | |
| 7440-41-7 | Beryllium | 0.08 | U | | P | |
| 7440-43-9 | Cadmium | 0.20 | U | | P | |
| 7440-70-2 | Calcium | 9120 | | | P | |
| 7440-47-3 | Chromium | 10.6 | | | P | |
| 7440-48-4 | Cobalt | 5.1 | B | | P | |
| 7440-50-8 | Copper | 20.7 | | | P | |
| 7439-89-6 | Iron | 13400 | | | P | |
| 7439-92-1 | Lead | 23.6 | | | F | |
| 7439-95-4 | Magnesium | 3840 | | | P | |
| 7439-96-5 | Manganese | 195 | | | P | |
| 7439-97-6 | Mercury | 0.05 | U | | CV | |
| 7440-02-0 | Nickel | 10.5 | | | P | |
| 7440-09-7 | Potassium | 653 | B | | P | |
| 7782-49-2 | Selenium | 0.58 | U | | F | |
| 7440-22-4 | Silver | 0.49 | U | | P | |
| 7440-23-5 | Sodium | 224 | B | | P | |
| 7440-28-0 | Thallium | 0.26 | U | | F | |
| 7440-62-2 | Vanadium | 26.9 | | | P | |
| 7440-66-6 | Zinc | 144 | | | P | |
| | Cyanide | | | | NR | |

Color Before: GREY Clarity Before: Texture: COARSE

Color After: GREY Clarity After: Artifacts: YES

Comments:
SHELLS

Cj 4/8/93

FORM I - IN ILM02.0

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9312968.1560

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07ND8

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-183SAS No.: SDG No.: B07ND4

Matrix (soil/water): SOIL Lab Sample ID: 11332-05S

Level (low/med): LOW Date Received: 11/25/92

% Solids: 97.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5260 | | | P | Q |
| 7440-36-0 | Antimony | 3.4 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 2.2 | | | F | |
| 7440-39-3 | Barium | 40.0 | B | | P | |
| 7440-41-7 | Beryllium | 0.08 | U | | P | |
| 7440-43-9 | Cadmium | 0.20 | U | | P | |
| 7440-70-2 | Calcium | 2140 | | | P | |
| 7440-47-3 | Chromium | 9.2 | | | P | |
| 7440-48-4 | Cobalt | 4.0 | B | | P | |
| 7440-50-8 | Copper | 6.9 | | | P | |
| 7439-89-6 | Iron | 11400 | | | P | |
| 7439-92-1 | Lead | 3.4 | | | F | |
| 7439-95-4 | Magnesium | 3690 | | | P | |
| 7439-96-5 | Manganese | 164 | | | P | |
| 7439-97-6 | Mercury | 0.05 | U | | CV | |
| 7440-02-0 | Nickel | 10.7 | | | P | |
| 7440-09-7 | Potassium | 563 | B | | P | |
| 7782-49-2 | Selenium | 0.58 | U | | F | |
| 7440-22-4 | Silver | 0.50 | U | | P | |
| 7440-23-5 | Sodium | 103 | B | | P | |
| 7440-28-0 | Thallium | 0.26 | U | | F | |
| 7440-62-2 | Vanadium | 23.2 | | | P | |
| 7440-66-6 | Zinc | 26.8 | | | P | |
| | Cyanide | | | | NR | |

Color Before: GREY Clarity Before: Texture: COARSE

Color After: GREY Clarity After: Artifacts:

Comments:

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WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

B07NH5

INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-009SAS No.: SDG No.: B07NF9

Matrix (soil/water): SOIL Lab Sample ID: 12032-16S

Level (low/med): LOW Date Received: 12/03/92

% Solids: 78.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 4400 | | | P | |
| 7440-36-0 | Antimony | 3.9 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 3.0 | | | F | |
| 7440-39-3 | Barium | 42.3 | ~~B~~ | E | P | J |
| 7440-41-7 | Beryllium | 0.09 | U | | P | |
| 7440-43-9 | Cadmium | 0.23 | U | | P | |
| 7440-70-2 | Calcium | 2770 | | | P | |
| 7440-47-3 | Chromium | 9.1 | | | P | |
| 7440-48-4 | Cobalt | 4.2 | B | | P | |
| 7440-50-8 | Copper | 18.2 | | | P | |
| 7439-89-6 | Iron | 10200 | | | P | |
| 7439-92-1 | Lead | 24.1 | | | F | |
| 7439-95-4 | Magnesium | 3010 | | | P | |
| 7439-96-5 | Manganese | 206 | ~~B~~ | N | P | J |
| 7439-97-6 | Mercury | 0.06 | U | | CV | |
| 7440-02-0 | Nickel | 8.4 | B | | P | |
| 7440-09-7 | Potassium | 560 | B | | P | |
| 7782-49-2 | Selenium | 0.81 | ~~U~~ | W | F | UJ |
| 7440-22-4 | Silver | 0.61 | ~~B~~ | | P | U |
| 7440-23-5 | Sodium | 199 | B | | P | |
| 7440-28-0 | Thallium | 0.85 | U | | F | |
| 7440-62-2 | Vanadium | 18.3 | | | P | |
| 7440-66-6 | Zinc | 185 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES

SJ 4/6/93

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9312968.1570

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

B07NH6

INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-009SAS No.: SDG No.: B07NF9

Matrix (soil/water): SOIL Lab Sample ID: 12032-17S

Level (low/med): LOW Date Received: 12/03/92

% Solids: 78.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5630 | | | P | Q |
| 7440-36-0 | Antimony | 4.2 | ~~U~~ | N | P | U |
| 7440-38-2 | Arsenic | 2.8 | | | F | |
| 7440-39-3 | Barium | 53.3 | | E | P | J |
| 7440-41-7 | Beryllium | 0.10 | U | | P | |
| 7440-43-9 | Cadmium | 0.25 | U | | P | |
| 7440-70-2 | Calcium | 3460 | | | P | |
| 7440-47-3 | Chromium | 11.3 | | | P | |
| 7440-48-4 | Cobalt | 5.9 | B | | P | |
| 7440-50-8 | Copper | 23.7 | | | P | |
| 7439-89-6 | Iron | 12500 | | | P | |
| 7439-92-1 | Lead | 24.8 | | | F | |
| 7439-95-4 | Magnesium | 3830 | | | P | |
| 7439-96-5 | Manganese | 234 | | N | P | J |
| 7439-97-6 | Mercury | 0.06 | U | | CV | |
| 7440-02-0 | Nickel | 11.2 | | | P | |
| 7440-09-7 | Potassium | 726 | B | | P | |
| 7782-49-2 | Selenium | 0.89 | U | M | F | |
| 7440-22-4 | Silver | 0.89 | ~~B~~ | | P | U |
| 7440-23-5 | Sodium | 272 | B | | P | |
| 7440-28-0 | Thallium | 0.94 | U | | F | |
| 7440-62-2 | Vanadium | 23.6 | | | P | |
| 7440-66-6 | Zinc | 209 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES.

4/16/93

018



9312968.1571

# INORGANIC ANALYSIS DATA SHEET

B07NH7

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP888

Matrix (soil/water): SOIL Lab Sample ID: 921288802

Level (low/med): LOW Date Received: 12/02/92

% Solids: 78.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 2460.00 | | | P | Q |
| 7440-36-0 | Antimony | 14.70 | U | | P | |
| 7440-38-2 | Arsenic | 2.20 | ~~B~~ | N | F | BJ |
| 7440-39-3 | Barium | 36.20 | B | | P | |
| 7440-41-7 | Beryllium | .25 | U | | P | |
| 7440-43-9 | Cadmium | 1.72 | U | | P | |
| 7440-70-2 | Calcium | 2740.00 | | | P | |
| 7440-47-3 | Chromium | 5.30 | | | P | |
| 7440-48-4 | Cobalt | 3.30 | B | | P | |
| 7440-50-8 | Copper | 23.00 | | | P | |
| 7439-89-6 | Iron | 6480.00 | | | P | J |
| 7439-92-1 | Lead | 18.10 | | | F | |
| 7439-95-4 | Magnesium | 1480.00 | | | P | |
| 7439-96-5 | Manganese | 144.00 | | | P | |
| 7439-97-6 | Mercury | .06 | ~~U~~ | | CV | UJ |
| 7440-02-0 | Nickel | 7.40 | B | | P | |
| 7440-09-7 | Potassium | 424.00 | B | | P | |
| 7782-49-2 | Selenium | .50 | ~~U~~ | N | F | UJ |
| 7440-22-4 | Silver | 5.30 | | N* | P | J |
| 7440-23-5 | Sodium | 219.00 | B | | P | |
| 7440-28-0 | Thallium | .52 | ~~B~~ | | F | BJ |
| 7440-62-2 | Vanadium | 6.50 | B | | P | |
| 7440-66-6 | Zinc | 167.00 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN 03/90

9 4/5/93

9312968.1572

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07NB7

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-135$AS No.: SDG No.: B07NB6

Matrix (soil/water): SOIL Lab Sample ID: 11255-02S

Level (low/med): LOW Date Received: 11/18/92

% Solids: 71.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 7380 | | | P | |
| 7440-36-0 | Antimony | 4.7 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 6.0 | | | F | |
| 7440-39-3 | Barium | 68.4 | | | P | |
| 7440-41-7 | Beryllium | 0.46 | B | | P | |
| 7440-43-9 | Cadmium | 0.28 | U | | P | |
| 7440-70-2 | Calcium | 4180 | | | P | |
| 7440-47-3 | Chromium | 17.7 | | | P | |
| 7440-48-4 | Cobalt | 7.6 | B | | P | |
| 7440-50-8 | Copper | 51.4 | | | P | |
| 7439-89-6 | Iron | 16100 | | | P | J |
| 7439-92-1 | Lead | 49.7 | | | F | |
| 7439-95-4 | Magnesium | 4440 | | | P | |
| 7439-96-5 | Manganese | 165 | | | P | |
| 7439-97-6 | Mercury | 0.06 | U | | CV | |
| 7440-02-0 | Nickel | 14.0 | | | P | |
| 7440-09-7 | Potassium | 1010 | B | | P | |
| 7782-49-2 | Selenium | 0.75 | U | S | F | |
| 7440-22-4 | Silver | 0.98 | ~~B~~ | | P | U |
| 7440-23-5 | Sodium | 227 | B | | P | |
| 7440-28-0 | Thallium | 0.98 | ~~U~~ | W | F | UJ |
| 7440-62-2 | Vanadium | 33.2 | | | P | |
| 7440-66-6 | Zinc | 309 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

CJ 4/15/93

003

FORM I - IN ILM03.0



9312968.1573

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07NB8

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-135$AS No.: SDG No.: B07NB6

Matrix (soil/water): SOIL Lab Sample ID: 11255-03S

Level (low/med): LOW Date Received: 11/18/92

% Solids: 74.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 7260 | | | P | |
| 7440-36-0 | Antimony | 4.3 | ~~B~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 5.4 | | | F | |
| 7440-39-3 | Barium | 56.1 | | | P | |
| 7440-41-7 | Beryllium | 0.53 | B | | P | |
| 7440-43-9 | Cadmium | 0.24 | U | | P | |
| 7440-70-2 | Calcium | 4100 | | | P | |
| 7440-47-3 | Chromium | 28.1 | | | P | |
| 7440-48-4 | Cobalt | 8.1 | B | | P | |
| 7440-50-8 | Copper | 37.4 | | | P | |
| 7439-89-6 | Iron | 17400 | | | P | ~~J~~ |
| 7439-92-1 | Lead | 31.4 | | | F | |
| 7439-95-4 | Magnesium | 4630 | | | P | |
| 7439-96-5 | Manganese | 197 | | | P | |
| 7439-97-6 | Mercury | 0.08 | B | | CV | |
| 7440-02-0 | Nickel | 12.8 | | | P | |
| 7440-09-7 | Potassium | 1080 | B | | P | |
| 7782-49-2 | Selenium | 0.73 | U | W | F | |
| 7440-22-4 | Silver | 0.80 | ~~B~~ | | P | U |
| 7440-23-5 | Sodium | 215 | B | | P | |
| 7440-28-0 | Thallium | 0.96 | ~~U~~ | W | F | UJ |
| 7440-62-2 | Vanadium | 38.3 | | | P | |
| 7440-66-6 | Zinc | 246 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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FORM I - IN ILM03.0



9312968.1574

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07NB9

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-135SAS No.: SDG No.: B07NB6

Matrix (soil/water): SOIL Lab Sample ID: 11255-04S

Level (low/med): LOW Date Received: 11/18/92

% Solids: 76.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| | | | | | | Q |
| 7429-90-5 | Aluminum | 8490 | | | P | |
| 7440-36-0 | Antimony | 4.0 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 6.2 | | | F | |
| 7440-39-3 | Barium | 70.3 | | | P | |
| 7440-41-7 | Beryllium | 0.63 | B | | P | |
| 7440-43-9 | Cadmium | 0.24 | U | | P | |
| 7440-70-2 | Calcium | 4300 | | | P | |
| 7440-47-3 | Chromium | 45.7 | | | P | |
| 7440-48-4 | Cobalt | 8.9 | B | | P | |
| 7440-50-8 | Copper | 42.1 | | | P | |
| 7439-89-6 | Iron | 18300 | — | | P | J |
| 7439-92-1 | Lead | 44.3 | | | F | |
| 7439-95-4 | Magnesium | 5140 | | | P | |
| 7439-96-5 | Manganese | 254 | | | P | |
| 7439-97-6 | Mercury | 0.09 | B | | CV | |
| 7440-02-0 | Nickel | 16.3 | | | P | |
| 7440-09-7 | Potassium | 1200 | | | P | |
| 7782-49-2 | Selenium | 0.84 | B | W | F | |
| 7440-22-4 | Silver | 0.76 | ~~B~~ | | P | U |
| 7440-23-5 | Sodium | 209 | B | | P | |
| 7440-28-0 | Thallium | 0.94 | ~~U~~ | W | F | UJ |
| 7440-62-2 | Vanadium | 39.1 | | | P | |
| 7440-66-6 | Zinc | 195 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

4/5/93

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FORM I - IN ILM03.0



9312968.1575

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

B07NC4

# INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-156SAS No.: SDG No.: B07NC4

Matrix (soil/water): SOIL Lab Sample ID: 11276-01S

Level (low/med): LOW Date Received: 11/20/92

% Solids: 69.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 6030 | | | P | |
| 7440-36-0 | Antimony | 4.1 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 5.7 | | | F | |
| 7440-39-3 | Barium | 56.1 | | | P | |
| 7440-41-7 | Beryllium | 0.22 | B | | P | |
| 7440-43-9 | Cadmium | 0.41 | U | | P | |
| 7440-70-2 | Calcium | 4850 | | | P | |
| 7440-47-3 | Chromium | 16.8 | | | P | |
| 7440-48-4 | Cobalt | 7.7 | B | | P | |
| 7440-50-8 | Copper | 69.6 | — | E | P | J |
| 7439-89-6 | Iron | 19300 | | * | P | |
| 7439-92-1 | Lead | 50.0 | — | N | F | J |
| 7439-95-4 | Magnesium | 3690 | | | P | |
| 7439-96-5 | Manganese | 179 | — | N | P | J |
| 7439-97-6 | Mercury | 0.06 | U | | CV | |
| 7440-02-0 | Nickel | 11.1 | | | P | |
| 7440-09-7 | Potassium | 887 | B | | P | |
| 7782-49-2 | Selenium | 1.0 | ~~U~~ | WN | F | UJ |
| 7440-22-4 | Silver | 0.99 | U | | P | |
| 7440-23-5 | Sodium | 346 | B | | P | |
| 7440-28-0 | Thallium | 1.0 | U | | F | |
| 7440-62-2 | Vanadium | 43.7 | | * | P | |
| 7440-66-6 | Zinc | 315 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROOTS

CJ 4/12/93

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93012968.1576

SAMPLE NUMBER:

B07NC5

# INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-156 SAS No.: SDG No.: B07NC4

Matrix (soil/water): SOIL Lab Sample ID: 11276-02S

Level (low/med): LOW Date Received: 11/20/92

% Solids: 82.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5940 | | | P | |
| 7440-36-0 | Antimony | 3.5 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 3.0 | | | F | |
| 7440-39-3 | Barium | 48.8 | | | P | |
| 7440-41-7 | Beryllium | 0.24 | B | | P | |
| 7440-43-9 | Cadmium | 0.35 | U | | P | |
| 7440-70-2 | Calcium | 1760 | | | P | |
| 7440-47-3 | Chromium | 16.1 | | | P | |
| 7440-48-4 | Cobalt | 7.2 | B | | P | |
| 7440-50-8 | Copper | 27.2 | | E | P | J |
| 7439-89-6 | Iron | 22000 | | * | P | |
| 7439-92-1 | Lead | 3.8 | | N | F | J |
| 7439-95-4 | Magnesium | 2890 | | | P | |
| 7439-96-5 | Manganese | 146 | | N | P | J |
| 7439-97-6 | Mercury | 0.05 | U | | CV | |
| 7440-02-0 | Nickel | 16.1 | | | P | |
| 7440-09-7 | Potassium | 573 | B | | P | |
| 7782-49-2 | Selenium | 0.89 | ~~U~~ | N | F | UJ |
| 7440-22-4 | Silver | 1.5 | B | | P | |
| 7440-23-5 | Sodium | 98.3 | B | | P | |
| 7440-28-0 | Thallium | 0.89 | U | | F | |
| 7440-62-2 | Vanadium | 40.3 | | * | P | |
| 7440-66-6 | Zinc | 27.6 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROOTS

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WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

B07NH3

# INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-009SAS No.: SDG No.: B07NF9

Matrix (soil/water): SOIL Lab Sample ID: 12032-13S

Level (low/med): LOW Date Received: 12/03/92

% Solids: 82.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 6410 | | | P | Q |
| 7440-36-0 | Antimony | 4.1 | ~~UJ~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 4.5 | | S | F | |
| 7440-39-3 | Barium | 100 | | E | P | J |
| 7440-41-7 | Beryllium | 0.10 | U | | P | |
| 7440-43-9 | Cadmium | 0.24 | U | | P | |
| 7440-70-2 | Calcium | 5450 | | | P | |
| 7440-47-3 | Chromium | 10.1 | | | P | |
| 7440-48-4 | Cobalt | 8.0 | B | | P | |
| 7440-50-8 | Copper | 13.4 | | | P | |
| 7439-89-6 | Iron | 12800 | | | P | |
| 7439-92-1 | Lead | 22.6 | | S | F | |
| 7439-95-4 | Magnesium | 3940 | | | P | |
| 7439-96-5 | Manganese | 344 | | N | P | J |
| 7439-97-6 | Mercury | 0.06 | U | | CV | |
| 7440-02-0 | Nickel | 10.4 | | | P | |
| 7440-09-7 | Potassium | 952 | B | | P | |
| 7782-49-2 | Selenium | 0.85 | ~~UJ~~ | W | F | UJ |
| 7440-22-4 | Silver | 0.77 | ~~B~~ | | P | U |
| 7440-23-5 | Sodium | 144 | B | | P | |
| 7440-28-0 | Thallium | 0.89 | U | | F | |
| 7440-62-2 | Vanadium | 25.4 | | | P | |
| 7440-66-6 | Zinc | 82.0 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES.

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# INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07NH4

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-009SAS No.: SDG No.: B07NF9

Matrix (soil/water): SOIL Lab Sample ID: 12032-14S

Level (low/med): LOW Date Received: 12/03/92

% Solids: 76.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 7700 | | | P |
| 7440-36-0 | Antimony | 4.2 | W | N | P |
| 7440-38-2 | Arsenic | 3.5 | | | F |
| 7440-39-3 | Barium | 97.1 | | E | P |
| 7440-41-7 | Beryllium | 0.10 | U | | P |
| 7440-43-9 | Cadmium | 0.25 | U | | P |
| 7440-70-2 | Calcium | 6210 | | | P |
| 7440-47-3 | Chromium | 12.5 | | | P |
| 7440-48-4 | Cobalt | 7.2 | B | | P |
| 7440-50-8 | Copper | 16.5 | | | P |
| 7439-89-6 | Iron | 13400 | | | P |
| 7439-92-1 | Lead | 12.1 | | | F |
| 7439-95-4 | Magnesium | 4420 | | | P |
| 7439-96-5 | Manganese | 286 | | N | P |
| 7439-97-6 | Mercury | 0.07 | U | | CV |
| 7440-02-0 | Nickel | 9.9 | B | | P |
| 7440-09-7 | Potassium | 1210 | B | | P |
| 7782-49-2 | Selenium | 0.87 | U | M | F |
| 7440-22-4 | Silver | 0.63 | U | | P |
| 7440-23-5 | Sodium | 141 | B | | P |
| 7440-28-0 | Thallium | 0.92 | U | | F |
| 7440-62-2 | Vanadium | 25.9 | | | P |
| 7440-66-6 | Zinc | 96.0 | | | P |
| | Cyanide | | | | NR |

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J

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROOTS

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WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

B07NG9

# INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-009SAS No.: SDG No.: B07NF9

Matrix (soil/water): SOIL Lab Sample ID: 12032-09S

Level (low/med): LOW Date Received: 12/03/92

% Solids: 77.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 6700 | | | P | |
| 7440-36-0 | Antimony | 4.0 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 4.9 | | S | F | |
| 7440-39-3 | Barium | 48.7 | | E | P | J |
| 7440-41-7 | Beryllium | 0.09 | U | | P | |
| 7440-43-9 | Cadmium | 0.53 | ~~B~~ | | P | U |
| 7440-70-2 | Calcium | 4060 | | | P | |
| 7440-47-3 | Chromium | 15.4 | | | P | |
| 7440-48-4 | Cobalt | 6.6 | B | | P | |
| 7440-50-8 | Copper | 29.3 | | | P | |
| 7439-89-6 | Iron | 14700 | | | P | |
| 7439-92-1 | Lead | 49.7 | | S | F | |
| 7439-95-4 | Magnesium | 4190 | | | P | |
| 7439-96-5 | Manganese | 156 | | N | P | J |
| 7439-97-6 | Mercury | 0.07 | U | | CV | |
| 7440-02-0 | Nickel | 11.7 | | | P | |
| 7440-09-7 | Potassium | 855 | B | | P | |
| 7782-49-2 | Selenium | 0.88 | ~~U~~ | W | F | UJ |
| 7440-22-4 | Silver | 1.3 | ~~B~~ | | P | U |
| 7440-23-5 | Sodium | 291 | B | | P | |
| 7440-28-0 | Thallium | 0.93 | U | | F | |
| 7440-62-2 | Vanadium | 29.8 | | | P | |
| 7440-66-6 | Zinc | 296 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROOTS

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WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER: B07NH0

INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-009SAS No.: SDG No.: B07NF9

Matrix (soil/water): SOIL Lab Sample ID: 12032-10S

Level (low/med): LOW Date Received: 12/03/92

% Solids: 78.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5040 | | | P | |
| 7440-36-0 | Antimony | 4.2 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 4.9 | | S | F | ~~J~~ J |
| 7440-39-3 | Barium | 48.1 | ~~B~~ | E | P | J |
| 7440-41-7 | Beryllium | 0.10 | U | | P | |
| 7440-43-9 | Cadmium | 0.38 | ~~B~~ | | P | U |
| 7440-70-2 | Calcium | 2300 | | | P | |
| 7440-47-3 | Chromium | 12.5 | | | P | |
| 7440-48-4 | Cobalt | 4.8 | B | | P | |
| 7440-50-8 | Copper | 12.8 | | | P | |
| 7439-89-6 | Iron | 11700 | | | P | |
| 7439-92-1 | Lead | 11.1 | | | F | |
| 7439-95-4 | Magnesium | 3760 | | | P | |
| 7439-96-5 | Manganese | 170 | | N | P | J |
| 7439-97-6 | Mercury | 0.06 | U | | CV | |
| 7440-02-0 | Nickel | 13.9 | | | P | |
| 7440-09-7 | Potassium | 570 | B | | P | |
| 7782-49-2 | Selenium | 0.83 | U | | F | |
| 7440-22-4 | Silver | 0.62 | U | | P | |
| 7440-23-5 | Sodium | 147 | B | | P | |
| 7440-28-0 | Thallium | 0.88 | U | | F | |
| 7440-62-2 | Vanadium | 21.1 | | | P | |
| 7440-66-6 | Zinc | 97.3 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts:

Comments:

4/6/93

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07NC0

Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-135$AS No.: SDG No.: B07NB6

