



Final Status Survey Final Report Phase III

**Appendix A7
Survey Unit Release Record
9531-0000, South End of Peninsula**

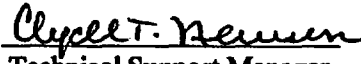
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CYAPCO
FINAL STATUS SURVEY RELEASE RECORD
SOUTHERN END OF PENINSULA
SURVEY UNIT 9531-0000

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1. SURVEY UNIT DESCRIPTION

Survey Unit 9531-0000 (Southern End of Peninsula) is designated as Final Status Survey (FSS) Class 3 and consists of 108,222 m² (26.8 acres) of uninhabited open land located approximately 0.77 miles from the reference coordinate system benchmark used at Haddam Neck Plant (HNP) (see Attachment 1, Figure 1). The area is mostly wetlands and wooded lowlands with large clumps of heavy brush. The topography of the southern portion of the peninsula is somewhat flat with sloping banks to the Discharge Canal and Connecticut River. The soil is mostly sand and the area is covered with dense grass or brush with some spots being heavily wooded. Survey Unit 9531-0000 is bounded on the east by the Discharge Canal, on the south and west by the Connecticut River, with a portion of Survey Area 9530 bounding the north perimeter. A small pond is contained in the interior of the survey unit. An old roadway allows for access to the end of the peninsula.

The reference coordinates associated with this survey unit are E020 through E008 by S125 through S160 (refer to License Termination Plan (LTP) Section 5.4.4). The reference coordinates provide the maximum dimensions of a rectangle containing this survey unit. Some areas contained in this rectangle may not be part of this survey unit. The boundary of the survey unit was defined using a Global Positioning System (GPS).

There are no known events potentially impacting this survey unit. The historical files indicate that there was evidence of past soil disturbance in this survey unit as indicated by mounds along the roadway. There was also evidence of past use of the peninsula for recreational use (e.g., fishing) and there is debris along the bank and in the lowland area adjacent to the Connecticut River.

There are several standing, capped pipes in the survey unit indicating that test wells were sunk sometime in the past. The objective and date of installation could not be established. There is a ten inch (10") capped metal pipe in the interior of this survey unit. A review of site drawings (Property Plan 10899-FX-1R) show this to be an old industrial well sunk in 1963 by the S. B. Church Company. A discussion with a contract hydro-geologist indicates that this well was never used due to insufficient well yield.

In Section 5.4.7.1 of the LTP, Equation 5-1 expresses the total dose contribution from three (3) components; soil contribution, existing groundwater contribution and future groundwater contribution. The survey data results for this release record address the dose contribution due to soil as provided in LTP Equation 5-1. This survey unit is not considered impacted by existing groundwater radioactive contamination as the survey unit is outside the capture zone perimeter for an affected monitoring well. The dose contribution from existing groundwater, the second component of Equation 5-1, is therefore zero. This survey unit is not considered impacted by future groundwater radioactive contamination, as there are no underground structures, systems or components

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containing residual radioactive material within the groundwater saturated zone in the area. The dose contribution from future groundwater, the third component of Equation 5-1, is therefore zero.

2. CLASSIFICATION BASIS

The survey unit was classified in accordance with Procedure RPM 5.1-10, "*Survey Unit Classification*." The historical information, scoping analyses and characterization results provided sufficient data to designate Survey Unit 9531-0000 as Class 3 in August 2001.

The "*Classification Basis Summary*" conducted for Survey Unit 9531-0000 consisted of:

- a) A review of the 10CFR50.75 (g) (1) database,
- b) A review of the "*Initial Characterization Report*" and the "*Historic Site Assessment Supplement*,"
- c) Historic and current survey records review,
- d) Visual inspections and a "walkdown."

A review of the 10CFR50.75 (g) (1) database report identifies seven (7) documents associated with or relating to this survey area.

- a) Event PIR 80-37: Contamination was documented to be present in an area outside the restricted area. Small areas of low-level contamination were found on the facility grounds through routine survey in a normally non-radioactive area. The areas were cleaned up in 1980. The records show that no contamination was found in 9531-0000.
- b) Radiological Assessment Branch (RAB) memo NE-86-RA-1142 (November 1986): Radiological analysis of the Discharge Canal. Memo discusses dredging the Discharge Canal and identifies a proposed location for the dredge spoils. The storage location for these dredged materials was a disposal area with sloping berm located in an adjacent Survey Area 9530. NE-86-RA-1142 is not directly associated with Survey Area 9531, however, related documents (e.g., NE-86-L-1229) and drawings indicate that approximately 12,000 cubic yards of dredged materials from 1979 were removed from the disposal area and spread over the peninsula in nearby Survey Unit 9530-0004.
- c) Condition Report (CR) 02-0133 identified three (3) rusty drums that were found on the peninsula during scoping surveys. These barrels were surveyed for radioactivity and meet the release criteria.
- d) Condition Report (CR) 02-0185: gamma spectroscopy reported a Co-60 result meeting the accepted criteria for detection (i.e., a result greater than two standard deviations uncertainty). The identification of more plant-related radioactivity led to a shift of the survey area boundary to remove approximately two (2) acres from survey area 9531. The two

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(2) acres were included in adjacent survey area 9530 which already contains several survey units with the potential to contain plant-related radioactivity.

- e) Condition Report 03-1020: Unusually high rainfall and tide have introduced Discharge Canal water into the middle of the peninsula. Subsequent surveys did not identify significant change from the FSS results.
- f) Condition Report 04-0456: Unusually high rainfall and tide have introduced Discharge Canal water into several areas including the peninsula. Subsequent surveys did not identify a significant change from the FSS results.
- g) Memo ISC 05-045: Periodic surveillance following final status survey. Surveillance is required periodically by the LTP to ensure the radiological condition does not significantly change from the FSS results. The memo documents no negative change in the radiological status.

A review of the *"Initial and Supplemental Characterization Reports"* as well as the previous *"Classification Basis Summaries"* provided no additional information pertinent to classification.

A characterization survey plan was initiated and executed by Site Closure personnel in March and April 2002 to determine existing conditions and obtain radiological data for Final Status Survey (FSS). Radiological results from the recent surveys indicated that plant related radioactive materials in soil (e.g., Co-60) were below the Minimum Detectable Activity (MDA). No areas of elevated radioactivity were identified in the survey unit.

Eighteen (18) samples were taken initially in accordance with the plan. Of the 18 samples initially taken, seventeen (17) sample results were used to determine the variability of radioactivity concentrations in this survey unit. The identification of Co-60 meeting the accepted criteria for detection in the remaining sample led to an investigation, the identification of more Co-60 and ultimately a shift of the survey unit area boundary to remove approximately two (2) acres from Survey Unit 9531-0000 into adjacent survey units. Table 1 provides an overview of the statistical quantities from the seventeen (17) samples taken during the survey. The Co-60 reported results did not meet the accepted criteria for detection in this set of samples.

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**Table 1 – Basic Statistical Quantities for Cesium-137 from the
Characterization Survey**

Parameter	Cs-137 (pCi/g)
Minimum Value:	2.10E-02
Maximum Value:	2.72E-01
Mean:	1.32E-01
Median:	1.41E-01
Standard Deviation:	6.98E-02

The FSS Engineer performed several visual inspections and walkdowns during 2002 to assess the physical condition of the survey unit, evaluate access points and travel paths and identify potentially hazardous conditions.

Assessment of the groundwater impact is discussed in Section 1 and Section 13. The classification basis shows that the expected residual radioactivity in the survey unit would be below the site remediation criteria and are consistent with procedural guidance, thereby sufficient to justify the final designation as Class 3.

3. DATA QUALITY OBJECTIVES (DQO)

FSS design and planning is based on the Data Quality Objective (DQO) process as described by the LTP, Procedure RPM 5.1-11, "*Preparation of Final Status Survey Plan*," and the "*Multi-Agency Radiation Survey and Site Investigation Manual*" (MARSSIM). A summary of the main features of the DQO process are provided herein.

The DQO process incorporated hypothesis testing and probabilistic sampling distributions to control decision errors during data analysis. Hypothesis testing is a process based on the scientific method that compares a baseline condition to an alternate condition. The baseline condition is technically known as the null hypothesis. Hypothesis testing rests on the premise that the null hypothesis is true and that sufficient evidence must be provided for rejection. In designing the survey plan, the underlying assumption, or null hypothesis was that residual activity in the survey unit exceeded the release criteria. Rejection of the null hypothesis would satisfy the release criteria objective of the FSS. Probabilistic sampling is a preferred method to select a sample so that each item in the population being studied has a known likelihood of being included in the sample. Probabilistic sampling might include simple random sampling where every sample has the same chance of being included, or systematic random sampling where samples are arranged in some order and a random starting point is selected.

The primary objective of the Final Status Survey Plan (FSSP) was to demonstrate that the level of residual radioactivity in Survey Unit 9531-0000 did not exceed the release criteria specified in the LTP and that the potential dose from residual radioactivity is As Low As Reasonably Achievable (ALARA).

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A fundamental precursor to survey design is to establish a relationship between the release criteria and some measurable quantity. This is done through the development of Derived Concentration Guideline Values (DCGLs). The DCGLs represent average levels of radioactivity above background levels and are presented in terms of surface or mass activity concentrations. Chapter 6 of the LTP describes in detail the modeling used to develop the DCGLs for soil (called Base Case Soil DCGL), existing groundwater radioactivity and additional future groundwater radioactivity from building basements and footings.

A reduction to the Base Case Soil DCGLs provided in Chapter 6 of the LTP must be performed to ensure compliance with the release criteria of twenty-five millirem (25 mrem) in a year Total Effective Dose Equivalent (TEDE) when all three pathways (soil, existing groundwater and future groundwater) are potentially present. Chapter 5 of the LTP shows a compliance formula, Equation 5-1, for including the total dose from the three media. The reduced DCGL is called the Operational DCGL whose relationship to the Base Case Soil DCGL is shown by Equation 5-3 of the LTP. The Base Case Soil DCGL for Cs-137 and the DCGLs for all the other radionuclides potentially present in soil were administratively reduced by about 60% to ensure compliance with the 25 mrem in a year TEDE criterion (Table 2).

**Table 2 – Radionuclide Specific Base Case Soil DCGL, Operational DCGLs
and Required Minimum Detectable Concentrations**

Radionuclide	Base Case Soil DCGL (pCi/g) ⁽¹⁾	Operational DCGL (pCi/g) ⁽²⁾	Required MDC (pCi/g) ⁽³⁾
H-3	4.12E+02	1.65E+02	1.65E+01
C-14	5.66E+00	2.26E+00	2.26E-01
Mn-54	1.74E+01	6.96E+00	6.96E-01
Fe-55	2.74E+04	1.10E+04	1.10E+03
Co-60	3.81E+00	1.52E+00	1.52E-01
Ag-108m	7.14E+00	2.86E+00	2.86E-01
Ni-63	7.23E+02	2.89E+02	2.89E+01
Sr-90	1.55E+00	6.20E-01	6.20E-02
Nb-94	7.12E+00	2.85E+00	2.85E-01
Tc-99	1.26E+01	5.04E+00	5.04E-01
Cs-134	4.67E+00	1.87E+00	1.87E-01
Cs-137	7.91E+00	3.16E+00	3.16E-01
Eu-152	1.01E+01	4.04E+00	4.04E-01
Eu-154	9.29E+00	3.72E+00	3.72E-01
Eu-155	3.92E+02	1.57E+02	1.57E+01
Pu-238	2.96E+01	1.18E+01	1.18E+00
Pu-239/240	2.67E+01	1.07E+01	1.07E+00

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**Table 2 – Radionuclide Specific Base Case Soil DCGL, Operational DCGLs
and Required Minimum Detectable Concentrations**

Radionuclide	Base Case Soil DCGL (pCi/g) ⁽¹⁾	Operational DCGL (pCi/g) ⁽²⁾	Required MDC (pCi/g) ⁽³⁾
Pu-241	8.70E+02	3.48E+02	3.48E+01
Am-241	2.58E+01	1.03E+01	1.03E+00
Cm-243/244	2.90E+01	1.16E+01	1.16E+00

(1) The Base Case Soil DCGLs for soil are specified by the LTP in Chapter 6

(2) The Operational DCGL is equivalent to achieving 10 mrem per year TEDE

(3) The required MDC was 10% of the Operational DCGL

Another important facet of the DQO process is to identify the radionuclides of concern and determine the concentration variability. Seventeen (17) samples were collected and analyzed during characterization as discussed in Section 2. The samples were collected through biased sampling over a simple grid design. Characterization did not include analyses for Hard to Detect (HTD) radionuclides as data from previous survey and sampling in adjacent areas did not identify HTDs in significant quantities. Cesium-137 was found to be the predominate radionuclide of concern. The mean and variability of Cs-137 in 9531-0000 was determined during characterization.

Instrument DQOs included a verification of the ability of the survey instrument to detect the radiation(s) of interest relative to the DCGL. Survey instrument response checks were to be performed before issue and after the instrument had been used. Control and accountability of survey instruments was to be maintained to assure the quality and prevent the loss of data.

Laboratory DQOs and analysis results were to be reported as actual calculated results. Results reported as less than Minimum Detectable Concentration (<MDC) would not be accepted for FSS. Sample report summaries were to include unique sample identification, analytical method, radionuclide, result, and uncertainty of two standard deviations, laboratory data qualifiers, units, and the required and observed MDC.

4. SURVEY DESIGN

The level of effort associated with planning a survey is based on the complexity of the survey and nature of the hazards. To assist the FSS Engineers when preparing survey plans for FSS, guidance is provided in Procedure RPM 5.1-11, *"Preparation of Final Status Survey Plans"*. By design, the FSSP meets the ALARA criteria for soils as specified in Chapter 4 of the LTP. The FSSP uses an integrated sample design that combines scanning surveys and sampling which can be either random or biased.

Seventeen (17) data points from characterization were used to determine concentration variability. The samples were collected through biased sampling over a simple grid design. The DQO process determined that Cs-137 would be the radionuclide of concern in 9531-0000 (refer to Section 3). The Operational

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DCGL of 3.16 pCi/g for Cs-137 was to be used to ensure compliance with the release criteria. Other radionuclides identified during FSS would be evaluated to ensure adequate survey design.

Surrogate DCGLs were not required for this survey unit because of process knowledge from characterization of nearby adjacent areas and via screening under LTP Section 5.4.7.2. Radionuclide screening or de-selection is a process where an individual radionuclide or aggregate may be considered insignificant and eliminated from the FSS. The criteria for de-selection are concentrations less than 5% for individual radionuclides and less than 10% for aggregates.

The Elevated Measurement Comparison (EMC) did not apply to this survey unit since discrete, elevated areas of contamination were not expected.

The Sign Test was selected as the non-parametric statistical test. The use of the Sign Test did not require the selection or use of a background reference area, which simplified survey design and implementation. This approach was conservative since it included background Cs-137 as part of the sample set.

The number of soil samples for FSS was determined in accordance with Procedure RPM 5.1-12, *"Determination of the Number of Surface Samples for Final Status Survey."* The Lower Bound of the Gray Region (LBGR) was set in accordance with Procedure RPM 5.1-11 to 3.02 pCi to maintain the relative shift (Δ/σ) in the range of 1 and 3. A Prospective Power Curve was generated using COMPASS, a software package developed under the sponsorship of the United States Nuclear Regulatory Commission (USNRC) for implementation of the MARSSIM in support of the decommissioning license termination rule (10 CFR 20, Subpart E). The result of the COMPASS computer run showed adequate power for the survey design. Survey design specified fifteen (15) surface soil samples for non-parametric statistical testing.

The grid pattern and locations of the soil samples were determined using Visual Sample Plan (VSP) in accordance with Procedure RPM 5.1-14, *"Identifying, and Marking Surface Sample Locations for Final Status Survey."* Visual Sample Plan was created by Pacific Northwest National Laboratory (PNNL) for the United States Department of Energy. A systematic triangular grid pattern with a random starting point was selected for sample design, which is appropriate for a Class 3 area.

Sample locations were identified using AutoCAD-Lt, a commercially available plotting software package with coordinates consistent with the Connecticut State Plane System. These coordinates were integrated with a GPS to locate sample locations in the field. Sample Measurement Locations for the design are listed with the GPS coordinates in Table 3.

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Table 3 -Sample Measurement Locations with Associated GPS Coordinates

Designation	Northing	Easting
9531-0000-001F	234015.10	672435.70
9531-0000-002F	234706.10	671808.70
9531-0000-003F	234065.60	672831.50
9531-0000-004F	234456.00	672718.20
9531-0000-005F	234269.80	672381.10
9531-0000-006F	234368.10	671985.40
9531-0000-007F	234243.90	672190.20
9531-0000-008F	234339.60	672316.70
9531-0000-009F	234841.30	672016.60
9531-0000-010F	234556.60	672154.70
9531-0000-011F	233872.10	672615.60
9531-0000-012F	234221.90	672081.10
9531-0000-013F	234410.90	672613.00
9531-0000-014F	234120.80	672417.10
9531-0000-015F	234229.50	672649.50

A minimum of twelve (12) judgmental or biased samples were to be collected at locations selected by FSS Supervision based on professional judgment and observation during characterization and walkdowns to determine areas having the potential for residual radioactivity (e.g., runoff and collection, area disturbance). The number of judgmental samples represented 80% of the number of samples that would be used for non-parametric statistical testing.

Although Procedure RPM 5.1-11 only specified that 5% of the samples be selected for HTD analysis, two (2) soil samples, or 13% of the number of samples that would be used for non-parametric statistical testing, were randomly selected for HTD radionuclide analysis using the Microsoft Excel "RANDBETWEEN" function. Each sample would be sent off-site for a full suite analysis of the HTD radionuclides specified in the LTP, Table 2-12, "Radionuclides Potentially Present at Haddam Neck Plant."

The implementation of survey specific quality control measures as referenced by Procedure RPM 5.1-24, *"Split Sample Assessment for Final Status Survey,"* included the collection of two (2) soil samples for "split sample" analysis by the off-site laboratory. These locations were selected randomly using the Microsoft Excel "RANDBETWEEN" function. The number of quality control soil samples was determined to be 13% of fifteen (15) samples, rounded up to the next whole number.

The LTP specifies that scanning will be performed in judgmental measurements for a Class 3 land area and cover a selected amount of the area. The fraction of scanning coverage was determined during the DQO process with the total amount and location(s) based on the likelihood of finding elevated activity during FSS. Elevated areas of residual radioactivity were not considered likely based on characterization data. Consequently, the decision was made to scan

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slightly less than 1% of the total area. Scans were also prescribed for a one (1) meter radius around each random and biased sample measurement location.

For this Class 3 survey unit, the "Investigation Level" for area scanning and soil sample measurement results are those levels specified in LTP, Table 5-8, "Investigation Levels."

Table 4 provides a synopsis of the survey design.

Table 4 – Synopsis of the Survey Design

Feature	Design Criteria	Basis
Survey Unit Land Area	108,221 m ²	Based on AutoCAD-Lt and Visual Sample Plan calculations
Number of Measurements	15	Type 1 and Type 2 errors were 0.05, sigma was 0.069 pCi/g, the LBGR was adjusted to 3.02 pCi/g to maintain Relative Shift in the range of 1 and 3, Relative Shift was 2
Grid Spacing	Random and random start	Appropriate design for Class 3
Interval Spacing	Not Applicable	Not appropriate for Class 3
Operational DCGL	3.16	Administratively set to achieve 10 mrem in a year TEDE
Scan Survey Area Coverage	988 m ²	Judgmental scanning coverage for Class 3 area based on likelihood of finding elevated areas
Scan Investigation Level	Detectable over background	Based on achieving the Operational DCGL

5. SURVEY IMPLEMENTATION

Final status survey field activities were conducted under Work Plan and Inspection Record (WP&IR) 24265-000-GEN-0000-00107-000. The WP&IR package included a detailed FSSP, job safety analysis, job planning checklist and related procedures for reference. Daily briefings were conducted to discuss the expectations for job performance and the safety aspects of the survey. The "Daily Survey Journal" was used to document field activities and other information pertaining to the FSS.

Survey activities occurred August 19, 2002 through October 21, 2002.

The scan areas were marked out and scanned for elevated readings (see Attachment 2 for Scan Area Results). Scanning was performed with an Eberline E-600 using a SPA-3 sodium iodide detector. The E-600 was operated in the rate-meter mode and used with audio response. The probe was positioned as close to the ground as possible and was moved at a scan speed of about 0.5 meters per second. A little less than 1% of the survey unit was scanned.

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Using GPS coordinates; sample measurement locations were identified and marked with a surveyor's flag for identification. At each sample measurement location, a one (1) meter radius around the sample flag was scanned for elevated radiation levels.

Fifteen (15) surface soil samples were collected and packaged in accordance with Haddam Neck Plant (HNP) Procedure RPM 5.1-3, *"Collection of Sample Media for Final Status Survey"* and FSS design. Samples were controlled, transported, stored, and transferred to the off-site laboratory using Chain-of-Custody (COC) protocol in accordance with Procedure RPM 5.1-5, *"Chain of Custody for Final Status Survey Samples."*

Two (2) samples (9531-000-013F and 9531-0000-015F) were randomly selected for HTD radionuclide analysis by the off-site laboratory.

Fifteen (15) biased soil samples (were collected and analyzed using gamma spectroscopy by the on-site laboratory.

The implementation of survey specific quality control measures included the collection of two samples (9531-0000-002F and 9530-0000-008F) for "split sample" analysis by the off-site laboratory.

6. SURVEY RESULTS

The twenty-seven (27) sample measurement locations identified in the FSS plan were scanned about a one (1) meter radius for elevated radiation levels. Table 5 provides an overview of the scan area survey. Scan area results are provided in Attachment 2.

Table 5- Scan Area Results for Sample Measurement Locations

Sample Measurement Location	Highest Logged Reading (kcpm)	Action Level (kcpm)	Above Action Level
1	5.64	6.41	No
2	8.45	9.31	No
3	7.58	7.85	No
4	7.46	8.96	No
5	8.15	8.65	No
6	6.44	9.69	No
7	6.64	7.32	No
8	6.82	8.41	No
9	7.89	9.29	No
10	8.36	9.09	No
11	5.96	7.78	No
12	6.66	7.57	No
13	7.54	8.03	No

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Table 5- Scan Area Results for Sample Measurement Locations

Sample Measurement Location	Highest Logged Reading (kcpm)	Action Level (kcpm)	Above Action Level
14	7.44	8.75	No
15	7.15	8.60	No
16	6.67	7.49	No
17	6.64	7.22	No
18	6.52	7.81	No
19	7.67	9.09	No
20	6.37	7.68	No
21	6.61	8.86	No
22	8.56	9.63	No
23	7.45	8.05	No
24	6.23	7.93	No
25	6.87	8.99	No
26	8.53	8.30	Yes
27	7.08	8.75	No

(1) FSS sample plans require movement of the sample measurement location to the area within the 1 meter radius yielding the response above the action level

Three (3) areas were scanned for elevated radiation levels. Several elevated areas were identified. Table 6 provides an overview of the scan area survey. Scan area results are provided in Attachment 2.

Table 6- Scan Area Results

Scan Area	Highest Logged Reading (kcpm)	Action Level (kcpm)	Elevated Reading Identification ⁽¹⁾	Investigation Sample ⁽²⁾
1	8.16	7.74	9531-00-ER-01-08-1	9531-0000-034FM 9531-0000-034FMD
			9531-00-ER-01-08-2	9531-0000-035FM 9531-0000-035FMD
2	7.82	9.16	None – no elevated areas identified	None

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Table 6- Scan Area Results

Scan Area	Highest Logged Reading (kcpm)	Action Level (kcpm)	Elevated Reading Identification ⁽¹⁾	Investigation Sample ⁽²⁾
3	8.97	8.38	9531-00-ER-03-03-1	9531-0000-029FM 9531-0000-029FMD
			9531-00-ER-03-03-2	9531-0000-030FM 9531-0000-030FMD
			9531-00-ER-03-04-1	9531-0000-028FM 9531-0000-028FMD
			9531-00-ER-03-04-2	9531-0000-031FM 9531-0000-031FMD
			9531-00-ER-03-05-1	9531-0000-032FM 9531-0000-032FMD
			9531-00-ER-03-06-1	9531-0000-033FM 9531-0000-033FMD

(1) ER and SC are nomenclature associated with the barcodes used in the field where ER stands for Elevated Reading and SC refers to Scan

(2) FM and FMD are nomenclature used to distinguish between surface samples collected in a one liter (1 L) marinelli container at depths up to fifteen centimeters (15 cm) and deeper samples collected in a 1 L marinelli container at depths up to ninety (90) cm from the same sample location

The off-site laboratory employed for the radiological analyses of samples was Severn Trent Laboratories – STL Richland, Richland, Washington. The laboratory analyzed the fifteen (15) samples taken for non-parametric statistical testing and the associated duplicates using gamma spectroscopy. Gamma spectroscopy analysis was performed to the required MDC. Gamma spectroscopy results identified some radionuclides meeting the accepted criteria for detection (i.e., a result greater than two standard deviations uncertainty). All but one (1) radionuclide could be deselected or excluded using the 5% and 10% rule described in Section 4. The exception was Cs-134 which was reported in one (1) sample at a concentration equivalent to 6% of the Operational DCGL. Further explanation of Cs-134 will be provided in Section 10.

Cesium-137 was identified in fourteen (14) of the fifteen (15) samples. Cobalt-60 was identified in one (1) of the fifteen (15) samples. The mean of the results of gamma spectrometry analysis for each of the samples indicated Cs-137 at levels lower than the concentrations of Cs-137 found in soil at off-site locations within the vicinity of the HNP as presented in the Health Physics TSD BCY-HP-0063.

Sample analysis did not indicate any anomalies requiring further investigation. A summary of the sample results is provided in Table 7.