Matrix (soil/water): SOIL Lab Sample ID: 11255-05S

Level (low/med): LOW Date Received: 11/19/92

% Solids: 89.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 9060 | | | P | Q |
| 7440-36-0 | Antimony | 3.6 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 7.9 | | | F | |
| 7440-39-3 | Barium | 89.5 | | | P | |
| 7440-41-7 | Beryllium | 0.57 | B | | P | |
| 7440-43-9 | Cadmium | 1.2 | — | | P | U |
| 7440-70-2 | Calcium | 4530 | | | P | |
| 7440-47-3 | Chromium | 22.6 | | | P | |
| 7440-48-4 | Cobalt | 8.5 | B | | P | |
| 7440-50-8 | Copper | 34.0 | | | P | |
| 7439-89-6 | Iron | 17300 | — | | P | ~~J~~ |
| 7439-92-1 | Lead | 43.4 | | | F | |
| 7439-95-4 | Magnesium | 5320 | | | P | |
| 7439-96-5 | Manganese | 284 | | | P | |
| 7439-97-6 | Mercury | 0.06 | B | | CV | |
| 7440-02-0 | Nickel | 16.2 | | | P | |
| 7440-09-7 | Potassium | 1550 | | | P | |
| 7782-49-2 | Selenium | 1.8 | — | + | F | J |
| 7440-22-4 | Silver | 1.0 | ~~B~~ | | P | U |
| 7440-23-5 | Sodium | 225 | B | | P | |
| 7440-28-0 | Thallium | 0.82 | ~~U~~ | W | F | UJ |
| 7440-62-2 | Vanadium | 35.3 | | | P | |
| 7440-66-6 | Zinc | 287 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROOTS

4/15/93

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FORM I - IN ILM03.0



9312968.1582

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07NC1

.ab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

.ab Code: SKINER Case No.: N2-11-135$AS No.: SDG No.: B07NB6

latrix (soil/water): SOIL Lab Sample ID: 11255-06S

.evel (low/med): LOW Date Received: 11/19/92

: Solids: 95.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 9690 | | | P | |
| 7440-36-0 | Antimony | 3.5 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 12.6 | | | F | |
| 7440-39-3 | Barium | 82.3 | | | P | |
| 7440-41-7 | Beryllium | 0.21 | B | | P | |
| 7440-43-9 | Cadmium | 0.20 | U | | P | |
| 7440-70-2 | Calcium | 2790 | | | P | |
| 7440-47-3 | Chromium | 28.9 | | | P | |
| 7440-48-4 | Cobalt | 9.4 | B | | P | |
| 7440-50-8 | Copper | 42.7 | | | P | |
| 7439-89-6 | Iron | 29700 | | | P | J |
| 7439-92-1 | Lead | 16.4 | | S | F | |
| 7439-95-4 | Magnesium | 3610 | | | P | |
| 7439-96-5 | Manganese | 296 | | | P | |
| 7439-97-6 | Mercury | 0.06 | B | | CV | |
| 7440-02-0 | Nickel | 22.6 | | | P | |
| 7440-09-7 | Potassium | 541 | B | | P | |
| 7782-49-2 | Selenium | 0.60 | ~~U~~ | + | F | UJ |
| 7440-22-4 | Silver | 1.8 | ~~B~~ | | P | U |
| 7440-23-5 | Sodium | 137 | B | | P | |
| 7440-28-0 | Thallium | 0.78 | ~~U~~ | W | F | UJ |
| 7440-62-2 | Vanadium | 83.2 | | | P | |
| 7440-66-6 | Zinc | 79.4 | | | P | |
| | Cyanide | | | | NR | |

olor Before: BROWN Clarity Before: Texture: FINE

olor After: BROWN Clarity After: Artifacts:

omments:

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FORM I - IN ILM03.0



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INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07NC2

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-135$AS No.: SDG No.: B07NB6

Matrix (soil/water): SOIL Lab Sample ID: 11255-07S

Level (low/med): LOW Date Received: 11/19/92

% Solids: 75.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5480 | | | P | |
| 7440-36-0 | Antimony | 4.4 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 2.4 | B | | F | |
| 7440-39-3 | Barium | 54.3 | | | P | |
| 7440-41-7 | Beryllium | 0.42 | B | | P | |
| 7440-43-9 | Cadmium | 0.26 | U | | P | |
| 7440-70-2 | Calcium | 3780 | | | P | |
| 7440-47-3 | Chromium | 18.8 | | | P | |
| 7440-48-4 | Cobalt | 6.2 | B | | P | |
| 7440-50-8 | Copper | 32.6 | | | P | |
| 7439-89-6 | Iron | 13500 | | | P | ~~J~~ |
| 7439-92-1 | Lead | 35.7 | | | F | |
| 7439-95-4 | Magnesium | 3450 | | | P | |
| 7439-96-5 | Manganese | 206 | | | P | |
| 7439-97-6 | Mercury | 0.06 | U | | CV | |
| 7440-02-0 | Nickel | 9.8 | B | | P | |
| 7440-09-7 | Potassium | 687 | B | | P | |
| 7782-49-2 | Selenium | 0.83 | B | | F | |
| 7440-22-4 | Silver | 0.77 | ~~B~~ | | P | U |
| 7440-23-5 | Sodium | 249 | B | | P | |
| 7440-28-0 | Thallium | 0.94 | ~~U~~ | W | F | UJ |
| 7440-62-2 | Vanadium | 28.9 | | | P | |
| 7440-66-6 | Zinc | 168 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROOTS AND STONES

by 4/15/98

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FORM I - IN ILM03.0



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INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07NC3

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-135$AS No.: SDG No.: B07NB6

Matrix (soil/water): SOIL Lab Sample ID: 11255-08S

Level (low/med): LOW Date Received: 11/19/92

% Solids: 65.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5790 | | | P | |
| 7440-36-0 | Antimony | 4.9 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 4.5 | | | F | |
| 7440-39-3 | Barium | 44.3 | B | | P | |
| 7440-41-7 | Beryllium | 0.50 | B | | P | |
| 7440-43-9 | Cadmium | 0.63 | ~~B~~ | | P | U |
| 7440-70-2 | Calcium | 3940 | | | P | |
| 7440-47-3 | Chromium | 28.3 | | | P | |
| 7440-48-4 | Cobalt | 5.9 | B | | P | |
| 7440-50-8 | Copper | 26.1 | | | P | |
| 7439-89-6 | Iron | 13600 | — | | P | J |
| 7439-92-1 | Lead | 28.3 | | S | F | |
| 7439-95-4 | Magnesium | 3620 | | | P | |
| 7439-96-5 | Manganese | 117 | | | P | |
| 7439-97-6 | Mercury | 0.08 | U | | CV | |
| 7440-02-0 | Nickel | 10.0 | B | | P | |
| 7440-09-7 | Potassium | 706 | B | | P | |
| 7782-49-2 | Selenium | 1.1 | B | | F | |
| 7440-22-4 | Silver | 0.73 | U | | P | |
| 7440-23-5 | Sodium | 267 | B | | P | |
| 7440-28-0 | Thallium | 1.0 | U | | F | |
| 7440-62-2 | Vanadium | 41.0 | | | P | |
| 7440-66-6 | Zinc | 141 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BLACK Clarity Before: Texture: MEDIUM

Color After: BLACK Clarity After: Artifacts: YES

Comments:

STONES AND ROOTS

GJ 4/5/93

009

FORM I - IN ILM03.0

9312968.1585

SAMPLE NUMBER:

B07NC6

# INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-156$AS No.: SDG No.: B07NC4

Matrix (soil/water): SOIL Lab Sample ID: 11276-03S

Level (low/med): LOW Date Received: 11/20/92

% Solids: 76.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5930 | | | P | |
| 7440-36-0 | Antimony | 3.7 | ~~B~~ | N | P | BJ |
| 7440-38-2 | Arsenic | 2.5 | | | F | |
| 7440-39-3 | Barium | 48.8 | B | | P | |
| 7440-41-7 | Beryllium | 0.18 | B | | P | |
| 7440-43-9 | Cadmium | 0.37 | U | | P | |
| 7440-70-2 | Calcium | 2960 | | | P | |
| 7440-47-3 | Chromium | 13.4 | | | P | |
| 7440-48-4 | Cobalt | 5.9 | B | | P | |
| 7440-50-8 | Copper | 23.9 | — | E | P | J |
| 7439-89-6 | Iron | 12800 | | * | P | |
| 7439-92-1 | Lead | 14.9 | — | N | F | J |
| 7439-95-4 | Magnesium | 3830 | | | P | |
| 7439-96-5 | Manganese | 161 | — | N | P | J |
| 7439-97-6 | Mercury | 0.06 | U | | CV | |
| 7440-02-0 | Nickel | 13.0 | | | P | |
| 7440-09-7 | Potassium | 697 | B | | P | |
| 7782-49-2 | Selenium | 0.90 | ~~U~~ | WN | F | UJ |
| 7440-22-4 | Silver | 0.88 | U | | P | |
| 7440-23-5 | Sodium | 161 | B | | P | |
| 7440-28-0 | Thallium | 0.90 | U | | F | |
| 7440-62-2 | Vanadium | 25.2 | | * | P | |
| 7440-66-6 | Zinc | 123 | | | P | |
| | Cyanide | | | | NR | |

Color Before: GREY Clarity Before: Texture: COARSE

Color After: GREY Clarity After: Artifacts:

Comments:

5 4/2/93

93 12968.1586

004

SAMPLE NUMBER:

B07NC7

# INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-156$AS No.: SDG No.: B07NC4

Matrix (soil/water): SOIL Lab Sample ID: 11276-04S

Level (low/med): LOW Date Received: 11/20/92

% Solids: 78.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 6030 | | | P | |
| 7440-36-0 | Antimony | 3.4 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 5.6 | | | F | |
| 7440-39-3 | Barium | 48.2 | | | P | |
| 7440-41-7 | Beryllium | 0.17 | B | | P | |
| 7440-43-9 | Cadmium | 0.99 | ~~B~~ | | P | U |
| 7440-70-2 | Calcium | 3040 | | | P | |
| 7440-47-3 | Chromium | 13.2 | | | P | |
| 7440-48-4 | Cobalt | 6.4 | B | | P | |
| 7440-50-8 | Copper | 24.5 | — | E | P | J |
| 7439-89-6 | Iron | 13000 | | * | P | |
| 7439-92-1 | Lead | 39.1 / ~~44~~.5 | — | SN | F | J |
| 7439-95-4 | Magnesium | 3810 | | | P | |
| 7439-96-5 | Manganese | 146 | — | N | P | J |
| 7439-97-6 | Mercury | 0.68 | | | CV | |
| 7440-02-0 | Nickel | 12.4 | | | P | |
| 7440-09-7 | Potassium | 822 | B | | P | |
| 7782-49-2 | Selenium | 0.93 | ~~U~~ | N | F | UJ |
| 7440-22-4 | Silver | 0.82 | U | | P | |
| 7440-23-5 | Sodium | 155 | B | | P | |
| 7440-28-0 | Thallium | 0.93 | U | | F | |
| 7440-62-2 | Vanadium | 25.3 | | * | P | |
| 7440-66-6 | Zinc | 219 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts:

Comments:

8 4/2/93

005

9312968.1507

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

B07ND2

INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-156 SAS No.: SDG No.: B07NC4

Matrix (soil/water): SOIL Lab Sample ID: 11276-07S

Level (low/med): LOW Date Received: 11/21/92

% Solids: 73.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 6790 | | | P | |
| 7440-36-0 | Antimony | 3.8 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 3.4 | | | F | |
| 7440-39-3 | Barium | 63.5 | | | P | |
| 7440-41-7 | Beryllium | 0.29 | B | | P | |
| 7440-43-9 | Cadmium | 1.4 | — | | P | U |
| 7440-70-2 | Calcium | 4060 | | | P | |
| 7440-47-3 | Chromium | 20.0 | | | P | |
| 7440-48-4 | Cobalt | 6.7 | B | | P | |
| 7440-50-8 | Copper | 29.1 | — | E | P | J |
| 7439-89-6 | Iron | 13700 | | * | P | |
| 7439-92-1 | Lead | 42.8 | — | N | F | J |
| 7439-95-4 | Magnesium | 3920 | | | P | |
| 7439-96-5 | Manganese | 130 | — | N | P | J |
| 7439-97-6 | Mercury | 0.08 | B | | CV | |
| 7440-02-0 | Nickel | 11.8 | | | P | |
| 7440-09-7 | Potassium | 802 | B | | P | |
| 7782-49-2 | Selenium | 0.97 | ~~U~~ | +N | F | UJ |
| 7440-22-4 | Silver | 0.92 | U | | P | |
| 7440-23-5 | Sodium | 198 | B | | P | |
| 7440-28-0 | Thallium | 0.97 | U | | F | |
| 7440-62-2 | Vanadium | 33.6 | | * | P | |
| 7440-66-6 | Zinc | 293 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROOTS

G Hagg

008

FORM B-36 IN ILM02.1

9312968.1588

SAMPLE NUMBER: B07ND3

# INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-156$AS No.: SDG No.: B07NC4

Matrix (soil/water): SOIL Lab Sample ID: 11276-08S

Level (low/med): LOW Date Received: 11/21/92

% Solids: 80.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 7430 | | | P | |
| 7440-36-0 | Antimony | 3.6 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 3.2 | | | F | |
| 7440-39-3 | Barium | 68.2 | | | P | |
| 7440-41-7 | Beryllium | 0.34 | B | | P | |
| 7440-43-9 | Cadmium | 0.61 | ~~B~~ | | P | U |
| 7440-70-2 | Calcium | 3610 | | | P | |
| 7440-47-3 | Chromium | 17.6 | | | P | |
| 7440-48-4 | Cobalt | 8.5 | B | | P | |
| 7440-50-8 | Copper | 25.4 | — | E | P | J |
| 7439-89-6 | Iron | 18800 | | * | P | |
| 7439-92-1 | Lead | 17.1 | — | N | F | J |
| 7439-95-4 | Magnesium | 4090 | | | P | |
| 7439-96-5 | Manganese | 155 | — | N | P | J |
| 7439-97-6 | Mercury | 0.06 | U | | CV | |
| 7440-02-0 | Nickel | 15.0 | | | P | |
| 7440-09-7 | Potassium | 864 | B | | P | |
| 7782-49-2 | Selenium | 0.91 | ~~U~~ | WN | F | UJ |
| 7440-22-4 | Silver | 0.87 | U | | P | |
| 7440-23-5 | Sodium | 179 | B | | P | |
| 7440-28-0 | Thallium | 0.91 | U | | F | |
| 7440-62-2 | Vanadium | 43.6 | | * | P | |
| 7440-66-6 | Zinc | 155 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES

4/21/93

009



9312969.1509

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

B07NG3

# INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-009SAS No.: SDG No.: B07NF9

Matrix (soil/water): SOIL Lab Sample ID: 12032-04S

Level (low/med): LOW Date Received: 12/03/92

% Solids: 68.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 7640 | | | P | |
| 7440-36-0 | Antimony | 4.4 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 4.5 | | S | F | |
| 7440-39-3 | Barium | 58.4 | | E | P | J |
| 7440-41-7 | Beryllium | 0.10 | U | | P | |
| 7440-43-9 | Cadmium | 2.0 | | | P | |
| 7440-70-2 | Calcium | 3720 | | | P | |
| 7440-47-3 | Chromium | 22.8 | | | P | |
| 7440-48-4 | Cobalt | 8.5 | B | | P | |
| 7440-50-8 | Copper | 18.9 | | | P | |
| 7439-89-6 | Iron | 15500 | | | P | |
| 7439-92-1 | Lead | 32.7 | | W | F | J |
| 7439-95-4 | Magnesium | 4450 | | | P | |
| 7439-96-5 | Manganese | 193 | | N | P | J |
| 7439-97-6 | Mercury | 0.07 | B | | CV | |
| 7440-02-0 | Nickel | 13.8 | | | P | |
| 7440-09-7 | Potassium | 1040 | B | | P | |
| 7782-49-2 | Selenium | 1.0 | U | | F | |
| 7440-22-4 | Silver | 0.65 | U | | P | |
| 7440-23-5 | Sodium | 205 | B | | P | |
| 7440-28-0 | Thallium | 1.1 | ~~U~~ | W | F | UJ |
| 7440-62-2 | Vanadium | 29.9 | | | P | |
| 7440-66-6 | Zinc | 397 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

SJ 4/6/93

006



9312968.1590

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

B07NG6

INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-009SAS No.: SDG No.: B07NF9

Matrix (soil/water): SOIL Lab Sample ID: 12032-07S

Level (low/med): LOW Date Received: 12/03/92

% Solids: 67.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 7430 | | | P | |
| 7440-36-0 | Antimony | 4.6 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 3.9 | | S | F | |
| 7440-39-3 | Barium | 58.5 | | E | P | J |
| 7440-41-7 | Beryllium | 0.11 | U | | P | |
| 7440-43-9 | Cadmium | 1.7 | | | P | |
| 7440-70-2 | Calcium | 3520 | | | P | |
| 7440-47-3 | Chromium | 21.7 | | | P | |
| 7440-48-4 | Cobalt | 7.8 | B | | P | |
| 7440-50-8 | Copper | 18.4 | | | P | |
| 7439-89-6 | Iron | 15000 | | | P | |
| 7439-92-1 | Lead | 31.3 | | | F | |
| 7439-95-4 | Magnesium | 4350 | | | P | |
| 7439-96-5 | Manganese | 193 | | N | P | J |
| 7439-97-6 | Mercury | 0.08 | B | | CV | |
| 7440-02-0 | Nickel | 14.5 | | | P | |
| 7440-09-7 | Potassium | 1050 | B | | P | |
| 7782-49-2 | Selenium | 0.97 | ~~U~~ | W | F | UJ |
| 7440-22-4 | Silver | 0.68 | U | | P | |
| 7440-23-5 | Sodium | 209 | B | | P | |
| 7440-28-0 | Thallium | 1.0 | ~~U~~ | W | F | UJ |
| 7440-62-2 | Vanadium | 28.7 | | | P | |
| 7440-66-6 | Zinc | 369 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9/16/93

009

93129668.1591

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B07NG5

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-009SAS No.: SDG No.: B07NF9

Matrix (soil/water): SOIL Lab Sample ID: 12032-06S

Level (low/med): LOW Date Received: 12/03/92

% Solids: 76.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 8620 | | | P | Q |
| 7440-36-0 | Antimony | 4.0 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 4.8 | | S | F | |
| 7440-39-3 | Barium | 88.5 | | E | P | J |
| 7440-41-7 | Beryllium | 0.09 | U | | P | |
| 7440-43-9 | Cadmium | 1.2 | | | P | U |
| 7440-70-2 | Calcium | 3970 | | | P | |
| 7440-47-3 | Chromium | 20.8 | | | P | |
| 7440-48-4 | Cobalt | 8.6 | B | | P | |
| 7440-50-8 | Copper | 21.5 | | | P | |
| 7439-89-6 | Iron | 16700 | | | P | |
| 7439-92-1 | Lead | 27.8 | | | F | |
| 7439-95-4 | Magnesium | 4990 | | | P | |
| 7439-96-5 | Manganese | 182 | | N | P | J |
| 7439-97-6 | Mercury | 0.05 | U | | CV | |
| 7440-02-0 | Nickel | 15.1 | | | P | |
| 7440-09-7 | Potassium | 1420 | | | P | |
| 7782-49-2 | Selenium | 0.89 | U | M | F | |
| 7440-22-4 | Silver | 1.0 | ~~U~~ | | P | U |
| 7440-23-5 | Sodium | 194 | B | | P | |
| 7440-28-0 | Thallium | 0.94 | ~~U~~ | W | F | UJ |
| 7440-62-2 | Vanadium | 33.9 | | | P | |
| 7440-66-6 | Zinc | 253 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

5-4/6/93

008

FORM B-40

9312968.1592

# INORGANIC ANALYSIS DATA SHEET

B07NG7

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP888

Matrix (soil/water): SOIL Lab Sample ID: 921288801

Level (low/med): LOW Date Received: 12/02/92

% Solids: 67.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 4830.00 | | | P | Q |
| 7440-36-0 | Antimony | 17.80 | U | | P | |
| 7440-38-2 | Arsenic | 4.30 ~~4.90~~ | | NS | F | J |
| 7440-39-3 | Barium | 76.50 | | | P | |
| 7440-41-7 | Beryllium | .42 | B | | P | |
| 7440-43-9 | Cadmium | 2.08 | U | | P | |
| 7440-70-2 | Calcium | 3280.00 | | | P | |
| 7440-47-3 | Chromium | 13.30 | | | P | |
| 7440-48-4 | Cobalt | 7.00 | B | | P | |
| 7440-50-8 | Copper | 17.20 | | | P | |
| 7439-89-6 | Iron | 10500.00 | | | P | J |
| 7439-92-1 | Lead | 27.90 | | | F | |
| 7439-95-4 | Magnesium | 3040.00 | | | P | |
| 7439-96-5 | Manganese | 130.00 | | | P | |
| 7439-97-6 | Mercury | .07 | ~~U~~ | | CV | UJ |
| 7440-02-0 | Nickel | 11.80 | B | | P | |
| 7440-09-7 | Potassium | 1080.00 | B | | P | |
| 7782-49-2 | Selenium | .59 | ~~U~~ | N | F | UJ |
| 7440-22-4 | Silver | 2.97 | ~~U~~ | N* | P | UJ |
| 7440-23-5 | Sodium | 131.00 | B | | P | |
| 7440-28-0 | Thallium | .59 | ~~U~~ | | F | UJ |
| 7440-62-2 | Vanadium | 14.50 | B | | P | |
| 7440-66-6 | Zinc | 230.00 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN 03/90

4/15/93

9312968.1593

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER: B07NG1

# INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-009SAS No.: SDG No.: B07NF9

Matrix (soil/water): SOIL Lab Sample ID: 12032-02S

Level (low/med): LOW Date Received: 12/03/92

% Solids: 68.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 6040 | | | P | |
| 7440-36-0 | Antimony | 4.8 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 6.0 | | | F | |
| 7440-39-3 | Barium | 58.0 | | E | P | J |
| 7440-41-7 | Beryllium | 0.11 | U | | P | |
| 7440-43-9 | Cadmium | 0.65 | ~~B~~ | | P | U |
| 7440-70-2 | Calcium | 3580 | | | P | |
| 7440-47-3 | Chromium | 24.3 | | | P | |
| 7440-48-4 | Cobalt | 6.7 | B | | P | |
| 7440-50-8 | Copper | 23.2 | | | P | |
| 7439-89-6 | Iron | 14900 | | | P | |
| 7439-92-1 | Lead | 30.5 | | W | F | |
| 7439-95-4 | Magnesium | 3870 | | | P | |
| 7439-96-5 | Manganese | 231 | | N | P | J |
| 7439-97-6 | Mercury | 0.07 | U | | CV | |
| 7440-02-0 | Nickel | 12.3 | | | P | |
| 7440-09-7 | Potassium | 831 | B | | P | |
| 7782-49-2 | Selenium | 1.0 | ~~U~~ | W | F | UJ |
| 7440-22-4 | Silver | 0.89 | ~~B~~ | | P | U |
| 7440-23-5 | Sodium | 237 | B | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | F | |
| 7440-62-2 | Vanadium | 31.8 | | | P | |
| 7440-66-6 | Zinc | 209 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES

5/4/6/98

004



9312968.1594

SAMPLE NUMBER:

B07NG2

# INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-009SAS No.: SDG No.: B07NF9

Matrix (soil/water): SOIL Lab Sample ID: 12032-03S

Level (low/med): LOW Date Received: 12/03/92

% Solids: 80.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 7550 | | | P | |
| 7440-36-0 | Antimony | 3.7 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 2.9 | | | F | |
| 7440-39-3 | Barium | 55.1 | | E | P | J |
| 7440-41-7 | Beryllium | 0.09 | U | | P | |
| 7440-43-9 | Cadmium | 0.22 | U | | P | |
| 7440-70-2 | Calcium | 3760 | | | P | |
| 7440-47-3 | Chromium | 18.8 | | | P | |
| 7440-48-4 | Cobalt | 6.7 | B | | P | |
| 7440-50-8 | Copper | 17.7 | | | P | |
| 7439-89-6 | Iron | 15400 | | | P | |
| 7439-92-1 | Lead | 10.6 | | | F | |
| 7439-95-4 | Magnesium | 4640 | | | P | |
| 7439-96-5 | Manganese | 222 | | N | P | J |
| 7439-97-6 | Mercury | 0.06 | U | | CV | |
| 7440-02-0 | Nickel | 15.2 | | | P | |
| 7440-09-7 | Potassium | 877 | B | | P | |
| 7782-49-2 | Selenium | 0.83 | ~~U~~ | W | F | UJ |
| 7440-22-4 | Silver | 0.55 | U | | P | |
| 7440-23-5 | Sodium | 168 | B | | P | |
| 7440-28-0 | Thallium | 0.88 | U | | F | |
| 7440-62-2 | Vanadium | 30.5 | | | P | |
| 7440-66-6 | Zinc | 94.8 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

5/4/6/93

005



9312968.1595

SAMPLE NUMBER:

B07NG0

# INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-009SAS No.: SDG No.: B07NF9

Matrix (soil/water): SOIL Lab Sample ID: 12032-01S

Level (low/med): LOW Date Received: 12/03/92

% Solids: 65.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 7250 | | | P | |
| 7440-36-0 | Antimony | 5.1 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 5.1 | | S | F | |
| 7440-39-3 | Barium | 61.3 | | E | P | J |
| 7440-41-7 | Beryllium | 0.12 | U | | P | |
| 7440-43-9 | Cadmium | 1.5 | | | P | U |
| 7440-70-2 | Calcium | 4070 | | | P | |
| 7440-47-3 | Chromium | 25.8 | | | P | |
| 7440-48-4 | Cobalt | 7.3 | B | | P | |
| 7440-50-8 | Copper | 20.5 | | | P | |
| 7439-89-6 | Iron | 15300 | | | P | |
| 7439-92-1 | Lead | 40.2 | | | F | |
| 7439-95-4 | Magnesium | 4320 | | | P | |
| 7439-96-5 | Manganese | 203 | | N | P | J |
| 7439-97-6 | Mercury | 0.06 | U | | CV | |
| 7440-02-0 | Nickel | 13.7 | | | P | |
| 7440-09-7 | Potassium | 1010 | B | | P | |
| 7782-49-2 | Selenium | 1.1 | ~~U~~ | | F | ~~UJ~~ U |
| 7440-22-4 | Silver | 0.92 | ~~B~~ | | P | U |
| 7440-23-5 | Sodium | 232 | B | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | F | |
| 7440-62-2 | Vanadium | 30.8 | | | P | |
| 7440-66-6 | Zinc | 378 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROOTS

GJ 4/6/93

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WESTINGHOUSE/HANFORD
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SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B07NF9

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-009SAS No.: SDG No.: B07NF9

Matrix (soil/water): SOIL Lab Sample ID: 12032-15S

Level (low/med): LOW Date Received: 12/03/92

% Solids: 63.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 9850 | | | P | |
| 7440-36-0 | Antimony | 4.9 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 6.2 | | | F | |
| 7440-39-3 | Barium | 87.5 | | E | P | J |
| 7440-41-7 | Beryllium | 0.12 | U | | P | |
| 7440-43-9 | Cadmium | 5.6 | | | P | |
| 7440-70-2 | Calcium | 5040 | | | P | |
| 7440-47-3 | Chromium | 64.1 | | | P | |
| 7440-48-4 | Cobalt | 10.1 | B | | P | |
| 7440-50-8 | Copper | 42.7 | | | P | |
| 7439-89-6 | Iron | 17600 | | | P | |
| 7439-92-1 | Lead | 59.3 | | | F | |
| 7439-95-4 | Magnesium | 5520 | | | P | |
| 7439-96-5 | Manganese | 173 | | N | P | J |
| 7439-97-6 | Mercury | 0.09 | B | | CV | |
| 7440-02-0 | Nickel | 19.1 | | | P | |
| 7440-09-7 | Potassium | 1650 | | | P | |
| 7782-49-2 | Selenium | 1.1 | ~~U~~ | W | F | UJ |
| 7440-22-4 | Silver | 1.4 | ~~B~~ | | P | U |
| 7440-23-5 | Sodium | 213 | B | | P | |
| 7440-28-0 | Thallium | 1.1 | U | | F | |
| 7440-62-2 | Vanadium | 41.7 | | | P | |
| 7440-66-6 | Zinc | 454 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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WESTINGHOUSE/HANFORD

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# INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07NG4

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-009SAS No.: SDG No.: B07NF9

Matrix (soil/water): SOIL Lab Sample ID: 12032-05S

Level (low/med): LOW Date Received: 12/03/92

% Solids: 72.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5110 | | | P | Q |
| 7440-36-0 | Antimony | 4.5 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 10.7 | | S | F | |
| 7440-39-3 | Barium | 60.5 | | E | P | J |
| 7440-41-7 | Beryllium | 0.11 | U | | P | |
| 7440-43-9 | Cadmium | 0.27 | U | | P | |
| 7440-70-2 | Calcium | 3310 | | | P | |
| 7440-47-3 | Chromium | 56.4 | | | P | |
| 7440-48-4 | Cobalt | 6.7 | B | | P | |
| 7440-50-8 | Copper | 14.9 | | | P | |
| 7439-89-6 | Iron | 15800 | | | P | |
| 7439-92-1 | Lead | 23.9 | | | F | |
| 7439-95-4 | Magnesium | 3310 | | | P | |
| 7439-96-5 | Manganese | 305 | | N | P | J |
| 7439-97-6 | Mercury | 0.07 | U | | CV | |
| 7440-02-0 | Nickel | 10.9 | | | P | |
| 7440-09-7 | Potassium | 630 | B | | P | |
| 7782-49-2 | Selenium | 0.92 | ~~U~~ | W | F | UJ |
| 7440-22-4 | Silver | 0.66 | U | | P | |
| 7440-23-5 | Sodium | 166 | B | | P | |
| 7440-28-0 | Thallium | 0.97 | U | | F | |
| 7440-62-2 | Vanadium | 32.7 | | | P | |
| 7440-66-6 | Zinc | 152 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES.

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WESTINGHOUSE/HANFORD
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SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B07NF5

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-191SAS No.: SDG No.: B07NC8

Matrix (soil/water): SOIL Lab Sample ID: 12020-06S

Level (low/med): LOW Date Received: 12/01/92

% Solids: 80.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 7470 | | | P | Q |
| 7440-36-0 | Antimony | 4.2 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 9.4 | | N | F | J |
| 7440-39-3 | Barium | 70.9 | | | P | |
| 7440-41-7 | Beryllium | 0.10 | U | | P | |
| 7440-43-9 | Cadmium | 0.30 | B | | P | |
| 7440-70-2 | Calcium | 3480 | | | P | |
| 7440-47-3 | Chromium | 15.0 | | | P | |
| 7440-48-4 | Cobalt | 7.2 | B | | P | |
| 7440-50-8 | Copper | 24.7 | | | P | |
| 7439-89-6 | Iron | 15400 | | | P | |
| 7439-92-1 | Lead | 57.7 | | S | F | J |
| 7439-95-4 | Magnesium | 4540 | | | P | |
| 7439-96-5 | Manganese | 189 | | N | P | J |
| 7439-97-6 | Mercury | 0.06 | U | | CV | |
| 7440-02-0 | Nickel | 15.6 | | | P | |
| 7440-09-7 | Potassium | 1100 | B | | P | |
| 7782-49-2 | Selenium | 0.70 | U | | F | |
| 7440-22-4 | Silver | 0.62 | U | | P | |
| 7440-23-5 | Sodium | 138 | B | | P | |
| 7440-28-0 | Thallium | 0.31 | ~~U~~ | W | F | UJ |
| 7440-62-2 | Vanadium | 28.9 | | | P | |
| 7440-66-6 | Zinc | 226 | | E | P | J |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts:

Comments:

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WESTINGHOUSE/HANFORD
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INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07NF6

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-191SAS No.: SDG No.: B07NC8

Matrix (soil/water): SOIL Lab Sample ID: 12020-07S

Level (low/med): LOW Date Received: 12/01/92

% Solids: 77.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5990 | | | P | |
| 7440-36-0 | Antimony | 4.2 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 1.9 | ~~B~~ | N | F | BJ |
| 7440-39-3 | Barium | 57.0 | | | P | |
| 7440-41-7 | Beryllium | 0.10 | U | | P | |
| 7440-43-9 | Cadmium | 0.25 | U | | P | |
| 7440-70-2 | Calcium | 2760 | | | P | |
| 7440-47-3 | Chromium | 13.2 | | | P | |
| 7440-48-4 | Cobalt | 6.4 | B | | P | |
| 7440-50-8 | Copper | 9.9 | | | P | |
| 7439-89-6 | Iron | 12600 | | | P | |
| 7439-92-1 | Lead | 5.8 | | | F | |
| 7439-95-4 | Magnesium | 4060 | | | P | |
| 7439-96-5 | Manganese | 160 | | N | P | J |
| 7439-97-6 | Mercury | 0.06 | U | | CV | |
| 7440-02-0 | Nickel | 13.1 | | | P | |
| 7440-09-7 | Potassium | 836 | B | | P | |
| 7782-49-2 | Selenium | 0.72 | U | | F | |
| 7440-22-4 | Silver | 0.63 | U | | P | |
| 7440-23-5 | Sodium | 102 | B | | P | |
| 7440-28-0 | Thallium | 0.32 | ~~U~~ | W | F | UJ |
| 7440-62-2 | Vanadium | 23.8 | | | P | |
| 7440-66-6 | Zinc | 43.7 | | E | P | J |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts:

Comments:

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WESTINGHOUSE/HANFORD
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SAMPLE NUMBER:

B07NF7

INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-191SAS No.: SDG No.: B07NC8

Matrix (soil/water): SOIL Lab Sample ID: 12020-08S

Level (low/med): LOW Date Received: 12/01/92

% Solids: 77.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 4790 | | | P | |
| 7440-36-0 | Antimony | 4.0 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 2.4 | | N | F | J |
| 7440-39-3 | Barium | 33.1 | B | | P | |
| 7440-41-7 | Beryllium | 0.10 | U | | P | |
| 7440-43-9 | Cadmium | 0.65 | B | | P | |
| 7440-70-2 | Calcium | 3640 | | | P | |
| 7440-47-3 | Chromium | 14.8 | | | P | |
| 7440-48-4 | Cobalt | 6.3 | B | | P | |
| 7440-50-8 | Copper | 20.4 | | | P | |
| 7439-89-6 | Iron | 14900 | | | P | |
| 7439-92-1 | Lead | 15.3 | | | F | |
| 7439-95-4 | Magnesium | 3440 | | | P | |
| 7439-96-5 | Manganese | 160 | | N | P | J |
| 7439-97-6 | Mercury | 0.05 | U | | CV | |
| 7440-02-0 | Nickel | 12.4 | | | P | |
| 7440-09-7 | Potassium | 565 | B | | P | |
| 7782-49-2 | Selenium | 0.69 | U | | F | |
| 7440-22-4 | Silver | 0.59 | U | | P | |
| 7440-23-5 | Sodium | 208 | B | | P | |
| 7440-28-0 | Thallium | 0.35 | ~~B~~ | W | F | BJ |
| 7440-62-2 | Vanadium | 40.3 | | | P | |
| 7440-66-6 | Zinc | 151 | | E | P | J |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts:

Comments:

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WESTINGHOUSE/HANFORD
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INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07NF8

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-191SAS No.: SDG No.: B07NC8

Matrix (soil/water): SOIL Lab Sample ID: 12020-09S

Level (low/med): LOW Date Received: 12/01/92

% Solids: 82.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5040 | | | P | |
| 7440-36-0 | Antimony | 4.0 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 5.8 | | +N | F | J |
| 7440-39-3 | Barium | 51.0 | | | P | |
| 7440-41-7 | Beryllium | 0.10 | U | | P | |
| 7440-43-9 | Cadmium | 0.62 | B | | P | |
| 7440-70-2 | Calcium | 3300 | | | P | |
| 7440-47-3 | Chromium | 11.2 | | | P | |
| 7440-48-4 | Cobalt | 6.3 | B | | P | |
| 7440-50-8 | Copper | 20.6 | | | P | |
| 7439-89-6 | Iron | 13200 | | | P | |
| 7439-92-1 | Lead | 27.0 | | | F | |
| 7439-95-4 | Magnesium | 3290 | | | P | |
| 7439-96-5 | Manganese | 263 | | N | P | J |
| 7439-97-6 | Mercury | 0.06 | U | | CV | |
| 7440-02-0 | Nickel | 11.0 | | | P | |
| 7440-09-7 | Potassium | 659 | B | | P | |
| 7782-49-2 | Selenium | 0.69 | ~~U~~ | | F | UJ |
| 7440-22-4 | Silver | 0.59 | ~~U~~ | | P | UJ |
| 7440-23-5 | Sodium | 213 | ~~B~~ | | P | B (no qualifier) 9/23/93 |
| 7440-28-0 | Thallium | 0.56 | ~~B~~ | W | F | BJ |
| 7440-62-2 | Vanadium | 27.6 | | | P | |
| 7440-66-6 | Zinc | 205 | | E | P | J |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROCKS

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07NB6

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-135$AS No.: SDG No.: B07NB6

Matrix (soil/water): SOIL Lab Sample ID: 11255-01S

Level (low/med): LOW Date Received: 11/18/92

% Solids: 73.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 7230 | | | P | |
| 7440-36-0 | Antimony | 4.5 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 7.4 | | | F | |
| 7440-39-3 | Barium | 73.0 | | | P | |
| 7440-41-7 | Beryllium | 0.43 | B | | P | |
| 7440-43-9 | Cadmium | 0.41 | ~~B~~ | | P | U |
| 7440-70-2 | Calcium | 3730 | | | P | |
| 7440-47-3 | Chromium | 15.2 | | | P | |
| 7440-48-4 | Cobalt | 8.0 | B | | P | |
| 7440-50-8 | Copper | 62.9 | | | P | |
| 7439-89-6 | Iron | 15900 | — | | P | J |
| 7439-92-1 | Lead | 55.7 | | | F | |
| 7439-95-4 | Magnesium | 4440 | | | P | |
| 7439-96-5 | Manganese | 194 | | | P | |
| 7439-97-6 | Mercury | 0.07 | U | | CV | |
| 7440-02-0 | Nickel | 14.1 | | | P | |
| 7440-09-7 | Potassium | 955 | B | | P | |
| 7782-49-2 | Selenium | 0.79 | U | W | F | |
| 7440-22-4 | Silver | 0.99 | ~~B~~ | | P | U |
| 7440-23-5 | Sodium | 215 | B | | P | |
| 7440-28-0 | Thallium | 1.0 | ~~U~~ | W | F | UJ |
| 7440-62-2 | Vanadium | 28.6 | | | P | |
| 7440-66-6 | Zinc | 335 | | | P | |
| | Cyanide | | | | NR | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

6/15/93

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FORM I - IN ILM03.0



9312968.1603

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07ND5

Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-11-183SAS No.: SDG No.: B07ND4

Matrix (soil/water): SOIL Lab Sample ID: 11332-02S

Level (low/med): LOW Date Received: 11/25/92

% Solids: 79.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | Q |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5740 | | | P | |
| 7440-36-0 | Antimony | 4.0 | ~~U~~ | N | P | UJ |
| 7440-38-2 | Arsenic | 3.5 | | | F | |
| 7440-39-3 | Barium | 50.9 | | | P | |
| 7440-41-7 | Beryllium | 0.10 | U | | P | |
| 7440-43-9 | Cadmium | 0.45 | ~~B~~ | | P | U |
| 7440-70-2 | Calcium | 4020 | | | P | |
| 7440-47-3 | Chromium | 9.4 | | | P | |
| 7440-48-4 | Cobalt | 5.4 | B | | P | |
| 7440-50-8 | Copper | 34.2 | | | P | |
| 7439-89-6 | Iron | 13100 | | | P | |
| 7439-92-1 | Lead | 21.6 | | | F | |
| 7439-95-4 | Magnesium | 3870 | | | P | |
| 7439-96-5 | Manganese | 251 | | | P | |
| 7439-97-6 | Mercury | 0.06 | U | | CV | |
| 7440-02-0 | Nickel | 8.9 | B | | P | |
| 7440-09-7 | Potassium | 736 | B | | P | |
| 7782-49-2 | Selenium | 0.72 | U | | F | |
| 7440-22-4 | Silver | 0.59 | U | | P | |
| 7440-23-5 | Sodium | 339 | B | | P | |
| 7440-28-0 | Thallium | 0.32 | U | | F | |
| 7440-62-2 | Vanadium | 26.4 | | | P | |
| 7440-66-6 | Zinc | 216 | | | P | |
| | Cyanide | | | | NR | |

Color Before: GREY Clarity Before: Texture: COARSE

Color After: GREY Clarity After: Artifacts:

Comments:

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FORM I - IN ILM02.0



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# APPENDIX C - VALIDATED RADIOCHEMISTRY DATA SUMMARY

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| Parameter | Samp# | B07NC8 | | B07NG8 | | B07ND1 | | B07ND9 | | B07NF3 | | B07NF4 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Date | 11-19-92 | | 11-23-92 | | 11-20-92 | | 11-20-92 | | 11-20-92 | | 11-20-92 | |
| | Site | Eq Blk | | Eq Blk | | SITE BC1 | | SITE BC1 | | SITE BC2 | | SITE BC2 | |
| | Depth | 0.00 - 0.00 | | 0.00 - 0.00 | | 0.00 - 6.00 | | 0.00 - 6.00 | | 0.00 - 6.00 | | 12.00 - 18.00 | |
| | Type | Eq Blk | | Eq Blk | | Duplicate | | | | | | | |
| | Units | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Radionuclides | | | | | | | | | | | | | |
| GROSS ALPHA | pCi/g | 5.000 | U | 4.000 | U | 6.700 | J | 5.000 | U | 8.000 | U | 8.100 | J |
| GROSS BETA | pCi/g | 27.000 | | 30.000 | | 13.000 | | 14.000 | | 13.000 | | 16.000 | |
| URANIUM-233/234 | pCi/g | 0.200 | U | 0.220 | J | 0.590 | | 0.450 | | 0.570 | | 0.840 | |
| URANIUM-235 | pCi/g | 0.200 | UR | 0.200 | U | 0.200 | UR | 0.300 | UR | 0.200 | UR | 0.200 | UR |
| URANIUM-238 | pCi/g | 0.200 | U | 0.200 | J | 0.440 | | 0.260 | J | 0.520 | | 1.100 | |
| PLUTONIUM-238 | pCi/g | 0.040 | U | 0.050 | U | 0.060 | U | 0.060 | U | 0.040 | U | 0.040 | U |
| PLUTONIUM-239 | pCi/g | 0.030 | U | 0.030 | U | 0.040 | U | 0.020 | U | 0.020 | U | 0.010 | U |
| AMERICIUM-241 | pCi/g | 0.090 | U | 0.030 | U | 0.030 | U | 0.100 | UR | 0.050 | U | 0.050 | U |
| STRONTIUM-90 | pCi/g | 0.100 | U | 0.900 | U | 0.200 | U | 0.200 | U | 0.100 | U | 0.800 | U |
| POTASSIUM-40 | pCi/g | 22.000 | | 23.000 | | 12.000 | | 12.000 | | 15.000 | | 15.000 | |
| IRON-59 | pCi/g | 0.400 | U | 0.400 | U | 0.300 | U | 0.100 | U | 0.200 | U | 0.200 | U |
| CHROMIUM-51 | pCi/g | 2.000 | U | 2.000 | U | 2.000 | U | 0.800 | U | 0.900 | U | 1.000 | U |
| COBALT-60 | pCi/g | 0.050 | U | 0.060 | U | 0.050 | U | 0.020 | U | 0.040 | U | 0.020 | U |
| ZINC-65 | pCi/g | 0.200 | U | 0.200 | U | 0.100 | U | 0.060 | U | 0.080 | U | 0.080 | U |
| RUTHENIUM-106 | pCi/g | 0.400 | U | 0.400 | U | 0.400 | U | 0.200 | U | 0.200 | U | 0.200 | U |
| CESIUM-134 | pCi/g | 0.050 | U | 0.060 | U | 0.050 | U | 0.040 | U | 0.030 | U | 0.030 | U |
| CESIUM-137 | pCi/g | 0.040 | UJ | 0.050 | U | 0.050 | UJ | 0.031 | J | 0.058 | J | 0.020 | UJ |
| EUROPIUM-152 | pCi/g | 0.090 | UJ | 0.070 | U | 0.090 | UJ | 0.050 | UJ | 0.050 | UJ | 0.050 | UJ |
| EUROPIUM-154 | pCi/g | 0.060 | UJ | 0.050 | U | 0.060 | UJ | 0.030 | UJ | 0.030 | UJ | 0.040 | UJ |
| RADIUM-226 | pCi/g | 0.280 | | 0.240 | | 0.510 | | 0.520 | | 0.580 | | 0.700 | |
| THORIUM-228 | pCi/g | 0.550 | | 0.460 | | 1.100 | | 0.820 | | 1.000 | | 1.400 | |
| THORIUM-232 | pCi/g | 0.510 | | 0.340 | | 0.750 | | 0.790 | | 0.950 | | 1.100 | |
| EUROPIUM-155 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| MANGANESE-54 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| TECHNETIUM-99 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| URANIUM-238 GAMMA SCAN | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| COBALT-58 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| CERIUM-144 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| NEPTUNIUM-237 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| THORIUM-231 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| THORIUM-234 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| RADIUM-228 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| RADIUM-223 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |

| Parameter | Samp# / Date / Site / Depth / Type | B07ND0 11-17-92 SITE D/H 0.00 - 6.00 | | B07NC9 11-17-92 SITE D/H 12.00 - 18.00 | | B07NF0 11-19-92 SITE D4 0.00 - 6.00 | | B07NF1 11-19-92 SITE D5 0.00 - 6.00 | | B07NF2 11-19-92 SITE D5 12.00 - 18.00 | | B07NH1 11-23-92 SITE DA1 0.00 - 6.00 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Units | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Radionuclides | | | | | | | | | | | | | |
| GROSS ALPHA | pCi/g | 8.000 | UJ | 16.000 | J | 8.700 | J | 5.700 | J | 8.000 | U | 7.700 | J |
| GROSS BETA | pCi/g | 12.000 | | 20.000 | | 12.000 | | 9.000 | J | 12.000 | | 14.000 | |
| URANIUM-233/234 | pCi/g | 0.820 | | 0.990 | | 0.840 | | 0.440 | | 0.370 | | 0.900 | |
| URANIUM-235 | pCi/g | 0.200 | U | 0.085 | J | 0.200 | UR | 0.300 | UR | 0.200 | UR | 0.200 | U |
| URANIUM-238 | pCi/g | 0.680 | | 0.950 | | 0.690 | | 0.440 | | 0.580 | | 0.980 | |
| PLUTONIUM-238 | pCi/g | 0.090 | UR | 0.040 | U | 0.040 | U | 0.060 | U | 0.020 | U | 0.040 | U |
| PLUTONIUM-239 | pCi/g | 0.050 | UR | 0.020 | U | 0.030 | U | 0.020 | U | 0.020 | U | 0.020 | U |
| AMERICIUM-241 | pCi/g | 0.030 | UR | 0.030 | UR | 0.030 | U | 0.040 | U | 0.030 | U | 0.040 | U |
| STRONTIUM-90 | pCi/g | 0.900 | U | 0.900 | U | 0.200 | U | 0.200 | U | 0.200 | U | 1.000 | U |
| POTASSIUM-40 | pCi/g | 11.000 | | 14.000 | | 8.400 | | 12.000 | | 13.000 | | 14.000 | |
| IRON-59 | pCi/g | 0.300 | U | 0.300 | U | 0.400 | U | 0.300 | U | 0.400 | U | 0.600 | U |
| CHROMIUM-51 | pCi/g | 2.000 | U | 2.000 | U | 3.000 | U | 2.000 | U | 3.000 | U | 4.000 | U |
| COBALT-60 | pCi/g | 0.062 | | 0.130 | | 0.330 | | 0.200 | | 0.089 | | 0.100 | |
| ZINC-65 | pCi/g | 0.100 | U | 0.200 | U | 0.200 | U | 0.200 | U | 0.200 | U | 0.200 | U |
| RUTHENIUM-106 | pCi/g | 0.400 | U | 0.400 | U | 0.500 | U | 0.500 | U | 0.500 | U | 0.700 | U |
| CESIUM-134 | pCi/g | 0.060 | U | 0.060 | U | 0.070 | U | 0.060 | U | 0.060 | U | 0.089 | |
| CESIUM-137 | pCi/g | 0.240 | J | 0.071 | J | 0.560 | J | 0.480 | J | 1.300 | J | 0.910 | |
| EUROPIUM-152 | pCi/g | 0.110 | | 0.370 | | 0.410 | J | 0.350 | J | 0.900 | J | 0.790 | |
| EUROPIUM-154 | pCi/g | N/R | | 0.200 | U | 0.300 | UJ | 0.200 | UJ | 0.400 | UJ | 0.300 | U |
| RADIUM-226 | pCi/g | 0.770 | | 1.000 | | 0.550 | | 0.540 | | 0.610 | | 0.980 | |
| THORIUM-228 | pCi/g | 1.200 | | 1.700 | | 0.840 | | 0.910 | | 0.950 | | 1.500 | |
| THORIUM-232 | pCi/g | 1.200 | | 1.600 | | 0.710 | | 0.740 | | 0.930 | | 1.200 | |
| EUROPIUM-155 | pCi/g | N/R | | 0.180 | | N/R | | N/R | | N/R | | N/R | |
| MANGANESE-54 | pCi/g | N/R | | N/R | | 0.057 | | N/R | | N/R | | N/R | |
| TECHNETIUM-99 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| URANIUM-238 GAMMA SCAN | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| COBALT-58 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| CERIUM-144 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| NEPTUNIUM-237 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| THORIUM-231 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| THORIUM-234 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| RADIUM-228 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| RADIUM-223 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |