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Table 7- Summary of Soil Sample Results

Sample Number	Cs-137 pCi/g	Co-60 pCi/g	Fraction of the Operational DCGL ⁽¹⁾
9531-0000-001F	5.42E-01	-7.24E-03	0.167
9531-0000-002F	1.06E-01	1.10E-02	0.041
9531-0000-003F	3.38E-02	-1.51E-03	0.010
9531-0000-004F	8.45E-01	1.12E-01	0.341
9531-0000-005F	1.01E-01	2.22E-03	0.033
9531-0000-006F	3.54E-01	2.16E-02	0.126
9531-0000-007F	3.80E-01	9.16E-03	0.126
9531-0000-008F	2.22E-01	-1.25E-02	0.062
9531-0000-009F	6.14E-01	1.05E-02	0.201
9531-0000-010F	3.86E-01	-1.54E-02	0.112
9531-0000-011F	2.21E-01	-3.19E-02	0.049
9531-0000-012F	4.77E-01	-2.73E-03	0.149
9531-0000-013F	5.50E-01	1.56E-02	0.184
9531-0000-014F	2.75E-02	-7.30E-03	0.004
9531-0000-015F	9.24E-02	1.09E-02	0.036

(1) The Operational DCGLs are 3.16 pCi/g for Cs-137 and 1.52 pCi/g for Co-60 used in conjunction with the unity rule

The off-site laboratory also processed two (2) samples for HTD analysis as required by the sample plan. The samples were The requested analyses included alpha spectroscopy, gas proportional counting, and liquid scintillation depending on the radionuclide and the measurement method. All analyses met the required MDC with the exception of Sr-90. However, the DQOs recognize that for some HTD analyses, the radionuclides may not meet MDC requirements due to analytic method (e.g., Carbon-14 in soil). In these cases, comparison to a higher value (i.e., 50% of the DCGL) is acceptable and consistent with the LTP. Table 8 lists the results for those radionuclides meeting the accepted criteria for detection (i.e., a result greater than two standard deviations uncertainty) in more than one sample.

Table 8-Hard-to-Detect Sample Results

Sample ⁽¹⁾	Sr-90 (pCi/g)	Ni-63 (pCi/g)	Tc-99 (pCi/g)	Pu-241 (pCi/g)	Fraction of the Operational DCGL ⁽²⁾
9531-0000-013F	1.69E-01	1.06E+01	-----	1.09E+01	0.403
9531-0000-013AF	-----	-----	3.15E-01	-----	
9531-0000-015F	5.86E-02	1.51E+01	-----	9.71E+00	0.202
9531-0000-015AF	-----	-----	3.17E-01	-----	

(1) Additional sample material was required for volatile HTDs (e.g., H-3 and Tc-99) as the laboratory inadvertently dried all provided sample material prior to extracting sample media for HTD analysis (refer to Section 10)

(2) The Operational DCGLs are 0.62 pCi/g for Sr-90, 289 pCi/g for Ni-63, 5.04 pCi/g for Tc-99 and 348 pCi/g for Pu-239 used in conjunction with the unity rule

SOUTHERN END OF PENINSULA
SURVEY UNIT 9531-0000

RELEASE RECORD

Fifteen (15) biased samples were collected at locations selected by FSS Supervision based on professional judgment and observation. Gamma spectroscopy analysis was performed by the on-site laboratory to the required MDC. None of the samples exceeded 18% of the Operational DCGL. No further action or investigations were required (see Table 9).

Table 9- Biased Sample Results

Sample Number ⁽¹⁾	Cs-137 pCi/g	Co-60 pCi/g	Fraction of the Operational DCGL ⁽²⁾
9531-0000-016FM	1.04E-01	4.02E-03	0.035
9531-0000-017FM	2.60E-01	1.47E-02	0.092
9531-0000-018FM	2.82E-01	-9.37E-03	0.083
9531-0000-019FM	2.99E-01	-1.26E-03	0.094
9531-0000-020FM	8.27E-02	1.54E-02	0.036
9531-0000-021FM	4.51E-02	-2.66E-03	0.013
9531-0000-021FMD	1.13E-02	1.48E-02	0.013
9531-0000-022FM	4.77E-01	1.76E-02	0.163
9531-0000-023FM	5.32E-01	1.83E-02	0.180
9531-0000-023FMD	5.15E-01	2.20E-02	0.178
9531-0000-024FM	1.02E-01	1.19E-02	0.040
9531-0000-024FMD	1.61E-01	3.80E-03	0.053
9531-0000-025FM	1.27E-01	1.87E-02	0.052
9531-0000-026FM	2.81E-01	-4.24E-03	0.086
9531-0000-027FM	1.80E-01	2.70E-02	0.075
(1) FM and FMD are nomenclature used to distinguish between surface samples collected in a 1 L marinelli container at depths up to fifteen centimeters (15 cm) and deeper samples collected in a 1 L marinelli container at depths up to ninety (90) cm from the same sample location			
(2) The Operational DCGLs are 3.16 pCi/g for Cs-137 and 1.52 pCi/g for Co-60 used in conjunction with the unity rule			

7. QUALITY CONTROL

The off-site laboratory processed the split samples and performed gamma spectroscopy analysis. Thirteen percent (13%) of the samples were selected for analysis, which exceeds the 5% minimum required by the LTP. The data were evaluated using USNRC acceptance criteria specified in Inspection Procedure 84750 as detailed in HNP Procedure RPM 5.1-24, "Split Sample Assessment for Final Status Survey." There was acceptable agreement between field split results.

The sample analysis vendor, Severn Trent Laboratories – STL Richland, Richland, Washington, maintained quality control and quality assurance plans as part of normal operation. Refer to Attachment 2 for data and data quality analysis results.

SOUTHERN END OF PENINSULA
SURVEY UNIT 9531-0000

RELEASE RECORD

8. INVESTIGATIONS AND RESULTS

Additional scanning was performed in one (1) small location in February 2006 to obtain additional data relevant to the DQOs. The scanning was performed in a single three foot (3 ft) by thirty foot (30 ft) strip located in scan area 2. No elevated readings were identified.

Additional soil sampling was performed under an Addendum to the FSS plan. The soil was collected from locations 13 and 15 to support HTD analyses after it was identified that the laboratory had prematurely dried the original sample material prior to determining what the required analyses were to be. The two samples were identified as 9531-0000-013AF and 9531-0000-015AF. The off-site laboratory properly processed and analyzed the additional samples for HTD.

Eight (8) localized areas were found to verifiably exceed their investigation level during the scan area survey. Two (2) samples were collected from each location. The samples consisted of a surface sample collected in a 1 L marinelli container at depths up to 15 cm and deeper samples collected in a 1 L marinelli container at depths up to 90 cm from the same sample location. The samples were analyzed on-site using gamma spectroscopy. The analyses reported Cs-137 as shown in Table 10.

Table 10- Confirmatory Sample Results

Sample Number ⁽¹⁾	Cs-137 pCi/g	Co-60 pCi/g	Fraction of the Operational DCGL ⁽²⁾
9531-0000-028FM	3.99E-01	-2.15E-04	0.126
9531-0000-028FMD	7.72E-03	1.20E-02	0.010
9531-0000-029FM	2.23E-01	1.72E-02	0.082
9531-0000-029FMD	1.27E-01	9.35E-03	0.046
9531-0000-030FM	2.06E-01	-1.51E-02	0.055
9531-0000-030FMD	-6.72E-03	1.97E-02	0.011
9531-0000-031FM	2.27E-01	6.54E-03	0.076
9531-0000-031FMD	2.14E-01	2.86E-02	0.086
9531-0000-032FM	4.69E-02	4.93E-03	0.018
9531-0000-032FMD	1.89E-03	8.27E-03	0.006
9531-0000-033FM	1.87E-01	1.43E-04	0.059
9531-0000-033FMD	2.36E-02	2.45E-02	0.024
9531-0000-034FM	1.74E-01	6.09E-04	0.056
9531-0000-034FMD	8.55E-02	1.85E-02	0.039
9531-0000-035FM	2.08E-01	2.30E-02	0.081
9531-0000-035FMD	2.48E-03	4.72E-03	0.004

(1) FM and FMD are nomenclature used to distinguish between surface samples collected in a 1 L marinelli container at depths up to fifteen centimeters (15 cm) and deeper samples collected in a 1 L marinelli container at depths up to ninety (90) cm from the same sample location

(2) The Operational DCGLs are 3.16 pCi/g for Cs-137 and 1.52 pCi/g for Co-60 used in conjunction with the unity rule

SOUTHERN END OF PENINSULA
SURVEY UNIT 9531-0000

RELEASE RECORD

9. REMEDIATION AND RESULTS

Historically, no radiological remedial action as described by MARSSIM Section 5.4 was performed in this survey unit prior to or as a result of the FSS. Health Physics TSD BCY-HP-0078, "*ALARA Evaluation of Soil Remediation in Support of Final Status Survey*," determined that remediation beyond that required to meet the release criteria was unnecessary and that the remaining residual radioactivity in soil was ALARA.

10. CHANGES FROM THE FINAL STATUS SURVEY PLAN

Several HTD radionuclides were reported in concentrations exceeding the 5% and 10% rule for de-selection. Therefore, the individual Operational DCGLs for these radionuclides were included into sample design to demonstrate compliance with the unity rule and ensure adequate survey design in accordance with the DQOs. The result of the COMPASS computer run showed adequate power for the revised survey design. The revised survey design maintained the original fifteen (15) surface soil samples for non-parametric statistical testing.

Cesium-134 was reported in concentrations exceeding the 5% rule for de-selection in one sample. A review of the data shows that the ratios of Cs-134 concentration to Cs-137 concentration are low enough not to impact or change the number of samples needed to demonstrate compliance with the DQOs.

11. DATA QUALITY ASSESSMENT (DQA)

The DQO sample design and data were reviewed in accordance with Procedure RPM 5.1-23, "*Data Quality Assessment*," for completeness and consistency. The sampling design had adequate power as indicated by the Retrospective Power Curve. The Sign Test was performed on the data and compared to the original assumptions of the DQOs. The Sign Test shows that the survey unit passes FSS.

Documentation was complete and legible. Surveys and sample collection were consistent with the DQOs and were sufficient to ensure that the survey unit was properly designated as Class 3.

The preliminary data review consisted of calculating basic statistical quantities (e.g., mean, median, standard deviation).

The range of the data, about 3.7 standard deviations, was not unusually large. The difference between the mean and median was 15% of the standard deviation. The difference is enough to indicate skewness in the data. The data was represented graphically through posting plots, a frequency plot, and a quantile plot. The frequency plot shows slight negative skewness as confirmed by the calculated skew of 0.5 and some bimodality probably due to the differences in terrain.

All data, assessments, and graphical representations are provided in Attachment 2.

**SOUTHERN END OF PENINSULA
SURVEY UNIT 9531-0000**

RELEASE RECORD

12. ANOMALIES

No anomalies were noted.

13. CONCLUSION

Survey Unit 9531-0000 has met the final DQOs of the FSS. The ALARA criteria for soils as specified in Chapter 4 of the LTP were achieved. Elevated Measurement Comparison and remediation was not required.

The sample data passed the Sign Test. The null hypothesis was rejected. Some anomalies were observed in the graphical representation of the data which could be attributed to differences in terrain. The Retrospective Power Curve generated using COMPASS shows adequate power was achieved. The survey unit was properly designated as Class 3.

As discussed in Section 1, the survey data results for this release record address the dose contribution due to soil as provided in LTP Equation 5-1. This survey unit is not considered impacted by existing groundwater radioactive contamination as the survey unit is outside the capture zone perimeter for an affected monitoring well. The dose contribution from existing groundwater, the second component of Equation 5-1, is therefore zero. This survey unit is not considered impacted by future groundwater radioactive contamination as there are no underground structures, systems or components containing residual radioactive material within the groundwater saturated zone in the area. The dose contribution from future groundwater, the third component of Equation 5-1, is therefore zero.

14. ATTACHMENTS

14.1 Attachment 1 – Figures

14.2 Attachment 2 – Sample and Statistical Data

**SOUTHERN END OF PENINSULA
SURVEY UNIT 9531-0000**

RELEASE RECORD

**Attachment 1
Figures
(5 pages)**

C-01

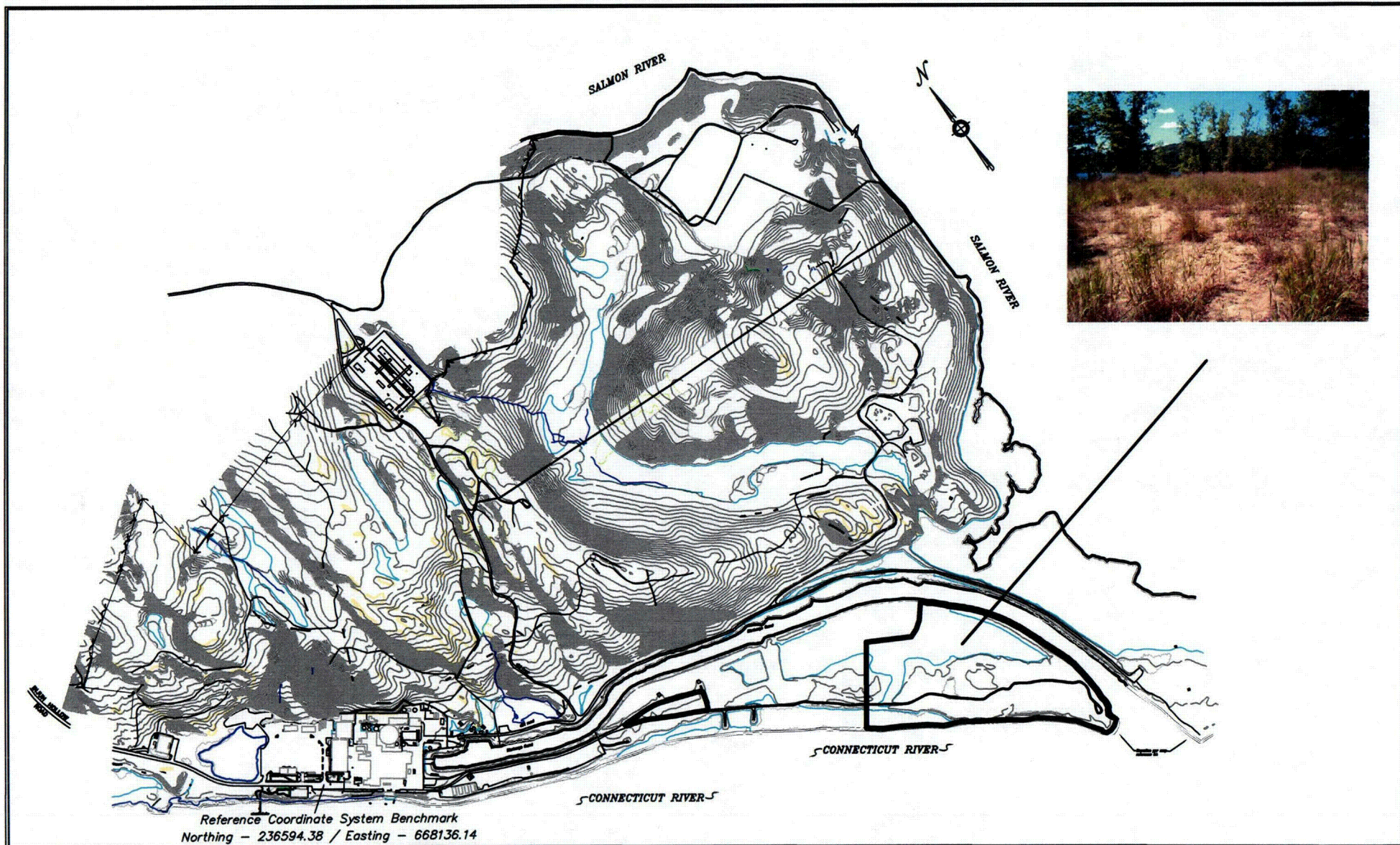


Figure 1



Connecticut Yankee Atomic Power Company
Site Map With Reference To Survey Unit 9531-0000

Date

By

February 2006

J. McC.

602

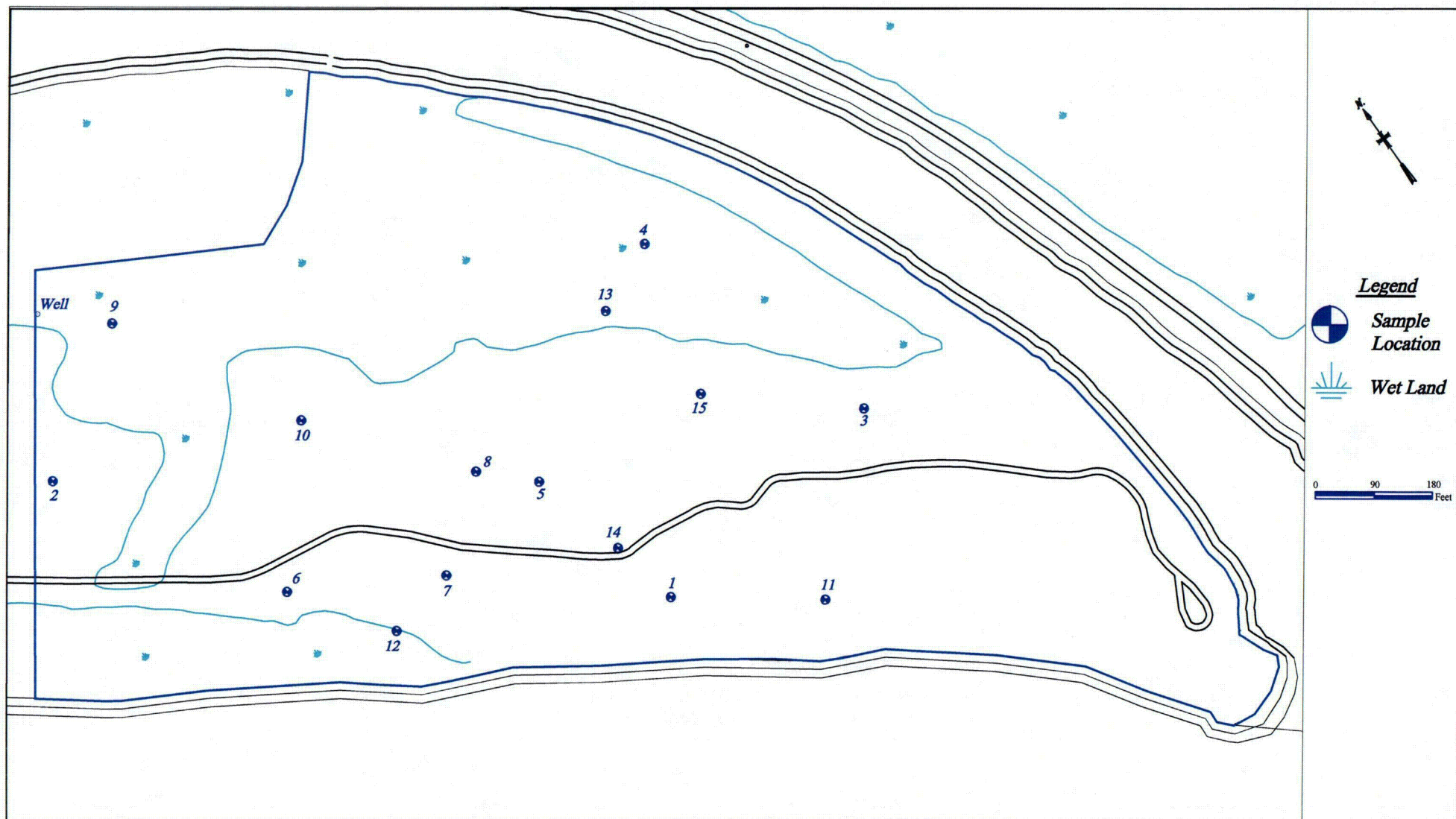


Figure 2

Connecticut Yankee Atomic Power Company
9531-0000 Final Status Survey Design

Date	By
February 2006	J. McC.

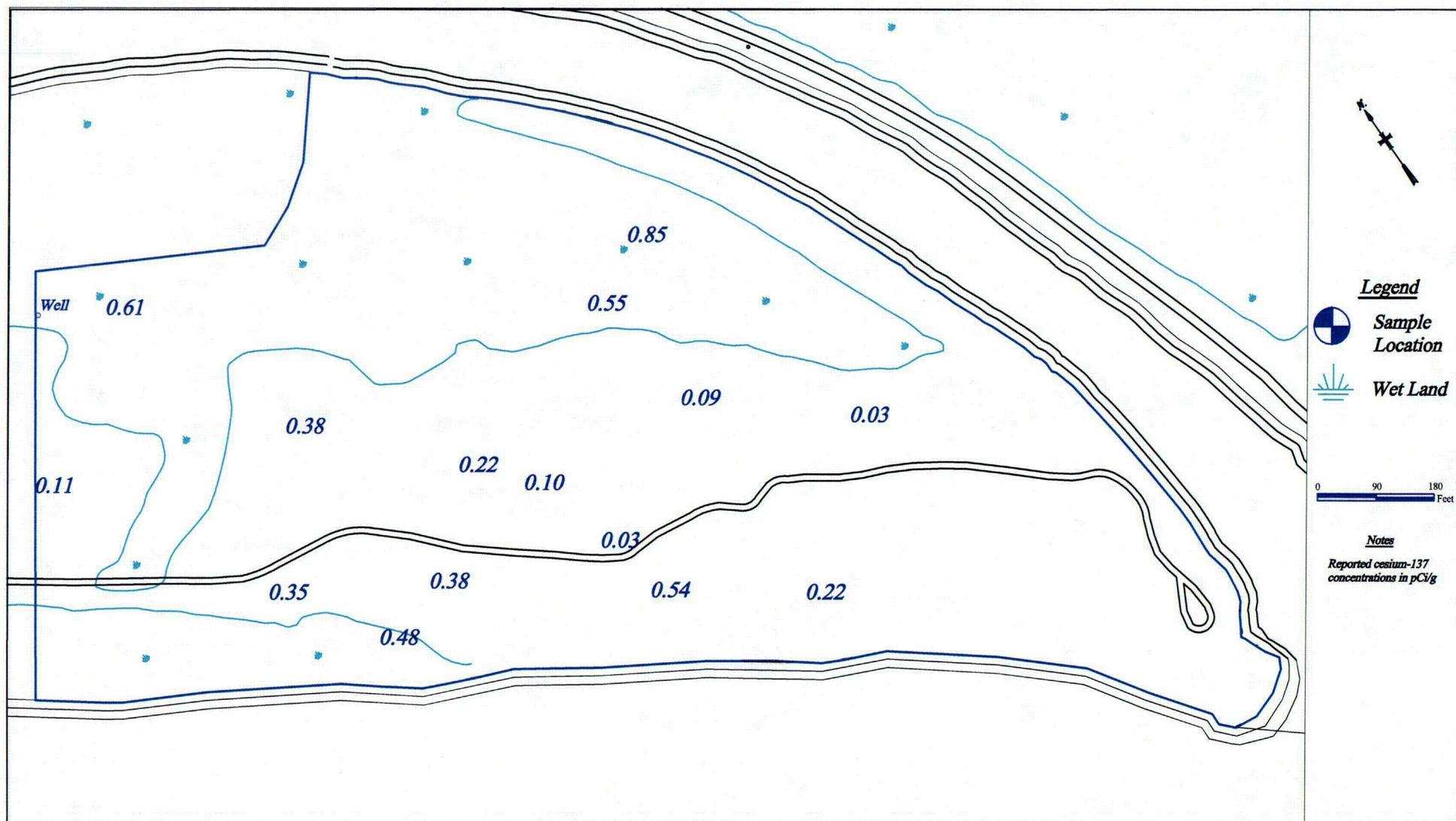


Figure 3	Connecticut Yankee Atomic Power Company 9531-0000 Final Status Survey Cs-137 Posting Plot	Date	By
		February 2006	J. McC.