| Parameter | Samp# / Date / Site / Depth / Type | B07NH2 11-23-92 SITE DA1 12.00 - 20.00 | | B07ND4 11-19-92 SITE DI1 0.00 - 6.00 | | B07ND7 11-19-92 SITE DI1 0.00 - 6.00 Duplicate | | B07ND6 11-19-92 SITE DI2 0.00 - 6.00 | | B07ND8 11-19-92 SITE DI2 12.00 - 20.00 | | B07NH5 11-24-92 SITE DI3 0.00 - 6.00 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Units | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| **Radionuclides** | | | | | | | | | | | | | |
| GROSS ALPHA | pCi/g | 11.000 | | 4.900 | J | 4.500 | J | 6.200 | J | 7.500 | J | 5.300 | J |
| GROSS BETA | pCi/g | 22.000 | | 17.000 | | 13.000 | | 14.000 | | 18.000 | | 17.000 | |
| URANIUM-233/234 | pCi/g | 2.600 | | 0.580 | | 0.440 | | 0.290 | J | 0.460 | | 0.490 | |
| URANIUM-235 | pCi/g | 0.200 | U | 0.200 | UR | 0.200 | UR | 0.300 | UR | 0.200 | UR | 0.200 | U |
| URANIUM-238 | pCi/g | 2.000 | | 0.680 | | 0.440 | | 0.490 | | 0.460 | | 0.300 | |
| PLUTONIUM-238 | pCi/g | 0.050 | U | 0.050 | U | 0.030 | U | 0.030 | U | 0.050 | U | 0.050 | U |
| PLUTONIUM-239 | pCi/g | 0.020 | U | 0.030 | U | 0.010 | U | 0.020 | U | 0.030 | U | 0.020 | U |
| AMERICIUM-241 | pCi/g | 0.040 | U | 0.060 | U | 0.030 | U | 0.030 | U | 0.040 | U | 0.030 | U |
| STRONTIUM-90 | pCi/g | 1.000 | U | 0.200 | U | 0.200 | U | 0.200 | U | 0.200 | U | 0.700 | U |
| POTASSIUM-40 | pCi/g | 15.000 | | 14.000 | | 13.000 | | 15.000 | | 17.000 | | 15.000 | |
| IRON-59 | pCi/g | 0.500 | U | 0.300 | U | 0.300 | U | 0.300 | U | 0.300 | U | 0.400 | U |
| CHROMIUM-51 | pCi/g | 4.000 | U | 2.000 | U | 2.000 | U | 2.000 | U | 2.000 | U | 2.000 | U |
| COBALT-60 | pCi/g | 0.060 | U | 0.180 | | 0.190 | | 0.060 | U | 0.050 | U | 0.250 | |
| ZINC-65 | pCi/g | 0.200 | U | 0.200 | U | 0.200 | U | 0.100 | U | 0.200 | U | 0.200 | U |
| RUTHENIUM-106 | pCi/g | 0.700 | U | 0.400 | U | 0.400 | U | 0.400 | U | 0.400 | U | 0.500 | U |
| CESIUM-134 | pCi/g | 0.090 | U | 0.050 | U | 0.060 | U | 0.060 | U | 0.060 | U | 0.060 | U |
| CESIUM-137 | pCi/g | 0.070 | U | 0.560 | J | 0.620 | J | 0.100 | J | 0.040 | UJ | 0.500 | |
| EUROPIUM-152 | pCi/g | 0.200 | U | 0.220 | J | 0.250 | J | 0.100 | UJ | 0.090 | UJ | 0.320 | |
| EUROPIUM-154 | pCi/g | 0.100 | U | 0.100 | UJ | 0.200 | UJ | 0.070 | UJ | 0.060 | UJ | 0.200 | U |
| RADIUM-226 | pCi/g | 1.300 | | 0.460 | | 0.480 | | 0.580 | | 0.500 | | 0.590 | |
| THORIUM-228 | pCi/g | 2.500 | | 0.500 | | 0.530 | | 0.880 | | 0.690 | | 0.780 | |
| THORIUM-232 | pCi/g | 2.300 | | 0.580 | | 0.500 | | 0.840 | | 0.890 | | 0.510 | |
| EUROPIUM-155 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| MANGANESE-54 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| TECHNETIUM-99 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| URANIUM-238 GAMMA SCAN | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| COBALT-58 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| CERIUM-144 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| NEPTUNIUM-237 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| THORIUM-231 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| THORIUM-234 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| RADIUM-228 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| RADIUM-223 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |

| Parameter | Samp# | B07NH6 | | B07NH7 | | B07NB7 | | B07NB8 | | B07NB9 | | B07NC4 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Date | 11-24-92 | | 11-24-92 | | 11-12-92 | | 11-12-92 | | 11-12-92 | | 11-16-92 | |
| | Site | SITE DI3 | | SITE DI3 | | SITE F2 | | SITE F3 | | SITE F3 | | SITE F4 | |
| | Depth | 0.00 - 6.00 | | 0.00 - 6.00 | | 0.00 - 6.00 | | 0.00 - 6.00 | | 12.00 - 24.00 | | 0.00 - 6.00 | |
| | Type | Duplicate | | Split | | | | | | | | | |
| | Units | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Radionuclides | | | | | | | | | | | | | |
| GROSS ALPHA | pCi/g | 5.000 | U | N/R | | 5.000 | UJ | 9.800 | J | 21.000 | J | 33.000 | J |
| GROSS BETA | pCi/g | 16.000 | | 15.700 | J | 15.000 | | 17.000 | | 23.000 | | 25.000 | |
| URANIUM-233/234 | pCi/g | 0.440 | | N/R | | 1.100 | | 0.790 | | 1.000 | | 1.600 | |
| URANIUM-235 | pCi/g | 0.200 | U | 0.017 | J | 0.200 | U | 0.200 | U | 0.100 | U | 0.200 | U |
| URANIUM-238 | pCi/g | 0.360 | | 0.365 | UJ | 0.930 | | 0.640 | | 1.300 | | 2.000 | |
| PLUTONIUM-238 | pCi/g | 0.070 | U | N/R | | 0.070 | UR | 0.040 | U | 0.080 | U | 0.080 | U |
| PLUTONIUM-239 | pCi/g | 0.030 | U | 0.187 | UJ | 0.030 | UR | 0.040 | U | 0.060 | U | 0.040 | U |
| AMERICIUM-241 | pCi/g | 0.060 | U | 0.242 | J | 0.040 | UR | 0.030 | UR | 0.070 | UR | 0.030 | UR |
| STRONTIUM-90 | pCi/g | 0.700 | U | 0.837 | UJ | 0.900 | U | 0.900 | U | 0.800 | U | 1.000 | U |
| POTASSIUM-40 | pCi/g | 13.000 | | 17.800 | J | 16.000 | | 14.000 | | 15.000 | | 14.000 | |
| IRON-59 | pCi/g | 0.400 | U | 0.054 | UJ | 0.400 | U | 0.300 | U | 0.300 | U | 0.400 | U |
| CHROMIUM-51 | pCi/g | 3.000 | U | N/R | | 2.000 | U | 2.000 | U | 2.000 | U | 3.000 | U |
| COBALT-60 | pCi/g | 0.200 | | 0.216 | J | 0.080 | U | 0.090 | U | 0.050 | U | 0.080 | U |
| ZINC-65 | pCi/g | 0.200 | U | N/R | | 0.200 | U | 0.200 | U | 0.100 | U | 0.200 | U |
| RUTHENIUM-106 | pCi/g | 0.500 | U | N/R | | 0.600 | U | 0.500 | U | 0.500 | U | 0.800 | U |
| CESIUM-134 | pCi/g | 0.060 | U | 0.006 | UJ | 0.090 | U | 0.060 | U | 0.060 | U | 0.100 | U |
| CESIUM-137 | pCi/g | 0.540 | | 0.519 | J | 0.330 | J | 0.260 | | 0.190 | J | 0.140 | J |
| EUROPIUM-152 | pCi/g | 0.320 | | 0.269 | J | 0.280 | | 0.180 | | 0.200 | | 0.200 | U |
| EUROPIUM-154 | pCi/g | 0.200 | U | 0.041 | J | 0.300 | U | 0.200 | U | 0.200 | U | 0.100 | U |
| RADIUM-226 | pCi/g | 0.540 | | N/R | | 0.920 | | 0.780 | | 0.980 | | 1.700 | |
| THORIUM-228 | pCi/g | 0.590 | | N/R | | 1.700 | | 1.100 | | 2.000 | | 4.400 | |
| THORIUM-232 | pCi/g | 0.600 | | N/R | | 1.800 | | 1.200 | | 1.900 | | 3.200 | |
| EUROPIUM-155 | pCi/g | N/R | | 0.043 | J | N/R | | N/R | | N/R | | N/R | |
| MANGANESE-54 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| TECHNETIUM-99 | pCi/g | N/R | | N/R | | N/R | | 0.300 | U | 0.200 | U | N/R | |
| URANIUM-238 GAMMA SCAN | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| COBALT-58 | pCi/g | N/R | | 0.014 | UJ | N/R | | N/R | | N/R | | N/R | |
| CERIUM-144 | pCi/g | N/R | | 0.049 | UJ | N/R | | N/R | | N/R | | N/R | |
| NEPTUNIUM-237 | pCi/g | N/R | | 0.482 | J | N/R | | N/R | | N/R | | N/R | |
| THORIUM-231 | pCi/g | N/R | | 0.294 | J | N/R | | N/R | | N/R | | N/R | |
| THORIUM-234 | pCi/g | N/R | | 0.687 | J | N/R | | N/R | | N/R | | N/R | |
| RADIUM-228 | pCi/g | N/R | | 0.542 | J | N/R | | N/R | | N/R | | N/R | |
| RADIUM-223 | pCi/g | N/R | | 0.033 | UJ | N/R | | N/R | | N/R | | N/R | |

| Parameter | Samp# / Date / Site / Depth / Type | B07NC5 11-16-92 SITE F4 12.00 - 16.00 | | B07NH3 11-23-92 SITE FF1 0.00 - 6.00 | | B07NH4 11-23-92 SITE FF1 12.00 - 20.00 | | B07NG9 11-23-92 SITE FI1 0.00 - 6.00 | | B07NH0 11-23-92 SITE FI1 12.00 - 18.00 | | B07NC0 11-13-92 SITE H1 0.00 - 6.00 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Units | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Radionuclides | | | | | | | | | | | | | |
| GROSS ALPHA | pCi/g | 6.900 | J | 7.400 | J | 5.000 | U | 4.700 | J | 5.000 | U | 6.000 | UJ |
| GROSS BETA | pCi/g | 16.000 | | 12.000 | | 19.000 | | 10.000 | | 18.000 | | 18.000 | |
| URANIUM-233/234 | pCi/g | 1.400 | | 0.510 | | 0.800 | | 0.770 | | 0.880 | | 0.790 | |
| URANIUM-235 | pCi/g | 0.200 | U | 0.200 | U | 0.100 | U | 0.200 | U | 0.200 | U | 0.200 | U |
| URANIUM-238 | pCi/g | 0.840 | | 0.750 | | 0.690 | | 0.490 | | 0.700 | | 0.770 | |
| PLUTONIUM-238 | pCi/g | 0.040 | U | 0.060 | U | 0.050 | U | 0.070 | U | 0.050 | U | 0.070 | U |
| PLUTONIUM-239 | pCi/g | 0.020 | U | 0.020 | U | 0.020 | U | 0.040 | U | 0.020 | U | 0.040 | U |
| AMERICIUM-241 | pCi/g | 0.010 | UR | 0.020 | U | 0.030 | U | 0.040 | U | 0.040 | U | 0.030 | UR |
| STRONTIUM-90 | pCi/g | 1.000 | U | 0.900 | U | 0.800 | U | 0.800 | U | 1.000 | U | 0.800 | U |
| POTASSIUM-40 | pCi/g | 15.000 | | 15.000 | | 17.000 | | 15.000 | | 15.000 | | 14.000 | |
| IRON-59 | pCi/g | 0.300 | U | 0.300 | U | 0.500 | U | 0.500 | U | 0.400 | U | 0.400 | U |
| CHROMIUM-51 | pCi/g | 2.000 | U | 2.000 | U | 3.000 | U | 3.000 | U | 3.000 | U | 3.000 | U |
| COBALT-60 | pCi/g | 0.060 | U | 0.060 | U | 0.060 | U | 0.360 | | 0.076 | | 0.380 | |
| ZINC-65 | pCi/g | 0.100 | U | 0.100 | U | 0.200 | U | 0.200 | U | 0.200 | U | 0.200 | U |
| RUTHENIUM-106 | pCi/g | 0.500 | U | 0.500 | U | 0.500 | U | 0.600 | U | 0.500 | U | 0.600 | U |
| CESIUM-134 | pCi/g | 0.050 | U | 0.100 | U | 0.070 | U | 0.070 | U | 0.070 | U | 0.070 | U |
| CESIUM-137 | pCi/g | 0.050 | UJ | 0.050 | U | 0.070 | U | 0.830 | | 0.160 | | 4.600 | J |
| EUROPIUM-152 | pCi/g | 0.100 | U | 0.100 | U | 0.100 | U | 0.920 | | 0.300 | | 1.800 | |
| EUROPIUM-154 | pCi/g | 0.090 | U | 0.070 | U | 0.070 | U | 0.160 | | 0.200 | U | 0.240 | |
| RADIUM-226 | pCi/g | 0.810 | | 0.670 | | 0.820 | | 0.690 | | 0.670 | | 0.850 | |
| THORIUM-228 | pCi/g | 1.600 | | 0.940 | | 1.100 | | 1.100 | | 0.990 | | 0.900 | |
| THORIUM-232 | pCi/g | 1.500 | | 0.830 | | 1.000 | | 0.980 | | 0.920 | | 0.960 | |
| EUROPIUM-155 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| MANGANESE-54 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| TECHNETIUM-99 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| URANIUM-238 GAMMA SCAN | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| COBALT-58 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| CERIUM-144 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| NEPTUNIUM-237 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| THORIUM-231 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| THORIUM-234 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| RADIUM-228 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| RADIUM-223 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |

| Parameter | Samp# / Date / Site / Depth / Type | B07NC1 11-13-92 SITE H1 12.00 - 18.00 | | B07NC2 11-13-92 SITE H2 0.00 - 6.00 | | B07NC3 11-13-92 SITE H3 0.00 - 6.00 | | B07NC6 11-16-92 SITE HAN1 0.00 - 6.00 | | B07NC7 11-16-92 SITE HAN1 12.00 - 16.00 | | B07ND2 11-17-92 SITE HAN2 0.00 - 6.00 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Units | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Radionuclides | | | | | | | | | | | | | |
| GROSS ALPHA | pCi/g | 26.000 | J | 27.000 | J | 13.000 | J | 9.000 | J | 6.300 | J | 6.000 | UJ |
| GROSS BETA | pCi/g | 23.000 | | 20.000 | | 21.000 | | 19.000 | | 21.000 | | 16.000 | |
| URANIUM-233/234 | pCi/g | 2.300 | | 1.200 | | 1.400 | | 0.600 | | 0.850 | | 0.730 | |
| URANIUM-235 | pCi/g | 0.100 | U | 0.200 | U | 0.200 | U | 0.200 | U | 0.200 | U | 0.110 | J |
| URANIUM-238 | pCi/g | 2.300 | | 1.200 | | 1.200 | | 0.480 | | 0.870 | | 0.750 | |
| PLUTONIUM-238 | pCi/g | 0.060 | U | 0.100 | UR | 0.050 | U | 0.040 | U | 0.060 | UR | 0.070 | U |
| PLUTONIUM-239 | pCi/g | 0.030 | U | 0.070 | UR | 0.030 | U | 0.020 | U | 0.040 | UR | 0.040 | U |
| AMERICIUM-241 | pCi/g | 0.020 | UR | 0.020 | UR | 0.050 | UR | 0.020 | UR | 0.040 | UR | 0.040 | UR |
| STRONTIUM-90 | pCi/g | 0.900 | U | 0.900 | U | 1.000 | U | 1.000 | U | 0.800 | U | 0.900 | U |
| POTASSIUM-40 | pCi/g | 13.000 | | 14.000 | | 14.000 | | 16.000 | | 17.000 | | 14.000 | |
| IRON-59 | pCi/g | 0.300 | U | 0.400 | U | 0.300 | U | 0.300 | U | 0.300 | U | 0.300 | U |
| CHROMIUM-51 | pCi/g | 2.000 | U | 3.000 | U | 2.000 | U | 2.000 | U | 2.000 | U | 2.000 | U |
| COBALT-60 | pCi/g | 0.050 | U | 0.090 | | 0.070 | U | 0.070 | U | 0.060 | U | 0.056 | |
| ZINC-65 | pCi/g | 0.200 | U | 0.200 | U | 0.200 | U | 0.200 | U | 0.200 | U | 0.200 | U |
| RUTHENIUM-106 | pCi/g | 0.500 | U | 0.500 | U | 0.500 | U | 0.500 | U | 0.500 | U | 0.500 | U |
| CESIUM-134 | pCi/g | 0.070 | U | 0.090 | U | 0.070 | U | 0.060 | U | 0.070 | U | 0.070 | U |
| CESIUM-137 | pCi/g | 0.520 | J | 0.430 | J | 0.330 | J | 0.074 | J | 0.060 | UJ | 1.000 | J |
| EUROPIUM-152 | pCi/g | 20.000 | U | 0.470 | | 0.230 | | 0.100 | U | 0.100 | U | 0.820 | |
| EUROPIUM-154 | pCi/g | 0.100 | U | 0.200 | U | 0.200 | U | 0.070 | U | 0.080 | U | 0.170 | |
| RADIUM-226 | pCi/g | 1.400 | | 1.000 | | 0.690 | | 0.670 | | 0.840 | | 0.810 | |
| THORIUM-228 | pCi/g | 3.000 | | 1.900 | | 1.300 | | 1.100 | | 1.800 | | 1.400 | |
| THORIUM-232 | pCi/g | 2.500 | | 1.800 | | 1.300 | | 1.200 | | 1.100 | | 1.000 | |
| EUROPIUM-155 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| MANGANESE-54 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| TECHNETIUM-99 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| URANIUM-238 GAMMA SCAN | pCi/g | 8.800 | | N/R | | N/R | | N/R | | N/R | | N/R | |
| COBALT-58 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| CERIUM-144 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| NEPTUNIUM-237 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| THORIUM-231 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| THORIUM-234 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| RADIUM-228 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| RADIUM-223 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |

| Parameter | Samp# / Date / Site / Depth / Type | B07ND3 11-17-92 SITE HAN2 12.00 - 18.00 | | B07NG3 11-22-92 SITE HU1 0.00 - 6.00 | | B07NG6 11-22-92 SITE HU1 0.00 - 6.00 Duplicate | | B07NG5 11-22-92 SITE HU1 12.00 - 18.00 | | B07NG7 11-22-92 SITE HU1 12.00 - 18.00 Split | | B07NG1 11-21-92 SITE K2 0.00 - 3.00 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Units | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Radionuclides | | | | | | | | | | | | | |
| GROSS ALPHA | pCi/g | 11.000 | J | 6.000 | U | 5.000 | U | 5.000 | U | N/R | | 6.000 | U |
| GROSS BETA | pCi/g | 19.000 | | 14.000 | | 9.300 | J | 13.000 | | 16.000 | J | 14.000 | |
| URANIUM-233/234 | pCi/g | 1.300 | | 0.450 | R | 0.850 | | 0.490 | | N/R | | 0.450 | |
| URANIUM-235 | pCi/g | 0.300 | U | 0.300 | UR | 0.200 | U | 0.100 | U | 0.022 | J | 0.200 | UR |
| URANIUM-238 | pCi/g | 1.000 | | 0.750 | R | 0.710 | | 0.410 | | 0.464 | UJ | 0.670 | |
| PLUTONIUM-238 | pCi/g | 0.050 | U | 0.040 | U | 0.040 | U | 0.040 | U | N/R | | 0.050 | U |
| PLUTONIUM-239 | pCi/g | 0.030 | U | 0.020 | U | 0.020 | U | 0.020 | U | 0.071 | | 0.020 | U |
| AMERICIUM-241 | pCi/g | 0.070 | UR | 0.030 | U | 0.040 | U | 0.040 | U | 0.080 | UJ | 0.020 | U |
| STRONTIUM-90 | pCi/g | 1.000 | U | 0.800 | U | 0.800 | U | 0.900 | U | 0.914 | UJ | 0.800 | U |
| POTASSIUM-40 | pCi/g | 17.000 | | 15.000 | | 14.000 | | 14.000 | | 15.200 | J | 13.000 | |
| IRON-59 | pCi/g | 0.300 | U | 0.500 | U | 0.500 | U | 0.500 | U | 0.054 | UJ | 0.300 | U |
| CHROMIUM-51 | pCi/g | 2.000 | U | 3.000 | U | 4.000 | U | 3.000 | U | N/R | | 2.000 | U |
| COBALT-60 | pCi/g | 0.060 | U | 0.380 | | 0.370 | | 0.120 | | 0.111 | J | 0.040 | U |
| ZINC-65 | pCi/g | 0.200 | U | 0.200 | U | 0.200 | U | 0.200 | U | N/R | | 0.100 | U |
| RUTHENIUM-106 | pCi/g | 0.500 | U | 0.600 | U | 0.600 | U | 0.600 | U | N/R | | 0.300 | U |
| CESIUM-134 | pCi/g | 0.080 | U | 0.070 | U | 0.080 | U | 0.070 | U | 0.008 | UJ | 0.050 | U |
| CESIUM-137 | pCi/g | 0.060 | UJ | 0.760 | | 0.790 | | 1.500 | | 1.610 | J | 0.110 | J |
| EUROPIUM-152 | pCi/g | 0.100 | U | 0.500 | | 0.560 | | 1.500 | | 1.330 | J | 0.090 | UJ |
| EUROPIUM-154 | pCi/g | 0.080 | U | 0.200 | U | 0.200 | U | 0.210 | | 0.141 | J | 0.060 | UJ |
| RADIUM-226 | pCi/g | 1.200 | | 0.640 | | 0.660 | | 0.650 | | N/R | | 0.660 | |
| THORIUM-228 | pCi/g | 2.100 | | 0.850 | | 0.900 | | 0.880 | | N/R | | 1.100 | |
| THORIUM-232 | pCi/g | 2.100 | | 0.840 | | 0.940 | | 0.930 | | N/R | | 0.910 | |
| EUROPIUM-155 | pCi/g | N/R | | N/R | | N/R | | N/R | | 0.035 | UJ | N/R | |
| MANGANESE-54 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| TECHNETIUM-99 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| URANIUM-238 GAMMA SCAN | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| COBALT-58 | pCi/g | N/R | | N/R | | N/R | | N/R | | 0.017 | UJ | N/R | |
| CERIUM-144 | pCi/g | N/R | | N/R | | N/R | | N/R | | 0.060 | UJ | N/R | |
| NEPTUNIUM-237 | pCi/g | N/R | | N/R | | N/R | | N/R | | 0.606 | J | N/R | |
| THORIUM-231 | pCi/g | N/R | | N/R | | N/R | | N/R | | 0.454 | J | N/R | |
| THORIUM-234 | pCi/g | N/R | | N/R | | N/R | | N/R | | 0.812 | J | N/R | |
| RADIUM-228 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| RADIUM-223 | pCi/g | N/R | | N/R | | N/R | | N/R | | 6.960 | UJ | N/R | |

| Parameter | Samp# | B07NG2 | | B07NG0 | | B07NF9 | | B07NG4 | | B07NF5 | | B07NF6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Date | 11-21-92 | | 11-21-92 | | 11-22-92 | | 11-22-92 | | 11-20-92 | | 11-20-92 | |
| | Site | SITE K3 | | SITE KU1 | | SITE KU1 | | SITE N | | SITE VBU1 | | SITE VBU1 | |
| | Depth | 0.00 - 6.00 | | 0.00 - 6.00 | | 12.00 - 18.00 | | 0.00 - 3.00 | | 0.00 - 6.00 | | 12.00 - 22.00 | |
| | Type | | | | | | | | | | | | |
| | Units | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Radionuclides | | | | | | | | | | | | | |
| GROSS ALPHA | pCi/g | 15.000 | | 5.200 | J | 5.400 | J | 5.000 | U | 8.300 | J | 6.100 | J |
| GROSS BETA | pCi/g | 16.000 | | 13.000 | | 12.000 | | 15.000 | | 16.000 | | 14.000 | |
| URANIUM-233/234 | pCi/g | 0.980 | | 0.530 | | 0.770 | | 0.350 | R | 0.850 | | 0.530 | |
| URANIUM-235 | pCi/g | 0.200 | UR | 0.200 | UR | 0.200 | U | 0.300 | UR | 0.200 | UR | 0.100 | UR |
| URANIUM-238 | pCi/g | 0.680 | | 0.570 | | 0.960 | | 0.530 | R | 0.540 | | 0.740 | |
| PLUTONIUM-238 | pCi/g | 0.020 | U | 0.040 | U | 0.030 | U | 0.030 | U | 0.100 | UR | 0.100 | UR |
| PLUTONIUM-239 | pCi/g | 0.010 | U | 0.020 | U | 0.020 | U | 0.020 | U | 0.040 | UR | 0.050 | UR |
| AMERICIUM-241 | pCi/g | 0.030 | U | 0.030 | U | 0.020 | U | 0.040 | U | 0.020 | U | 0.080 | UR |
| STRONTIUM-90 | pCi/g | 0.900 | U | 0.900 | U | 0.800 | U | 0.900 | U | 0.700 | U | 0.900 | U |
| POTASSIUM-40 | pCi/g | 15.000 | | 13.000 | | 13.000 | | 15.000 | | 16.000 | | 14.000 | |
| IRON-59 | pCi/g | 0.200 | U | 0.300 | U | 0.500 | U | 0.500 | U | 0.300 | U | 0.400 | U |
| CHROMIUM-51 | pCi/g | 2.000 | U | 2.000 | U | 3.000 | U | 3.000 | U | 2.000 | U | 2.000 | U |
| COBALT-60 | pCi/g | 0.040 | U | 0.050 | U | 0.070 | U | 0.070 | U | 0.060 | U | 0.060 | U |
| ZINC-65 | pCi/g | 0.100 | U | 0.100 | U | 0.200 | U | 0.200 | U | 0.100 | U | 0.200 | U |
| RUTHENIUM-106 | pCi/g | 0.400 | U | 0.800 | U | 0.600 | U | 0.600 | U | 0.500 | U | 0.600 | U |
| CESIUM-134 | pCi/g | 0.050 | U | 0.060 | U | 0.080 | U | 0.070 | U | 0.070 | U | 0.080 | U |
| CESIUM-137 | pCi/g | 0.040 | UJ | 0.270 | J | 0.450 | | 0.190 | | 0.050 | UJ | 0.082 | J |
| EUROPIUM-152 | pCi/g | 0.080 | UJ | 0.090 | UJ | 0.320 | | 0.100 | U | 0.100 | UJ | 0.100 | UJ |
| EUROPIUM-154 | pCi/g | 0.060 | UJ | 0.060 | UJ | 0.200 | U | 0.090 | U | 0.070 | UJ | 0.080 | UJ |
| RADIUM-226 | pCi/g | 0.950 | | 0.710 | | 0.900 | | 0.900 | | 0.780 | | 1.200 | |
| THORIUM-228 | pCi/g | 1.900 | | 0.910 | | 1.400 | | 1.300 | | 1.300 | | 2.500 | |
| THORIUM-232 | pCi/g | 1.500 | | 0.890 | | 0.910 | | 1.200 | | 1.200 | | 2.500 | |
| EUROPIUM-155 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| MANGANESE-54 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| TECHNETIUM-99 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| URANIUM-238 GAMMA SCAN | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| COBALT-58 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| CERIUM-144 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| NEPTUNIUM-237 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| THORIUM-231 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| THORIUM-234 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| RADIUM-228 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |
| RADIUM-223 | pCi/g | N/R | | N/R | | N/R | | N/R | | N/R | | N/R | |