C-04

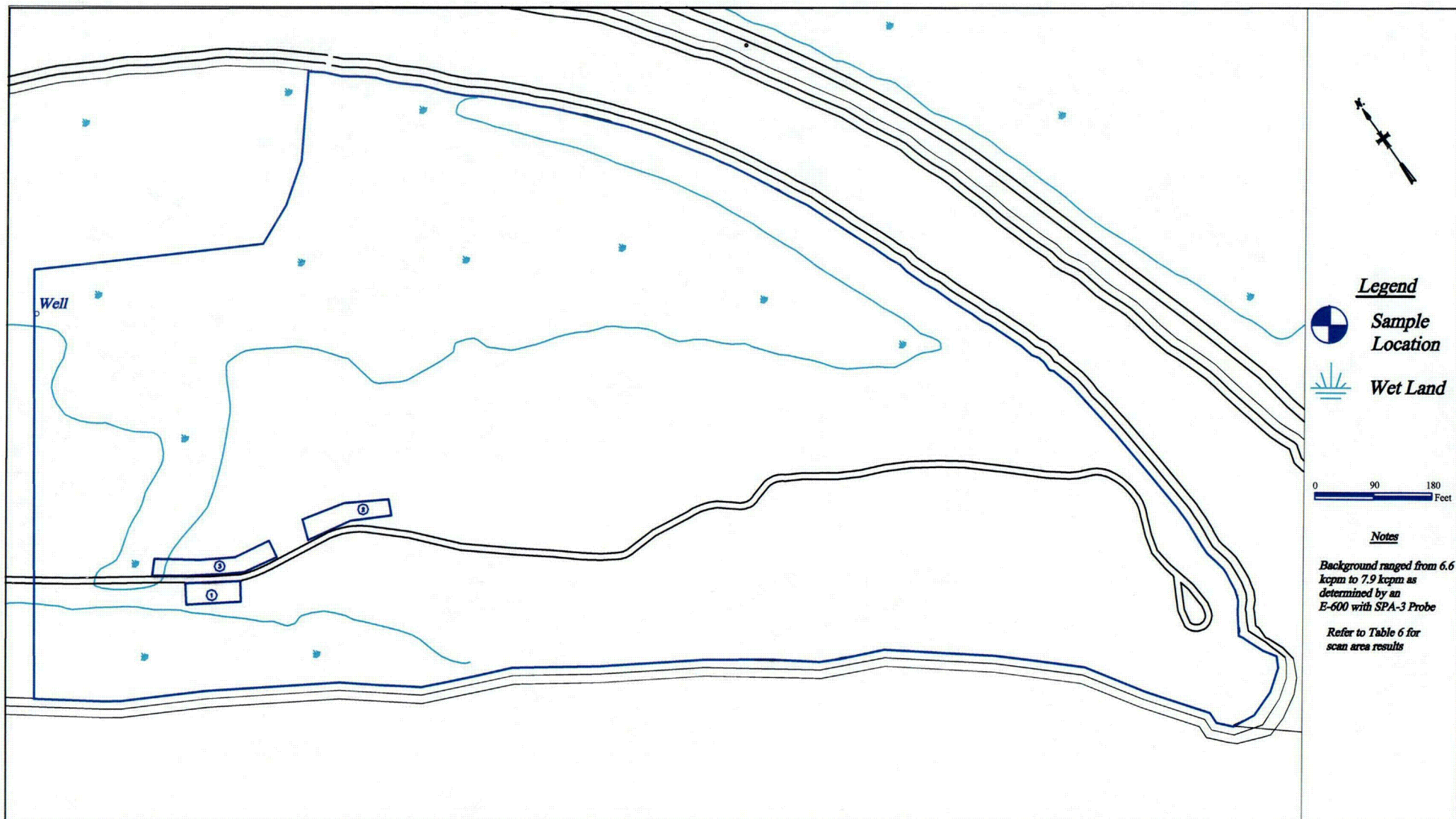


Figure 4

Connecticut Yankee Atomic Power Company
9531-0004 Final Status Survey Scan Areas

Date
February 2006

By
J. McC.

505

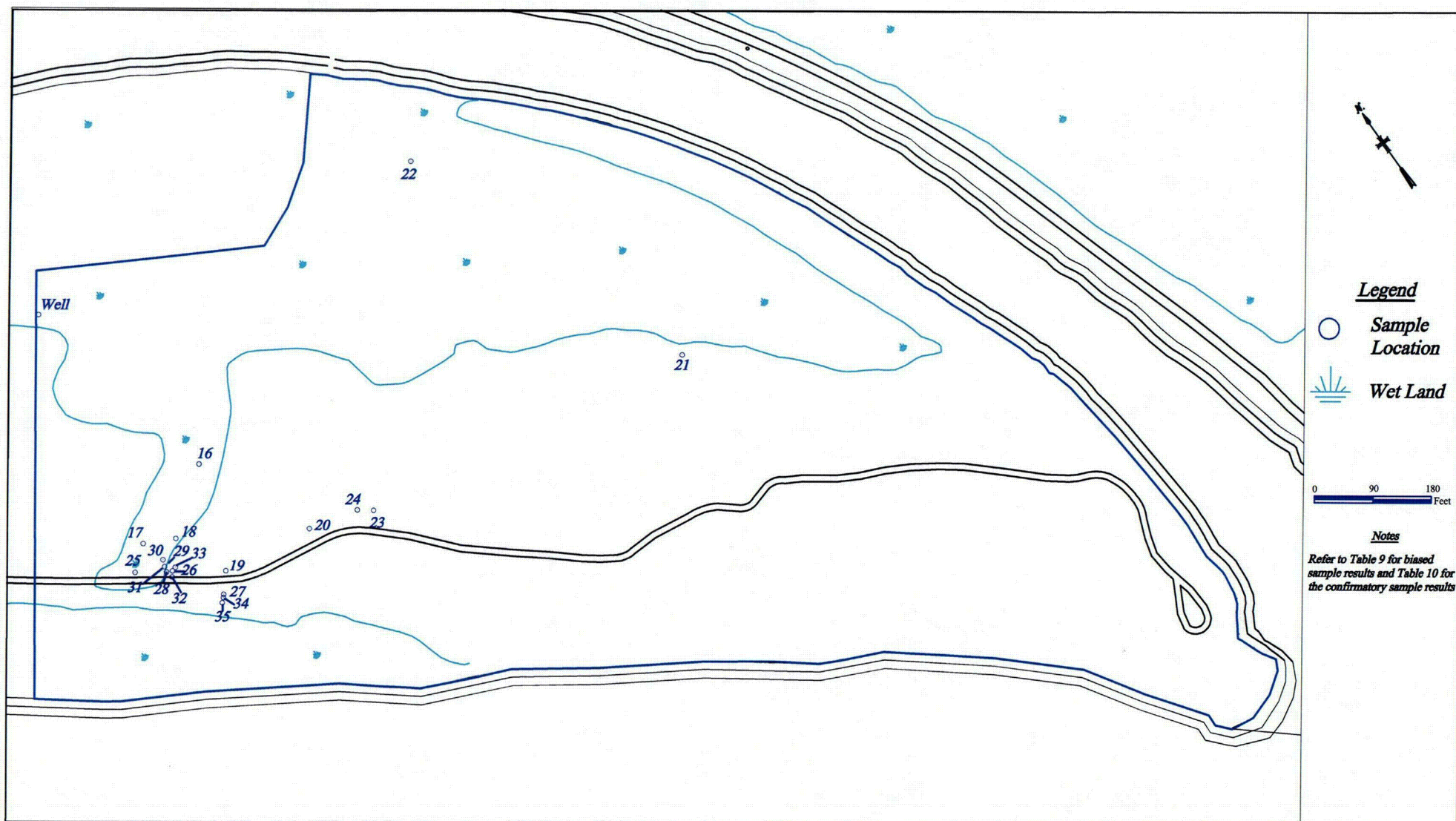


Figure 5

Connecticut Yankee Atomic Power Company
9531-0000 Biased and Confirmatory Sample Locations

Date
February 2006

By
J. McC.

**SOUTHERN END OF PENINSULA
SURVEY UNIT 9531-0000**

RELEASE RECORD

**Attachment 2
Sample and Statistical Data**

**SOUTHERN END OF PENINSULA
SURVEY UNIT 9531-0000**

RELEASE RECORD

**Attachment 2a
Sample Data
(276 Pages)**

Analytical Data Package Prepared For
Bechtel CT Yankee Project

Radiochemical Analysis By

STL Richland

2800 G.W. Way, Richland Wa, 99352, (509)-375-3131.

Assigned Laboratory Code: STLRL

Data Package Contains _____ Pages

Report No.: 20779

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
21180		9531-0000-001F	J2I300127-7	E84V11AA	9E84V110	2275373
		9531-0000-002F	J2I300127-12	E84WH1AA	9E84WH10	2275373
		9531-0000-002FS	J2I300127-13	E84WJ1AA	9E84WJ10	2275373
		9531-0000-003F	J2I300127-8	E84V51AA	9E84V510	2275373
		9531-0000-004F	J2I300127-3	E84VL1AA	9E84VL10	2275373
		9531-0000-005F	J2I300127-17	E84WT1AA	9E84WT10	2275373
		9531-0000-006F	J2I300127-14	E84WK1AA	9E84WK10	2275373
		9531-0000-007F	J2I300127-1	E84VJ1AA	9E84VJ10	2275373
		9531-0000-008F	J2I300127-15	E84WN1AA	9E84WN10	2275373
		9531-0000-008FS	J2I300127-16	E84WR1AA	9E84WR10	2275373
		9531-0000-009F	J2I300127-5	E84VP1AA	9E84VP10	2275373
		9531-0000-010F	J2I300127-4	E84VN1AA	9E84VN10	2275373
		9531-0000-011F	J2I300127-9	E84V81AA	9E84V810	2275373
		9531-0000-012F	J2I300127-2	E84VK1AA	9E84VK10	2275373
		9531-0000-014F	J2I300127-6	E84VT1AA	9E84VT10	2275373

CERTIFICATE OF ANALYSIS

October 30, 2002

Bechtel Corporation
362 Injun Hollow Road
East Hampton, CT 06424

Attention: Alan Heter

SDG Number	:	21180
Date SDG Received	:	September 25, 2002
Number of Samples	:	Fifteen (15)
Sample Type	:	Soil
Data deliverable	:	Summary Report

I. Introduction

On September 25, 2002, fifteen soil samples were received at STL Richland (STLR) for radiochemical analysis on four ITLV COCs (2002-0068, 0066, 0064 and 0062). Upon receipt, the sample was assigned to Lot Number J21300127 with the laboratory ID numbers to correspond with the Bechtel Corp. (BCT) specific IDs as listed on the cover page.

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical errors.

The requested analyses are: Gamma Spectroscopy
 Gamma Spec by method RICH-RC-5017

III. Quality Control

The analytical results for each analysis performed under SDG 21180 includes a minimum of one Laboratory Control Sample (LCS) and one method (reagent) blank and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

Bechtel Corporation
October 30, 2002
Page 2

QC and sample results are reported in the same units.

IV. Comments

Two additional samples listed on COC 2002-0064 for analysis Type I (BFSSALL) were put into an independent lot and will be reported separately as per agreement with the client.

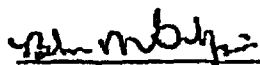
Gamma Spectroscopy

Gamma Spec by method RICH-RC-5017:

Seventeen of the eighteen requested radionuclides have been reported for each sample. The Bi-212 was over eight half lives since collection, therefore, not reported. Except as noted, the LCS, sample duplicate, batch blank and sample results are within required limits.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:



Barbara M. Gillespie
Project Manager

Drinking Water Method Cross References

DRINKING WATER ASTM METHOD CROSS REFERENCES		
Referenced Method	Isotope(s)	STL Richland's SOP number
EPA 901.1	Cs-134, I-131	RICH-RC-5017
EPA 900.0	Alpha & Beta	RICH-RC-5014
EPA 903.1	Ra-226	RICH-RC-5005
EPA 904.0	Ra-228	RICH-RC-5005
EPA 905.0	Sr89/90	RICH-RC-5006
ASTM D2480	Total Radium	RICH-RC-5027
Standard Method 7500-U-C & ASTM D5174	Uranium	RICH-RC-5058
EPA 906.0	Tritium	RICH-RC-5007
NOTE:		
The Gross Alpha LCS is prepared with Am-241 (unless otherwise specified in the case narrative)		
The Gross Beta LCS is prepared with Sr/Y-90 (unless otherwise specified in the case narrative)		

Uncertainty Estimation

STL Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, $R = \text{constants} * f(x,y,z,...)$. The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value ($S/\sqrt{n}$), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or STL Richland.
Count Error (Ns)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (Ns) u_c - Combined Uncertainty.	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, <i>u_c</i> , the <i>combined uncertainty</i> . The uncertainty is absolute and in the same units as the result.
(Ns), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or STL Richland "default" nominal detection limit. Often referred to the reporting level (RL.)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. $Lc = (1.645 * \sqrt{2 * (BkgndCnt / (1 - BkgndCntMin) / SCatMin)}) * (ConvFct / (Eff * Yld * Abn * Vol)) * IngrFct$. For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC/MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. $MDC = (4.65 * \sqrt{(BkgndCnt / (1 - BkgndCntMin) / SCatMin)}) + 2.71 / SCatMin * (ConvFct / (Eff * Yld * Abn * Vol)) * IngrFct$. For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUncert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the Work Order Number.
RER	The equation Replicate Error Ratio = $(S-D) / (\sqrt{TPUs^2 + TPUD^2})$ as defined by ICFT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUD is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Sample Results Summary
STL Richland STLRL
 Ordered by Client Sample ID, Batch No.

Date: 30-Oct-02

Report No. : 20779

SDG No: 21180

Client ID	Work Order Number	Parameter	Result ± Uncertainty (2s)	Qual	Units	Yield	MDC/MDA	RER
8531-0000-001F	E84V11AA	ACTINIUM-228	6.33E-01 ± 1.8E-01	U	pCi/g		3.10E-01	
		AG-108M	-1.58E-03 ± 2.4E-02	U	pCi/g		4.25E-02	
		AMERICIUM-241	-4.13E-02 ± 1.1E-01	U	pCi/g		1.84E-01	
		BISMUTH-214	3.72E-01 ± 1.0E-01	U	pCi/g		1.81E-01	
		COBALT-60	-7.24E-03 ± 2.8E-02	U	pCi/g		5.07E-02	
		CESIUM-134	3.02E-04 ± 3.0E-02	U	pCi/g		5.33E-02	
		CESIUM-137	5.42E-01 ± 9.3E-02		pCi/g		6.07E-02	
		EUROPIUM-152	-9.72E-02 ± 9.0E-02	U	pCi/g		1.33E-01	
		EUROPIUM-154	-1.44E-02 ± 9.2E-02	U	pCi/g		1.84E-01	
		EUROPIUM-155	6.05E-03 ± 8.8E-02	U	pCi/g		1.45E-01	
		POTASSIUM-40	9.81E+00 ± 1.5E+00		pCi/g		4.81E-01	
		MAGNESIUM-54	3.56E-02 ± 3.3E-02	U	pCi/g		8.35E-02	
		NIOBIUM-94	-8.18E-03 ± 2.8E-02	U	pCi/g		4.52E-02	
		LEAD-212	4.48E-01 ± 1.2E-01		pCi/g		8.92E-02	
		LEAD-214	4.61E-01 ± 1.3E-01		pCi/g		9.48E-02	
		RADIUM-228	3.72E-01 ± 1.0E-01	U	pCi/g		1.81E-01	
		THALLIUM-208	1.50E-01 ± 5.1E-02		pCi/g		4.50E-02	
9531-0000-002F	E84WH1AA	ACTINIUM-228	7.25E-01 ± 3.0E-01	U	pCi/g		4.29E-01	
		AG-108M	8.66E-04 ± 3.1E-02	U	pCi/g		5.30E-02	
		AMERICIUM-241	5.84E-02 ± 3.8E-01	U	pCi/g		6.42E-01	
		BISMUTH-214	5.83E-01 ± 2.0E-01	U	pCi/g		2.53E-01	
		COBALT-60	1.10E-02 ± 4.1E-02	U	pCi/g		7.88E-02	
		CESIUM-134	7.82E-02 ± 4.8E-02	U	pCi/g		9.54E-02	
		CESIUM-137	1.06E-01 ± 5.3E-02	U	pCi/g		1.00E-01	
		EUROPIUM-152	2.50E-02 ± 1.4E-01	U	pCi/g		1.78E-01	
		EUROPIUM-154	7.77E-02 ± 1.2E-01	U	pCi/g		2.28E-01	
		EUROPIUM-155	1.57E-01 ± 1.5E-01	U	pCi/g		2.68E-01	
		POTASSIUM-40	1.39E+01 ± 2.2E+00		pCi/g		6.46E-01	
		MAGNESIUM-54	1.95E-02 ± 4.4E-02	U	pCi/g		8.13E-02	
		NIOBIUM-94	-5.11E-03 ± 3.8E-02	U	pCi/g		6.37E-02	
		LEAD-212	7.24E-01 ± 1.8E-01		pCi/g		1.19E-01	
		LEAD-214	7.61E-01 ± 1.8E-01		pCi/g		1.26E-01	
		RADIUM-228	5.83E-01 ± 2.0E-01	U	pCi/g		2.53E-01	
		THALLIUM-208	2.42E-01 ± 7.9E-02		pCi/g		7.28E-02	

STL Richland RER - Replicate Error Ratio = $(S-D)/[\sqrt{(sq(TPUs)+sq(TPUs))}]$ as defined by ICPT BOA.

rptSTLRchSaSum U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.
 V3.95 A97

Sample Results Summary
STL Richland STLRL
 Ordered by Client Sample ID, Batch No.

Date: 30-Oct-02

Report No. : 20779

SDG No: 21180

Client ID	Work Order Number	Parameter	Result + Uncertainty (2s)	Qual	Units	Yield	MDC/MDA	RER
9531-0000-002FS	E84WJ1AA	ACTINIUM-228	8.15E-01 ± 2.5E-01		pCi/g		1.97E-01	
		AG-108M	8.98E-03 ± 2.9E-02	U	pCi/g		5.25E-02	
		AMERICIUM-241	1.78E-03 ± 6.3E-02	U	pCi/g		1.09E-01	
		BISMUTH-214	8.43E-01 ± 1.8E-01	U	pCi/g		2.88E-01	
		COBALT-60	1.17E-02 ± 3.7E-02	U	pCi/g		7.18E-02	
		CESIUM-134	4.78E-02 ± 4.6E-02	U	pCi/g		8.88E-02	
		CESIUM-137	1.30E-01 ± 6.8E-02	J	pCi/g		6.76E-02	
		EUROPIUM-152	8.44E-02 ± 1.0E-01	U	pCi/g		1.78E-01	
		EUROPIUM-154	8.50E-02 ± 1.1E-01	U	pCi/g		2.11E-01	
		EUROPIUM-155	6.03E-02 ± 8.8E-02	U	pCi/g		1.55E-01	
		POTASSIUM-40	1.33E+01 ± 2.1E+00		pCi/g		6.63E-01	
		MAGNESIUM-54	-2.23E-02 ± 3.8E-02	U	pCi/g		6.34E-02	
		NIOBIUM-94	4.77E-03 ± 3.4E-02	U	pCi/g		6.14E-02	
		LEAD-212	8.43E-01 ± 1.8E-01		pCi/g		1.45E-01	
		LEAD-214	8.70E-01 ± 2.0E-01		pCi/g		1.21E-01	
		RADIUM-226	8.43E-01 ± 1.8E-01		pCi/g		1.20E-01	
		THALLIUM-208	2.71E-01 ± 8.3E-02		pCi/g		6.48E-02	
9531-0000-003F	E84V61AA	ACTINIUM-228	4.63E-01 ± 1.8E-01	U	pCi/g		3.20E-01	
		AG-108M	-4.13E-03 ± 2.1E-02	U	pCi/g		3.84E-02	
		AMERICIUM-241	-1.98E-02 ± 7.5E-02	U	pCi/g		1.31E-01	
		BISMUTH-214	5.85E-01 ± 1.3E-01	U	pCi/g		2.04E-01	
		COBALT-60	-1.51E-03 ± 3.1E-02	U	pCi/g		5.74E-02	
		CESIUM-134	1.62E-02 ± 3.2E-02	U	pCi/g		5.85E-02	
		CESIUM-137	3.38E-02 ± 3.4E-02	U	pCi/g		6.49E-02	
		EUROPIUM-152	5.66E-03 ± 7.0E-02	U	pCi/g		1.23E-01	
		EUROPIUM-154	-1.68E-02 ± 8.8E-02	U	pCi/g		1.69E-01	
		EUROPIUM-155	1.83E-02 ± 6.8E-02	U	pCi/g		1.17E-01	
		POTASSIUM-40	1.05E+01 ± 1.7E+00		pCi/g		4.24E-01	
		MAGNESIUM-54	1.44E-02 ± 3.6E-02	U	pCi/g		6.69E-02	
		NIOBIUM-94	-6.02E-03 ± 2.6E-02	U	pCi/g		4.68E-02	
		LEAD-212	5.74E-01 ± 1.4E-01		pCi/g		1.01E-01	
		LEAD-214	5.43E-01 ± 1.4E-01		pCi/g		8.74E-02	
		RADIUM-226	5.85E-01 ± 1.3E-01	U	pCi/g		2.04E-01	
		THALLIUM-208	1.87E-01 ± 6.3E-02		pCi/g		4.99E-02	

STL Richland RER - Replicate Error Ratio = $(S-D)/\sqrt{sq(TPUs)+sq(TPUs)}$ as defined by ICPT BOA.
 rptSTLRchSaSum J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V3.85 A97 L Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

Sample Results Summary
STL Richland STLRL
 Ordered by Client Sample ID, Batch No.

Date: 30-Oct-02

Report No. : 20779

SDG No: 21180

Client ID	Work Order Number	Paramotor	Result ± Uncertainty (2s)	Qual	Units	Yield	MDC(MDA)	RER
8531-0000-004F	E84VL1AA	ACTINIUM-228	8.19E-01 ± 4.6E-01		pCi/g		3.80E-01	
		AG-108M	3.42E-03 ± 4.8E-02	U	pCi/g		8.07E-02	
		AMERICIUM-241	2.60E-02 ± 1.1E-01	U	pCi/g		1.89E-01	
		BISMUTH-214	1.15E+00 ± 2.6E-01	U	pCi/g		4.05E-01	
		COBALT-60	1.22E-01 ± 8.6E-02	U	pCi/g		1.42E-01	
		CESIUM-134	1.13E-01 ± 7.2E-02	U	pCi/g		1.44E-01	
		CESIUM-137	8.45E-01 ± 1.7E-01		pCi/g		9.57E-02	
		EUROPIUM-152	-1.44E-02 ± 1.5E-01	U	pCi/g		2.47E-01	
		EUROPIUM-154	-7.55E-02 ± 1.6E-01	U	pCi/g		2.56E-01	
		EUROPIUM-155	3.72E-02 ± 1.2E-01	U	pCi/g		2.11E-01	
		POTASSIUM-40	1.80E+01 ± 3.1E+00		pCi/g		1.31E+00	
		MAGNESIUM-64	4.57E-02 ± 5.8E-02	U	pCi/g		1.14E-01	
		NIOBIUM-94	-5.28E-03 ± 4.7E-02	U	pCi/g		8.47E-02	
		LEAD-212	1.27E+00 ± 2.7E-01		pCi/g		2.08E-01	
		LEAD-214	1.34E+00 ± 3.2E-01		pCi/g		1.85E-01	
		RADIUM-226	1.15E+00 ± 2.8E-01	U	pCi/g		4.05E-01	
		THALLIUM-208	5.65E-01 ± 1.3E-01	U	pCi/g		2.02E-01	
8531-0000-006F	E84WT1AA	ACTINIUM-228	8.12E-01 ± 2.1E-01	U	pCi/g		3.57E-01	
		AG-108M	-5.44E-03 ± 2.6E-02	U	pCi/g		4.40E-02	
		AMERICIUM-241	-3.71E-01 ± 3.0E-01	U	pCi/g		4.74E-01	
		BISMUTH-214	5.74E-01 ± 1.4E-01	U	pCi/g		2.08E-01	
		COBALT-60	2.22E-03 ± 2.8E-02	U	pCi/g		5.51E-02	
		CESIUM-134	7.73E-03 ± 3.7E-02	U	pCi/g		6.86E-02	
		CESIUM-137	1.01E-01 ± 4.3E-02	U	pCi/g		8.24E-02	
		EUROPIUM-152	-7.62E-02 ± 9.2E-02	U	pCi/g		1.39E-01	
		EUROPIUM-154	2.52E-02 ± 9.6E-02	U	pCi/g		1.80E-01	
		EUROPIUM-155	2.80E-02 ± 1.2E-01	U	pCi/g		2.05E-01	
		POTASSIUM-40	1.08E+01 ± 1.7E+00		pCi/g		3.44E-01	
		MAGNESIUM-64	3.12E-02 ± 3.7E-02	U	pCi/g		8.98E-02	
		NIOBIUM-94	4.58E-02 ± 3.0E-02	U	pCi/g		8.06E-02	
		LEAD-212	5.39E-01 ± 1.4E-01		pCi/g		1.05E-01	
		LEAD-214	6.05E-01 ± 1.6E-01		pCi/g		9.53E-02	
		RADIUM-226	5.74E-01 ± 1.4E-01	U	pCi/g		2.06E-01	
		THALLIUM-208	2.08E-01 ± 6.7E-02	U	pCi/g		9.92E-02	

STL Richland RER - Replicate Error Ratio = $(S-D)/\sqrt{(sq(TPUs)+sq(TPUs))}$ as defined by ICPT 80A.

rptSTLrchSaSum ! Qual - Analyzed for, but the result is less than the MDC(MDA)(Total Uncert or gamma scan software did not identify the nuclide.
 V3.95 A97

Sample Results Summary
STL Richland STLRL
 Ordered by Client Sample ID, Batch No.

Date: 30-Oct-02

Report No. : 20779

SDG No: 21180

Client ID	Work Order Number	Parameter	Result +/- Uncertainty (2s)	Qual	Units	Yield	MDC/JMDA	RER
9531-0000-006F	E84WK1AA	ACTINIUM-228	8.38E-01 +/- 2.6E-01		pCi/g		1.80E-01	
		AG-108M	1.08E-02 +/- 2.6E-02	U	pCi/g		4.60E-02	
		AMERICIUM-241	4.24E-02 +/- 9.0E-02	U	pCi/g		1.61E-01	
		BISMUTH-214	6.38E-01 +/- 1.4E-01	U	pCi/g		2.22E-01	
		COBALT-60	2.16E-02 +/- 3.0E-02	U	pCi/g		6.29E-02	
		CESIUM-134	1.09E-02 +/- 3.8E-02	U	pCi/g		6.89E-02	
		CESIUM-137	3.64E-01 +/- 7.2E-02		pCi/g		6.18E-02	
		EUROPIUM-152	-8.28E-02 +/- 9.1E-02	U	pCi/g		1.39E-01	
		EUROPIUM-154	8.44E-03 +/- 1.1E-01	U	pCi/g		2.04E-01	
		EUROPIUM-155	1.17E-01 +/- 8.1E-02	U	pCi/g		1.46E-01	
		POTASSIUM-40	1.11E+01 +/- 1.9E+00		pCi/g		5.38E-01	
		MAGNESIUM-54	1.58E-02 +/- 3.7E-02	U	pCi/g		6.89E-02	
		NIOBIUM-94	6.63E-03 +/- 2.8E-02	U	pCi/g		6.25E-02	
		LEAD-212	7.11E-01 +/- 1.5E-01		pCi/g		9.89E-02	
		LEAD-214	7.01E-01 +/- 1.7E-01		pCi/g		9.93E-02	
		RADIUM-226	6.38E-01 +/- 1.4E-01	U	pCi/g		2.22E-01	
		THALLIUM-208	3.20E-01 +/- 7.1E-02		pCi/g		6.07E-02	
9531-0000-007F	E84VJ1AA	ACTINIUM-228	6.80E-01 +/- 2.3E-01	U	pCi/g		3.44E-01	
		AG-108M	-1.87E-02 +/- 2.9E-02	U	pCi/g		4.78E-02	
		AMERICIUM-241	-7.87E-02 +/- 1.3E-01	U	pCi/g		2.13E-01	
		BISMUTH-214	6.38E-01 +/- 1.6E-01	U	pCi/g		2.11E-01	
		COBALT-60	8.18E-03 +/- 3.3E-02	U	pCi/g		6.24E-02	
		CESIUM-134	3.10E-02 +/- 3.8E-02	U	pCi/g		7.11E-02	
		CESIUM-137	3.80E-01 +/- 8.5E-02		pCi/g		6.61E-02	
		EUROPIUM-152	2.06E-02 +/- 1.3E-01	U	pCi/g		1.49E-01	
		EUROPIUM-154	4.38E-02 +/- 9.3E-02	U	pCi/g		1.77E-01	
		EUROPIUM-155	1.58E-02 +/- 9.6E-02	U	pCi/g		1.62E-01	
		POTASSIUM-40	1.00E+01 +/- 1.6E+00		pCi/g		6.33E-01	
		MAGNESIUM-54	7.17E-03 +/- 3.7E-02	U	pCi/g		6.63E-02	
		NIOBIUM-94	2.28E-02 +/- 2.8E-02	U	pCi/g		6.42E-02	
		LEAD-212	6.17E-01 +/- 1.5E-01		pCi/g		1.08E-01	
		LEAD-214	6.08E-01 +/- 1.6E-01		pCi/g		9.68E-02	
		RADIUM-226	6.38E-01 +/- 1.6E-01	U	pCi/g		2.11E-01	
		THALLIUM-208	2.14E-01 +/- 7.1E-02		pCi/g		6.42E-02	

STL Richland RER - Replicate Error Ratio = $(S-D)/\sqrt{(sq(TPU)+sq(TPD))}$ as defined by ICPT DOA.

rp1STLRichSaSum U Qual - Analyzed for, but the result is less than the MDC/MDA Total Uncert or gamma scan software did not identify the nuclide.
 V3.95 A97

Sample Results Summary
STL Richland STLRL
 Ordered by Client Sample ID, Batch No.

Date: 30-Oct-02

Report No. : 20779

SDG No: 21180

Client ID	Work Order Number	Parameter	Result ± Uncertainty (2σ)	Qual	Units	Yield	MDC MDA	RER
9531-0000-008F	E84WN1AA	ACTINIUM-228	6.10E-01 ± 2.0E-01		pCi/g		1.33E-01	
		AG-108M	4.63E-03 ± 1.8E-02	U	pCi/g		3.23E-02	
		AMERICIUM-241	3.44E-02 ± 5.2E-02	U	pCi/g		8.39E-02	
		BISMUTH-214	4.26E-01 ± 1.2E-01	U	pCi/g		1.69E-01	
		COBALT-60	-1.26E-02 ± 2.4E-02	U	pCi/g		4.06E-02	
		CESIUM-134	5.13E-02 ± 4.2E-02	U	pCi/g		5.93E-02	
		CESIUM-137	2.22E-01 ± 6.2E-02	J	pCi/g		4.42E-02	
		EUROPIUM-152	-8.60E-03 ± 6.0E-02	U	pCi/g		1.02E-01	
		EUROPIUM-154	2.16E-02 ± 8.4E-02	U	pCi/g		1.66E-01	
		EUROPIUM-155	4.07E-02 ± 6.2E-02	U	pCi/g		1.10E-01	
		POTASSIUM-40	1.21E+01 ± 1.8E+00		pCi/g		3.86E-01	
		MAGNESIUM-54	6.36E-04 ± 2.5E-02	U	pCi/g		4.67E-02	
		NIOBIUM-94	1.18E-02 ± 2.4E-02	U	pCi/g		4.44E-02	
		LEAD-212	6.76E-01 ± 1.1E-01		pCi/g		6.18E-02	
		LEAD-214	6.00E-01 ± 1.1E-01		pCi/g		7.24E-02	
		RADIUM-228	4.26E-01 ± 1.2E-01		pCi/g		7.11E-02	
		THALLIUM-208	1.87E-01 ± 5.1E-02	U	pCi/g		7.98E-02	
9531-0000-008FS	E84WR1AA	ACTINIUM-228	6.40E-01 ± 1.8E-01	U	pCi/g		3.11E-01	
		AG-108M	6.03E-03 ± 2.4E-02	U	pCi/g		4.26E-02	
		AMERICIUM-241	-7.64E-02 ± 1.1E-01	U	pCi/g		1.89E-01	
		BISMUTH-214	4.32E-01 ± 1.2E-01	U	pCi/g		1.68E-01	
		COBALT-60	-1.10E-02 ± 2.6E-02	U	pCi/g		4.44E-02	
		CESIUM-134	3.64E-02 ± 3.6E-02	U	pCi/g		6.74E-02	
		CESIUM-137	1.26E-01 ± 5.9E-02	J	pCi/g		4.87E-02	
		EUROPIUM-152	-8.69E-02 ± 8.4E-02	U	pCi/g		1.26E-01	
		EUROPIUM-154	6.76E-02 ± 9.0E-02	U	pCi/g		1.74E-01	
		EUROPIUM-155	-3.53E-02 ± 8.6E-02	U	pCi/g		1.42E-01	
		POTASSIUM-40	1.10E+01 ± 1.7E+00		pCi/g		4.26E-01	
		MAGNESIUM-54	6.69E-03 ± 3.4E-02	U	pCi/g		6.02E-02	
		NIOBIUM-94	-1.62E-03 ± 2.6E-02	U	pCi/g		4.64E-02	
		LEAD-212	6.25E-01 ± 1.7E-01		pCi/g		7.27E-02	
		LEAD-214	4.38E-01 ± 1.1E-01		pCi/g		9.39E-02	
		RADIUM-226	4.32E-01 ± 1.2E-01	U	pCi/g		1.68E-01	
		THALLIUM-208	2.04E-01 ± 6.3E-02	U	pCi/g		8.00E-02	

STL Richland
 rptSTLRchSaSum
 V1.95 A97

RER - Replicate Error Ratio = $(S-D)/\sqrt{(sq(TPU)+sq(TFU))}$ as defined by ICFT BOA.
 J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

Sample Results Summary
STL Richland STLRL
 Ordered by Client Sample ID, Batch No.

Date: 30-Oct-02

Report No. : 20779

SDG No: 21180

Client ID	Work Order Number	Parameter	Result +/- Uncertainty (2s)	Qual	Units	Yield	MDC/MDA	RER
9531-0000-008F	E84VP1AA	ACTINIUM-228	7.38E-01 +/- 2.8E-01		pCi/g		1.88E-01	
		AG-108M	-7.04E-04 +/- 2.7E-02	U	pCi/g		4.87E-02	
		AMERICIUM-241	-3.06E-02 +/- 8.1E-02	U	pCi/g		1.58E-01	
		BISMUTH-214	7.84E-01 +/- 1.7E-01	U	pCi/g		2.54E-01	
		COBALT-60	1.05E-02 +/- 3.8E-02	U	pCi/g		7.21E-02	
		CESIUM-134	8.72E-02 +/- 4.3E-02	U	pCi/g		8.68E-02	
		CESIUM-137	5.14E-01 +/- 1.1E-01		pCi/g		6.80E-02	
		EUROPIUM-152	-2.79E-02 +/- 8.4E-02	U	pCi/g		1.44E-01	
		EUROPIUM-154	5.01E-02 +/- 1.1E-01	U	pCi/g		2.05E-01	
		EUROPIUM-155	2.56E-02 +/- 8.6E-02	U	pCi/g		1.48E-01	
		POTASSIUM-40	1.28E+01 +/- 2.1E+00		pCi/g		5.84E-01	
		MAGNESIUM-54	-8.93E-04 +/- 3.7E-02	U	pCi/g		6.83E-02	
		NIObIUM-94	-2.29E-03 +/- 3.4E-02	U	pCi/g		6.10E-02	
		LEAD-212	8.95E-01 +/- 1.8E-01		pCi/g		8.08E-02	
		LEAD-214	6.98E-01 +/- 2.1E-01		pCi/g		1.03E-01	
		RADIUM-226	7.85E-01 +/- 1.7E-01		pCi/g		1.02E-01	
		THALLIUM-208	2.93E-01 +/- 7.6E-02		pCi/g		5.62E-02	
9531-0000-010F	E84VN1AA	ACTINIUM-228	1.00E+00 +/- 2.6E-01		pCi/g		1.89E-01	
		AG-108M	-4.24E-04 +/- 2.9E-02	U	pCi/g		5.13E-02	
		AMERICIUM-241	-1.27E-01 +/- 1.5E-01	U	pCi/g		2.49E-01	
		BISMUTH-214	7.15E-01 +/- 1.7E-01	U	pCi/g		2.36E-01	
		COBALT-60	-1.54E-02 +/- 3.9E-02	U	pCi/g		6.81E-02	
		CESIUM-134	7.19E-02 +/- 4.5E-02	U	pCi/g		8.78E-02	
		CESIUM-137	3.88E-01 +/- 8.6E-02		pCi/g		7.34E-02	
		EUROPIUM-152	-4.23E-02 +/- 1.4E-01	U	pCi/g		1.89E-01	
		EUROPIUM-154	-1.94E-01 +/- 1.3E-01	U	pCi/g		1.88E-01	
		EUROPIUM-155	2.37E-02 +/- 1.1E-01	U	pCi/g		1.92E-01	
		POTASSIUM-40	1.27E+01 +/- 2.0E+00		pCi/g		4.44E-01	
		MAGNESIUM-54	2.18E-02 +/- 4.2E-02	U	pCi/g		7.74E-02	
		NIObIUM-94	2.01E-08 +/- 3.3E-02	U	pCi/g		5.77E-02	
		LEAD-212	7.25E-01 +/- 1.9E-01		pCi/g		1.15E-01	
		LEAD-214	7.49E-01 +/- 1.9E-01		pCi/g		1.21E-01	
		RADIUM-226	7.15E-01 +/- 1.7E-01	U	pCi/g		2.36E-01	
		THALLIUM-208	3.13E-01 +/- 9.4E-02	U	pCi/g		1.15E-01	

STL Richland RER - Replicate Error Ratio = $(S-D)/\sqrt{sq(TPU)+sq(TPUD)}$ as defined by ICPT BOA.

rptSTLRichSaSum U Qual - Analyzed for, but the result is less than the Mdc/MDa[Total Uncert] or gamma scan software did not identify the nuclide.
 V3.95 A97

Sample Results Summary
STL Richland STLRL
 Ordered by Client Sample ID, Batch No.

Date: 30-Oct-02

Report No. : 20779

SDG No: 21180

Client ID	Work Order Number	Parameter	Result +/- Uncertainty (2s)	Qual	Units	Yield	MDC/MDA	RER
9531-0000-011F	E84V81AA	ACTINIUM-228	5.00E-01 +/- 1.6E-01	U	pCi/g		3.11E-01	
		AG-108M	5.15E-03 +/- 2.5E-02	U	pCi/g		4.42E-02	
		AMERICIUM-241	-1.02E-01 +/- 1.2E-01	U	pCi/g		2.00E-01	
		BISMUTH-214	5.68E-01 +/- 1.2E-01	U	pCi/g		1.93E-01	
		COBALT-60	-3.19E-02 +/- 3.2E-02	U	pCi/g		5.02E-02	
		CESIUM-134	6.18E-02 +/- 3.9E-02	U	pCi/g		7.48E-02	
		CESIUM-137	2.21E-01 +/- 6.8E-02	J	pCi/g		5.57E-02	
		EUROPIUM-152	-4.71E-02 +/- 1.1E-01	U	pCi/g		1.37E-01	
		EUROPIUM-154	-5.25E-02 +/- 1.0E-01	U	pCi/g		1.74E-01	
		EUROPIUM-155	-1.69E-02 +/- 9.4E-02	U	pCi/g		1.57E-01	
		POTASSIUM-40	1.05E+01 +/- 1.7E+00		pCi/g		4.51E-01	
		MAGNESIUM-54	1.44E-02 +/- 3.5E-02	U	pCi/g		6.39E-02	
		NIOBIUM-94	3.80E-03 +/- 2.7E-02	U	pCi/g		4.78E-02	
		LEAD-212	5.34E-01 +/- 1.4E-01		pCi/g		6.88E-02	
		LEAD-214	6.68E-01 +/- 1.5E-01		pCi/g		1.02E-01	
		RADIUM-226	5.86E-01 +/- 1.2E-01	U	pCi/g		1.93E-01	
		THALLIUM-208	2.73E-01 +/- 6.7E-02		pCi/g		4.80E-02	
9531-0000-012F	E84VK1AA	ACTINIUM-228	6.14E-01 +/- 2.0E-01	U	pCi/g		3.60E-01	
		AG-108M	7.03E-03 +/- 2.6E-02	U	pCi/g		4.57E-02	
		AMERICIUM-241	-4.17E-02 +/- 8.1E-02	U	pCi/g		1.38E-01	
		BISMUTH-214	6.48E-01 +/- 1.4E-01	U	pCi/g		2.23E-01	
		COBALT-60	-2.73E-03 +/- 3.3E-02	U	pCi/g		6.13E-02	
		CESIUM-134	1.64E-03 +/- 3.4E-02	U	pCi/g		6.18E-02	
		CESIUM-137	4.77E-01 +/- 9.1E-02		pCi/g		5.21E-02	
		EUROPIUM-152	-1.31E-02 +/- 7.8E-02	U	pCi/g		1.33E-01	
		EUROPIUM-154	-3.08E-02 +/- 1.0E-01	U	pCi/g		1.78E-01	
		EUROPIUM-155	5.41E-02 +/- 7.1E-02	U	pCi/g		1.25E-01	
		POTASSIUM-40	1.02E+01 +/- 1.7E+00		pCi/g		4.89E-01	
		MAGNESIUM-54	1.18E-02 +/- 3.6E-02	U	pCi/g		6.76E-02	
		NIOBIUM-94	-1.62E-03 +/- 2.9E-02	U	pCi/g		5.27E-02	
		LEAD-212	6.18E-01 +/- 1.4E-01		pCi/g		9.42E-02	
		LEAD-214	6.38E-01 +/- 1.6E-01		pCi/g		1.02E-01	
		RADIUM-226	5.46E-01 +/- 1.4E-01	U	pCi/g		2.23E-01	
		THALLIUM-208	1.72E-01 +/- 5.8E-02	U	pCi/g		9.73E-02	

STL Richland RER - Replicate Error Ratio = $(S-D)/\sqrt{sq(TFU)+sq(TFUD)}$ as defined by ICPT BOA.
 rptSTLRchSaSum J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V3.95 A97 U Qual - Analyzed for, but the result is less than the Mdc/MDa/Total Uncert or gamma scan software did not identify the nuclide.

Sample Results Summary
STL Richland STLRL
 Ordered by Client Sample ID, Batch No.

Date: 30-Oct-02

Report No. : 20779

SDG No: 21180

Client ID	Work Order Number	Parameter	Result +/- Uncertainty (2s)	Qual	Units	Yield	MDC/MDA	RER
9531-0000-014F	EB4VT1AA	ACTINIUM-228	6.08E-01 +/- 2.1E-01	U	pCi/g		3.66E-01	
		AG-108M	-2.36E-03 +/- 2.6E-02	U	pCi/g		4.32E-02	
		AMERICIUM-241	2.84E-02 +/- 5.3E-02	U	pCi/g		8.61E-02	
		BISMUTH-214	5.30E-01 +/- 1.4E-01	U	pCi/g		2.14E-01	
		COBALT-60	-7.30E-03 +/- 2.8E-02	U	pCi/g		5.08E-02	
		CESIUM-134	3.09E-02 +/- 3.5E-02	U	pCi/g		6.75E-02	
		CESIUM-137	2.75E-02 +/- 3.4E-02	U	pCi/g		6.28E-02	
		EUROPIUM-152	5.49E-02 +/- 8.3E-02	U	pCi/g		1.40E-01	
		EUROPIUM-154	3.28E-02 +/- 9.3E-02	U	pCi/g		1.76E-01	
		EUROPIUM-155	3.81E-02 +/- 7.0E-02	U	pCi/g		1.22E-01	
		POTASSIUM-40	1.07E+01 +/- 1.7E+00		pCi/g		2.65E-01	
		MAGNESIUM-54	-1.26E-03 +/- 3.2E-02	U	pCi/g		5.66E-02	
		NIOBIUM-94	-7.65E-03 +/- 2.5E-02	U	pCi/g		4.44E-02	
		LEAD-212	7.32E-01 +/- 1.5E-01		pCi/g		1.02E-01	
		LEAD-214	6.23E-01 +/- 1.5E-01		pCi/g		8.69E-02	
		RADIUM-226	5.30E-01 +/- 1.4E-01		pCi/g		9.32E-02	
		THALLIUM-208	2.73E-01 +/- 9.3E-02		pCi/g		4.96E-02	
9531-0000-016F DUP	EB7CA1AM	ACTINIUM-228	6.23E-01 +/- 2.0E-01	U	pCi/g		3.42E-01	
		AG-108M	-1.03E-02 +/- 2.3E-02	U	pCi/g		3.82E-02	
		AMERICIUM-241	2.36E-02 +/- 8.1E-02	U	pCi/g		1.40E-01	
		BISMUTH-214	4.88E-01 +/- 1.3E-01	U	pCi/g		1.89E-01	
		COBALT-60	6.72E-03 +/- 2.9E-02	U	pCi/g		5.84E-02	
		CESIUM-134	3.17E-02 +/- 3.4E-02	U	pCi/g		6.45E-02	
		CESIUM-137	7.45E-02 +/- 5.6E-02	J	pCi/g		4.65E-02	
		EUROPIUM-152	-2.38E-02 +/- 8.7E-02	U	pCi/g		1.27E-01	
		EUROPIUM-154	-6.60E-02 +/- 9.4E-02	U	pCi/g		1.58E-01	
		EUROPIUM-155	6.10E-02 +/- 6.9E-02	U	pCi/g		1.22E-01	
		POTASSIUM-40	9.88E+00 +/- 1.6E+00		pCi/g		3.03E-01	
		MAGNESIUM-54	-6.07E-03 +/- 3.2E-02	U	pCi/g		5.63E-02	
		NIOBIUM-94	-6.87E-03 +/- 2.8E-02	U	pCi/g		4.63E-02	
		LEAD-212	6.71E-01 +/- 1.4E-01		pCi/g		6.60E-02	
		LEAD-214	4.87E-01 +/- 1.5E-01		pCi/g		8.84E-02	
		RADIUM-226	4.88E-01 +/- 1.3E-01	U	pCi/g		1.89E-01	
		THALLIUM-208	1.79E-01 +/- 6.0E-02		pCi/g		4.37E-02	

STL Richland RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPU)+sq(TPD))] as defined by ICPT NOA.
 rptSTLRLchSaSum J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V3.95 A97 U Qual - Analyzed for, but the result is less than the MDC/MDA/Total Uncert or gamma scan software did not identify the nuclide.

Sample Results Summary
STL Richland STLRL
Ordered by Client Sample ID, Batch No.

Date: 30-Oct-02

Report No. : 20779

SDG No: 21203

Client ID	Work Order Number	Parameter	Result +/- Uncertainty (2s)	Qual	Units	Yield	MDC(MDA)	RER
Number of Results:		272						

STL Richland RER - Replicate Error Ratio = $(S-D)/[\sqrt{sq(TPLU)+sq(TPLD)}]$ as defined by ICPT NOA.
rp1STLRchSaSum
V3.95 A97

QC Results Summary
STL Richland STLRL
 Ordered by QC Type, Batch No.

Date: 30-Oct-02

Report No. : 20779

SDG No.: 21180

QC Type	Work Order Number	Parameter	Result +/- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDQ/MDA
BLANK QC	E888N1AA	ACTINIUM-228	-9.35E-03 +/- 1.2E-01	U	pCi/g				2.16E-01
		AG-108M	-1.97E-02 +/- 2.8E-02	U	pCi/g				4.58E-02
		AMERICIUM-241	1.26E-01 +/- 2.9E-01	U	pCi/g				6.13E-01
		BISMUTH-214	-2.21E-02 +/- 8.3E-02	U	pCi/g				1.47E-01
		COBALT-60	-1.84E-03 +/- 3.2E-02	U	pCi/g				6.28E-02
		CESIUM-134	-1.15E-02 +/- 3.7E-02	U	pCi/g				6.60E-02
		CESIUM-137	-3.79E-04 +/- 3.8E-02	U	pCi/g				6.98E-02
		EUROPIUM-152	-1.55E-02 +/- 9.1E-02	U	pCi/g				1.59E-01
		EUROPIUM-154	1.76E-02 +/- 1.0E-01	U	pCi/g				1.96E-01
		EUROPIUM-155	-3.67E-02 +/- 1.1E-01	U	pCi/g				1.87E-01
		POTASSIUM-40	-5.63E-01 +/- 6.3E-01	U	pCi/g				1.37E+00
		MAGNESIUM-64	3.46E-03 +/- 3.0E-02	U	pCi/g				6.91E-02
		NIOBIUM-94	4.62E-02 +/- 3.7E-02	U	pCi/g				7.84E-02
		LEAD-212	-2.48E-02 +/- 6.0E-02	U	pCi/g				1.03E-01
		LEAD-214	3.41E-02 +/- 7.0E-02	U	pCi/g				1.29E-01
		RADIUM-226	-2.19E-02 +/- 8.3E-02	U	pCi/g				1.47E-01
		THALLIUM-208	8.82E-03 +/- 4.4E-02	U	pCi/g				8.27E-02
LCS	E888N1AC	CESIUM-137	1.07E+00 +/- 1.8E-01		pCi/g		104.77%	0.0	8.10E-02

Number of Results: 18

STL Richland Bias = (Result/Expected)-1 as defined by ANSI N13.30.
 rptSTLRLchQcSum U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.
 V3.65 A97

FORM I

Date: 30-Oct-02

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: J21300127-7
 Client Sample ID: 9531-0000-001F

SDG: 21180
 Report No.: 20779
 COC No.:

Collection Date: 8/20/2002 1:53:00 PM
 Received Date: 9/25/2002 3:13:00 PM
 Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Alliquot Size	Analy Method, Primary Detector
Batch: 2275373	Work Order: E84V11AA				Report DB ID: 9E84V110							
ACTINIUM-226	6.33E-01	U	1.8E-01	1.8E-01	3.10E-01	pCi/g		(2.) (6.9)	10/24/02 09:49 a		343.6 g	E901.1 GER1\$1
AG-108M	-1.58E-03	U	2.4E-02	2.4E-02	4.25E-02	pCi/g		-0.04 -0.13	10/24/02 09:49 a		343.6 g	E901.1 GER1\$1
AMERICIUM-241	-4.13E-02	U	1.1E-01	1.1E-01	1.84E-01	pCi/g		-0.23 -0.76	10/24/02 09:49 a		343.6 g	E901.1 GER1\$1
BISMUTH-214	3.72E-01	U	1.0E-01	1.0E-01	1.81E-01	pCi/g		(2.3) (7.2)	10/24/02 09:49 a		343.6 g	E901.1 GER1\$1
COBALT-60	-7.24E-03	U	2.8E-02	2.9E-02	5.07E-02	pCi/g		-0.14 -0.51	10/24/02 09:49 a		343.6 g	E901.1 GER1\$1
CESIUM-134	3.02E-04	U	3.0E-02	3.0E-02	6.33E-02	pCi/g	1.52E-01	0.01	10/24/02 09:49 a		343.6 g	E901.1 GER1\$1
CESIUM-137	6.42E-01		9.3E-02	9.3E-02	5.07E-02	pCi/g	1.87E-01	0.02	10/24/02 09:49 a		343.6 g	E901.1 GER1\$1
EUROPIUM-152	-8.72E-02	U	9.0E-02	9.0E-02	1.33E-01	pCi/g	3.16E-01	(10.7) (11.7)	10/24/02 09:49 a		343.6 g	E901.1 GER1\$1
EUROPIUM-154	-1.44E-02	U	9.2E-02	9.2E-02	1.64E-01	pCi/g	4.04E-01	-0.73 -(2.2)	10/24/02 09:49 a		343.6 g	E901.1 GER1\$1
EUROPIUM-155	6.06E-03	U	8.6E-02	8.6E-02	1.45E-01	pCi/g	3.72E-01	-0.09 -0.31	10/24/02 09:49 a		343.6 g	E901.1 GER1\$1
							1.57E+01	0.04 0.14	10/24/02 09:49 a		343.6 g	E901.1 GER1\$1

STL Richland
 rptSTLRichSample
 V3.85 A87

MDC(MDA), Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I

Date: 30-Oct-02

SAMPLE RESULTS

Lab Name: STL Richland

SDG: 21180

Collection Date: 8/20/2002 1:53:00 PM

Lot-Sample No.: J21300127-7

Report No.: 20779

Received Date: 9/25/2002 3:13:00 PM

Client Sample ID: 9531-0000-001F

COC No. :