| Parameter | Sampl# / Date / Site / Depth / Type | B07NF7 11-20-92 SITE VBU2 0.00 - 6.00 | | B07NF8 11-20-92 SITE VBU3 0.00 - 3.00 | | B07NB6 11-12-92 SITE_F1 0.00 - 6.00 | | B07ND5 11-19-92 Unknown 0.00 - 0.00 | |
|---|---|---|---|---|---|---|---|---|---|
| | Units | Result | Q | Result | Q | Result | Q | Result | Q |
| Radionuclides | | | | | | | | | |
| GROSS ALPHA | pCi/g | 8.400 | J | 7.500 | J | 7.000 | UJ | 4.000 | U |
| GROSS BETA | pCi/g | 15.000 | | 16.000 | | 22.000 | | 20.000 | |
| URANIUM-233/234 | pCi/g | 1.000 | | 1.000 | | 0.670 | | 0.490 | |
| URANIUM-235 | pCi/g | 0.200 | UR | 0.100 | UR | 0.100 | U | 0.200 | UR |
| URANIUM-238 | pCi/g | 0.580 | | 0.800 | | 0.880 | | 0.360 | |
| PLUTONIUM-238 | pCi/g | 0.050 | U | 0.060 | U | 0.070 | U | 0.040 | U |
| PLUTONIUM-239 | pCi/g | 0.020 | U | 0.030 | U | 0.030 | U | 0.020 | U |
| AMERICIUM-241 | pCi/g | 0.020 | U | 0.030 | U | 0.060 | UR | 0.040 | U |
| STRONTIUM-90 | pCi/g | 0.900 | U | 0.800 | U | 0.900 | U | 0.200 | U |
| POTASSIUM-40 | pCi/g | 15.000 | | 12.000 | | 16.000 | | 15.000 | |
| IRON-59 | pCi/g | 0.300 | U | 0.300 | U | 0.400 | U | 0.400 | U |
| CHROMIUM-51 | pCi/g | 2.000 | U | 2.000 | U | 2.000 | U | 2.000 | U |
| COBALT-60 | pCi/g | 0.050 | U | 0.040 | U | 0.060 | U | 0.410 | |
| ZINC-65 | pCi/g | 0.100 | U | 0.100 | U | 0.200 | U | 0.200 | U |
| RUTHENIUM-106 | pCi/g | 0.400 | U | 0.400 | U | 0.600 | U | 0.500 | U |
| CESIUM-134 | pCi/g | 0.060 | U | 0.060 | U | 0.070 | U | 0.050 | U |
| CESIUM-137 | pCi/g | 0.040 | UJ | 0.140 | J | 0.180 | J | 0.740 | J |
| EUROPIUM-152 | pCi/g | 0.100 | UJ | 0.090 | UJ | 0.100 | | 0.480 | J |
| EUROPIUM-154 | pCi/g | 0.060 | UJ | 0.060 | UJ | 0.200 | U | 0.200 | UJ |
| RADIUM-226 | pCi/g | 0.630 | | 0.600 | | 0.740 | | 0.420 | |
| THORIUM-228 | pCi/g | 1.300 | | 1.100 | | 1.200 | | 0.460 | |
| THORIUM-232 | pCi/g | 1.000 | | 0.990 | | 1.100 | | 0.500 | |
| EUROPIUM-155 | pCi/g | N/R | | N/R | | N/R | | N/R | |
| MANGANESE-54 | pCi/g | N/R | | N/R | | N/R | | N/R | |
| TECHNETIUM-99 | pCi/g | N/R | | N/R | | N/R | | N/R | |
| URANIUM-238 GAMMA SCAN | pCi/g | N/R | | N/R | | N/R | | N/R | |
| COBALT-58 | pCi/g | N/R | | N/R | | N/R | | N/R | |
| CERIUM-144 | pCi/g | N/R | | N/R | | N/R | | N/R | |
| NEPTUNIUM-237 | pCi/g | N/R | | N/R | | N/R | | N/R | |
| THORIUM-231 | pCi/g | N/R | | N/R | | N/R | | N/R | |
| THORIUM-234 | pCi/g | N/R | | N/R | | N/R | | N/R | |
| RADIUM-228 | pCi/g | N/R | | N/R | | N/R | | N/R | |
| RADIUM-223 | pCi/g | N/R | | N/R | | N/R | | N/R | |

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# APPENDIX D - VALIDATED RADIOCHEMISTRY LABORATORY REPORTS

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**TMA NORCAL**
**REPORTING GROUP 7136**

**DATA SHEET**

N212017-06

B07NG8

| | | | |
|---|---|---|---|
| SDG | 7136 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N212017-06 | Client sample id | B07NG8 |
| Dept sample id | 7136-006 | Matrix | SOIL |
| Received | 12/02/92 | Collected | 11/23/92 |
| % moisture | 0.2 | Chain of custody id | 199806_226 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 2.1 | 3.0 | 4 | 10 | U | 80A |
| Gross Beta | Beta | 30 | 4.7 | 5 | 10 | | 80B |
| Uranium 233/234 | | 0.22 | 0.15 | 0.2 | 0.3 | J | U |
| Uranium 235 | 15117-96-1 | 0.030 | 0.060 | 0.2 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 0.20 | 0.15 | 0.2 | 0.3 | J | U |
| Plutonium 238 | 13981-16-3 | 0.013 | 0.026 | 0.05 | 0.05 | U | PU |
| Plutonium 239/240 | | -0.003 | 0.013 | 0.03 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0.009 | 0.017 | 0.03 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | -0.41 | 0.72 | 0.9 | 2 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 23 | 1.3 | | | | GAM |
| Iron 59 | | U | | 0.4 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.06 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.4 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.06 | | U | GAM |
| Cesium 137 | 10045-97-3 | U | | 0.05 | 0.05 | U | GAM |
| Europium 152 | 14683-23-9 | U | | 0.07 | 0.1 | U | GAM |
| Europium 154 | 15585-10-1 | U | | 0.05 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 0.24 | 0.079 | | | | GAM |
| Thorium 228 | 14274-82-9 | 0.46 | 0.077 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.34 | 0.20 | | | | GAM |

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| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/19/93 |

N211152-10

**TMA NORCAL**
**REPORTING GROUP 7131**

**DATA SHEET**

B07ND1

SDG 7131 — Client Westinghouse Hanford
Contact Dinkar Kharkar — Contract MBH-SVV-069262

Lab sample id N211152-10 — Client sample id B07ND1
Dept sample id 7131-010 — Matrix SOIL
Received 11/25/92 — Collected 11/20/92
% moisture 22.5 — Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 6.7 | 4.0 | 4 | 10 | J | 80A |
| Gross Beta | Beta | 13 | 4.3 | 6 | 10 | | 80B |
| Uranium 233/234 | | 0.59 | 0.22 | 0.1 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.061 | 0.082 | 0.2 | 0.3 | ~~U~~ UR | U |
| Uranium 238 | 7440-61-1 | 0.44 | 0.18 | 0.1 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0.003 | 0.032 | 0.06 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.013 | 0.019 | 0.04 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0.013 | 0.022 | 0.03 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | -0.66 | 1.2 | 0.2 | | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 12 | 0.85 | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.05 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.1 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.4 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.05 | | U | GAM |
| Cesium 137 | 10045-97-3 | U | | 0.05 | 0.05 | ~~U~~ UJ | GAM |
| Europium 152 | 14683-23-9 | U | | 0.09 | 0.1 | ~~U~~ UJ | GAM |
| Europium 154 | 15585-10-1 | U | | 0.06 | 0.1 | ~~U~~ UJ | GAM |
| Radium 226 | 13982-67-7 | 0.51 | 0.099 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.1 | 0.087 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.75 | 0.19 | | | | GAM |

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Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/11/93

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**TMA NORCAL**
**REPORTING GROUP 7131**

**DATA SHEET**

N211152-11

B07ND9

SDG 7131
Contact Dinkar Kharkar
Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N211152-11
Dept sample id 7131-011
Received 11/25/92
% moisture 21.7
Client sample id B07ND9
Matrix SOIL
Collected 11/20/92
Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 4.7 | 4.0 | 5 | 10 | U | 80A |
| Gross Beta | Beta | 14 | 3.9 | 5 | 10 | | 80B |
| Uranium 233/234 | | 0.45 | 0.27 | 0.4 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.039 | 0.079 | 0.3 | 0.3 | ~~U~~ UR | U |
| Uranium 238 | 7440-61-1 | 0.26 | 0.20 | 0.2 | 0.3 | J | U |
| Plutonium 238 | 13981-16-3 | -0.023 | 0.020 | 0.06 | 0.05 | U | PU |
| Plutonium 239/240 | | 0 | 0.007 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | -0.027 | 0.043 | 0.1 | 0.05 | ~~U~~ UR | AM |
| Strontium 90 | 10098-97-2 | -0.011 | 0.42 | 0.2 | | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 12 | 0.48 | | | | GAM |
| Iron 59 | | U | | 0.1 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 0.8 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.02 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.06 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.2 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.04 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.031 | 0.017 | | 0.05 | ~~J~~ J | GAM |
| Europium 152 | 14683-23-9 | U | | 0.05 | 0.1 | ~~U~~ UJ | GAM |
| Europium 154 | 15585-10-1 | U | | 0.03 | 0.1 | ~~U~~ UJ | GAM |
| Radium 226 | 13982-67-7 | 0.52 | 0.045 | | | | GAM |
| Thorium 228 | 14274-82-9 | 0.82 | 0.030 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.79 | 0.077 | | | | GAM |

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Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/11/93

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**TMA NORCAL**
**REPORTING GROUP 7131**

N211152-12

B07NF3

**DATA SHEET**

| | | | |
|---|---|---|---|
| SDG | 7131 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N211152-12 | Client sample id | B07NF3 |
| Dept sample id | 7131-012 | Matrix | SOIL |
| Received | 11/25/92 | Collected | 11/20/92 |
| % moisture | 26.0 | Chain of custody id | 199806_226 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 2.2 | 5.3 | 8 | 10 | U | 80A |
| Gross Beta | Beta | 13 | 4.2 | 6 | 10 | | 80B |
| Uranium 233/234 | | 0.57 | 0.21 | 0.1 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.061 | 0.082 | 0.2 | 0.3 | ~~U~~ UJ | U |
| Uranium 238 | 7440-61-1 | 0.52 | 0.21 | 0.1 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0.009 | 0.025 | 0.04 | 0.05 | U | PU |
| Plutonium 239/240 | | 0 | 0.006 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | -0.003 | 0.021 | 0.05 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | 0 | 0.96 | 0.1 | | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 15 | 0.55 | | | | GAM |
| Iron 59 | | U | | 0.2 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 0.9 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.04 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.08 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.2 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.03 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.058 | 0.022 | | 0.05 | ~~U~~ J | GAM |
| Europium 152 | 14683-23-9 | U | | 0.05 | 0.1 | ~~U~~ UJ | GAM |
| Europium 154 | 15585-10-1 | U | | 0.03 | 0.1 | ~~U~~ UJ | GAM |
| Radium 226 | 13982-67-7 | 0.58 | 0.051 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.0 | 0.036 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.95 | 0.11 | | | | GAM |

9/5/1993

| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/11/93 |

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9312968.1619

**TMA NORCAL**
**REPORTING GROUP 7131**

N211152-13

**DATA SHEET**

B07NF4

SDG 7131
Contact Dinkar Kharkar
Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N211152-13
Dept sample id 7131-013
Received 11/25/92
% moisture 21.1
Client sample id B07NF4
Matrix SOIL
Collected 11/20/92
Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 8.1 | 5.2 | 6 | 10 | J | 80A |
| Gross Beta | Beta | 16 | 4.0 | 5 | 10 | | 80B |
| Uranium 233/234 | | 0.84 | 0.27 | 0.1 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.085 | 0.086 | 0.2 | 0.3 | ~~U~~ UL | U |
| Uranium 238 | 7440-61-1 | 1.1 | 0.31 | 0.1 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | -0.013 | 0.019 | 0.04 | 0.05 | U | PU |
| Plutonium 239/240 | | 0 | 0.004 | 0.01 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | -0.006 | 0.022 | 0.05 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | 0.041 | 0.22 | 0.8 | | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 15 | 0.51 | | | | GAM |
| Iron 59 | | U | | 0.2 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 1 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.02 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.08 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.2 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.03 | | U | GAM |
| Cesium 137 | 10045-97-3 | U | | 0.02 | 0.05 | ~~U~~ UJ | GAM |
| Europium 152 | 14683-23-9 | U | | 0.05 | 0.1 | ~~U~~ UJ | GAM |
| Europium 154 | 15585-10-1 | U | | 0.04 | 0.1 | ~~U~~ UJ | GAM |
| Radium 226 | 13982-67-7 | 0.70 | 0.049 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.4 | 0.046 | | | | GAM |
| Thorium 232 | 7440-29-1 | 1.1 | 0.12 | | | | GAM |

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gj 5/18/93

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/11/93

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TMA NORCAL
REPORTING GROUP 7128

N211148-14

DATA SHEET

B07ND0

| | | | |
|---|---|---|---|
| SDG | 7128 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N211148-14 | Client sample id | B07ND0 |
| Dept sample id | 7128-014 | Matrix | SOIL |
| Received | 11/20/92 | Collected | 11/17/92 |
| % moisture | 31.6 | Chain of custody id | 199806_226 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 6.1 | 6.5 | 8 | 10 | ~~U~~ UJ | 80A |
| Gross Beta | Beta | 12 | 4.5 | 6 | 10 | | 80B |
| Uranium 233/234 | | 0.82 | 0.29 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.027 | 0.053 | 0.2 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 0.68 | 0.28 | 0.2 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | -0.014 | 0.029 | 0.09 | 0.05 | ~~U~~ UR | PU |
| Plutonium 239/240 | | 0.007 | 0.029 | 0.05 | 0.05 | ~~U~~ UR | PU |
| Americium 241 | 14596-10-2 | 0 | 0.017 | 0.03 | 0.05 | ~~U~~ UR | AM |
| Strontium 90 | 10098-97-2 | 0.17 | 0.28 | 0.9 | 1 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 11 | 0.92 | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | 0.062 | 0.051 | | 0.05 | | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.1 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.4 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.06 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.24 | 0.053 | | 0.05 | — J | GAM |
| Europium 152 | 14683-23-9 | 0.11 | 0.038 | | 0.1 | | GAM |
| Radium 226 | 13982-67-7 | 0.77 | 0.095 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.2 | 0.069 | | | | GAM |
| Thorium 232 | 7440-29-1 | 1.2 | 0.22 | | | | GAM |

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DATA SHEETS
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CJ 5/18/93

| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/04/93 |

**TMA NORCAL**
**REPORTING GROUP 7128**

**DATA SHEET**

N211148-13

B07NC9

| | | | |
|---|---|---|---|
| SDG | 7128 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N211148-13 | Client sample id | B07NC9 |
| Dept sample id | 7128-013 | Matrix | SOIL |
| Received | 11/20/92 | Collected | 11/17/92 |
| % moisture | 20.1 | Chain of custody id | 199806_226 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 16 | 6.8 | 6 | 10 | — J | BOA |
| Gross Beta | Beta | 20 | 4.7 | 6 | 10 | | BOB |
| Uranium 233/234 | | 0.99 | 0.19 | 0.07 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.085 | 0.057 | 0.07 | 0.3 | J | U |
| Uranium 238 | 7440-61-1 | 0.95 | 0.19 | 0.06 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0 | 0.018 | 0.04 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.003 | 0.012 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | -0.006 | 0.016 | 0.03 | 0.05 | ~~U~~ UR | AM |
| Strontium 90 | 10098-97-2 | -0.31 | 0.27 | 0.9 | 1 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 14 | 0.98 | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | 0.13 | 0.063 | | 0.05 | | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.4 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.06 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.071 | 0.053 | | 0.05 | — J | GAM |
| Europium 152 | 14683-23-9 | 0.37 | 0.092 | | 0.1 | | GAM |
| Europium 154 | 15585-10-1 | U | | 0.2 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 1.0 | 0.11 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.7 | 0.076 | | | | GAM |
| Thorium 232 | 7440-29-1 | 1.6 | 0.24 | | | | GAM |
| Europium 155 | 14391-16-3 | 0.18 | 0.12 | | | | GAM |

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| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/04/93 |

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**TMA NORCAL**
**REPORTING GROUP 7131**

N211152-01

B07NF0

# DATA SHEET

SDG 7131
Contact Dinkar Kharkar
Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N211152-01
Dept sample id 7131-001
Received 11/24/92
% moisture 55.4
Client sample id B07NF0
Matrix SOIL
Collected 11/19/92
Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 8.7 | 5.5 | 6 | 10 | J | 80A |
| Gross Beta | Beta | 12 | 3.9 | 5 | 10 | | 80B |
| Uranium 233/234 | | 0.84 | 0.32 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.030 | 0.060 | 0.2 | 0.3 | ~~U~~ UR | U |
| Uranium 238 | 7440-61-1 | 0.69 | 0.27 | 0.2 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0.005 | 0.021 | 0.04 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.003 | 0.016 | 0.03 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0.012 | 0.018 | 0.03 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | -0.10 | 0.52 | 0.2 | | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 8.4 | 1.0 | | | | GAM |
| Iron 59 | | U | | 0.4 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 3 | | U | GAM |
| Cobalt 60 | 10198-40-0 | 0.33 | 0.098 | | 0.05 | | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.5 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.07 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.56 | 0.067 | | 0.05 | J | GAM |
| Europium 152 | 14683-23-9 | 0.41 | 0.11 | | 0.1 | J | GAM |
| Europium 154 | 15585-10-1 | U | | 0.3 | 0.1 | ~~U~~ UJ | GAM |
| Radium 226 | 13982-67-7 | 0.55 | 0.12 | | | | GAM |
| Thorium 228 | 14274-82-9 | 0.84 | 0.12 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.71 | 0.26 | | | | GAM |
| Manganese 54 | | 0.057 | 0.034 | | | | GAM |

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cj 5/18/93

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/11/93

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N211152-02

**TMA NORCAL**
**REPORTING GROUP 7131**

**DATA SHEET**

B07NF1

| | | | |
|---|---|---|---|
| SDG | 7131 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N211152-02 | Client sample id | B07NF1 |
| Dept sample id | 7131-002 | Matrix | SOIL |
| Received | 11/24/92 | Collected | 11/19/92 |
| % moisture | 23.3 | Chain of custody id | 199806_226 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 5.7 | 4.0 | 5 | 10 | J | 80A |
| Gross Beta | Beta | 9.0 | 4.2 | 6 | 10 | J | 80B |
| Uranium 233/234 | | 0.44 | 0.23 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.066 | 0.067 | 0.3 | 0.3 | ~~U~~ UR | U |
| Uranium 238 | 7440-61-1 | 0.44 | 0.23 | 0.2 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | -0.010 | 0.026 | 0.06 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.013 | 0.013 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | -0.007 | 0.021 | 0.04 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | 0.11 | 0.094 | 0.2 | | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 12 | 0.96 | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | 0.20 | 0.058 | | 0.05 | | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.5 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.06 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.48 | 0.066 | | 0.05 | ~~-~~ J | GAM |
| Europium 152 | 14683-23-9 | 0.35 | 0.087 | | 0.1 | ~~-~~ J | GAM |
| Europium 154 | 15585-10-1 | U | | 0.2 | 0.1 | ~~U~~ UJ | GAM |
| Radium 226 | 13982-67-7 | 0.54 | 0.097 | | | | GAM |
| Thorium 228 | 14274-82-9 | 0.91 | 0.10 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.74 | 0.18 | | | | GAM |

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| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/11/93 |

DATA SHEETS
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**TMA NORCAL**
**REPORTING GROUP 7131**

N211152-03

**DATA SHEET**

B07NF2

SDG 7131
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N211152-03
Dept sample id 7131-003
Received 11/24/92
% moisture 31.3

Client sample id B07NF2
Matrix SOIL
Collected 11/19/92
Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 1.7 | 5.1 | 8 | 10 | U | 80A |
| Gross Beta | Beta | 12 | 4.0 | 5 | 10 | | 80B |
| Uranium 233/234 | | 0.37 | 0.18 | 0.1 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.021 | 0.043 | 0.2 | 0.3 | ~~U~~ UR | U |
| Uranium 238 | 7440-61-1 | 0.58 | 0.22 | 0.1 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0.018 | 0.018 | 0.02 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.018 | 0.018 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0.004 | 0.016 | 0.03 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | -0.005 | 0.42 | 0.2 | | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 13 | 0.95 | | | | GAM |
| Iron 59 | | U | | 0.4 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 3 | | U | GAM |
| Cobalt 60 | 10198-40-0 | 0.089 | 0.061 | | 0.05 | | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.5 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.06 | | U | GAM |
| Cesium 137 | 10045-97-3 | 1.3 | 0.094 | | 0.05 | J | GAM |
| Europium 152 | 14683-23-9 | 0.90 | 0.14 | | 0.1 | J | GAM |
| Europium 154 | 15585-10-1 | U | | 0.4 | 0.1 | ~~U~~ UJ | GAM |
| Radium 226 | 13982-67-7 | 0.61 | 0.091 | | | | GAM |
| Thorium 228 | 14274-82-9 | 0.95 | 0.086 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.93 | 0.23 | | | | GAM |

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Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/11/93

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N212017-09

**TMA NORCAL**
**REPORTING GROUP 7136**

**DATA SHEET**

B07NH1

| | | | |
|---|---|---|---|
| SDG | 7136 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N212017-09 | Client sample id | B07NH1 |
| Dept sample id | 7136-009 | Matrix | SOIL |
| Received | 12/02/92 | Collected | 11/23/92 |
| % moisture | 16.7 | Chain of custody id | 199806_226 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 7.7 | 4.5 | 4 | 10 | J | 80A |
| Gross Beta | Beta | 14 | 4.2 | 6 | 10 | | 80B |
| Uranium 233/234 | | 0.90 | 0.31 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.15 | 0.10 | 0.2 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 0.98 | 0.32 | 0.2 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | -0.006 | 0.017 | 0.04 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.014 | 0.011 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0.013 | 0.022 | 0.04 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | -0.001 | 2.3 | 1 | 2 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 14 | 1.3 | | | | GAM |
| Iron 59 | | U | | 0.6 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 4 | | U | GAM |
| Cobalt 60 | 10198-40-0 | 0.10 | 0.072 | | 0.05 | | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.7 | | U | GAM |
| Cesium 134 | 17967-70-9 | 0.089 | 0.078 | | | | GAM |
| Cesium 137 | 10045-97-3 | 0.91 | 0.098 | | 0.05 | | GAM |
| Europium 152 | 14683-23-9 | 0.79 | 0.14 | | 0.1 | | GAM |
| Europium 154 | 15585-10-1 | U | | 0.3 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 0.98 | 0.17 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.5 | 0.10 | | | | GAM |
| Thorium 232 | 7440-29-1 | 1.2 | 0.36 | | | | GAM |

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| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/19/93 |

**TMA NORCAL**
**REPORTING GROUP 7136**

N212017-10

**DATA SHEET**

B07NH2

SDG 7136
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N212017-10
Dept sample id 7136-010
Received 12/02/92
% moisture 4.2