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert (2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst MDC, Rst Tot Uncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Anal Method, Primary Detector
POTASSIUM-40	9.81E+00		1.5E+00	1.5E+00	4.91E-01	pCi/g		(20.) (12.8)	10/24/02 09:49 a		343.6	E901.1
MAGNESIUM-54	3.58E-02	U	3.3E-02	3.3E-02	6.35E-02	pCi/g	6.86E-01	0.56 (2.1)	10/24/02 09:49 a		9	GER1\$1
NIOBIUM-84	-8.16E-03	U	2.6E-02	2.6E-02	4.52E-02	pCi/g	2.85E-01	-0.18 -0.62	10/24/02 09:49 a		343.6	E901.1
LEAD-212	4.48E-01		1.2E-01	1.2E-01	8.92E-02	pCi/g		(5.) (7.2)	10/24/02 09:49 a		343.6	E901.1
LEAD-214	4.81E-01		1.3E-01	1.3E-01	9.49E-02	pCi/g		(4.9) (8.0)	10/24/02 09:49 a		343.6	E901.1
RADIUM-226	3.72E-01	U	1.0E-01	1.0E-01	1.81E-01	pCi/g		(2.3) (7.2)	10/24/02 09:49 a		343.6	E901.1
THALLIUM-208	1.50E-01		5.1E-02	5.1E-02	4.50E-02	pCi/g		(3.3) (5.9)	10/24/02 09:49 a		343.6	E901.1
											9	GER1\$1

Number of Results: 17

Comments:

STL Richland MDC|MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRichSample U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.
 V3.95 A97

FORM I SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J21300127-12
Client Sample ID: 9531-0000-002F

SDG: 21180
Report No.: 20779
COC No.:

Collection Date: 8/19/2002 2:27:00 PM
Received Date: 9/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2275373	Work Order: E84WH1AA				Report DB ID: 9E84WH10							
ACTINIUM-228	7.25E-01	U	3.0E-01	3.0E-01	4.29E-01	pCi/g		(1.7) (4.9)	10/24/02 11:32 a		273.4 g	E901.1 GER2\$1
AG-108M	8.88E-04	U	3.1E-02	3.1E-02	5.30E-02	pCi/g		0.02 0.08	10/24/02 11:32 a		273.4 g	E901.1 GER2\$1
AMERICIUM-241	5.84E-02	U	3.8E-01	3.8E-01	8.42E-01	pCi/g		0.09 0.31	10/24/02 11:32 a		273.4 g	E901.1 GER2\$1
BISMUTH-214	5.83E-01	U	2.0E-01	2.0E-01	2.53E-01	pCi/g		(2.3) (5.9)	10/24/02 11:32 a		273.4 g	E901.1 GER2\$1
COBALT-60	1.10E-02	U	4.1E-02	4.1E-02	7.88E-02	pCi/g		0.14	10/24/02 11:32 a		273.4 g	E901.1 GER2\$1
							1.82E-01	0.54				
CESIUM-134	7.82E-02	U	4.8E-02	4.8E-02	9.54E-02	pCi/g		0.82	10/24/02 11:32 a		273.4 g	E901.1 GER2\$1
							1.87E-01	(3.2)				
CESIUM-137	1.08E-01	U	5.3E-02	5.3E-02	1.00E-01	pCi/g		(1.1)	10/24/02 11:32 a		273.4 g	E901.1 GER2\$1
							3.16E-01	(4.)				
EUROPIUM-152	2.60E-02	U	1.4E-01	1.4E-01	1.78E-01	pCi/g		0.14	10/24/02 11:32 a		273.4 g	E901.1 GER2\$1
							4.04E-01	0.36				
EUROPIUM-154	7.77E-02	U	1.2E-01	1.2E-01	2.28E-01	pCi/g		0.34	10/24/02 11:32 a		273.4 g	E901.1 GER2\$1
							3.72E-01	(1.3)				
EUROPIUM-155	1.57E-01	U	1.5E-01	1.5E-01	2.88E-01	pCi/g		0.58	10/24/02 11:32 a		273.4 g	E901.1 GER2\$1
							1.57E+01	(2.1)				

STL Richland
rptSTLRichSample
V3.95 A97

MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J21300127-12
Client Sample ID: 9531-0000-002F

SDG: 21180
Report No.: 20779
COC No.:

Collection Date: 8/19/2002 2:27:00 PM
Received Date: 9/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
POTASSIUM-40	1.39E+01		2.2E+00	2.2E+00	6.46E-01	pCi/g		(21.5) (12.6)	10/24/02 11:32 a		273.4	E901.1 GER2\$1
MAGNESIUM-54	1.95E-02	U	4.4E-02	4.4E-02	8.13E-02	pCi/g	8.86E-01	0.24 0.89	10/24/02 11:32 a		273.4	E901.1 GER2\$1
NIOBIUM-94	-5.11E-03	U	3.6E-02	3.6E-02	8.37E-02	pCi/g	2.85E-01	-0.08 -0.28	10/24/02 11:32 a		273.4	E901.1 GER2\$1
LEAD-212	7.24E-01		1.9E-01	1.9E-01	1.19E-01	pCi/g		(6.1) (7.6)	10/24/02 11:32 a		273.4	E901.1 GER2\$1
LEAD-214	7.61E-01		1.8E-01	1.8E-01	1.26E-01	pCi/g		(6.1) (8.4)	10/24/02 11:32 a		273.4	E901.1 GER2\$1
RADIUM-226	5.83E-01	U	2.0E-01	2.0E-01	2.53E-01	pCi/g		(2.3) (5.9)	10/24/02 11:32 a		273.4	E901.1 GER2\$1
THALLIUM-208	2.42E-01		7.9E-02	7.9E-02	7.28E-02	pCi/g		(3.3) (6.1)	10/24/02 11:32 a		273.4	E901.1 GER2\$1

Number of Results: 17

Comments:

STL Richland MDC(MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
rptSTLRichSample U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.
V3.95 A97

FORM I SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J21300127-13
Client Sample ID: 9531-0000-002FS

SDG: 21180
Report No.: 20779
COC No.:

Collection Date: 8/19/2002 2:27:00 PM
Received Date: 9/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2275373	Work Order: E84WJ1AA				Report DB ID: 9E84WJ10							
ACTINIUM-228	9.15E-01		2.5E-01	2.5E-01	1.97E-01	pCi/g		(4.6) (7.3)	10/24/02 11:37 a		277.2 g	E901.1 GER5\$1
AG-105M	8.96E-03	U	2.9E-02	2.9E-02	5.26E-02	pCi/g		0.17 0.61	10/24/02 11:37 a		277.2 g	E901.1 GER5\$1
AMERICIUM-241	1.78E-03	U	6.3E-02	6.3E-02	1.09E-01	pCi/g		0.02 0.05	10/24/02 11:37 a		277.2 g	E901.1 GER5\$1
BISMUTH-214	8.43E-01	U	1.8E-01	1.8E-01	2.68E-01	pCi/g		(3.1) (9.3)	10/24/02 11:37 a		277.2 g	E901.1 GER5\$1
COBALT-60	1.17E-02	U	3.7E-02	3.7E-02	7.18E-02	pCi/g		0.16 0.63	10/24/02 11:37 a		277.2 g	E901.1 GER5\$1
							1.52E-01					
CESIUM-134	4.78E-02	U	4.6E-02	4.8E-02	8.86E-02	pCi/g		0.54 1.87E-01	10/24/02 11:37 a		277.2 g	E901.1 GER5\$1
CESIUM-137	1.30E-01	J	6.8E-02	6.8E-02	6.75E-02	pCi/g		(1.9) 3.16E-01	10/24/02 11:37 a		277.2 g	E901.1 GER5\$1
EUROPIUM-152	8.44E-02	U	1.0E-01	1.0E-01	1.76E-01	pCi/g		0.48 4.04E-01	10/24/02 11:37 a		277.2 g	E901.1 GER5\$1
EUROPIUM-154	8.50E-02	U	1.1E-01	1.1E-01	2.11E-01	pCi/g		0.4 3.72E-01	10/24/02 11:37 a		277.2 g	E901.1 GER5\$1
EUROPIUM-155	6.03E-02	U	6.8E-02	6.8E-02	1.56E-01	pCi/g		0.39 1.57E+01	10/24/02 11:37 a		277.2 g	E901.1 GER5\$1

STL Richland
rptSTLRichSample
V3.95 A97

MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland
 Lot-Sample No.: J21300127-13
 Client Sample ID: 9531-0000-002FS

SDG: 21180
 Report No.: 20779
 COC No.:

Collection Date: 8/19/2002 2:27:00 PM
 Received Date: 9/25/2002 3:13:00 PM
 Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
POTASSIUM-40	1.33E+01		2.1E+00	2.1E+00	5.63E-01	pCi/g		(23.6) (12.7)	10/24/02 11:37 a		277.2	E901.1 GER5\$1
MAGNESIUM-24	-2.23E-02	U	3.8E-02	3.8E-02	6.34E-02	pCi/g	6.98E-01	-0.35 -(1.2)	10/24/02 11:37 a		277.2	E901.1 GER5\$1
NIOBIUM-94	4.77E-03	U	3.4E-02	3.4E-02	6.14E-02	pCi/g	2.85E-01	0.08 0.28	10/24/02 11:37 a		277.2	E901.1 GER5\$1
LEAD-212	8.43E-01		1.9E-01	1.9E-01	1.45E-01	pCi/g		(5.8) (9.1)	10/24/02 11:37 a		277.2	E901.1 GER5\$1
LEAD-214	8.70E-01		2.0E-01	2.0E-01	1.21E-01	pCi/g		(7.2) (8.8)	10/24/02 11:37 a		277.2	E901.1 GER5\$1
RADIUM-226	8.43E-01		1.8E-01	1.8E-01	1.20E-01	pCi/g		(7.1) (9.3)	10/24/02 11:37 a		277.2	E901.1 GER5\$1
THALLIUM-208	2.71E-01		8.3E-02	8.3E-02	6.48E-02	pCi/g		(4.2) (6.5)	10/24/02 11:37 a		277.2	E901.1 GER5\$1

Number of Results: 17

Comments:

STL Richland MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRichSample J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V3.95 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J21300127-8
Client Sample ID: 9531-0000-003F

SDG: 21180
Report No.: 20779
COC No.:

Collection Date: 8/20/2002 2:20:00 PM
Received Date: 9/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert (2 s)	MDC/MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prop Date	Total Sa Size	Aliquot Size	Anal Method, Primary Detector
Batch: 2275373	Work Order: E84V51AA				Report DB ID: 9E84V510							
ACTINIUM-228	4.63E-01	U	1.8E-01	1.8E-01	3.20E-01	pCi/g		(1.4) (5.2)	10/24/02 09:45 a		324.4 g	E901.1 GER6S1
AG-109M	-4.13E-03	U	2.1E-02	2.1E-02	3.64E-02	pCi/g		-0.11 -0.39	10/24/02 09:45 a		324.4 g	E901.1 GER6S1
AMERICIUM-241	-1.98E-02	U	7.5E-02	7.5E-02	1.31E-01	pCi/g		-0.15 -0.52	10/24/02 09:45 a		324.4 g	E901.1 GER6S1
BISMUTH-214	5.85E-01	U	1.3E-01	1.3E-01	2.04E-01	pCi/g		(2.9) (9.)	10/24/02 09:45 a		324.4 g	E901.1 GER6S1
COBALT-60	-1.51E-03	U	3.1E-02	3.1E-02	5.74E-02	pCi/g		-0.03	10/24/02 09:45 a		324.4 g	E901.1 GER6S1
							1.52E-01	-0.1				
CESIUM-134	1.62E-02	U	3.2E-02	3.2E-02	5.95E-02	pCi/g		0.27	10/24/02 09:45 a		324.4 g	E901.1 GER6S1
							1.87E-01	(1.)				
CESIUM-137	3.36E-02	U	3.4E-02	3.4E-02	6.49E-02	pCi/g		0.52	10/24/02 09:45 a		324.4 g	E901.1 GER6S1
							3.16E-01	(2.)				
EUROPIUM-152	5.56E-03	U	7.0E-02	7.0E-02	1.23E-01	pCi/g		0.05	10/24/02 09:45 a		324.4 g	E901.1 GER6S1
							4.04E-01	0.16				
EUROPIUM-154	-1.58E-02	U	8.8E-02	8.8E-02	1.59E-01	pCi/g		-0.1	10/24/02 09:45 a		324.4 g	E901.1 GER6S1
							3.72E-01	-0.36				
EUROPIUM-155	1.83E-02	U	6.6E-02	6.6E-02	1.17E-01	pCi/g		0.16	10/24/02 09:45 a		324.4 g	E901.1 GER6S1
							1.57E+01	0.54				

STL Richland
rptSTLRichSample
V3.03 A97

MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J21300127-8
Client Sample ID: 9531-0000-003F

SDG: 21180
Report No.: 20779
COC No.:

Collection Date: 8/20/2002 2:20:00 PM
Received Date: 9/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
POTASSIUM-40	1.05E+01		1.7E+00	1.7E+00	4.24E-01	pCi/g		(24.8) (12.5)	10/24/02 09:45 a		324.4 g	E901.1 GER6\$1
MAGNESIUM-24	1.44E-02	U	3.6E-02	3.6E-02	6.59E-02	pCi/g	6.95E-01	0.22 0.81	10/24/02 09:45 a		324.4 g	E901.1 GER6\$1
NIOBIUM-94	-6.02E-03	U	2.6E-02	2.6E-02	4.86E-02	pCi/g	2.85E-01	-0.13 -0.46	10/24/02 09:45 a		324.4 g	E901.1 GER6\$1
LEAD-212	5.74E-01		1.4E-01	1.4E-01	1.01E-01	pCi/g		(5.7) (3.5)	10/24/02 09:45 a		324.4 g	E901.1 GER6\$1
LEAD-214	5.43E-01		1.4E-01	1.4E-01	8.74E-02	pCi/g		(5.2) (7.8)	10/24/02 09:45 a		324.4 g	E901.1 GER6\$1
RADIUM-226	5.85E-01	U	1.3E-01	1.3E-01	2.04E-01	pCi/g		(2.9) (9.)	10/24/02 09:45 a		324.4 g	E901.1 GER6\$1
THALLIUM-208	1.87E-01		6.3E-02	6.3E-02	4.99E-02	pCi/g		(3.3) (5.3)	10/24/02 09:45 a		324.4 g	E901.1 GER6\$1

Number of Results: 17

Comments:

STL Richland
rptSTLRichSample
V3.95 A97

MDC(MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J21300127-3
Client Sample ID: 9531-0000-004F

SDG: 21180
Report No.: 20779
COC No.:

Collection Date: 8/21/2002 10:35:00 AM
Received Date: 9/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: Z275373	Work Order: E84VL1AA				Report DB ID: 9E84VL10							
ACTINIUM-228	9.19E-01		4.5E-01	4.5E-01	3.60E-01	pCi/g		(2.6) (4.1)	10/24/02 07:05 a		175.0 g	E901.1 GER5\$1
AG-108M	3.42E-03	U	4.6E-02	4.6E-02	8.07E-02	pCi/g		0.04 0.15	10/24/02 07:05 a		175.0 g	E901.1 GER5\$1
AMERICIUM-241	2.60E-02	U	1.1E-01	1.1E-01	1.69E-01	pCi/g		0.15 0.47	10/24/02 07:05 a		175.0 g	E901.1 GER5\$1
BISMUTH-214	1.16E+00	U	2.6E-01	2.6E-01	4.05E-01	pCi/g		(2.6) (8.7)	10/24/02 07:05 a		175.0 g	E901.1 GER5\$1
COBALT-60	1.22E-01	U	6.5E-02	6.5E-02	1.42E-01	pCi/g		0.86 (3.7)	10/24/02 07:05 a		175.0 g	E901.1 GER5\$1
CESIUM-134	1.13E-01	U	7.2E-02	7.2E-02	1.44E-01	pCi/g	1.52E-01	0.78 (3.1)	10/24/02 07:05 a		175.0 g	E901.1 GER5\$1
CESIUM-137	8.45E-01		1.7E-01	1.7E-01	9.57E-02	pCi/g		(8.8) (9.7)	10/24/02 07:05 a		175.0 g	E901.1 GER5\$1
EUROPIUM-152	-1.44E-02	U	1.5E-01	1.5E-01	2.47E-01	pCi/g		-0.06 4.04E-01	10/24/02 07:05 a		175.0 g	E901.1 GER5\$1
EUROPIUM-154	-7.55E-02	U	1.5E-01	1.5E-01	2.56E-01	pCi/g		-0.29 3.72E-01	10/24/02 07:05 a		175.0 g	E901.1 GER5\$1
EUROPIUM-155	3.72E-02	U	1.2E-01	1.2E-01	2.11E-01	pCi/g		0.18 1.57E+01	10/24/02 07:05 a		175.0 g	E901.1 GER5\$1

STL Richland
rptSTLRchSample
V3.99 A97

MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland
Lot Sample No.: J21300127-3
Client Sample ID: 9531-0000-004F

SDG: 21180
Report No.: 20779
COC No.:

Collection Date: 8/21/2002 10:35:00 AM
Received Date: 9/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert (2 s)	MDC/MDA, Action Lev	Rpt Unit, Lc	Yield CRDL (RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Alliquot Size	Anal Method, Primary Detector
POTASSIUM-40	1.80E+01		3.1E+00	3.1E+00	1.31E+00	pCi/g		(13.7) (11.7)	10/24/02 07:05 a		175.0	E901.1 GER551
MAGNESIUM-84	4.67E-02	U	6.9E-02	5.9E-02	1.14E-01	pCi/g	6.96E-01	0.4 (1.6)	10/24/02 07:05 a		175.0	E901.1 GER551
NIOBIUM-94	-5.28E-03	U	4.7E-02	4.7E-02	8.47E-02	pCi/g	2.85E-01	-0.06 (9.5)	10/24/02 07:05 a		175.0	E901.1 GER551
LEAD-212	1.27E+00		2.7E-01	2.7E-01	2.08E-01	pCi/g		(6.1) (9.5)	10/24/02 07:05 a		175.0	E901.1 GER551
LEAD-214	1.34E+00		3.2E-01	3.2E-01	1.85E-01	pCi/g		(7.2) (8.4)	10/24/02 07:05 a		175.0	E901.1 GER551
RADIUM-226	1.15E+00	U	2.6E-01	2.6E-01	4.05E-01	pCi/g		(2.8) (8.7)	10/24/02 07:05 a		175.0	E901.1 GER551
THALLIUM-208	5.65E-01	U	1.3E-01	1.3E-01	2.02E-01	pCi/g		(2.8) (8.8)	10/24/02 07:05 a		175.0	E901.1 GER551

Number of Results: 17

Comments:

STL Richland MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRichSample J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V3.95 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J21300127-17
Client Sample ID: 9531-0000-005F

SDG: 21180
Report No.: 20779
COC No.:

Collection Date: 8/19/2002 3:20:00 PM
Received Date: 9/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Anal Method, Primary Detector
Batch: Z275373	Work Order: EB4WT1AA				Report DB ID: 9E84WT10							
ACTINIUM-228	9.12E-01	U	2.1E-01	2.1E-01	3.57E-01	pCi/g		(2.6) (8.6)	10/24/02 01:20 p		335.6 g	E901.1 GER2\$1
AG-108M	-5.44E-03	U	2.6E-02	2.6E-02	4.40E-02	pCi/g		-0.12 -0.42	10/24/02 01:20 p		335.6 g	E901.1 GER2\$1
AMERICIUM-241	-3.71E-01	U	3.0E-01	3.0E-01	4.74E-01	pCi/g		-0.78 -(2.4)	10/24/02 01:20 p		335.6 g	E901.1 GER2\$1
BISMUTH-214	5.74E-01	U	1.4E-01	1.4E-01	2.06E-01	pCi/g		(2.8) (8.2)	10/24/02 01:20 p		335.6 g	E901.1 GER2\$1
COBALT-60	2.22E-03	U	2.9E-02	2.9E-02	5.51E-02	pCi/g		0.04 1.52E-01	10/24/02 01:20 p		335.6 g	E901.1 GER2\$1
CESIUM-134	7.73E-03	U	3.7E-02	3.7E-02	6.68E-02	pCi/g		0.12 1.87E-01	10/24/02 01:20 p		335.6 g	E901.1 GER2\$1
CESIUM-137	1.01E-01	U	4.3E-02	4.3E-02	8.24E-02	pCi/g		(1.2) 3.18E-01	10/24/02 01:20 p		335.6 g	E901.1 GER2\$1
EUROPIUM-152	-7.62E-02	U	9.2E-02	9.2E-02	1.39E-01	pCi/g		-0.55 4.04E-01	10/24/02 01:20 p		335.6 g	E901.1 GER2\$1
EUROPIUM-154	2.52E-02	U	9.8E-02	9.8E-02	1.80E-01	pCi/g		0.14 3.72E-01	10/24/02 01:20 p		335.6 g	E901.1 GER2\$1
EUROPIUM-155	2.80E-02	U	1.2E-01	1.2E-01	2.06E-01	pCi/g		0.14 1.57E+01	10/24/02 01:20 p		335.6 g	E901.1 GER2\$1

STL Richland
rptSTLRichSample
V3.95 A97

MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
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U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland
 Lot-Sample No.: J21300127-17
 Client Sample ID: 9531-0000-005F

SDG: 21180
 Report No.: 20779
 COC No.:

Collection Date: 8/19/2002 3:20:00 PM
 Received Date: 9/25/2002 3:13:00 PM
 Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
POTASSIUM-40	1.08E+01		1.7E+00	1.7E+00	3.44E-01	pCi/g		(31.4) (12.8)	10/24/02 01:20 p	335.6		E901.1 GER251
MAGNESIUM-24	3.12E-02	U	3.7E-02	3.7E-02	6.98E-02	pCi/g	6.98E-01	0.45 (1.7)	10/24/02 01:20 p	335.6		E901.1 GER251
NIOBIUM-94	4.58E-02	U	3.0E-02	3.0E-02	6.06E-02	pCi/g	2.85E-01	0.76 (3.)	10/24/02 01:20 p	335.6		E901.1 GER251
LEAD-212	5.39E-01		1.4E-01	1.4E-01	1.06E-01	pCi/g		(5.1) (7.8)	10/24/02 01:20 p	335.6		E901.1 GER251
LEAD-214	6.05E-01		1.6E-01	1.6E-01	9.59E-02	pCi/g		(6.3) (7.8)	10/24/02 01:20 p	335.6		E901.1 GER251
RADIUM-226	5.74E-01	U	1.4E-01	1.4E-01	2.06E-01	pCi/g		(2.8) (8.2)	10/24/02 01:20 p	335.6		E901.1 GER251
THALLIUM-208	2.06E-01	U	6.7E-02	6.7E-02	9.92E-02	pCi/g		(2.1) (6.2)	10/24/02 01:20 p	335.6		E901.1 GER251

Number of Results: 17

Comments:

STL Richland
 rptSTLResSample
 V3.95 A97

MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J21300127-14
Client Sample ID: 9531-0000-006F

SDG: 21180
Report No.: 20779
COC No.:

Collection Date: 8/19/2002 2:38:00 PM
Received Date: 9/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, RstTotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2275373	Work Order: E84WK1AA				Report DB ID: 8E84WK10							
ACTINIUM-225	8.35E-01		2.5E-01	2.5E-01	1.80E-01	pCi/g		(4.6) (6.7)	10/24/02 11:33 a		290.6 g	E901.1 GER6\$1
AG-108M	1.05E-02	U	2.6E-02	2.6E-02	4.80E-02	pCi/g		0.23 0.63	10/24/02 11:33 a		290.6 g	E901.1 GER6\$1
AMERICIUM-241	4.24E-02	U	9.0E-02	9.0E-02	1.61E-01	pCi/g		0.26 0.94	10/24/02 11:33 a		290.6 g	E901.1 GER6\$1
BISMUTH-214	6.38E-01	U	1.4E-01	1.4E-01	2.22E-01	pCi/g		(2.9) (9.4)	10/24/02 11:33 a		290.6 g	E901.1 GER6\$1
COBALT-60	2.16E-02	U	3.0E-02	3.0E-02	6.28E-02	pCi/g		0.34 (1.4)	10/24/02 11:33 a		290.6 g	E901.1 GER6\$1
CESIUM-134	1.09E-02	U	3.8E-02	3.8E-02	6.99E-02	pCi/g	1.52E-01	0.16	10/24/02 11:33 a		290.6 g	E901.1 GER6\$1
CESIUM-137	3.54E-01		7.2E-02	7.2E-02	6.18E-02	pCi/g	1.87E-01	0.57	10/24/02 11:33 a		290.6 g	E901.1 GER6\$1
EUROPIUM-152	-6.28E-02	U	9.1E-02	9.1E-02	1.38E-01	pCi/g	3.16E-01	(5.7) (9.9)	10/24/02 11:33 a		290.6 g	E901.1 GER6\$1
EUROPIUM-154	8.44E-03	U	1.1E-01	1.1E-01	2.04E-01	pCi/g	4.04E-01	-0.45 -(1.4)	10/24/02 11:33 a		290.6 g	E901.1 GER6\$1
EUROPIUM-155	1.17E-01	U	8.1E-02	8.1E-02	1.45E-01	pCi/g	3.72E-01	0.04 0.15	10/24/02 11:33 a		290.6 g	E901.1 GER6\$1
							1.57E+01	(2.9)				

STL Richland
rptSTLRelSample
V3.53 A97

MDC(MDA), Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J21300127-14
Client Sample ID: 9531-0000-006F

SDG: 21180
Report No.: 20779
COC No.:

Collection Date: 8/19/2002 2:36:00 PM
Received Date: 9/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
POTASSIUM-40	1.11E+01		1.9E+00	1.9E+00	5.38E-01	pCi/g		(20.6) (11.8)	10/24/02 11:33 a		290.6 g	E901.1 GER6\$1
MAGNESIUM-84	1.68E-02	U	3.7E-02	3.7E-02	6.89E-02	pCi/g	6.89E-01	0.23 0.86	10/24/02 11:33 a		290.6 g	E901.1 GER6\$1
NIOBIUM-94	6.63E-03	U	2.8E-02	2.8E-02	5.25E-02	pCi/g	2.85E-01	0.12 0.46	10/24/02 11:33 a		290.6 g	E901.1 GER6\$1
LEAD-212	7.11E-01		1.5E-01	1.5E-01	9.99E-02	pCi/g		(7.1) (9.4)	10/24/02 11:33 a		290.6 g	E901.1 GER6\$1
LEAD-214	7.01E-01		1.7E-01	1.7E-01	9.93E-02	pCi/g		(7.1) (8.3)	10/24/02 11:33 a		290.6 g	E901.1 GER6\$1
RADIUM-226	6.38E-01	U	1.4E-01	1.4E-01	2.22E-01	pCi/g		(2.9) (9.4)	10/24/02 11:33 a		290.6 g	E901.1 GER6\$1
THALLIUM-208	3.20E-01		7.1E-02	7.1E-02	5.07E-02	pCi/g		(6.3) (9.)	10/24/02 11:33 a		290.6 g	E901.1 GER6\$1

Number of Results: 17

Comments:

STL Richland
rptSTLRichSample
V3.95 AS7

MDC(MDA,Le - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J21300127-1
Client Sample ID: 9531-0000-007F

SDG: 21180
Report No.: 20779
COC No.:

Collection Date: 8/21/2002 10:00:00 AM
Received Date: 9/25/2002 3:13:00 PM
Matrbc: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Anal Method, Primary Detector
Batch: Z275373	Work Order: E84VJ1AA				Report DB ID: SE84VJ10							
ACTINIUM-228	8.80E-01	U	2.3E-01	2.3E-01	3.44E-01	pCi/g		(2.) (5.8)	10/24/02 06:11 a		323.3 g	E901.1 GER1S1
AG-108M	-1.87E-02	U	2.8E-02	2.9E-02	4.78E-02	pCi/g		-0.39 -(1.3)	10/24/02 06:11 a		323.3 g	E901.1 GER1S1
AMERICIUM-241	-7.87E-02	U	1.3E-01	1.3E-01	2.13E-01	pCi/g		-0.37 -(1.2)	10/24/02 06:11 a		323.3 g	E901.1 GER1S1
BISMUTH-214	8.38E-01	U	1.5E-01	1.5E-01	2.11E-01	pCi/g		(3.) (8.4)	10/24/02 06:11 a		323.3 g	E901.1 GER1S1
COBALT-60	9.16E-03	U	3.3E-02	3.3E-02	6.24E-02	pCi/g		0.15 1.82E-01	10/24/02 06:11 a		323.3 g	E901.1 GER1S1
CESIUM-134	3.10E-02	U	3.8E-02	3.8E-02	7.11E-02	pCi/g		0.44 1.87E-01	10/24/02 06:11 a		323.3 g	E901.1 GER1S1
CESIUM-137	3.80E-01		8.5E-02	8.5E-02	6.81E-02	pCi/g		(6.8) 3.16E-01	10/24/02 06:11 a		323.3 g	E901.1 GER1S1
EUROPIUM-152	2.06E-02	U	1.3E-01	1.3E-01	1.49E-01	pCi/g		0.14 4.04E-01	10/24/02 06:11 a		323.3 g	E901.1 GER1S1
EUROPIUM-154	4.36E-02	U	9.3E-02	9.3E-02	1.77E-01	pCi/g		0.25 3.72E-01	10/24/02 06:11 a		323.3 g	E901.1 GER1S1
EUROPIUM-155	1.68E-02	U	9.5E-02	9.5E-02	1.82E-01	pCi/g		0.1 1.57E+01	10/24/02 06:11 a		323.3 g	E901.1 GER1S1

STL Richland
rptSTLRichSample
V3.85 A97

MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J21300127-1
Client Sample ID: 9531-0000-007F

SDG: 21180
Report No.: 20779
COC No.:

Collection Date: 8/21/2002 10:00:00 AM
Received Date: 9/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, Lo	Yield CRDL(RL)	Rst/MDG, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Anal Method, Primary Detector
POTASSIUM-40	1.00E+01		1.8E+00	1.8E+00	5.33E-01	pCi/g		(18.8) (12.4)	10/24/02 08:11 a		323.3 g	E901.1 GER1S1
MAGNESIUM-24	7.17E-03	U	3.7E-02	3.7E-02	6.63E-02	pCi/g	6.98E-01	0.11 0.39	10/24/02 08:11 a		323.3 g	E901.1 GER1S1
NIOSIUM-94	2.28E-02	U	2.8E-02	2.8E-02	5.42E-02	pCi/g	2.85E-01	0.42 (1.6)	10/24/02 08:11 a		323.3 g	E901.1 GER1S1
LEAD-212	5.17E-01		1.5E-01	1.5E-01	1.08E-01	pCi/g		(4.8) (7.1)	10/24/02 08:11 a		323.3 g	E901.1 GER1S1
LEAD-214	6.08E-01		1.5E-01	1.5E-01	9.68E-02	pCi/g		(6.3) (8.2)	10/24/02 08:11 a		323.3 g	E901.1 GER1S1
RADIUM-226	6.38E-01	U	1.5E-01	1.5E-01	2.11E-01	pCi/g		(3.) (8.4)	10/24/02 08:11 a		323.3 g	E901.1 GER1S1
THALLIUM-208	2.14E-01		7.1E-02	7.1E-02	5.42E-02	pCi/g		(4.) (6.1)	10/24/02 08:11 a		323.3 g	E901.1 GER1S1

Number of Results: 17

Comments:

STL Richland MDC/MDA,Lo - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
rptSTLRichSample J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
V3.95 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I

Date: 30-Oct-02

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: J21300127-15
 Client Sample ID: 9531-0000-008F

SDG: 21180
 Report No.: 20779
 COC No.:

Collection Date: 8/19/2002 3:20:00 PM
 Received Date: 9/25/2002 3:13:00 PM
 Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sn Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2275373	Work Order: E84WN1AA			Report DB ID: 9E84WN10								
ACTINIUM-228	8.10E-01		2.0E-01	2.0E-01	1.33E-01	pCi/g		(4.6) (6.1)	10/24/02 11:34 a		356.6 g	E901.1 GER8\$1
AG-108M	4.63E-03	U	1.8E-02	1.8E-02	3.23E-02	pCi/g		0.14 0.52	10/24/02 11:34 a		356.6 g	E901.1 GER8\$1
AMERICIUM-241	3.44E-02	U	5.2E-02	5.2E-02	8.39E-02	pCi/g		0.41 (1.3)	10/24/02 11:34 a		356.6 g	E901.1 GER8\$1
BISMUTH-214	4.25E-01	U	1.2E-01	1.2E-01	1.69E-01	pCi/g		(2.5) (5.9)	10/24/02 11:34 a		356.6 g	E901.1 GER8\$1
COBALT-60	-1.25E-02	U	2.4E-02	2.4E-02	4.08E-02	pCi/g		-0.31 (1.1)	10/24/02 11:34 a		356.6 g	E901.1 GER8\$1
CESIUM-134	5.13E-02	U	4.2E-02	4.2E-02	5.93E-02	pCi/g	1.52E-01	0.87 (2.4)	10/24/02 11:34 a		356.6 g	E901.1 GER8\$1
CESIUM-137	2.22E-01	J	6.2E-02	6.2E-02	4.42E-02	pCi/g	1.87E-01	(5.) (7.2)	10/24/02 11:34 a		356.6 g	E901.1 GER8\$1
EUROPIUM-152	-9.60E-03	U	6.0E-02	6.0E-02	1.02E-01	pCi/g	3.16E-01	-0.09 4.04E-01	10/24/02 11:34 a		356.6 g	E901.1 GER8\$1
EUROPIUM-154	2.16E-02	U	8.4E-02	8.4E-02	1.58E-01	pCi/g	3.72E-01	0.14 0.52	10/24/02 11:34 a		356.6 g	E901.1 GER8\$1
EUROPIUM-155	4.07E-02	U	6.2E-02	6.2E-02	1.10E-01	pCi/g	1.57E+01	0.37 (1.3)	10/24/02 11:34 a		356.6 g	E901.1 GER8\$1

STL Richland
 rptSTLRichSample
 V3.95 A97

MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J21300127-15
Client Sample ID: 9531-0000-008F

SDG: 21180
Report No.: 20779
COC No.:

Collection Date: 8/19/2002 3:20:00 PM
Received Date: 9/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, Ls	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Anal Method, Primary Detector
POTASSIUM-40	1.21E+01		1.8E+00	1.8E+00	3.85E-01	pCi/g		(31.4) (13.5)	10/24/02 11:34 a		358.8 g	E901.1 GER8\$1
MAGNESIUM-54	5.35E-04	U	2.5E-02	2.5E-02	4.57E-02	pCi/g	6.98E-01	0.01 0.04	10/24/02 11:34 a		358.8 g	E901.1 GER8\$1
NIOBIUM-94	1.18E-02	U	2.4E-02	2.4E-02	4.44E-02	pCi/g	2.85E-01	0.27 (1.)	10/24/02 11:34 a		358.8 g	E901.1 GER8\$1
LEAD-212	5.75E-01		1.1E-01	1.1E-01	6.18E-02	pCi/g		(9.3) (10.)	10/24/02 11:34 a		358.8 g	E901.1 GER8\$1
LEAD-214	5.00E-01		1.1E-01	1.1E-01	7.24E-02	pCi/g		(8.9) (9.4)	10/24/02 11:34 a		358.8 g	E901.1 GER8\$1
RADIUM-226	4.25E-01		1.2E-01	1.2E-01	7.11E-02	pCi/g		(6.) (6.9)	10/24/02 11:34 a		358.8 g	E901.1 GER8\$1
THALLIUM-208	1.87E-01	U	5.1E-02	5.1E-02	7.88E-02	pCi/g		(2.3) (7.3)	10/24/02 11:34 a		358.8 g	E901.1 GER8\$1

Number of Results: 17

Comments:

STL Richland
rptSTLRichSample
V3.85 A57

MDC/MDA, Ls - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I
SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J21300127-18
Client Sample ID: 9531-0000-008FS

SDG: 21180
Report No.: 20779
COC No.:

Collection Date: 8/19/2002 3:20:00 PM
Received Date: 9/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Allquot Size	Anal Method, Primary Detector
Batch: 2275373	Work Order: E84WR1AA				Report DB ID: 8E84WR10							
ACTINIUM-228	8.40E-01	U	1.9E-01	1.9E-01	3.11E-01	pCi/g		(2.1) (5.6)	10/24/02 01:23 p		359.2 g	E901.1 GER1S1
AG-108M	5.03E-03	U	2.4E-02	2.4E-02	4.26E-02	pCi/g		0.12 0.42	10/24/02 01:23 p		359.2 g	E901.1 GER1S1
AMERICIUM-241	-7.84E-02	U	1.1E-01	1.1E-01	1.89E-01	pCi/g		-0.4 -(1.3)	10/24/02 01:23 p		359.2 g	E901.1 GER1S1
BISMUTH-214	4.32E-01	U	1.2E-01	1.2E-01	1.58E-01	pCi/g		(2.6) (7.5)	10/24/02 01:23 p		359.2 g	E901.1 GER1S1
COBALT-60	-1.10E-02	U	2.8E-02	2.8E-02	4.44E-02	pCi/g		-0.25 -0.86	10/24/02 01:23 p		359.2 g	E901.1 GER1S1
CESIUM-134	3.54E-02	U	3.6E-02	3.6E-02	6.74E-02	pCi/g	1.52E-01	0.53 (2)	10/24/02 01:23 p		359.2 g	E901.1 GER1S1
CESIUM-137	1.26E-01	J	5.9E-02	5.9E-02	4.97E-02	pCi/g	1.87E-01	(2.5) (4.3)	10/24/02 01:23 p		359.2 g	E901.1 GER1S1
EUROPIUM-152	-8.68E-02	U	8.4E-02	8.4E-02	1.25E-01	pCi/g		-0.69 -(2.1)	10/24/02 01:23 p		359.2 g	E901.1 GER1S1
EUROPIUM-154	6.76E-02	U	9.0E-02	9.0E-02	1.74E-01	pCi/g	4.04E-01	0.39 (1.5)	10/24/02 01:23 p		359.2 g	E901.1 GER1S1
EUROPIUM-155	-3.53E-02	U	8.6E-02	8.6E-02	1.42E-01	pCi/g	3.72E-01	-0.25 -0.82	10/24/02 01:23 p		359.2 g	E901.1 GER1S1

STL Richland
rptSTLRehSample
V3.65 A97

MDC(MDA),Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I

Date: 30-Oct-02

SAMPLE RESULTS

Lab Name: STL Richland

SDG: 21180

Collection Date: 8/19/2002 3:20:00 PM

Lot-Sample No.: J21300127-16

Report No.: 20779

Received Date: 9/25/2002 3:13:00 PM

Client Sample ID: 9531-0000-008FS

COC No.:

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Anal Method, Primary Detector
POTASSIUM-40	1.10E+01		1.7E+00	1.7E+00	4.26E-01	pCi/g		(25.7) (13.2)	10/24/02 01:23 p		359.2 g	E901.1 GER1\$1
MAGNESIUM-54	5.69E-03	U	3.4E-02	3.4E-02	6.02E-02	pCi/g	6.96E-01	0.09 0.34	10/24/02 01:23 p		359.2 g	E901.1 GER1\$1
NIOBIUM-94	-1.62E-03	U	2.6E-02	2.6E-02	4.64E-02	pCi/g		-0.03 2.85E-01	10/24/02 01:23 p		359.2 g	E901.1 GER1\$1
LEAD-212	6.25E-01		1.7E-01	1.7E-01	7.27E-02	pCi/g		(8.6) (7.5)	10/24/02 01:23 p		359.2 g	E901.1 GER1\$1
LEAD-214	4.38E-01		1.1E-01	1.1E-01	9.39E-02	pCi/g		(4.7) (7.7)	10/24/02 01:23 p		359.2 g	E901.1 GER1\$1
RADIUM-226	4.32E-01	U	1.2E-01	1.2E-01	1.68E-01	pCi/g		(2.6) (7.5)	10/24/02 01:23 p		359.2 g	E901.1 GER1\$1
THALLIUM-208	2.04E-01	U	5.3E-02	5.3E-02	8.00E-02	pCi/g		(2.5) (7.6)	10/24/02 01:23 p		359.2 g	E901.1 GER1\$1

Number of Results: 17

Comments:

STL Richland
rptSTLRichSample
V3.55 A97MDC(MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland

SDG: 21180

Collection Date: 8/21/2002 1:46:00 PM

Lot-Sample No.: J21300127-5

Report No.: 20779

Received Date: 9/25/2002 3:13:00 PM

Client Sample ID: 9531-0000-009F

COC No.:

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Anal Method, Primary Detector
Batch: 2275373			Work Order: E84VP1AA			Report DB ID: 9284VP10						
ACTINIUM-228	7.39E-01		2.6E-01	2.8E-01	1.98E-01	pCi/g		(3.7) (5.3)	10/24/02 07:51 a		280.8 g	E901.1 GER6\$1
AG-109M	-7.04E-04	U	2.7E-02	2.7E-02	4.67E-02	pCi/g		-0.02 -0.05	10/24/02 07:51 a		280.8 g	E901.1 GER6\$1
AMERICIUM-241	-3.06E-02	U	9.1E-02	9.1E-02	1.58E-01	pCi/g		-0.19 -0.67	10/24/02 07:51 a		280.8 g	E901.1 GER6\$1
BISMUTH-214	7.84E-01	U	1.7E-01	1.7E-01	2.54E-01	pCi/g		(3.1) (9.1)	10/24/02 07:51 a		280.8 g	E901.1 GER6\$1
COBALT-60	1.05E-02	U	3.8E-02	3.8E-02	7.21E-02	pCi/g		0.16 0.56	10/24/02 07:51 a		280.8 g	E901.1 GER6\$1
CESIUM-134	8.72E-02	U	4.3E-02	4.3E-02	8.68E-02	pCi/g	1.52E-01	(1.) (4.1)	10/24/02 07:51 a		280.8 g	E901.1 GER6\$1
CESIUM-137	6.14E-01		1.1E-01	1.1E-01	6.80E-02	pCi/g	1.87E-01	(9.) (11.3)	10/24/02 07:51 a		280.8 g	E901.1 GER6\$1
EUROPIUM-152	-2.79E-02	U	8.4E-02	8.4E-02	1.44E-01	pCi/g	3.16E-01	-0.19 -0.67	10/24/02 07:51 a		280.8 g	E901.1 GER6\$1
EUROPIUM-154	5.01E-02	U	1.1E-01	1.1E-01	2.05E-01	pCi/g	4.04E-01	0.24 0.95	10/24/02 07:51 a		280.8 g	E901.1 GER6\$1
EUROPIUM-155	2.56E-02	U	8.6E-02	8.6E-02	1.48E-01	pCi/g	3.72E-01	0.17 0.6	10/24/02 07:51 a		280.8 g	E901.1 GER6\$1

STL Richland
rptSTLRichSample
V3.95 A97

MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland

SDG: 21180

Collection Date: 8/21/2002 1:46:00 PM

Lot-Sample No.: J21300127-5

Report No.: 20779

Received Date: 9/25/2002 3:13:00 PM

Client Sample ID: 9531-0000-009F

COC No.:

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert (2 s)	MDC(MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
POTASSIUM-40	1.28E+01		2.1E+00	2.1E+00	5.84E-01	pCi/g		(22.) (12.4)	10/24/02 07:51 a		280.8	E901.1
											g	GER6\$1
MAGNESIUM-84	-8.93E-04	U	3.7E-02	3.7E-02	6.63E-02	pCi/g	6.96E-01	-0.01 -0.05	10/24/02 07:51 a		280.8	E901.1
											g	GER6\$1
NIOBIUM-94	-2.29E-03	U	3.4E-02	3.4E-02	6.10E-02	pCi/g	2.85E-01	-0.04 -0.13	10/24/02 07:51 a		280.8	E901.1
											g	GER6\$1
LEAD-212	8.95E-01		1.8E-01	1.8E-01	8.06E-02	pCi/g		(11.1) (10.1)	10/24/02 07:51 a		280.8	E901.1
											g	GER6\$1
LEAD-214	6.98E-01		2.1E-01	2.1E-01	1.03E-01	pCi/g		(6.8) (6.6)	10/24/02 07:51 a		280.8	E901.1
											g	GER6\$1
RADIUM-226	7.85E-01		1.7E-01	1.7E-01	1.02E-01	pCi/g		(7.7) (9.1)	10/24/02 07:51 a		280.8	E901.1
											g	GER6\$1
THALLIUM-208	2.93E-01		7.6E-02	7.6E-02	5.62E-02	pCi/g		(5.2) (7.7)	10/24/02 07:51 a		280.8	E901.1
											g	GER6\$1

Number of Results: 17

Comments:

STL Richland
rptSTLRichSample
V3.95 A97

MDC(MDA)_{Lc} - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J21300127-4
Client Sample ID: 9531-0000-010F

SDG: 21180
Report No.: 20779
COC No.:

Collection Date: 8/21/2002 2:40:00 PM
Received Date: 9/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analys Method, Primary Detector
Batch: 2275373	Work Order: E84VN1AA				Report DB ID: 9E84VN10							
ACTINIUM-228	1.00E+00		2.6E-01	2.6E-01	1.99E-01	pCi/g		(5.) (7.6)	10/24/02 07:55 a		289.4 g	E901.1 GER1\$1
AG-108M	-4.24E-04	U	2.9E-02	2.9E-02	5.13E-02	pCi/g		-0.01 -0.03	10/24/02 07:55 a		289.4 g	E901.1 GER1\$1
AMERICIUM-241	-1.27E-01	U	1.5E-01	1.5E-01	2.49E-01	pCi/g		-0.51 -(1.7)	10/24/02 07:55 a		289.4 g	E901.1 GER1\$1
BISMUTH-214	7.15E-01	U	1.7E-01	1.7E-01	2.36E-01	pCi/g		(3.) (8.3)	10/24/02 07:55 a		289.4 g	E901.1 GER1\$1
COBALT-60	-1.54E-02	U	3.9E-02	3.9E-02	6.81E-02	pCi/g		-0.23 1.52E-01	10/24/02 07:55 a		289.4 g	E901.1 GER1\$1
CESIUM-134	7.19E-02	U	4.5E-02	4.5E-02	8.78E-02	pCi/g		0.52 1.87E-01	10/24/02 07:55 a		289.4 g	E901.1 GER1\$1
CESIUM-137	3.86E-01		8.6E-02	8.6E-02	7.34E-02	pCi/g		(5.3) 3.16E-01	10/24/02 07:55 a		289.4 g	E901.1 GER1\$1
EUROPIUM-152	-4.23E-02	U	1.4E-01	1.4E-01	1.69E-01	pCi/g		-0.25 4.04E-01	10/24/02 07:55 a		289.4 g	E901.1 GER1\$1
EUROPIUM-154	-1.94E-01	U	1.3E-01	1.3E-01	1.88E-01	pCi/g		-(1.) 3.72E-01	10/24/02 07:55 a		289.4 g	E901.1 GER1\$1
EUROPIUM-155	2.37E-02	U	1.1E-01	1.1E-01	1.92E-01	pCi/g		0.12 1.57E+01	10/24/02 07:55 a		289.4 g	E901.1 GER1\$1

STL Richland MDC(MDA) Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
rptSTLRichSample J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
V3.95 A97 U Qual - Analyzed for, but the result is less than the Mdc(Mda) Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J21300127-4
Client Sample ID: 9531-0000-010F

SDG: 21180
Report No.: 20778
COC No.:

Collection Date: 8/21/2002 2:40:00 PM
Received Date: 9/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Anal Method, Primary Detector
POTASSIUM-40	1.27E+01		2.0E+00	2.0E+00	4.44E-01	pCi/g		(28.6) (12.6)	10/24/02 07:55 a	289.4	g	E901.1 GER1\$1
MAGNESIUM-54	2.18E-02	U	4.2E-02	4.2E-02	7.74E-02	pCi/g	6.88E-01	0.28 (1.)	10/24/02 07:55 a	289.4	g	E901.1 GER1\$1
NIOBIUM-94	2.01E-08	U	3.3E-02	3.3E-02	5.77E-02	pCi/g	2.85E-01	0. 0.	10/24/02 07:55 a	289.4	g	E901.1 GER1\$1
LEAD-212	7.25E-01		1.9E-01	1.9E-01	1.15E-01	pCi/g		(5.3) (7.8)	10/24/02 07:55 a	289.4	g	E901.1 GER1\$1
LEAD-214	7.49E-01		1.9E-01	1.9E-01	1.21E-01	pCi/g		(5.2) (7.9)	10/24/02 07:55 a	289.4	g	E901.1 GER1\$1
RADIUM-226	7.15E-01	U	1.7E-01	1.7E-01	2.38E-01	pCi/g		(3.) (8.3)	10/24/02 07:55 a	289.4	g	E901.1 GER1\$1
THALLIUM-208	3.13E-01	U	9.4E-02	9.4E-02	1.15E-01	pCi/g		(2.7) (6.6)	10/24/02 07:55 a	289.4	g	E901.1 GER1\$1

Number of Results: 17

Comments:

STL Richland MDC(MDA),Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
rpt(STL)RichSample J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
V3.53 A97 U Qual - Analyzed for, but the result is less than the Mdc(Mda)/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J21300127-9
Client Sample ID: 9531-0000-011F

SDG: 21180
Report No.: 20779
COC No.:

Collection Date: 8/20/2002 2:23:00 PM
Received Date: 9/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2275373	Work Order: E84V81AA				Report DB ID: 9E84V810							
ACTINIUM-228	5.00E-01	U	1.8E-01	1.8E-01	3.11E-01	pCi/g		(1.6) (6.2)	10/24/02 11:38 a		340.6 g	E901.1 GER1\$1
AG-108M	5.15E-03	U	2.5E-02	2.5E-02	4.42E-02	pCi/g		0.12 0.41	10/24/02 11:38 a		340.6 g	E901.1 GER1\$1
AMERICIUM-241	-1.02E-01	U	1.2E-01	1.2E-01	2.00E-01	pCi/g		-0.51 -(1.7)	10/24/02 11:38 a		340.6 g	E901.1 GER1\$1
BISMUTH-214	5.66E-01	U	1.2E-01	1.2E-01	1.93E-01	pCi/g		(2.9) (9.3)	10/24/02 11:38 a		340.6 g	E901.1 GER1\$1
COBALT-60	-3.19E-02	U	3.2E-02	3.2E-02	5.02E-02	pCi/g		-0.64 -(2)	10/24/02 11:38 a		340.6 g	E901.1 GER1\$1
CESIUM-134	6.16E-02	U	3.9E-02	3.9E-02	7.48E-02	pCi/g	1.52E-01	0.82 (3.2)	10/24/02 11:38 a		340.6 g	E901.1 GER1\$1
CESIUM-137	2.21E-01	J	6.8E-02	6.8E-02	5.57E-02	pCi/g	1.87E-01	(4) (8.5)	10/24/02 11:38 a		340.6 g	E901.1 GER1\$1
EUROPIUM-152	-4.71E-02	U	1.1E-01	1.1E-01	1.37E-01	pCi/g		-0.34 4.04E-01	10/24/02 11:38 a		340.6 g	E901.1 GER1\$1
EUROPIUM-154	-5.25E-02	U	1.0E-01	1.0E-01	1.74E-01	pCi/g		-0.3 3.72E-01	10/24/02 11:38 a		340.6 g	E901.1 GER1\$1
EUROPIUM-155	-1.59E-02	U	9.4E-02	9.4E-02	1.57E-01	pCi/g		-0.1 1.57E+01	10/24/02 11:38 a		340.6 g	E901.1 GER1\$1