Client sample id B07NH2
Matrix SOIL
Collected 11/23/92
Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALI-FIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 11 | 5.5 | 6 | 10 | | 80A |
| Gross Beta | Beta | 22 | 4.4 | 5 | 10 | | 80B |
| Uranium 233/234 | | 2.6 | 0.50 | 0.1 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.080 | 0.081 | 0.2 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 2.0 | 0.43 | 0.1 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0.009 | 0.031 | 0.05 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.012 | 0.012 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0.002 | 0.023 | 0.04 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | 0.17 | 0.32 | 1 | 2 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 15 | 1.2 | | | | GAM |
| Iron 59 | | U | | 0.5 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 4 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.06 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.7 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.09 | | U | GAM |
| Cesium 137 | 10045-97-3 | U | | 0.07 | 0.05 | U | GAM |
| Europium 152 | 14683-23-9 | U | | 0.2 | 0.1 | U | GAM |
| Europium 154 | 15585-10-1 | U | | 0.1 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 1.3 | 0.14 | | | | GAM |
| Thorium 228 | 14274-82-9 | 2.5 | 0.12 | | | | GAM |
| Thorium 232 | 7440-29-1 | 2.3 | 0.35 | | | | GAM |

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5/10/93

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/19/93

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**TMA NORCAL**
**REPORTING GROUP 7131**

**DATA SHEET**

N211152-04

B07ND4

| | | | |
|---|---|---|---|
| SDG | 7131 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N211152-04 | Client sample id | B07ND4 |
| Dept sample id | 7131-004 | Matrix | SOIL |
| Received | 11/24/92 | Collected | 11/19/92 |
| % moisture | 20.2 | Chain of custody id | 199806_226 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 4.9 | 3.7 | 4 | 10 | J | 80A |
| Gross Beta | Beta | 17 | 4.1 | 5 | 10 | | 80B |
| Uranium 233/234 | | 0.58 | 0.22 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | -0.021 | 0.042 | 0.2 | 0.3 | ~~U~~ UK | U |
| Uranium 238 | 7440-61-1 | 0.68 | 0.23 | 0.1 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | -0.011 | 0.015 | 0.05 | 0.05 | U | PU |
| Plutonium 239/240 | | 0 | 0.007 | 0.03 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0 | 0.027 | 0.06 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | -0.47 | 1.4 | 0.2 | | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 14 | 1.0 | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | 0.18 | 0.052 | | 0.05 | | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.4 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.05 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.56 | 0.065 | | 0.05 | — J | GAM |
| Europium 152 | 14683-23-9 | 0.22 | 0.073 | | 0.1 | — J | GAM |
| Europium 154 | 15585-10-1 | U | | 0.1 | 0.1 | ~~U~~ UJ | GAM |
| Radium 226 | 13982-67-7 | 0.46 | 0.066 | | | | GAM |
| Thorium 228 | 14274-82-9 | 0.50 | 0.076 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.58 | 0.19 | | | | GAM |

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GJ 5/18/93

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|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/11/93 |

**TMA NORCAL**
**REPORTING GROUP 7131**

N211152-07

B07ND7

# DATA SHEET

SDG 7131
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N211152-07
Dept sample id 7131-007
Received 11/24/92
% moisture 19.8

Client sample id B07ND7
Matrix SOIL
Collected 11/19/92
Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 4.5 | 3.5 | 4 | 10 | J | 80A |
| Gross Beta | Beta | 13 | 3.9 | 5 | 10 | | 80B |
| Uranium 233/234 | | 0.44 | 0.20 | 0.1 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.023 | 0.092 | 0.2 | 0.3 | ~~U~~ UR | U |
| Uranium 238 | 7440-61-1 | 0.44 | 0.20 | 0.1 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | -0.007 | 0.011 | 0.03 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.005 | 0.007 | 0.01 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0.007 | 0.019 | 0.03 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | -0.076 | 0.46 | 0.2 | | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 13 | 1.1 | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | 0.19 | 0.065 | | 0.05 | | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.4 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.06 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.62 | 0.069 | | 0.05 | ~~-~~ J | GAM |
| Europium 152 | 14683-23-9 | 0.25 | 0.077 | | 0.1 | ~~-~~ J | GAM |
| Europium 154 | 15585-10-1 | U | | 0.2 | 0.1 | ~~U~~ UJ | GAM |
| Radium 226 | 13982-67-7 | 0.48 | 0.087 | | | | GAM |
| Thorium 228 | 14274-82-9 | 0.53 | 0.055 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.50 | 0.16 | | | | GAM |

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CJ 5/18/93

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/11/93

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**TMA NORCAL**
**REPORTING GROUP 7131**

N211152-06

B07ND6

# DATA SHEET

SDG 7131
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N211152-06
Dept sample id 7131-006
Received 11/24/92
% moisture 4.4

Client sample id B07ND6
Matrix SOIL
Collected 11/19/92
Chain of custody id 199806 226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALI-FIERS Q | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 6.2 | 3.8 | 4 | 10 | J | BOA |
| Gross Beta | Beta | 14 | 4.4 | 6 | 10 | | BOB |
| Uranium 233/234 | | 0.29 | 0.18 | 0.2 | 0.3 | J | U |
| Uranium 235 | 15117-96-1 | 0.035 | 0.070 | 0.3 | 0.3 | ~~U~~ UR | U |
| Uranium 238 | 7440-61-1 | 0.49 | 0.24 | 0.2 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0.002 | 0.014 | 0.03 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.002 | 0.010 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | -0.009 | 0.009 | 0.03 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | 0 | 0.98 | 0.2 | | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 15 | 1.0 | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.06 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.1 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.4 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.06 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.10 | 0.046 | | 0.05 | ~~U~~ J | GAM |
| Europium 152 | 14683-23-9 | U | | 0.1 | 0.1 | ~~U~~ UJ | GAM |
| Europium 154 | 15585-10-1 | U | | 0.07 | 0.1 | ~~U~~ UJ | GAM |
| Radium 226 | 13982-67-7 | 0.58 | 0.10 | | | | GAM |
| Thorium 228 | 14274-82-9 | 0.88 | 0.076 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.84 | 0.18 | | | | GAM |

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CJ 5/15/93

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/11/93

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N211152-08

**TMA NORCAL**
**REPORTING GROUP 7131**

**DATA SHEET**

B07ND8

| | | | |
|---|---|---|---|
| SDG | 7131 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | NBH-SVV-069262 |
| Lab sample id | N211152-08 | Client sample id | B07ND8 |
| Dept sample id | 7131-008 | Matrix | SOIL |
| Received | 11/24/92 | Collected | 11/19/92 |
| % moisture | 1.1 | Chain of custody id | 199806_226 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 7.5 | 4.8 | 5 | 10 | J | 80A |
| Gross Beta | Beta | 18 | 4.2 | 5 | 10 | | 80B |
| Uranium 233/234 | | 0.46 | 0.21 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.024 | 0.048 | 0.2 | 0.3 | ~~U~~ UL | U |
| Uranium 238 | 7440-61-1 | 0.46 | 0.21 | 0.2 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0.005 | 0.026 | 0.05 | 0.05 | U | PU |
| Plutonium 239/240 | | 0 | 0.011 | 0.03 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0.014 | 0.023 | 0.04 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | 0 | 1.0 | 0.2 | | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 17 | 1.2 | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.05 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.4 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.06 | | U | GAM |
| Cesium 137 | 10045-97-3 | U | | 0.04 | 0.05 | ~~U~~ UJ | GAM |
| Europium 152 | 14683-23-9 | U | | 0.09 | 0.1 | ~~U~~ UJ | GAM |
| Europium 154 | 15585-10-1 | U | | 0.06 | 0.1 | ~~U~~ UJ | GAM |
| Radium 226 | 13982-67-7 | 0.50 | 0.095 | | | | GAM |
| Thorium 228 | 14274-82-9 | 0.69 | 0.058 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.89 | 0.23 | | | | GAM |

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CJ 5/18/93

| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/11/93 |

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**TMA NORCAL**
**REPORTING GROUP 7136**

N212017-13

**DATA SHEET**

B07NH5

| | | | |
|---|---|---|---|
| SDG | 7136 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N212017-13 | Client sample id | B07NH5 |
| Dept sample id | 7136-013 | Matrix | SOIL |
| Received | 12/02/92 | Collected | 11/24/92 |
| % moisture | 25.4 | Chain of custody id | 199806_226 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 5.3 | 4.4 | 5 | 10 | J | 80A |
| Gross Beta | Beta | 17 | 4.6 | 6 | 10 | | 80B |
| Uranium 233/234 | | 0.49 | 0.21 | 0.1 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.020 | 0.041 | 0.2 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 0.30 | 0.14 | 0.1 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | -0.012 | 0.023 | 0.05 | 0.05 | U | PU |
| Plutonium 239/240 | | 0 | 0.006 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0.011 | 0.018 | 0.03 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | -0.087 | 0.60 | 0.7 | 2 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 15 | 0.96 | | | | GAM |
| Iron 59 | | U | | 0.4 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | 0.25 | 0.057 | | 0.05 | | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.5 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.06 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.50 | 0.068 | | 0.05 | | GAM |
| Europium 152 | 14683-23-9 | 0.32 | 0.099 | | 0.1 | | GAM |
| Europium 154 | 15585-10-1 | U | | 0.2 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 0.59 | 0.10 | | | | GAM |
| Thorium 228 | 14274-82-9 | 0.78 | 0.11 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.51 | 0.22 | | | | GAM |

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SJ 5/18/93

| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/19/93 |

**TMA NORCAL**
**REPORTING GROUP 7136**

**N212017-14**

**B07NH6**

**DATA SHEET**

SDG 7136
Contact Dinkar Kharkar
Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N212017-14
Dept sample id 7136-014
Received 12/02/92
% moisture 23.6
Client sample id B07NH6
Matrix SOIL
Collected 11/24/92
Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 1.6 | 3.4 | 5 | 10 | U | 80A |
| Gross Beta | Beta | 16 | 4.0 | 5 | 10 | | 80B |
| Uranium 233/234 | | 0.44 | 0.22 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0 | 0.063 | 0.2 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 0.36 | 0.21 | 0.2 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | -0.011 | 0.029 | 0.07 | 0.05 | ~~U~~ ~~UR~~ UPU | |
| Plutonium 239/240 | | 0 | 0.007 | 0.03 | 0.05 | ~~U~~ ~~UR~~ UPU | |
| Americium 241 | 14596-10-2 | 0.010 | 0.030 | 0.06 | 0.05 | ~~U~~ ~~UR~~ UAM | |
| Strontium 90 | 10098-97-2 | 0.069 | 0.19 | 0.7 | 2 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 13 | 1.1 | | | | GAM |
| Iron 59 | | U | | 0.4 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 3 | | U | GAM |
| Cobalt 60 | 10198-40-0 | 0.20 | 0.062 | | 0.05 | | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.5 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.06 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.54 | 0.071 | | 0.05 | | GAM |
| Europium 152 | 14683-23-9 | 0.32 | 0.086 | | 0.1 | | GAM |
| Europium 154 | 15585-10-1 | U | | 0.2 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 0.54 | 0.10 | | | | GAM |
| Thorium 228 | 14274-82-9 | 0.59 | 0.061 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.60 | 0.21 | | | | GAM |

93129GB.1633

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/19/93

**TMA NORCAL**
**REPORTING GROUP 7128**

N211148-02

**DATA SHEET**

B07NB7

SDG 7128
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N211148-02
Dept sample id 7128-002
Received 11/17/92
% moisture 22.5

Client sample id B07NB7
Matrix SOIL
Collected 11/12/92
Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS Q | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 4.3 | 3.9 | 5 | 10 | ~~U~~ UJ | 80A |
| Gross Beta | Beta | 15 | 4.3 | 6 | 10 | | 80B |
| Uranium 233/234 | | 1.1 | 0.36 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0 | 0.056 | 0.2 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 0.93 | 0.31 | 0.2 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0.022 | 0.043 | 0.07 | 0.05 | ~~U~~ UR | PU |
| Plutonium 239/240 | | 0 | 0.009 | 0.03 | 0.05 | ~~U~~ UR | PU |
| Americium 241 | 14596-10-2 | -0.007 | 0.018 | 0.04 | 0.05 | ~~U~~ UR | AM |
| Strontium 90 | 10098-97-2 | 0.045 | 0.23 | 0.9 | 1 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 16 | 1.2 | | | | GAM |
| Iron 59 | | U | | 0.4 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.08 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.6 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.09 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.33 | 0.067 | | 0.05 | — J | GAM |
| Europium 152 | 14683-23-9 | 0.28 | 0.12 | | 0.1 | | GAM |
| Europium 154 | 15585-10-1 | U | | 0.3 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 0.92 | 0.13 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.7 | 0.091 | | | | GAM |
| Thorium 232 | 7440-29-1 | 1.8 | 0.36 | | | | GAM |

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Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/04/93

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**TMA NORCAL**
**REPORTING GROUP 7128**

| N211148-03 | B07NB8 |
|---|---|

# DATA SHEET

| | | | |
|---|---|---|---|
| SDG | 7128 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N211148-03 | Client sample id | B07NB8 |
| Dept sample id | 7128-003 | Matrix | SOIL |
| Received | 11/17/92 | Collected | 11/12/92 |
| % moisture | 28.5 | Chain of custody id | 199806_226 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALI-FIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 9.8 | 5.0 | 5 | 10 | J | 80A |
| Gross Beta | Beta | 17 | 3.9 | 5 | 10 | | 80B |
| Uranium 233/234 | | 0.79 | 0.26 | 0.1 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.12 | 0.085 | 0.2 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 0.64 | 0.22 | 0.2 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0.012 | 0.024 | 0.04 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.004 | 0.016 | 0.04 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0.002 | 0.018 | 0.03 | 0.05 | ~~U~~ UR | AM |
| Strontium 90 | 10098-97-2 | 0.067 | 0.25 | 0.9 | 1 | U | Y |
| Technetium 99 | 14133-76-7 | -0.078 | 0.11 | 0.3 | 0.5 | U | TC |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 14 | 1.2 | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.09 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.5 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.06 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.26 | 0.067 | | 0.05 | — J | GAM |
| Europium 152 | 14683-23-9 | 0.18 | 0.098 | | 0.1 | | GAM |
| Europium 154 | 15585-10-1 | U | | 0.2 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 0.78 | 0.12 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.1 | 0.075 | | | | GAM |
| Thorium 232 | 7440-29-1 | 1.2 | 0.26 | | | | GAM |

| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/04/93 |

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9312968.1635

**TMA NORCAL**
**REPORTING GROUP 7128**

**N211148-04**

**DATA SHEET**

**B07NB9**

SDG 7128
Contact Dinkar Kharkar
Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N211148-04
Dept sample id 7128-004
Received 11/17/92
% moisture 24.6
Client sample id B07NB9
Matrix SOIL
Collected 11/12/92
Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 21 | 7.9 | 7 | 10 | — J | 80A |
| Gross Beta | Beta | 23 | 4.2 | 5 | 10 | | 80B |
| Uranium 233/234 | | 1.0 | 0.27 | 0.1 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.036 | 0.037 | 0.1 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 1.3 | 0.31 | 0.1 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | -0.006 | 0.037 | 0.08 | 0.05 | U | PU |
| Plutonium 239/240 | | -0.006 | 0.025 | 0.06 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0 | 0.039 | 0.07 | 0.05 | ~~U~~ UR | AM |
| Strontium 90 | 10098-97-2 | -0.23 | 1.1 | 0.8 | 1 | U | Y |
| Technetium 99 | 14133-76-7 | 0.015 | 0.075 | 0.2 | 0.5 | U | TC |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 15 | 0.97 | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.05 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.1 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.5 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.06 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.19 | 0.047 | | 0.05 | — J | GAM |
| Europium 152 | 14683-23-9 | 0.20 | 0.081 | | 0.1 | | GAM |
| Europium 154 | 15585-10-1 | U | | 0.2 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 0.98 | 0.10 | | | | GAM |
| Thorium 228 | 14274-82-9 | 2.0 | 0.10 | | | | GAM |
| Thorium 232 | 7440-29-1 | 1.9 | 0.19 | | | | GAM |

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Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/04/93

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**TMA NORCAL**
**REPORTING GROUP 7128**

**DATA SHEET**

N211148-09

B07NC4

| | | | |
|---|---|---|---|
| SDG | 7128 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N211148-09 | Client sample id | B07NC4 |
| Dept sample id | 7128-009 | Matrix | SOIL |
| Received | 11/19/92 | Collected | 11/16/92 |
| % moisture | 27.3 | Chain of custody id | 199806_226 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 33 | 9.1 | 7 | 10 | — ~~RJ~~ | 80A |
| Gross Beta | Beta | 25 | 4.4 | 5 | 10 | | 80B |
| Uranium 233/234 | | 1.6 | 0.38 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.16 | 0.12 | 0.2 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 2.0 | 0.43 | 0.1 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0.028 | 0.046 | 0.08 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.014 | 0.018 | 0.04 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | -0.002 | 0.013 | 0.03 | 0.05 | ~~U~~ UR | AM |
| Strontium 90 | 10098-97-2 | 0.26 | 0.31 | 1 | 1 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 14 | 1.3 | | | | GAM |
| Iron 59 | | U | | 0.4 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 3 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.08 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.8 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.1 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.14 | 0.064 | | 0.05 | J | GAM |
| Europium 152 | 14683-23-9 | U | | 0.2 | 0.1 | U | GAM |
| Europium 154 | 15585-10-1 | U | | 0.1 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 1.7 | 0.18 | | | | GAM |
| Thorium 228 | 14274-82-9 | 4.4 | 0.21 | | | | GAM |
| Thorium 232 | 7440-29-1 | 3.2 | 0.40 | | | | GAM |

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GJ 5/18/93

| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/04/93 |

TMA NORCAL
REPORTING GROUP 7128

N211148-10

B07NC5

# DATA SHEET

SDG 7128
Contact Dinkar Kharkar
Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N211148-10
Dept sample id 7128-010
Received 11/19/92
% moisture 23.0
Client sample id B07NC5
Matrix SOIL
Collected 11/16/92
Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 6.9 | 4.4 | 5 | 10 | J | 80A |
| Gross Beta | Beta | 16 | 3.8 | 5 | 10 | | 80B |
| Uranium 233/234 | | 1.4 | 0.36 | 0.1 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.047 | 0.047 | 0.2 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 0.84 | 0.29 | 0.1 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | -0.003 | 0.021 | 0.04 | 0.05 | U | PU |
| Plutonium 239/240 | | 0 | 0.005 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0.009 | 0.012 | 0.01 | 0.05 | ~~U~~ UR | AM |
| Strontium 90 | 10098-97-2 | -0.012 | 1.3 | 1 | 1 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 15 | 1.2 | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.06 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.1 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.5 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.05 | | U | GAM |
| Cesium 137 | 10045-97-3 | U | | 0.05 | 0.05 | ~~U~~ UJ | GAM |
| Europium 152 | 14683-23-9 | U | | 0.1 | 0.1 | U | GAM |
| Europium 154 | 15585-10-1 | U | | 0.09 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 0.81 | 0.13 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.6 | 0.087 | | | | GAM |
| Thorium 232 | 7440-29-1 | 1.5 | 0.29 | | | | GAM |

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Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/04/93

**TMA NORCAL**
**REPORTING GROUP 7136**

**DATA SHEET**

N212017-11

B07NH3

| | | | |
|---|---|---|---|
| SDG | 7136 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N212017-11 | Client sample id | B07NH3 |
| Dept sample id | 7136-011 | Matrix | SOIL |
| Received | 12/02/92 | Collected | 11/24/92 |
| % moisture | 20.7 | Chain of custody id | 199806_226 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 7.4 | 4.2 | 4 | 10 | J | 80A |
| Gross Beta | Beta | 12 | 3.8 | 5 | 10 | | 80B |
| Uranium 233/234 | | 0.51 | 0.22 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.15 | 0.13 | 0.2 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 0.75 | 0.26 | 0.2 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | -0.018 | 0.025 | 0.06 | 0.05 | U | PU |
| Plutonium 239/240 | | 0 | 0.006 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0 | 0.009 | 0.02 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | -0.23 | 0.24 | 0.9 | 2 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 15 | 1.1 | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.06 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.1 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.5 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.1 | | U | GAM |
| Cesium 137 | 10045-97-3 | U | | 0.05 | 0.05 | U | GAM |
| Europium 152 | 14683-23-9 | U | | 0.1 | 0.1 | U | GAM |
| Europium 154 | 15585-10-1 | U | | 0.07 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 0.67 | 0.10 | | | | GAM |
| Thorium 228 | 14274-82-9 | 0.94 | 0.064 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.83 | 0.17 | | | | GAM |

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5/18/93

| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/19/93 |

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**TMA NORCAL**
**REPORTING GROUP 7136**

N212017-12

**DATA SHEET**

B07NH4

| | | | |
|---|---|---|---|
| SDG | 7136 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N212017-12 | Client sample id | B07NH4 |
| Dept sample id | 7136-012 | Matrix | SOIL |
| Received | 12/02/92 | Collected | 11/24/92 |
| % moisture | 31.9 | Chain of custody id | 199806 226 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALI-FIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 3.3 | 4.0 | 5 | 10 | U | 80A |
| Gross Beta | Beta | 19 | 4.2 | 5 | 10 | | 80B |
| Uranium 233/234 | | 0.80 | 0.24 | 0.1 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.019 | 0.038 | 0.1 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 0.69 | 0.23 | 0.1 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0 | 0.023 | 0.05 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.009 | 0.012 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0 | 0.015 | 0.03 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | 0 | 1.5 | 0.8 | 2 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 17 | 1.3 | | | | GAM |
| Iron 59 | | U | | 0.5 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 3 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.06 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.5 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.07 | | U | GAM |
| Cesium 137 | 10045-97-3 | U | | 0.07 | 0.05 | U | GAM |
| Europium 152 | 14683-23-9 | U | | 0.1 | 0.1 | U | GAM |
| Europium 154 | 15585-10-1 | U | | 0.07 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 0.82 | 0.12 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.1 | 0.076 | | | | GAM |
| Thorium 232 | 7440-29-1 | 1.0 | 0.24 | | | | GAM |

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| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/19/93 |

**TMA NORCAL**
**REPORTING GROUP 7136**

N212017-07

**DATA SHEET**

B07NG9

| | | | |
|---|---|---|---|
| SDG | 7136 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N212017-07 | Client sample id | B07NG9 |
| Dept sample id | 7136-007 | Matrix | SOIL |
| Received | 12/02/92 | Collected | 11/23/92 |
| % moisture | 21.7 | Chain of custody id | 199806_226 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALI-FIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 4.7 | 3.5 | 4 | 10 | J | 80A |
| Gross Beta | Beta | 10 | 4.2 | 6 | 10 | | 80B |
| Uranium 233/234 | | 0.77 | 0.24 | 0.1 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.045 | 0.046 | 0.2 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 0.49 | 0.20 | 0.1 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | -0.012 | 0.031 | 0.07 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.019 | 0.023 | 0.04 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0.009 | 0.023 | 0.04 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | -0.094 | 1.9 | 0.8 | 2 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 15 | 1.1 | | | | GAM |
| Iron 59 | | U | | 0.5 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 3 | | U | GAM |
| Cobalt 60 | 10198-40-0 | 0.36 | 0.078 | | 0.05 | | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.6 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.07 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.83 | 0.095 | | 0.05 | | GAM |
| Europium 152 | 14683-23-9 | 0.92 | 0.17 | | 0.1 | | GAM |
| Europium 154 | 15585-10-1 | 0.16 | 0.16 | | 0.1 | | GAM |
| Radium 226 | 13982-67-7 | 0.69 | 0.12 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.1 | 0.097 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.98 | 0.27 | | | | GAM |

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| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/19/93 |

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N212017-08

**TMA NORCAL**
**REPORTING GROUP 7136**

**DATA SHEET**

B07NH0

SDG 7136
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N212017-08
Dept sample id 7136-008
Received 12/02/92
% moisture 29.0

Client sample id B07NH0
Matrix SOIL
Collected 11/23/92
Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 2.9 | 4.0 | 5 | 10 | U | 80A |
| Gross Beta | Beta | 18 | 4.2 | 5 | 10 | | 80B |
| Uranium 233/234 | | 0.88 | 0.27 | 0.1 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.065 | 0.087 | 0.2 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 0.70 | 0.23 | 0.1 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0.006 | 0.023 | 0.05 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.011 | 0.011 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0.016 | 0.026 | 0.04 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | -0.035 | 0.28 | 1 | 2 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 15 | 1.2 | | | | GAM |
| Iron 59 | | U | | 0.4 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 3 | | U | GAM |
| Cobalt 60 | 10198-40-0 | 0.076 | 0.058 | | 0.05 | | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.5 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.07 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.16 | 0.058 | | 0.05 | | GAM |
| Europium 152 | 14683-23-9 | 0.30 | 0.096 | | 0.1 | | GAM |
| Europium 154 | 15585-10-1 | U | | 0.2 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 0.67 | 0.11 | | | | GAM |
| Thorium 228 | 14274-82-9 | 0.99 | 0.074 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.92 | 0.22 | | | | GAM |

9312968.1642

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/19/93

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N211148-05

**TMA NORCAL**
**REPORTING GROUP 7128**

**DATA SHEET**

B07NC0

SDG 7128
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N211148-05
Dept sample id 7128-005
Received 11/18/92
% moisture 9.8

Client sample id B07NC0
Matrix SOIL
Collected 11/13/92
Chain of custody id 199806_226_02