STL Richland
rptSTLRichSample
V3.65 A97

MDC(MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I

Date: 30-Oct-02

SAMPLE RESULTS

Lab Name: STL Richland

SDG: 21180

Collection Date: 8/20/2002 2:23:00 PM

Lot-Sample No.: J21300127-9

Report No.: 20779

Received Date: 9/25/2002 3:13:00 PM

Client Sample ID: 9531-0000-011F

COC No.:

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
POTASSIUM-40	1.05E+01		1.7E+00	1.7E+00	4.51E-01	pCi/g		(23.4) (12.7)	10/24/02 11:36 a		340.6 g	E901.1 GER1S1
MAGNESIUM-84	1.44E-02	U	3.5E-02	3.5E-02	6.39E-02	pCi/g	6.96E-01	0.23 0.82	10/24/02 11:36 a		340.6 g	E901.1 GER1S1
NIOBium-94	3.90E-03	U	2.7E-02	2.7E-02	4.79E-02	pCi/g	2.85E-01	0.08 0.29	10/24/02 11:36 a		340.6 g	E901.1 GER1S1
LEAD-212	5.34E-01		1.4E-01	1.4E-01	8.86E-02	pCi/g		(6.1) (7.4)	10/24/02 11:36 a		340.6 g	E901.1 GER1S1
LEAD-214	6.66E-01		1.5E-01	1.5E-01	1.02E-01	pCi/g		(5.5) (8.6)	10/24/02 11:36 a		340.6 g	E901.1 GER1S1
RADIUM-226	5.66E-01	U	1.2E-01	1.2E-01	1.93E-01	pCi/g		(2.9) (9.3)	10/24/02 11:36 a		340.6 g	E901.1 GER1S1
THALLIUM-208	2.73E-01		6.7E-02	6.7E-02	4.80E-02	pCi/g		(5.6) (8.1)	10/24/02 11:36 a		340.6 g	E901.1 GER1S1

Number of Results: 17

Comments:

STL Richland
rptSTLRichSample
V3.99 A97MDC(MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for, but the result is less than the Mdc(Mda)Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J21300127-2
Client Sample ID: 9531-0000-012F

SDG: 21180
Report No.: 20779
COC No.:

Collection Date: 8/21/2002 10:05:00 AM
Received Date: 9/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Allquot Size	Analy Method, Primary Detector
Batch: 2275373	Work Order: E84VK1AA				Report DB ID: 9E84VK10							
ACTINIUM-228	6.14E-01	U	2.0E-01	2.0E-01	3.80E-01	pCi/g		(1.7) (8.1)	10/24/02 08:07 a		294.8 g	E901.1 GER6\$1
AG-108M	7.03E-03	U	2.6E-02	2.6E-02	4.57E-02	pCi/g		0.15 0.55	10/24/02 08:07 a		294.8 g	E901.1 GER6\$1
AMERICIUM-241	-4.17E-02	U	8.1E-02	8.1E-02	1.39E-01	pCi/g		-0.3 -1.1	10/24/02 08:07 a		294.8 g	E901.1 GER6\$1
BISMUTH-214	6.46E-01	U	1.4E-01	1.4E-01	2.23E-01	pCi/g		(2.9) (8.9)	10/24/02 08:07 a		294.8 g	E901.1 GER6\$1
COBALT-60	-2.73E-03	U	3.3E-02	3.3E-02	6.13E-02	pCi/g		-0.04	10/24/02 08:07 a		294.8	E901.1
							1.52E-01	-0.16			g	GER6\$1
CESIUM-134	1.64E-03	U	3.4E-02	3.4E-02	6.18E-02	pCi/g		0.03	10/24/02 08:07 a		294.8	E901.1
							1.87E-01	0.09			g	GER6\$1
CESIUM-137	4.77E-01		9.1E-02	9.1E-02	5.21E-02	pCi/g		(9.1)	10/24/02 08:07 a		294.8	E901.1
							3.16E-01	(10.4)			g	GER6\$1
EUROPIUM-152	-1.31E-02	U	7.6E-02	7.6E-02	1.33E-01	pCi/g		-0.1	10/24/02 08:07 a		294.8	E901.1
							4.04E-01	-0.35			g	GER6\$1
EUROPIUM-154	-3.08E-02	U	1.0E-01	1.0E-01	1.79E-01	pCi/g		-0.17	10/24/02 08:07 a		294.8	E901.1
							3.72E-01	-0.61			g	GER6\$1
EUROPIUM-155	6.41E-02	U	7.1E-02	7.1E-02	1.26E-01	pCi/g		0.43	10/24/02 08:07 a		294.8	E901.1
							1.57E+01	(1.5)			g	GER6\$1

STL Richland
rptSTLRichSample
V3.95 A57

MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I

Date: 30-Oct-02

SAMPLE RESULTS

Lab Name: STL Richland

SDG: 21180

Collection Date: 8/21/2002 10:05:00 AM

Lot-Sample No.: J21300127-2

Report No.: 20779

Received Date: 9/25/2002 3:13:00 PM

Client Sample ID: 9531-0000-012F

COC No.:

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
POTASSIUM-40	1.02E+01		1.7E+00	1.7E+00	4.99E-01	pCi/g		(20.5) (11.8)	10/24/02 08:07 a		294.8	E901.1
MAGNESIUM-54	1.18E-02	U	3.6E-02	3.6E-02	6.76E-02	pCi/g		0.18	10/24/02 08:07 a		294.8	E901.1
							6.98E-01	0.65			g	GER6\$1
NIObIUM-94	-1.52E-03	U	2.9E-02	2.9E-02	5.27E-02	pCi/g		-0.03	10/24/02 08:07 a		294.8	E901.1
							2.85E-01	-0.1			g	GER6\$1
LEAD-212	6.19E-01		1.4E-01	1.4E-01	9.42E-02	pCi/g		(6.6) (9.1)	10/24/02 08:07 a		294.8	E901.1
LEAD-214	6.35E-01		1.6E-01	1.6E-01	1.02E-01	pCi/g		(6.2) (7.8)	10/24/02 08:07 a		294.8	E901.1
								(8.9)			g	GER6\$1
RADIUM-226	6.46E-01	U	1.4E-01	1.4E-01	2.23E-01	pCi/g		(2.9) (8.9)	10/24/02 08:07 a		294.8	E901.1
								(1.8) (3.9)	10/24/02 08:07 a		294.8	E901.1
THALLIUM-208	1.72E-01	U	6.8E-02	5.8E-02	9.73E-02	pCi/g					g	GER6\$1

Number of Results: 17

Comments:

STL Richland MDC(MDA), Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRichSample J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V3.55 A97 U Qual - Analyzed for, but the result is less than the Mdc(Mda)(Total Uncert or gamma scan software did not identify the nuclide.

FORM I

Date: 30-Oct-02

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: J21300127-8
 Client Sample ID: 9531-0000-014F

SDG: 21180
 Report No.: 20779
 COC No.:

Collection Date: 8/20/2002 1:50:00 PM
 Received Date: 9/25/2002 3:13:00 PM
 Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Anal Method, Primary Detector
Batch: 2275373	Work Order: E84VT1AA			Report DB ID: 9E84VT10								
ACTINIUM-226	6.08E-01	U	2.1E-01	2.1E-01	3.66E-01	pCi/g		(1.7) (5.7)	10/24/02 08:52 a		333.4 g	E901.1 GER5\$1
AG-106M	-2.36E-03	U	2.5E-02	2.5E-02	4.32E-02	pCi/g		-0.05 -0.19	10/24/02 08:52 a		333.4 g	E901.1 GER5\$1
AMERICIUM-241	2.94E-02	U	5.3E-02	5.3E-02	8.81E-02	pCi/g		0.33 (1.1)	10/24/02 08:52 a		333.4 g	E901.1 GER5\$1
BISMUTH-214	6.30E-01	U	1.4E-01	1.4E-01	2.14E-01	pCi/g		(2.5) (7.4)	10/24/02 08:52 a		333.4 g	E901.1 GER5\$1
COBALT-60	-7.30E-03	U	2.8E-02	2.8E-02	6.08E-02	pCi/g		-0.14 1.52E-01	10/24/02 08:52 a		333.4 g	E901.1 GER5\$1
CESIUM-134	3.09E-02	U	3.6E-02	3.6E-02	6.76E-02	pCi/g		0.46 1.87E-01	10/24/02 08:52 a		333.4 g	E901.1 GER5\$1
CESIUM-137	2.75E-02	U	3.4E-02	3.4E-02	6.28E-02	pCi/g		0.44 3.16E-01	10/24/02 08:52 a		333.4 g	E901.1 GER5\$1
EUROPIUM-152	5.49E-02	U	8.3E-02	8.3E-02	1.40E-01	pCi/g		0.39 4.04E-01	10/24/02 08:52 a		333.4 g	E901.1 GER5\$1
EUROPIUM-154	3.26E-02	U	9.3E-02	9.3E-02	1.76E-01	pCi/g		0.19 3.72E-01	10/24/02 08:52 a		333.4 g	E901.1 GER5\$1
EUROPIUM-155	3.81E-02	U	7.0E-02	7.0E-02	1.22E-01	pCi/g		0.31 1.57E+01	10/24/02 08:52 a		333.4 g	E901.1 GER5\$1

STL Richland
 rptSTLRchSample
 V3.95 A97

MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 30-Oct-02

Lab Name: STL Richland
Lot-Sample No.: J21300127-6
Client Sample ID: 9531-0000-014F

SDG: 21180
Report No.: 20779
COC No.:

Collection Date: 8/20/2002 1:50:00 PM
Received Date: 9/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, Lo	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysts, Prep Date	Total Sa Size	Aliquot Size	Anal Method, Primary Detector
POTASSIUM-40	1.07E+01		1.7E+00	1.7E+00	2.65E-01	pCi/g		(40.5) (12.5)	10/24/02 08:52 a		333.4 g	E901.1 GER551
MAGNESIUM-54	-1.26E-03	U	3.2E-02	3.2E-02	5.88E-02	pCi/g	6.86E-01	-0.02 -0.08	10/24/02 08:52 a		333.4 g	E901.1 GER551
NIOBIUM-94	-7.65E-03	U	2.5E-02	2.5E-02	4.44E-02	pCi/g	2.85E-01	-0.17 -0.6	10/24/02 08:52 a		333.4 g	E901.1 GER551
LEAD-212	7.32E-01		1.5E-01	1.5E-01	1.02E-01	pCi/g		(7.2) (9.7)	10/24/02 08:52 a		333.4 g	E901.1 GER551
LEAD-214	8.23E-01		1.5E-01	1.5E-01	8.69E-02	pCi/g		(7.2) (8.4)	10/24/02 08:52 a		333.4 g	E901.1 GER551
RADIUM-226	5.30E-01		1.4E-01	1.4E-01	9.32E-02	pCi/g		(5.7) (7.4)	10/24/02 08:52 a		333.4 g	E901.1 GER551
THALLIUM-208	2.73E-01		9.3E-02	9.3E-02	4.86E-02	pCi/g		(5.6) (5.9)	10/24/02 08:52 a		333.4 g	E901.1 GER551

Number of Results: 17

Comments:

STL Richland MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
rptSTLRichSample J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
V3.95 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 30-Oct-02

DUPLICATE RESULTS

Lab Name: STL Richland

SDG: 21203

Collection Date: 8/20/2002 2:48:00 PM

Lot-Sample No.: J2J010260-1

Report No.: 20778

Received Date: 9/25/2002 3:13:00 PM

Client Sample ID: 9531-0000-015F DUP

COC No.:

Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert (2 s)	MDC/MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2275373	Work Order: E87CA1AM			Report DB ID: E87CA1MR		Orig Sa DB ID:						
ACTINIUM-228	6.23E-01	U	2.0E-01	2.0E-01	3.42E-01	pCi/g		(1.8)	10/24/02 01:20 p		340.7	E901.1
	7.49E-01	U RER	0.8					(5.1)			g	GER6S1
AG-108M	-1.03E-02	U	2.3E-02	2.3E-02	3.82E-02	pCi/g		-0.27	10/24/02 01:20 p		340.7	E901.1
	2.18E-02	U RER	1.9					-0.8			g	GER6S1
AMERICIUM-241	2.38E-02	U	8.1E-02	8.1E-02	1.40E-01	pCi/g		0.17	10/24/02 01:20 p		340.7	E901.1
	4.80E-02	U RER	0.6					0.58			g	GER6S1
BISMUTH-214	4.88E-01	U	1.3E-01	1.3E-01	1.89E-01	pCi/g		(2.6)	10/24/02 01:20 p		340.7	E901.1
	5.47E-01	U RER	0.6					(7.5)			g	GER6S1
COBALT-60	8.72E-03	U	2.9E-02	2.9E-02	5.64E-02	pCi/g		0.15	10/24/02 01:20 p		340.7	E901.1
	1.09E-02	U RER	0.1			1.52E-01		0.6			g	GER6S1
CESIUM-134	3.17E-02	U	3.4E-02	3.4E-02	5.45E-02	pCi/g		0.49	10/24/02 01:20 p		340.7	E901.1
	5.29E-02	U RER	0.9			1.87E-01		(1.9)			g	GER6S1
CESIUM-137	7.45E-02	J	5.6E-02	5.6E-02	4.65E-02	pCi/g		(1.6)	10/24/02 01:20 p		340.7	E901.1
	9.24E-02	J RER	0.6			3.16E-01		(2.6)			g	GER6S1
EUROPIUM-152	-2.38E-02	U	8.7E-02	8.7E-02	1.27E-01	pCi/g		-0.19	10/24/02 01:20 p		340.7	E901.1
	-2.19E-02	U RER	0.0			4.04E-01		-0.55			g	GER6S1
EUROPIUM-154	-6.80E-02	U	9.4E-02	9.4E-02	1.58E-01	pCi/g		-0.42	10/24/02 01:20 p		340.7	E901.1
	-2.88E-02	U RER	0.6			3.72E-01		-(1.4)			g	GER6S1
EUROPIUM-155	6.10E-02	U	6.9E-02	6.9E-02	1.22E-01	pCi/g		0.5	10/24/02 01:20 p		340.7	E901.1
	-3.78E-03	U RER	1.3			1.57E+01		(1.8)			g	GER6S1
POTASSIUM-40	9.68E+00		1.6E+00	1.6E+00	3.03E-01	pCi/g		(31.9)	10/24/02 01:20 p		340.7	E901.1
	1.08E+01	RER	0.9					(11.8)			g	GER6S1

STL Richland RER - Replicate Error Ratio = $(S-D)/\sqrt{sq(TFUs)+sq(TFUs)}$ as defined by ICFT BOA.rptSTLRchDupV3,
95 A97

MDC/MDA, Le - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.

U Qual - Analyzed for, but the result is less than the Mde/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 30-Oct-02

DUPLICATE RESULTS

Lab Name: STL Richland

SDG: 21203

Collection Date: 8/20/2002 2:48:00 PM

Lot-Sample No.: J2J010260-1

Report No.: 20779

Received Date: 9/25/2002 3:13:00 PM

Client Sample ID: 9531-0000-015F DUP

COC No.:

Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotalUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
MAGNESIUM-24	-8.07E-03	U	3.2E-02	3.2E-02	5.63E-02	pCi/g		-0.11	10/24/02 01:20 p		340.7	EB01.1
	1.12E-02	U RER	0.7			8.86E-01		-0.38			g	GER6\$1
NIOBIUM-94	-8.87E-03	U	2.8E-02	2.8E-02	4.83E-02	pCi/g		-0.15	10/24/02 01:20 p		340.7	EB01.1
	-8.22E-03	U RER	0.0			2.85E-01		-0.52			g	GER6\$1
LEAD-212	6.71E-01		1.4E-01	1.4E-01	6.60E-02	pCi/g		(10.2)	10/24/02 01:20 p		340.7	EB01.1
	6.40E-01	RER	0.3					(9.7)			g	GER6\$1
LEAD-214	4.87E-01		1.6E-01	1.6E-01	8.84E-02	pCi/g		(5.5)	10/24/02 01:20 p		340.7	EB01.1
	6.16E-01	RER	1.2					(6.6)			g	GER6\$1
RADIUM-226	4.88E-01	U	1.3E-01	1.3E-01	1.89E-01	pCi/g		(2.5)	10/24/02 01:20 p		340.7	EB01.1
	5.47E-01	U RER	0.8					(7.5)			g	GER6\$1
THALLIUM-208	1.78E-01		6.0E-02	6.0E-02	4.37E-02	pCi/g		(4.1)	10/24/02 01:20 p		340.7	EB01.1
	2.63E-01	RER	1.7					(5.9)			g	GER6\$1

Number of Results: 17

Comments:

STL Richland RER - Replicate Error Ratio = $(S-D)/\sqrt{sq(TPUs)+sq(TPUD)}$ as defined by ICPT BOA.

rptSTLRichDupV3. MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

95 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM II BLANK RESULTS

Date: 30-Oct-02

Lab Name: STL Richland

SDG: 21180

Lot-Sample No.: J2J020000-373

Report No.: 20779

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2275373	Work Order: E888N1AA			Report DB ID: E888N1AB								
ACTINIUM-228	-9.35E-03	U	1.2E-01	1.2E-01	2.16E-01	pCi/g		-0.04	10/24/02 03:17 p		200.0	E901.1
								-0.16			g	GER2\$1
AG-108M	-1.97E-02	U	2.8E-02	2.8E-02	4.68E-02	pCi/g		-0.43	10/24/02 03:17 p		200.0	E901.1
								-(1.4)			g	GER2\$1
AMERICIUM-241	1.26E-01	U	2.9E-01	2.9E-01	5.13E-01	pCi/g		0.25	10/24/02 03:17 p		200.0	E901.1
								0.88			g	GER2\$1
BISMUTH-214	-2.21E-02	U	8.3E-02	8.3E-02	1.47E-01	pCi/g		-0.16	10/24/02 03:17 p		200.0	E901.1
								-0.64			g	GER2\$1
COBALT-60	-1.84E-03	U	3.2E-02	3.2E-02	6.28E-02	pCi/g		-0.03	10/24/02 03:17 p		200.0	E901.1
								1.52E-01			g	GER2\$1
CESIUM-134	-1.15E-02	U	3.7E-02	3.7E-02	6.60E-02	pCi/g		-0.17	10/24/02 03:17 p		200.0	E901.1
								1.87E-01			g	GER2\$1
CESIUM-137	-3.79E-04	U	3.8E-02	3.8E-02	6.96E-02	pCi/g		-0.01	10/24/02 03:17 p		200.0	E901.1
								3.16E-01			g	GER2\$1
EUROPIUM-152	-1.55E-02	U	9.1E-02	9.1E-02	1.59E-01	pCi/g		-0.1	10/24/02 03:17 p		200.0	E901.1
								4.04E-01			g	GER2\$1
EUROPIUM-154	1.78E-02	U	1.0E-01	1.0E-01	1.98E-01	pCi/g		0.09	10/24/02 03:17 p		200.0	E901.1
								3.72E-01			g	GER2\$1
EUROPIUM-155	-3.87E-02	U	1.1E-01	1.1E-01	1.87E-01	pCi/g		-0.2	10/24/02 03:17 p		200.0	E901.1
								1.57E+01			g	GER2\$1
POTASSIUM-40	-5.63E-01	U	8.3E-01	8.3E-01	1.37E+00	pCi/g		-0.41	10/24/02 03:17 p		200.0	E901.1
								-(1.8)			g	GER2\$1
MAGNESIUM-64	3.46E-03	U	3.0E-02	3.0E-02	5.91E-02	pCi/g		0.06	10/24/02 03:17 p		200.0	E901.1
								6.96E-01			g	GER2\$1

STL Richland
rptSTLRichBlank
V3.93 A97

MDC(MDA)Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM II
BLANK RESULTS

Date: 30-Oct-02

Lab Name: STL Richland

SDG: 21180

Lot-Sample No.: J2J020000-373

Report No.: 20779

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analys Method, Primary Detector
NIOBIUM-94	4.52E-02	U	3.7E-02	3.7E-02	7.64E-02	pCi/g		0.59	10/24/02 03:17 p		200.0	E901.1
						2.85E-01		(2.5)			g	GER2\$1
LEAD-212	-2.48E-02	U	6.0E-02	6.0E-02	1.03E-01	pCi/g		-0.24	10/24/02 03:17 p		200.0	E901.1
								-0.83			g	GER2\$1
LEAD-214	3.41E-02	U	7.0E-02	7.0E-02	1.28E-01	pCi/g		0.26	10/24/02 03:17 p		200.0	E901.1
								0.97			g	GER2\$1
RADIUM-226	-2.19E-02	U	8.3E-02	8.3E-02	1.47E-01	pCi/g		-0.15	10/24/02 03:17 p		200.0	E901.1
								-0.53			g	GER2\$1
THALLIUM-208	8.82E-03	U	4.4E-02	4.4E-02	8.27E-02	pCi/g		0.11	10/24/02 03:17 p		200.0	E901.1
								0.4			g	GER2\$1
...												

Number of Results: 17

Comments:

STL Richland MDC/MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRchBlank U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.
 V3.95 A97

FORM II
LCS RESULTS

Date: 30-Oct-02

Lab Name: STL Richland

SDG: 21180

Lot-Sample No.: J2J020000-373

Report No.: 20779

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Data	Alliquot Size	Analys Method, Primary Detector
Batch: 2275373	Work Order: E888N1AC												
CESIUM-137	1.07E+00		1.8E-01	1.8E-01	8.10E-02	pCi/g		1.02E+00	3.4E-02	104.77%	10/24/02 03:19 p	200.0	E901.1
							Rec Limits:	70.	130.	0.0		g	GER151

Number of Results: 1

Comments:

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.
rptSTLRichLcs
V3.85 A87

Sole.

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J2I300127 SD7 21180

24265-000-GPP-GGGR-R5104-003 Attachment A

Page 1 of 1

Bechtel Power Corporation 362 Injan Hollow Road, East Hampton, CT 06424 860-267-2556			Chain of Custody Form					COC No: 2002-0068 P.O. #: 24265-FSB-S-00552-AC Activity Codes: 24265-200-034AA3			
Project Name: Haddam Neck Decommissioning							Analyses Requested		Lab Use Only		
Contact Name: Jack McCarthy Phone: 1-860-267-2556 ext 3024			Media Code	Sample Type Code	Container Size & Type Code	Number of Containers	Analysis Type 1	Analysis Type 2	Analysis Type 3	Comments:	
Analytical Lab (Name, City, State): STL Richland, 2800 George Washington Way Richland, WA 99352 Attention: Barb Gillespi											
Priority: ☒ 30 D. ☐ 15 D. ☐ 7 D. ☐ ASAP											
Sample Designation	Date	Time									
✓ 9531-0000-007F	8/21/2002	1000	TS	G	BP	1	BFSSGAM	EB4VJ		Comment, Preservation N/A	Lab Sample ID
✓ 9531-0000-012F	8/21/2002	1005	TS	G	BP	1	BFSSGAM	EB4VK		N/A	
✓ 9531-0000-004F	8/21/2002	1035	TS	G	BP	1	BFSSGAM	EB4VL		N/A	
NOTES: Multiple individuals performing sampling, refer to Daily Survey Journal sheet for list of team members										Samples Shipped Via: ☒ Fed Ex ☐ UPS ☐ Hand ☐ Other	Internal Container Temp.: ____ Deg. C Custody Sealed? Y ☐ N ☐ Custody Seal Intact? Y ☐ N ☐
1) Sampled By <i>[Signature]</i> Date/Time 8/21/02 1530			2) Received By <i>[Signature]</i> Date/Time 9/25/02 15:13			Bill of Lading # 27103700236					
3) Relinquished By Date/Time			4) Received By Date/Time								
5) Relinquished By Date/Time			6) Received By Date/Time								
Media Code	WG: Ground Water, WF: Surface Water, RW: River Water, WE: Estuary Water, WS: Sea Water, EW: Effluent Water, TS: Soil, SE: Sediment, AS: Asphalt, TG: Vegetation, CT: Concrete, OT: Other										
Sample Type Code	G: Grab, C: Composite, CR: Core, D: Duplicate, S: Split, FB: Field Blank, RB: Rinse Blank, MSB: Matrix Spike Dup, OT: Other										
Container Type	BP: Plastic Bag, BC: Cloth Bag, P: Plastic, SC: Steel Can, G: Glass, A: Amber glass, V: Vial, LLM: 1 liter marisell; OT: Other										

Bechtel

Bechtel Power Corporation 362 Injun Hollow Road, East Hampton, CT 06424 860-267-2556			Chain of Custody Form					COC No: 2002-0066 P.O. # 24265-FSB-S-00552-AC Activity Code: 24265-200-034AA3		
Project Name: Haddam Neck Decommissioning							Analyses Requested		Lab Use Only	
Contact Name: Jack McCarthy Phone: 1-860-267-2556 ext 3024			Media Code	Sample Type Code	Container Size & Type Code	Number of Containers	Analysis Type 1	Analysis Type 2	Analysis Type 3	Comments:
Analytical Lab (Name, City, State): STL Richland, 2800 George Washington Way Richland, WA 99352 Attention: Barb Gillespi										
Priority: ☒ 30 D. ☐ 15 D. ☐ 7 D. ☐ ASAP										
Sample Designation	Date	Time								
✓ 9531-0000-010F	8/21/2002	1440	TS	G	BP	1	BFSSGAM	EB4-VN		Comment, Preservation
✓ 9531-0000-009F	8/21/2002	1346	TS	G	BP	1	BFSSGAM	EB4-VP		Lab Sample ID
NOTES: Multiple individuals performing sampling, refer to Daily Survey Journal sheet for list of team members										
1) Sampled By <i>[Signature]</i> Date/Time 8/21/02 1530			2) Received By <i>[Signature]</i> 1100 AM Date/Time 9/25/02 15:13			Samples Shipped Via: ☒ Fed Ex ☐ UPS ☐ Hand ☐ Other		Internal Container Temp.: _____ Deg. C		
3) Relinquished By _____ Date/Time _____			4) Received By _____ Date/Time _____			Custody Sealed? Y ☐ N ☐		Custody Seal Intact? Y ☐ N ☐		
5) Relinquished By _____ Date/Time _____			6) Received By _____ Date/Time _____			7/19/3070 0736 Bill of Lading #				
Media Code	WG: Ground Water, WF: Surface Water, RW: River Water, WE: Estuary Water, WS: Sea Water, EW: Effluent Water, TS: Soil, SE: Sediment, AS: Asphalt, TO: Vegetation, CT: Concrete, OT: Other									
Sample Type Code	G: Grab, C: Composite, CR: Core, D: Duplicate, S: Split, FB: Field Blank, RB: Rinsate Blank, MSB: Matrix Spike Dup, OT: Other									
Container Type	BT: Plastic Bag, BC: Cloth Bag, P: Plastic, SC: Steel Can, G: Glass, A: Amber glass, V: Vial, LLM: 1 liter marinelli; OT: Other									