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 4.5 | 5.2 | 6 | 10 | ~~U~~ UJ | BOA |
| Gross Beta | Beta | 18 | 4.0 | 5 | 10 | | BOB |
| Uranium 233/234 | | 0.79 | 0.29 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.082 | 0.11 | 0.2 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 0.77 | 0.29 | 0.2 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0.030 | 0.037 | 0.07 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.030 | 0.022 | 0.04 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0.002 | 0.014 | 0.03 | 0.05 | ~~U~~ UR | AM |
| Strontium 90 | 10098-97-2 | 0.26 | 0.59 | 0.8 | 1 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 14 | 1.0 | | | | GAM |
| Iron 59 | | U | | 0.4 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 3 | | U | GAM |
| Cobalt 60 | 10198-40-0 | 0.38 | 0.071 | | 0.05 | | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.6 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.07 | | U | GAM |
| Cesium 137 | 10045-97-3 | 4.6 | 0.13 | | 0.05 | — J | GAM |
| Europium 152 | 14683-23-9 | 1.8 | 0.15 | | 0.1 | | GAM |
| Europium 154 | 15585-10-1 | 0.24 | 0.16 | | 0.1 | | GAM |
| Radium 226 | 13982-67-7 | 0.85 | 0.13 | | | | GAM |
| Thorium 228 | 14274-82-9 | 0.90 | 0.073 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.96 | 0.22 | | | | GAM |

9312968.1613

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/04/93

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**TMA NORCAL**
**REPORTING GROUP 7128**

**DATA SHEET**

N211148-06

B07NC1

SDG 7128
Contact Dinkar Kharkar
Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N211148-06
Dept sample id 7128-006
Received 11/18/92
% moisture 4.0
Client sample id B07NC1
Matrix SOIL
Collected 11/13/92
Chain of custody id 199806_226_02

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 26 | 8.8 | 7 | 10 | — RJ | 80A |
| Gross Beta | Beta | 23 | 4.6 | 6 | 10 | | 80B |
| Uranium 233/234 | | 2.3 | 0.43 | 0.1 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.096 | 0.065 | 0.1 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 2.3 | 0.42 | 0.1 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | -0.017 | 0.027 | 0.06 | 0.05 | U | PU |
| Plutonium 239/240 | | 0 | 0.007 | 0.03 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0.002 | 0.011 | 0.02 | 0.05 | ~~U~~ UR | AM |
| Strontium 90 | 10098-97-2 | 0.14 | 0.25 | 0.9 | 1 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 13 | 0.83 | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.05 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.5 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.07 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.52 | 0.064 | | 0.05 | — J | GAM |
| Europium 152 | 14683-23-9 | U | | 20 | 0.1 | U | GAM |
| Europium 154 | 15585-10-1 | U | | 0.1 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 1.4 | 0.12 | | | | GAM |
| Thorium 228 | 14274-82-9 | 3.0 | 0.099 | | | | GAM |
| Thorium 232 | 7440-29-1 | 2.5 | 0.24 | | | | GAM |
| URANIUM 238 | | 8.8 | 6.8 | | | | GAM |

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Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/04/93

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**TMA NORCAL**
**REPORTING GROUP 7128**

N211148-07

**DATA SHEET**

B07NC2

| | | | |
|---|---|---|---|
| SDG | 7128 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N211148-07 | Client sample id | B07NC2 |
| Dept sample id | 7128-007 | Matrix | SOIL |
| Received | 11/18/92 | Collected | 11/13/92 |
| % moisture | 28.5 | Chain of custody id | 199806_226_02 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 27 | 9.2 | 9 | 10 | — J | 80A |
| Gross Beta | Beta | 20 | 4.1 | 5 | 10 | | 80B |
| Uranium 233/234 | | 1.2 | 0.34 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.084 | 0.084 | 0.2 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 1.2 | 0.31 | 0.1 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | -0.019 | 0.051 | 0.1 | 0.05 | ~~U~~ UR | PU |
| Plutonium 239/240 | | -0.019 | 0.026 | 0.07 | 0.05 | ~~U~~ UR | PU |
| Americium 241 | 14596-10-2 | 0.009 | 0.013 | 0.02 | 0.05 | ~~U~~ UR | AM |
| Strontium 90 | 10098-97-2 | 0.050 | 1.4 | 0.9 | 1 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 14 | 1.2 | | | | GAM |
| Iron 59 | | U | | 0.4 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 3 | | U | GAM |
| Cobalt 60 | 10198-40-0 | 0.090 | 0.071 | | 0.05 | | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.5 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.09 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.43 | 0.077 | | 0.05 | — J | GAM |
| Europium 152 | 14683-23-9 | 0.47 | 0.13 | | 0.1 | | GAM |
| Europium 154 | 15585-10-1 | U | | 0.2 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 1.0 | 0.13 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.9 | 0.11 | | | | GAM |
| Thorium 232 | 7440-29-1 | 1.8 | 0.35 | | | | GAM |

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5/10/93

| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/04/93 |

**TMA NORCAL**
**REPORTING GROUP 7128**

**N211148-08**

**DATA SHEET**

**B07NC3**

| | | | |
|---|---|---|---|
| SDG | 7128 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N211148-08 | Client sample id | B07NC3 |
| Dept sample id | 7128-008 | Matrix | SOIL |
| Received | 11/18/92 | Collected | 11/13/92 |
| % moisture | 27.6 | Chain of custody id | 199806_226_02 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 13 | 6.3 | 6 | 10 | — J | BOA |
| Gross Beta | Beta | 21 | 4.4 | 5 | 10 | | BOB |
| Uranium 233/234 | | 1.4 | 0.35 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.083 | 0.083 | 0.2 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 1.2 | 0.31 | 0.1 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0.003 | 0.023 | 0.05 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.006 | 0.012 | 0.03 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | -0.014 | 0.021 | 0.05 | 0.05 | ~~U~~ UR | AM |
| Strontium 90 | 10098-97-2 | 0.13 | 0.25 | 1 | 1 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 14 | 1.1 | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.07 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.5 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.07 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.33 | 0.058 | | 0.05 | — J | GAM |
| Europium 152 | 14683-23-9 | 0.23 | 0.10 | | 0.1 | | GAM |
| Europium 154 | 15585-10-1 | U | | 0.2 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 0.69 | 0.11 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.3 | 0.073 | | | | GAM |
| Thorium 232 | 7440-29-1 | 1.3 | 0.26 | | | | GAM |

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GJ 5/18/93

| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/04/93 |

N211148-11

**TMA NORCAL**
**REPORTING GROUP 7128**

**DATA SHEET**

B07NC6

SDG 7128
Contact Dinkar Kharkar
Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N211148-11
Dept sample id 7128-011
Received 11/19/92
% moisture 27.0
Client sample id B07NC6
Matrix SOIL
Collected 11/16/92
Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 9.0 | 5.3 | 6 | 10 | J | 80A |
| Gross Beta | Beta | 19 | 3.9 | 5 | 10 | | 80B |
| Uranium 233/234 | | 0.60 | 0.23 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.027 | 0.053 | 0.2 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 0.48 | 0.23 | 0.2 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0.010 | 0.019 | 0.04 | 0.05 | U | PU |
| Plutonium 239/240 | | -0.003 | 0.006 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0.008 | 0.015 | 0.02 | 0.05 | ~~U~~ UR | AM |
| Strontium 90 | 10098-97-2 | 0 | 1.3 | 1 | 1 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 16 | 1.1 | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.07 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.5 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.06 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.074 | 0.048 | | 0.05 | J | GAM |
| Europium 152 | 14683-23-9 | U | | 0.1 | 0.1 | U | GAM |
| Europium 154 | 15585-10-1 | U | | 0.07 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 0.67 | 0.11 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.1 | 0.067 | | | | GAM |
| Thorium 232 | 7440-29-1 | 1.2 | 0.22 | | | | GAM |

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Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/04/93

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Page 26

**TMA NORCAL**
**REPORTING GROUP 7128**

**DATA SHEET**

N211148-12

B07NC7

SDG 7128
Contact Dinkar Kharkar
Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N211148-12
Dept sample id 7128-012
Received 11/19/92
% moisture 24.1
Client sample id B07NC7
Matrix SOIL
Collected 11/16/92
Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 6.3 | 5.0 | 6 | 10 | J | 80A |
| Gross Beta | Beta | 21 | 4.1 | 5 | 10 | | 80B |
| Uranium 233/234 | | 0.85 | 0.28 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.077 | 0.10 | 0.2 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 0.87 | 0.28 | 0.2 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | -0.006 | 0.022 | 0.06 | 0.05 | ~~U~~ UR | PU |
| Plutonium 239/240 | | 0 | 0.011 | 0.04 | 0.05 | ~~U~~ UR | PU |
| Americium 241 | 14596-10-2 | -0.006 | 0.018 | 0.04 | 0.05 | ~~U~~ UR | AM |
| Strontium 90 | 10098-97-2 | 0.22 | 0.26 | 0.8 | 1 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 17 | 1.1 | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.06 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.5 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.07 | | U | GAM |
| Cesium 137 | 10045-97-3 | U | | 0.06 | 0.05 | ~~U~~ UJ | GAM |
| Europium 152 | 14683-23-9 | U | | 0.1 | 0.1 | U | GAM |
| Europium 154 | 15585-10-1 | U | | 0.08 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 0.84 | 0.11 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.8 | 0.14 | | | | GAM |
| Thorium 232 | 7440-29-1 | 1.1 | 0.24 | | | | GAM |

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Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/04/93

**TMA NORCAL**
**REPORTING GROUP 7128**

**DATA SHEET**

N211148-15

B07ND2

| | | | |
|---|---|---|---|
| SDG | 7128 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N211148-15 | Client sample id | B07ND2 |
| Dept sample id | 7128-015 | Matrix | SOIL |
| Received | 11/20/92 | Collected | 11/17/92 |
| % moisture | 27.1 | Chain of custody id | 199806_226 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | Q | TEST |
|---|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 3.5 | 4.3 | 6 | 10 | ~~U~~ | UJ | 80A |
| Gross Beta | Beta | 16 | 4.1 | 5 | 10 | | | 80B |
| Uranium 233/234 | | 0.73 | 0.19 | 0.07 | 0.3 | | | U |
| Uranium 235 | 15117-96-1 | 0.11 | 0.071 | 0.09 | 0.3 | J | | U |
| Uranium 238 | 7440-61-1 | 0.75 | 0.19 | 0.07 | 0.3 | | | U |
| Plutonium 238 | 13981-16-3 | -0.010 | 0.031 | 0.07 | 0.05 | U | | PU |
| Plutonium 239/240 | | 0.005 | 0.020 | 0.04 | 0.05 | U | | PU |
| Americium 241 | 14596-10-2 | 0.005 | 0.019 | 0.04 | 0.05 | ~~U~~ | UR | AM |
| Strontium 90 | 10098-97-2 | 0.11 | 0.26 | 0.9 | 1 | U | | Y |
| GAMMA SCAN ANALYTES | | | | | | | | |
| Potassium 40 | 13966-00-2 | 14 | 0.96 | | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | | GAM |
| Cobalt 60 | 10198-40-0 | 0.056 | 0.049 | | 0.05 | | | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.5 | | U | | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.07 | | U | | GAM |
| Cesium 137 | 10045-97-3 | 1.0 | 0.080 | | 0.05 | — | J | GAM |
| Europium 152 | 14683-23-9 | 0.82 | 0.14 | | 0.1 | | | GAM |
| Europium 154 | 15585-10-1 | 0.17 | 0.13 | | 0.1 | | | GAM |
| Radium 226 | 13982-67-7 | 0.81 | 0.12 | | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.4 | 0.13 | | | | | GAM |
| Thorium 232 | 7440-29-1 | 1.0 | 0.20 | | | | | GAM |

9312968.1649

CJ 5/10/93

| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/04/93 |

**TMA NORCAL**
**REPORTING GROUP 7128**

| N211148-16 | B07ND3 |
|---|---|

**DATA SHEET**

| | | | |
|---|---|---|---|
| SDG | 7128 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N211148-16 | Client sample id | B07ND3 |
| Dept sample id | 7128-016 | Matrix | SOIL |
| Received | 11/20/92 | Collected | 11/17/92 |
| % moisture | 16.1 | Chain of custody id | 199806_226 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 11 | 6.2 | 6 | 10 | — J | 80A |
| Gross Beta | Beta | 19 | 4.3 | 5 | 10 | | 80B |
| Uranium 233/234 | | 1.3 | 0.47 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.072 | 0.073 | 0.3 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 1.0 | 0.40 | 0.2 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0 | 0.024 | 0.05 | 0.05 | U | PU |
| Plutonium 239/240 | | -0.004 | 0.008 | 0.03 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | -0.008 | 0.033 | 0.07 | 0.05 | ~~U~~ UA | AM |
| Strontium 90 | 10098-97-2 | 0.24 | 0.31 | 1 | 1 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 17 | 1.2 | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.06 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.5 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.08 | | U | GAM |
| Cesium 137 | 10045-97-3 | U | | 0.06 | 0.05 | ~~U~~ UJ | GAM |
| Europium 152 | 14683-23-9 | U | | 0.1 | 0.1 | U | GAM |
| Europium 154 | 15585-10-1 | U | | 0.08 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 1.2 | 0.12 | | | | GAM |
| Thorium 228 | 14274-82-9 | 2.1 | 0.090 | | | | GAM |
| Thorium 232 | 7440-29-1 | 2.1 | 0.28 | | | | GAM |

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| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/04/93 |

N212017-02

**TMA NORCAL**
**REPORTING GROUP 7136**

**DATA SHEET**

B07NG3

SDG 7136
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N212017-02
Dept sample id 7136-002
Received 12/02/92
% moisture 34.2

Client sample id B07NG3
Matrix SOIL
Collected 11/22/92
Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS Q | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 3.5 | 4.4 | 6 | 10 | U | 80A |
| Gross Beta | Beta | 14 | 4.5 | 6 | 10 | | 80B |
| Uranium 233/234 | | 0.45 | 0.23 | 0.2 | 0.3 | — R | U |
| Uranium 235 | 15117-96-1 | 0.14 | 0.14 | 0.3 | 0.3 | U UR | U |
| Uranium 238 | 7440-61-1 | 0.75 | 0.30 | 0.2 | 0.3 | — R | U |
| Plutonium 238 | 13981-16-3 | -0.016 | 0.013 | 0.04 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.013 | 0.013 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0.006 | 0.017 | 0.03 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | -0.009 | 1.7 | 0.8 | 2 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 15 | 1.3 | | | | GAM |
| Iron 59 | | U | | 0.5 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 3 | | U | GAM |
| Cobalt 60 | 10198-40-0 | 0.38 | 0.083 | | 0.05 | | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.6 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.07 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.76 | 0.093 | | 0.05 | | GAM |
| Europium 152 | 14683-23-9 | 0.50 | 0.12 | | 0.1 | | GAM |
| Europium 154 | 15585-10-1 | U | | 0.2 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 0.64 | 0.14 | | | | GAM |
| Thorium 228 | 14274-82-9 | 0.85 | 0.079 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.84 | 0.29 | | | | GAM |

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Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/19/93

DATA SHEETS
Page 2
SUMMARY DATA SECTION
Page 16

**TMA NORCAL**
**REPORTING GROUP 7136**

N212017-05

**DATA SHEET**

B07NG6

| | | | |
|---|---|---|---|
| SDG | 7136 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N212017-05 | Client sample id | B07NG6 |
| Dept sample id | 7136-005 | Matrix | SOIL |
| Received | 12/02/92 | Collected | 11/22/92 |
| % moisture | 34.1 | Chain of custody id | 199806_226 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 2.6 | 3.8 | 5 | 10 | U | 80A |
| Gross Beta | Beta | 9.3 | 3.7 | 5 | 10 | J | 80B |
| Uranium 233/234 | | 0.85 | 0.30 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.024 | 0.048 | 0.2 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 0.71 | 0.26 | 0.2 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0.002 | 0.021 | 0.04 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.002 | 0.009 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | -0.002 | 0.019 | 0.04 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | 0.009 | 0.17 | 0.8 | 2 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 14 | 1.3 | | | | GAM |
| Iron 59 | | U | | 0.5 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 4 | | U | GAM |
| Cobalt 60 | 10198-40-0 | 0.37 | 0.084 | | 0.05 | | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.6 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.08 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.79 | 0.097 | | 0.05 | | GAM |
| Europium 152 | 14683-23-9 | 0.56 | 0.13 | | 0.1 | | GAM |
| Europium 154 | 15585-10-1 | U | | 0.2 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 0.66 | 0.14 | | | | GAM |
| Thorium 228 | 14274-82-9 | 0.90 | 0.082 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.94 | 0.30 | | | | GAM |

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| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/19/93 |

**TMA NORCAL**
**REPORTING GROUP 7136**

**N212017-04**

**DATA SHEET**

**B07NG5**

| | | | |
|---|---|---|---|
| SDG | 7136 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N212017-04 | Client sample id | B07NG5 |
| Dept sample id | 7136-004 | Matrix | SOIL |
| Received | 12/02/92 | Collected | 11/22/92 |
| % moisture | 31.3 | Chain of custody id | 199806_226 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALI-FIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 2.6 | 3.5 | 5 | 10 | U | 80A |
| Gross Beta | Beta | 13 | 3.9 | 5 | 10 | | 80B |
| Uranium 233/234 | | 0.49 | 0.20 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.019 | 0.039 | 0.1 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 0.41 | 0.17 | 0.1 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | -0.009 | 0.019 | 0.04 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.016 | 0.014 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0.016 | 0.023 | 0.04 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | -0.13 | 0.25 | 0.9 | 2 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 14 | 1.1 | | | | GAM |
| Iron 59 | | U | | 0.5 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 3 | | U | GAM |
| Cobalt 60 | 10198-40-0 | 0.12 | 0.064 | | 0.05 | | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.6 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.07 | | U | GAM |
| Cesium 137 | 10045-97-3 | 1.5 | 0.11 | | 0.05 | | GAM |
| Europium 152 | 14683-23-9 | 1.5 | 0.17 | | 0.1 | | GAM |
| Europium 154 | 15585-10-1 | 0.21 | 0.17 | | 0.1 | | GAM |
| Radium 226 | 13982-67-7 | 0.65 | 0.11 | | | | GAM |
| Thorium 228 | 14274-82-9 | 0.88 | 0.094 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.93 | 0.22 | | | | GAM |

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5/18/93

| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/19/93 |

EcoTek LSI
EcoTek Laboratory Services Incorporated

# ISOTOPIC PLUTONIUM

Client: Weston
LSDG: 30015

Client Reference No.: 92121888
Date Received: 1/5/93

| Lab Sample ID | Hanford Sample ID | Weston Sample ID | Date Sampled | Date Analyzed | Analyte | Matrix | Result pCi/g | 2 Sigma Error pCi/g | Detection Limit pCi/g |
|---|---|---|---|---|---|---|---|---|---|
| 3001501 | B07NG7 | 9212L888-001 | 11/22/92 | 3/9/93 | Pu-239/240 | Sediment | 7.07E-02 | 5.50E-02 | 3.03E-02 |
| 3001502 | B07NH7 | 9212L888-002 | 11/24/92 | 3/9/93 | Pu-239/240 | Sediment | ND | NA | 1.87E-01 |

ND = Not Detected
NA = Not Applicable

5/21/93

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**EcoTek LSI**
EcoTek Laboratory Services Incorporated

# ISOTOPIC URANIUM

*Client:* Weston
*LSDG:* 30015

*Client Reference No.:* 9212L888
*Date Received:* 1/5/93

| Lab Sample ID | Hanford Sample ID | Weston Sample ID | Date Sampled | Date Analyzed | Analyte | Matrix | Result pCi/g | 2 Sigma Error pCi/g | Detection Limit pCi/g | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| 3001501 | B07NG7 | 9212L888-001 | 11/22/92 | 3/11/93 | U-235 | Sediment | 2.17E-02 | 1.67E-02 | 9.30E-03 | |
| 3001501 | B07NG7 | 9212L888-001 | 11/22/92 | 3/11/93 | U-238 | Sediment | 4.64E-01 | 9.83E-02 | 9.27E-03 | ~~R~~ |
| 3001502 | B07NH7 | 9212L888-002 | 11/24/92 | 3/11/93 | U-235 | Sediment | 1.66E-02 | 1.50E-02 | 9.98E-03 | |
| 3001502 | B07NH7 | 9212L888-002 | 11/24/92 | 3/11/93 | U-238 | Sediment | 3.65E-01 | 8.62E-02 | 2.54E-02 | ~~R~~ |

R
J
~~U~~
J
~~U~~

*ND = Not Detected Above MDA*
*NA = Not Applicable*

5/21/93

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**EcoTek LSI**
EcoTek Laboratory Services Incorporated

# ISOTOPIC AMERICIUM

*Client:* Weston
*LSDG:* 30015

*Client Reference No.:* 92121888
*Date Received:* 1/5/93

| Lab Sample ID | Hanford Sample ID | Weston Sample ID | Date Sampled | Date Analyzed | Analyte | Matrix | Result pCi/g | 2 Sigma Error pCi/g | Detection Limit pCi/g | |
|---|---|---|---|---|---|---|---|---|---|---|
| 3001501 | 9212L888-001 | B07NG7 | 11/22/92 | 4/2/93 | Am-241 | Sediment | ND | NA | 8.00E-02 | U |
| 3001502 | 9212L888-002 | B07NH7 | 11/22/92 | 4/2/93 | Am-241 | Sediment | 2.42E-01 | 7.03E-02 | 2.94E-02 | J |

*ND = Not Detected Above MDA*
*NA = Not Applicable*

5/21/93

9312968.1656

EcoTek LSI
EcoTek Laboratory Services Incorporated

# STRONTIUM

*Client:* Weston
*LSDG:* 30015

*Client Reference No.:* 92121888
*Date Received:* 1/5/93

| Lab Sample ID | Hanford Sample ID | Weston Sample ID | Date Sampled | Date Analyzed | Analyte | Matrix | Result pCi/g | 2 Sigma Error pCi/g | Detection Limit pCi/g | Q |
|---|---|---|---|---|---|---|---|---|---|---|
| 3001501 | 92121888-001 | B07NG7 | 11/22/92 | 3/24/93 | Sr-90 | Sediment | ND | NA | 9.14E-01 | UJ |
| 3001502 | 92121888-002 | B07NH7 | 11/22/92 | 3/24/93 | Sr-90 | Sediment | ND | NA | 8.37E-01 | UJ |

ND = Not Detected Above MDA
NA = Not Applicable

5/21/93

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EcoTek LSI
EcoTek Laboratory Services Incorporated

# GROSS BETA

Client: Weston
LSDG: 30015

Client Reference No.: 9212L888
Date Received: 1/5/93

| Lab Sample ID | Hanford Sample ID | Weston Sample ID | Date Sampled | Date Analyzed | Analyte | Matrix | Result pCi/g | 2 Sigma Error pCi/g | Detection Limit pCi/g | |
|---|---|---|---|---|---|---|---|---|---|---|
| 3001501 | 9212L888-001 | B07NG7 | 11/22/92 | 4/11/93 | Gross Beta | Sediment | 1.60E+01 | 4.93E+00 | 3.05E+00 | J |
| 3001502 | 9212L888-002 | B07NH7 | 11/24/92 | 4/11/93 | Gross Beta | Sediment | 1.57E+01 | 4.38E+00 | 2.27E+00 | J |

ND = Not Detected
NA = Not Applicable

5/21/93

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**EcoTek LSI**
EcoTek Laboratory Services Incorporated

# GAMMA SPECIFIC

*Client:* Weston
*LSDG:* 30015

*Client Reference No.:* 92121888
*Date Received:* 1/5/93

| Lab Sample ID | Hanford Sample ID | Weston Sample ID | Date Sampled | Date Analyzed | Analyte | Matrix | Result pCi/g | 2 Sigma Error pCi/g | Detection Limit pCi/g | Q |
|---|---|---|---|---|---|---|---|---|---|---|
| 3001501 | 9212L888-001 | B07NG7 | 11/22/92 | 2/12/93 | Cobalt - 58 | Sediment | ND | NA | 1.74E-02 | UJ |
| 3001501 | 9212L888-001 | B07NG7 | 11/22/92 | 2/12/93 | Iron - 59 | Sediment | ND | NA | 5.44E-02 | UJ |
| 3001501 | 9212L888-001 | B07NG7 | 11/22/92 | 2/12/93 | Cobalt - 60 | Sediment | 1.11E-01 | 1.01E-02 | 2.60E-03 | J |
| 3001501 | 9212L888-001 | B07NG7 | 11/22/92 | 2/12/93 | Cesium - 134 | Sediment | ND | NA | 7.76E-03 | UJ |
| 3001501 | 9212L888-001 | B07NG7 | 11/22/92 | 2/12/93 | Cesium - 137 | Sediment | 1.61E+00 | 2.30E-01 | 1.07E-02 | J |
| 3001501 | 9212L888-001 | B07NG7 | 11/22/92 | 2/12/93 | Cerium - 144 | Sediment | ND | NA | 6.01E-02 | UJ |
| 3001501 | 9212L888-001 | B07NG7 | 11/22/92 | 2/12/93 | Europium - 152 | Sediment | 1.33E+00 | 6.20E-02 | 8.72E-02 | J |
| 3001501 | 9212L888-001 | B07NG7 | 11/22/92 | 2/12/93 | Europium - 154 | Sediment | 1.41E-01 | 1.81E-02 | 9.20E-03 | J |
| 3001501 | 9212L888-001 | B07NG7 | 11/22/92 | 2/12/93 | Europium - 155 | Sediment | ND | NA | 3.47E-02 | UJ |
| 3001501 | 9212L888-001 | B07NG7 | 11/22/92 | 2/12/93 | Radium - 223 | Sediment | ND | NA | 6.96E+00 | UJ |
| ~~3001501~~ | ~~9212L888-001~~ | ~~B07NG7~~ | ~~11/22/92~~ | ~~2/12/93~~ | ~~Radium - 224~~ | ~~Sediment~~ | ~~Half - Life too Short~~ | | | |
| 3001501 | 9212L888-001 | B07NG7 | 11/22/92 | 2/12/93 | Potassium-40 | Sediment | 1.52E+01 | 1.60E+00 | 7.72E-02 | J |
| 3001501 | 9212L888-001 | B07NG7 | 11/22/92 | 2/12/93 | Thorium-231 | Sediment | 4.54E-01 | 1.28E-01 | 1.43E-01 | J |
| 3001501 | 9212L888-001 | B07NG7 | 11/22/92 | 2/12/93 | Thorium-234 | Sediment | 8.12E-01 | 1.79E-01 | 3.43E-01 | J |
| 3001501 | 9212L888-001 | B07NG7 | 11/22/92 | 2/12/93 | Neptunium-237 | Sediment | 6.06E-01 | 8.90E-02 | 6.22E-02 | J |
| 3001502 | 9212L888-001 | B07NH7 | 11/22/92 | 2/12/93 | Cobalt - 58 | Sediment | ND | NA | 1.40E-02 | UJ |
| 3001502 | 9212L888-001 | B07NH7 | 11/22/92 | 2/12/93 | Iron - 59 | Sediment | ND | NA | 5.42E-02 | UJ |
| 3001502 | 9212L888-001 | B07NH7 | 11/22/92 | 2/12/93 | Cobalt - 60 | Sediment | 2.16E-01 | 1.89E-02 | 7.50E-03 | J |
| 3001502 | 9212L888-001 | B07NH7 | 11/22/92 | 2/12/93 | Cesium - 134 | Sediment | ND | NA | 5.97E-03 | UJ |
| 3001502 | 9212L888-001 | B07NH7 | 11/22/92 | 2/12/93 | Cesium - 137 | Sediment | 5.19E-01 | 6.61E-02 | 6.40E-03 | J |
| 3001502 | 9212L888-001 | B07NH7 | 11/22/92 | 2/12/93 | Cerium - 144 | Sediment | ND | NA | 4.95E-02 | UJ |
| 3001502 | 9212L888-001 | B07NH7 | 11/22/92 | 2/12/93 | Europium - 152 | Sediment | 2.69E-01 | 2.54E-02 | 7.63E-02 | J |
| 3001502 | 9212L888-001 | B07NH7 | 11/22/92 | 2/12/93 | Europium - 154 | Sediment | 4.11E-02 | 7.49E-03 | 8.10E-03 | J |
| 3001502 | 9212L888-001 | B07NH7 | 11/22/92 | 2/12/93 | Europium - 155 | Sediment | 4.35E-02 | 1.94E-02 | 2.28E-02 | J |
| 3001502 | 9212L888-001 | B07NH7 | 11/22/92 | 2/12/93 | Radium - 223 | Sediment | ND | NA | 3.26E-02 | UJ |
| ~~3001502~~ | ~~9212L888-001~~ | ~~B07NH7~~ | ~~11/22/92~~ | ~~2/12/93~~ | ~~Radium - 224~~ | ~~Sediment~~ | ~~Half - Life too short~~ | | | |
| 3001502 | 9212L888-001 | B07NH7 | 11/22/92 | 2/12/93 | Potassium-40 | Sediment | 1.78E+01 | 2.17E+00 | 5.90E-02 | J |
| 3001502 | 9212L888-001 | B07NH7 | 11/22/92 | 2/12/93 | Radium-228 | Sediment | 5.42E-01 | 3.62E-02 | 3.04E-02 | J |
| 3001502 | 9212L888-001 | B07NH7 | 11/22/92 | 2/12/93 | Thorium-231 | Sediment | 2.94E-01 | 9.82E-02 | 4.45E-02 | J |
| 3001502 | 9212L888-001 | B07NH7 | 11/22/92 | 2/12/93 | Thorium-234 | Sediment | 6.87E-01 | 1.65E-01 | 2.44E-01 | J |
| 3001502 | 9212L888-001 | B07NH7 | 11/22/92 | 2/12/93 | Neptunium-237 | Sediment | 4.82E-01 | 1.06E-01 | 4.93E-02 | J |

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*ND = Not DetectedAbove MDA*
*NA = Not Applicable*

5/21/93

CRB 4/18/93

**TMA NORCAL**
**REPORTING GROUP 7131**

N211152-19

B07NG1

**DATA SHEET**

SDG 7131
Contact Dinkar Kharkar
Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N211152-19
Dept sample id 7131-019
Received 12/02/92
% moisture 28.6
Client sample id B07NG1
Matrix SOIL
Collected 11/22/92
Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 2.7 | 4.4 | 6 | 10 | U | 80A |
| Gross Beta | Beta | 14 | 3.9 | 5 | 10 | | 80B |
| Uranium 233/234 | | 0.45 | 0.23 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.081 | 0.11 | 0.2 | 0.3 | ~~U~~ UR | U |
| Uranium 238 | 7440-61-1 | 0.67 | 0.24 | 0.2 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0.006 | 0.024 | 0.05 | 0.05 | U | PU |
| Plutonium 239/240 | | -0.003 | 0.006 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0.007 | 0.014 | 0.02 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | 0 | 0.45 | 0.8 | | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 13 | 0.82 | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.04 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.1 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.3 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.05 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.11 | 0.035 | | 0.05 | ~~—~~ J | GAM |
| Europium 152 | 14683-23-9 | U | | 0.09 | 0.1 | ~~U~~ UJ | GAM |
| Europium 154 | 15585-10-1 | U | | 0.06 | 0.1 | ~~U~~ UJ | GAM |
| Radium 226 | 13982-67-7 | 0.66 | 0.080 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.1 | 0.072 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.91 | 0.16 | | | | GAM |

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gj 5/18/93

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/11/93

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**TMA NORCAL**
**REPORTING GROUP 7131**

N211152-20

**DATA SHEET**

B07NG2

| | | | |
|---|---|---|---|
| SDG | 7131 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N211152-20 | Client sample id | B07NG2 |
| Dept sample id | 7131-020 | Matrix | SOIL |
| Received | 12/02/92 | Collected | 11/22/92 |
| % moisture | 20.5 | Chain of custody id | 199806_226 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 15 | 4.8 | 3 | 10 | | 80A |
| Gross Beta | Beta | 16 | 4.3 | 5 | 10 | | 80B |
| Uranium 233/234 | | 0.98 | 0.30 | 0.1 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.13 | 0.086 | 0.2 | 0.3 | ~~U~~ UL | U |
| Uranium 238 | 7440-61-1 | 0.68 | 0.23 | 0.1 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0.003 | 0.007 | 0.02 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.002 | 0.007 | 0.01 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | -0.004 | 0.012 | 0.03 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | 0.40 | 0.26 | 0.9 | | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 15 | 0.75 | | | | GAM |
| Iron 59 | | U | | 0.2 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.04 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.1 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.4 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.05 | | U | GAM |
| Cesium 137 | 10045-97-3 | U | | 0.04 | 0.05 | ~~U~~ UJ | GAM |
| Europium 152 | 14683-23-9 | U | | 0.08 | 0.1 | ~~U~~ UJ | GAM |
| Europium 154 | 15585-10-1 | U | | 0.06 | 0.1 | ~~U~~ UJ | GAM |
| Radium 226 | 13982-67-7 | 0.95 | 0.090 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.9 | 0.085 | | | | GAM |
| Thorium 232 | 7440-29-1 | 1.5 | 0.18 | | | | GAM |

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gj 5/18/93

| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/11/93 |

**TMA NORCAL**
**REPORTING GROUP 7131**

N211152-18

B07NG0

# DATA SHEET

SDG 7131
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N211152-18
Dept sample id 7131-018
Received 12/02/92
% moisture 32.0

Client sample id B07NG0
Matrix SOIL
Collected 11/22/92
Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 5.2 | 4.4 | 5 | 10 | J | 80A |
| Gross Beta | Beta | 13 | 4.3 | 6 | 10 | | 80B |
| Uranium 233/234 | | 0.53 | 0.21 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0 | 0.049 | 0.2 | 0.3 | ~~U~~ UR | U |
| Uranium 238 | 7440-61-1 | 0.57 | 0.21 | 0.2 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0.005 | 0.024 | 0.04 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.005 | 0.009 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0.004 | 0.016 | 0.03 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | 0.25 | 1.2 | 0.9 | | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 13 | 1.0 | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.05 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.1 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.8 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.06 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.27 | 0.056 | | 0.05 | — J | GAM |
| Europium 152 | 14683-23-9 | U | | 0.09 | 0.1 | ~~U~~ UJ | GAM |
| Europium 154 | 15585-10-1 | U | | 0.06 | 0.1 | ~~U~~ UJ | GAM |
| Radium 226 | 13982-67-7 | 0.71 | 0.073 | | | | GAM |
| Thorium 228 | 14274-82-9 | 0.91 | 0.062 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.89 | 0.20 | | | | GAM |

93129968.1662

gj 5/14/93

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/11/93

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**TMA NORCAL**
**REPORTING GROUP 7136**

N212017-01

B07NF9

**DATA SHEET**

| | | | |
|---|---|---|---|
| SDG | 7136 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N212017-01 | Client sample id | B07NF9 |
| Dept sample id | 7136-001 | Matrix | SOIL |
| Received | 12/02/92 | Collected | 11/22/92 |
| % moisture | 37.8 | Chain of custody id | 199806_226 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 5.4 | 3.9 | 4 | 10 | J | 80A |
| Gross Beta | Beta | 12 | 4.1 | 6 | 10 | | 80B |
| Uranium 233/234 | | 0.77 | 0.26 | 0.1 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.042 | 0.042 | 0.2 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 0.96 | 0.27 | 0.1 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0.004 | 0.013 | 0.03 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.004 | 0.008 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | -0.004 | 0.012 | 0.02 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | -0.15 | 0.23 | 0.8 | 2 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 13 | 1.1 | | | | GAM |
| Iron 59 | | U | | 0.5 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 3 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.07 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.6 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.08 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.45 | 0.073 | | 0.05 | | GAM |
| Europium 152 | 14683-23-9 | 0.32 | 0.17 | | 0.1 | | GAM |
| Europium 154 | 15585-10-1 | U | | 0.2 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 0.90 | 0.15 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.4 | 0.11 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.91 | 0.26 | | | | GAM |

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DATA SHEETS
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| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/19/93 |

**TMA NORCAL**
**REPORTING GROUP 7136**

**N212017-03**

**DATA SHEET**

**B07NG4**

| | | | |
|---|---|---|---|
| SDG | 7136 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N212017-03 | Client sample id | B07NG4 |
| Dept sample id | 7136-003 | Matrix | SOIL |
| Received | 12/02/92 | Collected | 11/22/92 |
| % moisture | 25.5 | Chain of custody id | 199806_226 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 4.3 | 4.2 | 5 | 10 | U | 80A |
| Gross Beta | Beta | 15 | 4.0 | 5 | 10 | | 80B |
| Uranium 233/234 | | 0.35 | 0.22 | 0.3 | 0.3 | — R | U |
| Uranium 235 | 15117-96-1 | 0.17 | 0.17 | 0.3 | 0.3 | ~~U~~ UR | U |
| Uranium 238 | 7440-61-1 | 0.53 | 0.30 | 0.3 | 0.3 | — R | U |
| Plutonium 238 | 13981-16-3 | -0.008 | 0.011 | 0.03 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.005 | 0.011 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0.002 | 0.022 | 0.04 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | -0.091 | 2.1 | 0.9 | 2 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 15 | 1.2 | | | | GAM |
| Iron 59 | | U | | 0.5 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 3 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.07 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.6 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.07 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.19 | 0.076 | | 0.05 | | GAM |
| Europium 152 | 14683-23-9 | U | | 0.1 | 0.1 | U | GAM |
| Europium 154 | 15585-10-1 | U | | 0.09 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 0.90 | 0.12 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.3 | 0.087 | | | | GAM |
| Thorium 232 | 7440-29-1 | 1.2 | 0.24 | | | | GAM |

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5/18/93

| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/19/93 |

**TMA NORCAL**
**REPORTING GROUP 7131**

**DATA SHEET**

N211152-14

B07NF5

SDG 7131
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N211152-14
Dept sample id 7131-014
Received 11/25/92
% moisture 20.3

Client sample id B07NF5
Matrix SOIL
Collected 11/20/92
Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS Q | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 8.3 | 3.9 | 4 | 10 | J | 80A |
| Gross Beta | Beta | 16 | 4.0 | 5 | 10 | | 80B |
| Uranium 233/234 | | 0.85 | 0.29 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.054 | 0.055 | 0.2 | 0.3 | ~~U~~ UR | U |
| Uranium 238 | 7440-61-1 | 0.54 | 0.24 | 0.2 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0.011 | 0.057 | 0.1 | 0.05 | ~~U~~ UR | PU |
| Plutonium 239/240 | | 0.011 | 0.011 | 0.04 | 0.05 | ~~U~~ UR | PU |
| Americium 241 | 14596-10-2 | -0.002 | 0.010 | 0.02 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | 0 | 0.86 | 0.7 | | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 16 | 1.1 | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.06 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.1 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.5 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.07 | | U | GAM |
| Cesium 137 | 10045-97-3 | U | | 0.05 | 0.05 | ~~U~~ UJ | GAM |
| Europium 152 | 14683-23-9 | U | | 0.1 | 0.1 | ~~U~~ UJ | GAM |
| Europium 154 | 15585-10-1 | U | | 0.07 | 0.1 | ~~U~~ UJ | GAM |
| Radium 226 | 13982-67-7 | 0.78 | 0.11 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.3 | 0.076 | | | | GAM |
| Thorium 232 | 7440-29-1 | 1.2 | 0.22 | | | | GAM |

9312969.1695

CJ 5/10/93

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/11/93

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**TMA NORCAL**
**REPORTING GROUP 7131**

N211152-15

B07NF6

# DATA SHEET

SDG 7131
Contact Dinkar Kharkar
Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N211152-15
Dept sample id 7131-015
Received 11/25/92
% moisture 23.6
Client sample id B07NF6
Matrix SOIL
Collected 11/20/92
Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 6.1 | 4.1 | 5 | 10 | J | 80A |
| Gross Beta | Beta | 14 | 3.9 | 5 | 10 | | 80B |
| Uranium 233/234 | | 0.53 | 0.19 | 0.1 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.018 | 0.036 | 0.1 | 0.3 | ~~U~~ UR | U |
| Uranium 238 | 7440-61-1 | 0.74 | 0.22 | 0.1 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | -0.079 | 0.054 | 0.1 | 0.05 | ~~U~~ UR | PU |
| Plutonium 239/240 | | 0.007 | 0.026 | 0.05 | 0.05 | ~~U~~ UR | PU |
| Americium 241 | 14596-10-2 | 0.028 | 0.042 | 0.08 | 0.05 | ~~U~~ UR | AM |
| Strontium 90 | 10098-97-2 | -0.017 | 0.51 | 0.9 | | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 14 | 1.1 | | | | GAM |
| Iron 59 | | U | | 0.4 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.06 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.6 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.08 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.082 | 0.060 | | 0.05 | — J | GAM |
| Europium 152 | 14683-23-9 | U | | 0.1 | 0.1 | ~~U~~ UJ | GAM |
| Europium 154 | 15585-10-1 | U | | 0.08 | 0.1 | ~~U~~ UJ | GAM |
| Radium 226 | 13982-67-7 | 1.2 | 0.14 | | | | GAM |
| Thorium 228 | 14274-82-9 | 2.5 | 0.091 | | | | GAM |
| Thorium 232 | 7440-29-1 | 2.5 | 0.24 | | | | GAM |

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DATA SHEETS
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Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/11/93

**TMA NORCAL**
**REPORTING GROUP 7131**

N211152-16

**DATA SHEET**

B07NF7

SDG 7131
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N211152-16
Dept sample id 7131-016
Received 11/25/92
% moisture 23.5

Client sample id B07NF7
Matrix SOIL
Collected 11/20/92
Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 8.4 | 4.2 | 4 | 10 | J | 80A |
| Gross Beta | Beta | 15 | 4.0 | 5 | 10 | | 80B |
| Uranium 233/234 | | 1.0 | 0.31 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.024 | 0.049 | 0.2 | 0.3 | ~~U~~ UR | U |
| Uranium 238 | 7440-61-1 | 0.58 | 0.21 | 0.2 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0.011 | 0.023 | 0.05 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.014 | 0.011 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | -0.005 | 0.011 | 0.02 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | -0.27 | 0.32 | 0.9 | | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 15 | 0.92 | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.05 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.1 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.4 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.06 | | U | GAM |
| Cesium 137 | 10045-97-3 | U | | 0.04 | 0.05 | ~~U~~ UJ | GAM |
| Europium 152 | 14683-23-9 | U | | 0.1 | 0.1 | ~~U~~ UJ | GAM |
| Europium 154 | 15585-10-1 | U | | 0.06 | 0.1 | ~~U~~ UJ | GAM |
| Radium 226 | 13982-67-7 | 0.63 | 0.091 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.3 | 0.077 | | | | GAM |
| Thorium 232 | 7440-29-1 | 1.0 | 0.19 | | | | GAM |

93129968.1667

gj 5/18/93

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/11/93

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**TMA NORCAL**
**REPORTING GROUP 7131**

N211152-17

B07NF8

# DATA SHEET

SDG 7131
Contact Dinkar Kharkar
Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N211152-17
Dept sample id 7131-017
Received 11/25/92
% moisture 21.4
Client sample id B07NF8
Matrix SOIL
Collected 11/20/92
Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 7.5 | 4.0 | 3 | 10 | J | 80A |
| Gross Beta | Beta | 16 | 4.0 | 5 | 10 | | 80B |
| Uranium 233/234 | | 1.0 | 0.24 | 0.09 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.072 | 0.058 | 0.1 | 0.3 | ~~U~~ UR | U |
| Uranium 238 | 7440-61-1 | 0.80 | 0.21 | 0.09 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | -0.028 | 0.022 | 0.06 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.003 | 0.017 | 0.03 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0.006 | 0.016 | 0.03 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | -0.39 | 0.92 | 0.8 | | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 12 | 0.86 | | | | GAM |
| Iron 59 | | U | | 0.3 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.04 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.1 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.4 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.06 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.14 | 0.051 | | 0.05 | ~~U~~ J | GAM |
| Europium 152 | 14683-23-9 | U | | 0.09 | 0.1 | ~~U~~ UJ | GAM |
| Europium 154 | 15585-10-1 | U | | 0.06 | 0.1 | ~~U~~ UJ | GAM |
| Radium 226 | 13982-67-7 | 0.60 | 0.088 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.1 | 0.063 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.99 | 0.20 | | | | GAM |

93162968.1660

gj 3/18/93

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/11/93

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**TMA NORCAL**
**REPORTING GROUP 7131**

**DATA SHEET**

N211152-09

B07NC8

SDG 7131
Contact Dinkar Kharkar
Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N211152-09
Dept sample id 7131-009
Received 11/25/92
% moisture 0.1
Client sample id B07NC8
Matrix SOIL
Collected 11/20/92
Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 0.58 | 3.6 | 5 | 10 | U | 80A |
| Gross Beta | Beta | 27 | 4.7 | 5 | 10 | | 80B |
| Uranium 233/234 | | 0.16 | 0.14 | 0.2 | 0.3 | U | U |
| Uranium 235 | 15117-96-1 | 0 | 0.054 | 0.2 | 0.3 | ~~U~~ UR | U |
| Uranium 238 | 7440-61-1 | 0.18 | 0.14 | 0.2 | 0.3 | U | U |
| Plutonium 238 | 13981-16-3 | 0.005 | 0.022 | 0.04 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.027 | 0.022 | 0.03 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | -0.014 | 0.045 | 0.09 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | 0.014 | 0.086 | 0.1 | | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 22 | 1.1 | | | | GAM |
| Iron 59 | | U | | 0.4 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.05 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.4 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.05 | | U | GAM |
| Cesium 137 | 10045-97-3 | U | | 0.04 | 0.05 | ~~U~~ UJ | GAM |
| Europium 152 | 14683-23-9 | U | | 0.09 | 0.1 | ~~U~~ UJ | GAM |
| Europium 154 | 15585-10-1 | U | | 0.06 | 0.1 | ~~U~~ UJ | GAM |
| Radium 226 | 13982-67-7 | 0.28 | 0.070 | | | | GAM |
| Thorium 228 | 14274-82-9 | 0.55 | 0.084 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.51 | 0.22 | | | | GAM |

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Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/11/93

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**TMA NORCAL**
**REPORTING GROUP 7131**

N211152-05

**DATA SHEET**

B07ND5

SDG 7131 — Client Westinghouse Hanford
Contact Dinkar Kharkar — Contract MBH-SVV-069262

Lab sample id N211152-05 — Client sample id B07ND5
Dept sample id 7131-005 — Matrix SOIL
Received 11/24/92 — Collected 11/19/92
% moisture 23.5 — Chain of custody id 199806_226

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 2.9 | 3.2 | 4 | 10 | U | 80A |
| Gross Beta | Beta | 20 | 4.4 | 6 | 10 | | 80B |
| Uranium 233/234 | | 0.49 | 0.22 | 0.2 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.051 | 0.052 | 0.2 | 0.3 | ~~U~~ UL | U |
| Uranium 238 | 7440-61-1 | 0.36 | 0.18 | 0.2 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | -0.008 | 0.017 | 0.04 | 0.05 | U | PU |
| Plutonium 239/240 | | 0.006 | 0.011 | 0.02 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | 0 | 0.016 | 0.04 | 0.05 | U | AM |
| Strontium 90 | 10098-97-2 | 0.068 | 0.091 | 0.2 | | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 15 | 1.1 | | | | GAM |
| Iron 59 | | U | | 0.4 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | 0.41 | 0.073 | | 0.05 | | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.5 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.05 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.74 | 0.075 | | 0.05 | J | GAM |
| Europium 152 | 14683-23-9 | 0.48 | 0.089 | | 0.1 | J | GAM |
| Europium 154 | 15585-10-1 | U | | 0.2 | 0.1 | ~~U~~ UJ | GAM |
| Radium 226 | 13982-67-7 | 0.42 | 0.11 | | | | GAM |
| Thorium 228 | 14274-82-9 | 0.46 | 0.048 | | | | GAM |
| Thorium 232 | 7440-29-1 | 0.50 | 0.21 | | | | GAM |

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GJ 5/18/93

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.23
Report date 03/11/93

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**TMA NORCAL**
REPORTING GROUP 7128

**DATA SHEET**

N211148-01

B07NB6

| | | | |
|---|---|---|---|
| SDG | 7128 | Client | Westinghouse Hanford |
| Contact | Dinkar Kharkar | Contract | MBH-SVV-069262 |
| Lab sample id | N211148-01 | Client sample id | B07NB6 |
| Dept sample id | 7128-001 | Matrix | SOIL |
| Received | 11/17/92 | Collected | 11/12/92 |
| % moisture | 27.8 | Chain of custody id | 199806_226 |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|---|---|---|---|---|---|---|---|
| Gross Alpha | Alpha | 4.5 | 5.7 | 7 | 10 | ~~U~~ UJ | 80A |
| Gross Beta | Beta | 22 | 4.5 | 6 | 10 | | 80B |
| Uranium 233/234 | | 0.67 | 0.22 | 0.1 | 0.3 | | U |
| Uranium 235 | 15117-96-1 | 0.090 | 0.073 | 0.1 | 0.3 | U | U |
| Uranium 238 | 7440-61-1 | 0.88 | 0.26 | 0.1 | 0.3 | | U |
| Plutonium 238 | 13981-16-3 | 0.004 | 0.034 | 0.07 | 0.05 | U | PU |
| Plutonium 239/240 | | 0 | 0.008 | 0.03 | 0.05 | U | PU |
| Americium 241 | 14596-10-2 | -0.003 | 0.027 | 0.06 | 0.05 | ~~U~~ UR | AM |
| Strontium 90 | 10098-97-2 | -0.004 | 1.4 | 0.9 | 1 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 16 | 1.2 | | | | GAM |
| Iron 59 | | U | | 0.4 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 2 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.06 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 0.6 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.07 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.18 | 0.065 | | 0.05 | — J | GAM |
| Europium 152 | 14683-23-9 | 0.10 | 0.080 | | 0.1 | | GAM |
| Europium 154 | 15585-10-1 | U | | 0.2 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 0.74 | 0.13 | | | | GAM |
| Thorium 228 | 14274-82-9 | 1.2 | 0.095 | | | | GAM |
| Thorium 232 | 7440-29-1 | 1.1 | 0.24 | | | | GAM |

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OJ 5/10/93

| | |
|---|---|
| Lab id | TMAN |
| Protocol | WHC-HEIS |
| Version | Ver 1.0 |
| Form | DVD-DS |
| Version | 2.23 |
| Report date | 03/04/93 |