Bechtel Power Corporation 362 Injun Hollow Road, East Hampton, CT 06424 860-267-2556			Chain of Custody Form					COC No: 2002-0064 P.O. #: 24265-FSD-S-00552-AC Activity Code: 24265-200-034AA3			
Project Name: Haddam Neck Decommissioning							Analyses Requested		Lab Use Only		
Contact Name: Jack McCarthy Phone: 1-860-267-2556 ext 3024			Media Code	Sample Type Code	Container Size & Type Code	Number of Containers	Analysis Type 1	Analysis Type 2	Analysis Type 3	Comments:	
Analytical Lab (Name, City, State): STL Richland, 2800 George Washington Way Richland, WA 99352 Attention: Barb Gillespi											
Priority: ☒ 30 D. ☐ 15 D. ☐ 7 D. ☐ ASAP											
Sample Designation	Date	Time									
✓ 9531-0000-014F	8/20/2002	1350	TS	G	BP	1	BFSSGAM	EB4VT		Comment, Preservation	Lab Sample ID
✓ 9531-0000-001F	8/20/2002	1353	TS	G	BP	1	BFSSGAM	EB4V1		N/A	
✓ 9531-0000-003F	8/20/2002	1420	TS	G	BP	1	BFSSGAM	EB4V5		N/A	
✓ 9531-0000-011F	8/20/2002	1423	TS	G	BP	1	BFSSGAM	EB4VB		N/A	
✓ 9531-0000-015F	8/20/2002	1448	TS	G	BP	1	BFSSALL	EB4V9		N/A	
✓ 9531-0000-013F	8/20/2002	1455	TS	G	BP	1	BFSSALL	EB4W4		N/A	
NOTES: Multiple individuals performing sampling, refer to Daily Survey Journal sheet for list of team members									Samples Shipped Via:	Internal Container Temp.: _____ Deg. C	
1) Sampled By <i>[Signature]</i> Date/Time 8/22/02 1530			2) Received By <i>[Signature]</i> Date/Time 9/25/02 15:13			☒ Fed Ex ☐ UPS ☐ Hand ☐ Other			Custody Sealed? Y ☐ N ☐		
3) Relinquished By _____ Date/Time _____			4) Received By _____ Date/Time _____			Bill of Lading # <i>791637100236</i>			Custody Seal Intact? Y ☐ N ☐		
5) Relinquished By _____ Date/Time _____			6) Received By _____ Date/Time _____								
Media Code	WG: Ground Water, WF: Surface Water, RW: River Water, WE: Estuary Water, WS: Sea Water, EW: Effluent Water, TS: Soil, SE: Sediment, AS: Asphalt, TG: Vegetation, CT: Concrete, OT: Other										
Sample Type Code	G: Grab, C: Composite, CR: Core, D: Duplicate, S: Spill, FB: Field Blank, RB: Rinse Blank, MSB: Matrix Spike Dup, OT: Other										
Container Type	BP: Plastic Bag, BC: Cloth Bag, P: Plastic, SC: Steel Can, G: Glass, A: Amber glass, V: Vial, ILM: 1 liter canneli; OT: Other										

Bechtel

Bechtel Power Corporation 362 Injun Hollow Road, East Hampton, CT 06424 860-267-2556			Chain of Custody Form					COC No: 2002-0062 P.O. #: 24265-FSB-S-00552-AC Activity Code: 24265-200-034AA3			
Project Name: Haddam Neck Decommissioning							Analyses Requested		Lab Use Only		
Contact Name: J. McCarthy Phone: 1-860-267-2556 ext 3024			Media Code	Sample Type Code	Container Size & Type Code	Number of Containers	Analysis Type 1	Analysis Type 2	Analysis Type 3	Comments:	
Analytical Lab (Name, City, State): STL Richland, 2800 George Washington Way Richland, WA 99352 Attention: Barb Gillespi											
Priority: ☒ 30 D. ☐ 15 D. ☐ 7 D. ☐ ASAP											
Sample Designation	Date	Time									
✓ 9531-0000-002F	8/19/2002	1427	TS	G	BP	1	BFSSGAM	E84WH		Comment, Preservation	Lab Sample ID
✓ 9531-0000-002FS	8/19/2002	1427	TS	G	BP	1	BFSSGAM	E84WJ		N/A	
✓ 9531-0000-006F	8/19/2002	1438	TS	G	BP	1	BFSSGAM	E84WK		N/A	
✓ 9531-0000-008F	8/19/2002	1520	TS	G	BP	1	BFSSGAM	E84WN		N/A	
✓ 9531-0000-008FS	8/19/2002	1520	TS	G	BP	1	BFSSGAM	E84WR		N/A	
✓ 9531-0000-005F	8/19/2002	1520	TS	G	BP	1	BFSSGAM	E84WT		N/A	
NOTES: Multiple individuals performing sampling, refer to Daily Survey Journal sheet for list of team members										Samples Shipped Via: ☒ Fed Ex ☐ UPS ☐ Hand ☐ Other	Internal Container Temp.: ____ Deg. C Custody Scaled? Y ☐ N ☐ Custody Seal Intact? Y ☐ N ☐
1) Sampled By <i>[Signature]</i> Date/Time 8/19/02 1530			2) Received By <i>[Signature]</i> Date/Time 9/25/02 1513								
3) Relinquished By <i>[Signature]</i> Date/Time			4) Received By <i>[Signature]</i> Date/Time								
5) Relinquished By <i>[Signature]</i> Date/Time			6) Received By <i>[Signature]</i> Date/Time								
Media Code	WG: Ground Water, WF: Surface Water, RW: River Water, WE: Estuary Water, WS: Sea Water, EW: Effluent Water, TS: Soil, SE: Sediment, AS: Asphalt, TG: Vegetation, CT: Concrete, OT: Other										
Sample Type Code	G: Grab, C: Composite, CR: Core, D: Duplicate, S: Split, FB: Field Blank, RB: Rinse Blank, MSB: Matrix Spike Dup, OT: Other										
Container Type	BP: Plastic Bag, BC: Cloth Bag, P: Plastic, SC: Steel Can, G: Glass, A: Amber glass, V: Vial, ILM: 1 liter marinelli; OT: Other										

Analytical Data Package Prepared For
Bechtel CT Yankee Project

Radiochemical Analysis By

STL Richland

2800 G.W. Way, Richland Wa, 99352, (509)-375-3131.

Assigned Laboratory Code: **STLRL**

Data Package Contains _____ Pages

Report No.: 20994

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
21414		9523-0000-011AF	J2J240307-1	FAPR71AD	9FAPR710	2298423
		9523-0000-011AF	J2J240307-1	FAPR71AC	9FAPR710	2298424
		9523-0000-011AF	J2J240307-1	FAPR71AA	9FAPR710	2298425
		9523-0000-011AFS	J2J240307-2	FAPTF1AD	9FAPTF10	2298423
		9523-0000-011AFS	J2J240307-2	FAPTF1AC	9FAPTF10	2298424
		9523-0000-011AFS	J2J240307-2	FAPTF1AA	9FAPTF10	2298425
		9523-0000-026AF	J2J240307-3	FAPTL1AD	9FAPTL10	2298423
		9523-0000-026AF	J2J240307-3	FAPTL1AC	9FAPTL10	2298424
		9523-0000-026AF	J2J240307-3	FAPTL1AA	9FAPTL10	2298425
		9531-0000-013AF	J2J240307-4	FAPTR1AD	9FAPTR10	2298423
		9531-0000-013AF	J2J240307-4	FAPTR1AC	9FAPTR10	2298424
		9531-0000-013AF	J2J240307-4	FAPTR1AA	9FAPTR10	2298425
		9531-0000-015AF	J2J240307-5	FAPTV1AD	9FAPTV10	2298423
		9531-0000-015AF	J2J240307-5	FAPTV1AC	9FAPTV10	2298424
		9531-0000-015AF	J2J240307-5	FAPTV1AA	9FAPTV10	2298425

CERTIFICATE OF ANALYSIS

November 20, 2002

**Bechtel Corporation
362 Injun Hollow Road
East Hampton, CT 06424**

Attention: Alan Heter

SDG Number	:	21414
Date SDG Received	:	October 24, 2002
Number of Samples	:	Five (5)
Sample Type	:	Soil
Data deliverable	:	Summary Report

I. Introduction

On October 24, 2002, five soil samples were received at STL Richland (STLR) for radiochemical analysis. Upon receipt, the samples were assigned to Lot Number J2J240307 with the laboratory ID numbers to correspond with the Bechtel Corp. (BCT) specific IDs as listed on the cover page.

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical errors.

The requested analyses are:	Liquid Scintillation Counting
	Tritium by method RICH-RC-5037
	Technetium-99 by method RICH-RC-5078
	Carbon-14 by method RICH-RC-5022

III. Quality Control

The analytical results for each analysis performed under SDG 21414 includes a minimum of one Laboratory Control Sample (LCS) and one method (reagent) blank and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

Bechtel Corporation
November 20, 2002
Page 2

QC and sample results are reported in the same units.

IV. Comments

Liquid Scintillation Counting

Tritium by method RICH-RC-5037:

The LCS, sample duplicate, batch blank and sample results are within contractual requirements.

Technetium-99 by method RICH-RC-5078:

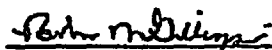
The LCS, sample duplicate, batch blank, matrix spike, and sample results are within contractual requirements.

Carbon-14 by method RICH-RC-5022:

The LCS, sample duplicate, batch blank and sample results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:



Barbara M. Gillespie
Project Manager

Drinking Water Method Cross References

DRINKING WATER ASTM METHOD CROSS REFERENCES		
Referenced Method	Isotope(s)	STL Richland's SOP number
EPA 801.1	Cs-134, I-131	RICH-RC-5017
EPA 800.0	Alpha & Beta	RICH-RC-5014
EPA 803.1	Ra-226	RICH-RC-5005
EPA 804.0	Ra-228	RICH-RC-5005
EPA 805.0	Sr89/90	RICH-RC-5006
ASTM D2460	Total Radium	RICH-RC-5027
Standard Method 7500-U-C & ASTM D5174	Uranium	RICH-RC-5058
EPA 806.0	Thallium	RICH-RC-5007
NOTE:		
The Gross Alpha LCS is prepared with Am-241 (unless otherwise specified in the case narrative)		
The Gross Beta LCS is prepared with Sr/Y-90 (unless otherwise specified in the case narrative)		

Uncertainty Estimation

STL Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, $R = \text{constants} \cdot f(x, y, z, \dots)$. The components (x, y, z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1, 2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value ($S/\sqrt{n}$), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation $(\text{Result}/\text{Expected}) - 1$ as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or STL Richland.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) u_c - Combined Uncertainty.	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, u _c , the combined uncertainty. The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or STL Richland "default" nominal detection limit. Often referred to the reporting level (RL)
Le	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. $Le = (1.645 * \text{Sqrt}(2 * (\text{BkgndCnt}/\text{BkgndCntMin}/\text{SCntMin})) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol}) * \text{IngrFct}))$. For LSC methods the batch blank is used as a measure of the background variability. Le cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC/MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. $MDC = (4.65 * \text{Sqrt}((\text{BkgndCnt}/\text{BkgndCntMin})/\text{SCntMin}) + 2.71/\text{SCntMin}) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol}) * \text{IngrFct}))$. For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUncert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the Work Order Number.
RER	The equation Replicate Error Ratio = $(S-D)/[\text{sqrt}(\text{TPUs}^2 + \text{TPUd}^2)]$ as defined by ICFT BOA where S is the original sample result, D is the result of the duplicate, TPU _s is the total uncertainty of the original sample and TPU _d is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Sample Results Summary
STL Richland STLRL
 Ordered by Client Sample ID, Batch No.

Date: 20-Nov-02

Report No. : 20994

SDG No: 21414

Client ID	Work Order Number	Parameter	Result +/- Uncertainty (2s)	Qual	Units	Yield	MDC/MDA	RER
9523-0000-011AF	FAPR71AD	TRITIUM	7.21E-02 +/- 3.6E-02	J	pCi/g	100.00%	7.19E-02	
9523-0000-011AF	FAPR71AC	TECHNETIUM-99	-7.60E-02 +/- 2.2E-01	U	pCi/g	100.00%	3.14E-01	
9523-0000-011AF	FAPR71AA	CARBON-14	1.28E-02 +/- 7.7E-02	U	pCi/g	100.00%	1.43E-01	
9523-0000-011AF DUP	FAPR71AE	TRITIUM	3.88E-02 +/- 3.7E-02	U	pCi/g	100.00%	7.61E-02	
9523-0000-011AFS	FAPTF1AD	TRITIUM	2.68E-02 +/- 4.1E-02	U	pCi/g	100.00%	8.86E-02	
9523-0000-011AFS	FAPTF1AC	TECHNETIUM-99	-1.17E-01 +/- 2.1E-01	U	pCi/g	100.00%	3.10E-01	
9523-0000-011AFS	FAPTF1AA	CARBON-14	-1.01E-02 +/- 7.6E-02	U	pCi/g	100.00%	1.43E-01	
9523-0000-011AFS DUP	FAPTF1AE	TECHNETIUM-99	-1.02E-01 +/- 2.2E-01	U	pCi/g	100.00%	3.12E-01	
9523-0000-028AF	FAPTL1AD	TRITIUM	7.48E-02 +/- 6.6E-02	U	pCi/g	100.00%	1.38E-01	
9523-0000-028AF	FAPTL1AC	TECHNETIUM-99	1.69E-01 +/- 2.3E-01	U	pCi/g	100.00%	3.19E-01	
9523-0000-028AF	FAPTL1AA	CARBON-14	6.12E-03 +/- 7.6E-02	U	pCi/g	100.00%	1.43E-01	
9531-0000-013AF	FAPTR1AD	TRITIUM	1.72E-01 +/- 6.1E-02	J	pCi/g	100.00%	1.32E-01	
9531-0000-013AF	FAPTR1AC	TECHNETIUM-99	3.15E-01 +/- 2.4E-01	J	pCi/g	100.00%	3.08E-01	
9531-0000-013AF	FAPTR1AA	CARBON-14	-3.73E-02 +/- 7.6E-02	U	pCi/g	100.00%	1.43E-01	
9531-0000-013AF DUP	FAPTR1AE	CARBON-14	-3.89E-02 +/- 7.5E-02	U	pCi/g	100.00%	1.43E-01	
9531-0000-016AF	FAPTV1AD	TRITIUM	4.86E-02 +/- 3.0E-02	U	pCi/g	100.00%	8.03E-02	
9531-0000-016AF	FAPTV1AC	TECHNETIUM-99	3.17E-01 +/- 2.4E-01	J	pCi/g	100.00%	3.08E-01	
9531-0000-016AF	FAPTV1AA	CARBON-14	1.31E-02 +/- 7.6E-02	U	pCi/g	100.00%	1.43E-01	

Number of Results: 18

STL Richland RER - Replicate Error Ratio = $(S-D)/\sqrt{sq(TPUa)+sq(TPUd)}$ as defined by ICFT BOA.
 rptSTLRichSaSum J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V3.98 A97 U Qual - Analyzed for, but the result is less than the 3σ or gamma scan software did not identify the nuclide.

QC Results Summary
STL Richland STLRL
 Ordered by QC Type, Batch No.

Date: 20-Nov-02

Report No. : 20994

SDG No.: 21414

QC Type	Work Order Number	Parameter	Result +/- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC MDA
MATRIX SPIK	FAPTL1AE	TECHNETIUM-99	2.52E+01 +/- 1.8E+00		pCi/g	100.00%	92.70%	-0.1	3.25E-01
BLANK QC	FAR8F1AA	TRITIUM	-3.20E-02 +/- 1.4E-01	U	pCi/g	100.00%			3.08E-01
BLANK QC	FAR8K1AA	TECHNETIUM-99	2.02E-01 +/- 2.3E-01	U	pCi/g	100.00%			3.05E-01
BLANK QC	FAR8M1AA	CARBON-14	-4.78E-02 +/- 7.5E-02	U	pCi/g	100.00%			1.44E-01
LCS	FAR8F1AC	TRITIUM	6.74E+00 +/- 3.9E-01	J	pCi/g	100.00%	98.78%	0.0	3.07E-01
LCS	FAR8K1AC	TECHNETIUM-99	1.31E+01 +/- 1.0E+00	J	pCi/g	100.00%	95.89%	0.0	3.06E-01
LCS	FAR8M1AC	CARBON-14	2.69E+00 +/- 1.5E-01	J	pCi/g	100.00%	99.00%	0.0	1.44E-01

Number of Results: 7

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.10.
 rptSTLRichQCsum J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V1.88 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 20-Nov-02

Lab Name: STL Richland
Lot-Sample No.: J2J240307-1
Client Sample ID: 9523-0000-011AF

SDG: 21414
Report No.: 20994
COC No.:

Collection Date: 10/17/2002 2:10:00 PM
Received Date: 10/24/2002 11:55:00 AM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Allquot Size	Analy Method, Primary Detector
Batch: 2298423	Work Order: FAPR71AD				Report DB ID: 9FAPR710							
TRITIUM	7.21E-02	J	3.3E-02	3.6E-02	7.18E-02	pCi/g	100.00%	(1.)	11/6/02 10:15 p		100.2	E908.0
						3.34E-02	1.55E+01	(4.1)			g	LSC6
Batch: 2298424	Work Order: FAPR71AC				Report DB ID: 9FAPR710							
TECHNETIUM-99	-7.50E-02	U	1.3E-01	2.2E-01	3.14E-01	pCi/g	100.00%	-0.24	11/16/02 01:43 a		5.0	RICHRC5078
						1.52E-01	5.04E-01	-0.69			g	LSC6
Batch: 2298425	Work Order: FAPR71AA				Report DB ID: 9FAPR710							
CARBON-14	1.28E-02	U	6.1E-02	7.7E-02	1.43E-01	pCi/g	100.00%	0.09	11/10/02 09:13 a		5.004	RC5022
						7.04E-02	2.26E-01	0.34			g	LSC3

Number of Results: 3

Comments:

STL Richland MDC/MDA, Lc - Detection, Decision Level based on Instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRichSample J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V3.86 AS7 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 20-Nov-02

Lab Name: STL Richland
Lot-Sample No.: J2J240307-2
Client Sample ID: 9523-0000-011AFS

SDG: 21414
Report No.: 20994
COC No.:

Collection Date: 10/17/2002 2:10:00 PM
Received Date: 10/24/2002 11:55:00 AM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert (2 s)	MDC/MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/ToUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2298423	Work Order: FAPTF1AD											
TRITIUM	2.68E-02	U	3.7E-02	4.1E-02	6.85E-02	pCi/g	100.00%	0.3	11/6/02 11:39 p		100.2	E908.0
							4.11E-02	1.85E+01	(1.3)		9	LSC6
Batch: 2298424	Work Order: FAPTF1AC											
TECHNETIUM-99	-1.17E-01	U	1.3E-01	2.1E-01	3.10E-01	pCi/g	100.00%	-0.38	11/16/02 02:45 a		5.0	RICHRC5078
							1.51E-01	5.04E-01	-(1.1)		9	LSC8
Batch: 2298425	Work Order: FAPTF1AA											
CARBON-14	-1.01E-02	U	6.0E-02	7.6E-02	1.43E-01	pCi/g	100.00%	-0.07	11/10/02 12:35 p		5.011	RC5022
							7.04E-02	2.28E-01	-0.26		9	LSC3

Number of Results: 3

Comments:

STL Richland
rptSTLRichSample
V3.95 AS7

MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.

U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I

Date: 20-Nov-02

SAMPLE RESULTS

Lab Name: STL Richland

SDG: 21414

Collection Date: 10/17/2002 2:30:00 PM

Lot-Sample No.: J2J240307-3

Report No.: 20994

Received Date: 10/24/2002 11:55:00 AM

Client Sample ID: 9523-0000-026AF

COC No.:

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2298423	Work Order: FAPTL1AD				Report DB ID: 9FAPTL10							
TRITIUM	7.48E-02	U	5.9E-02	8.6E-02	1.38E-01	pCi/g	100.00%	0.54	11/7/02 12:21 a		50.6	E908.0
							6.41E-02	1.65E+01	(2.3)		9	LSC8
Batch: 2298424	Work Order: FAPTL1AC				Report DB ID: 9FAPTL10							
TECHNETIUM-99	1.69E-01	U	1.4E-01	2.3E-01	3.19E-01	pCi/g	100.00%	0.53	11/18/02 04:49 a		5.0	RICHRC5078
							1.55E-01	5.04E-01	(1.5)		9	LSC6
Batch: 2298425	Work Order: FAPTL1AA				Report DB ID: 9FAPTL10							
CARBON-14	5.12E-03	U	8.0E-02	7.6E-02	1.43E-01	pCi/g	100.00%	0.04	11/10/02 03:58 p		5.027	RC5022
							7.00E-02	2.26E-01	0.13		9	LSC3

Number of Results: 3

Comments:

STL Richland MDC(MDA)Le - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRichSample J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V3.98 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I

Date: 20-Nov-02

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: J2J240307-4
 Client Sample ID: 9531-0000-013AF

SDG: 21414
 Report No.: 20994
 COC No.:

Collection Date: 10/21/2002 1:28:00 PM
 Received Date: 10/24/2002 11:55:00 AM
 Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Anal Method, Primary Detector
Batch: 2298423	Work Order: FAPTR1AD				Report DB ID: 9FAPTR10							
TRITIUM	1.72E-01	J	5.7E-02	6.1E-02	1.32E-01	pCi/g	100.00%	(1.3)	11/7/02 01:04 a		50.6	E906.0
							6.13E-02	1.65E+01	(5.7)		g	LSC6
Batch: 2298424	Work Order: FAPTR1AC				Report DB ID: 9FAPTR10							
TECHNETIUM-99	3.15E-01	J	1.4E-01	2.4E-01	3.08E-01	pCi/g	100.00%	(1.)	11/16/02 06:53 a		5.0	RICHRC5078
							1.49E-01	5.04E-01	(2.7)		g	LSC6
Batch: 2298425	Work Order: FAPTR1AA				Report DB ID: 9FAPTR10							
CARBON-14	-3.73E-02	U	6.0E-02	7.5E-02	1.43E-01	pCi/g	100.00%	-0.26	11/10/02 07:20 p		5.043	RC5022
							6.89E-02	2.26E-01	-1.		g	LSC3

Number of Results: 3

Comments:

STL Richland
 rptSTLRichSample
 V3.86 A97

MDC(MDA)Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 U Qual - Analyzed for, but the result is less than the Mdc(Mda)Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 20-Nov-02

Lab Name: STL Richland
Lot-Sample No.: J2J240307-5
Client Sample ID: 9531-0000-015AF

SDG: 21414
Report No.: 20994
COC No.:

Collection Date: 10/21/2002 12:00 PM
Received Date: 10/24/2002 11:55:00 AM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Anal Method, Primary Detector
Batch: 2298423	Work Order: FAPTVIAD				Report DB ID: 9FAPTV10							
TRITIUM	4.88E-02	U	2.8E-02	3.0E-02	8.03E-02	pCi/g	100.00%	0.61	11/7/02 01:48 a		100.2	E90A0
						3.73E-02	1.65E+01	(3.3)			g	LSC6
Batch: 2298424	Work Order: FAPTVIAC				Report DB ID: 9FAPTV10							
TECHNETIUM-99	3.17E-01	J	1.4E-01	2.4E-01	3.08E-01	pCi/g	100.00%	(1.)	11/18/02 07:55 a		5.0	RICHRC078
						1.50E-01	5.04E-01	(2.7)			g	LSC6
Batch: 2298425	Work Order: FAPTVIAA				Report DB ID: 9FAPTV10							
CARBON-14	1.31E-02	U	6.1E-02	7.8E-02	1.43E-01	pCi/g	100.00%	0.09	11/11/02 02:05 a		5.018	RC5022
						7.03E-02	2.28E-01	0.34			g	LSC3

Number of Results: 3

Comments:

STL Richland MDC(MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
rptSTLRichSample J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
V3.96 AS7 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 20-Nov-02

DUPLICATE RESULTS

Lab Name: STL Richland

SDG: 21414

Collection Date: 10/17/2002 2:10:00 PM

Lot-Sample No.: J2J240307-1

Report No.: 20994

Received Date: 10/24/2002 11:55:00 AM

Client Sample ID: 9523-0000-011AF DUP

GOC No.:

Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/Tot/Ucert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 229B423	Work Order: FAPR71AE				Report DB ID: FAPR71ER	Orig Sa DB ID:						
TRITIUM	3.88E-02	U	3.3E-02	3.7E-02	7.81E-02	pCi/g	100.00%	0.51	11/6/02 10:57 p		100.2	E906.0
	7.21E-02	J RER	1.3			1.65E+01		(2.1)			g	LSC6

Number of Results: 1

Comments:

STL Richland

RER - Replicate Error Ratio = $(S-D)/(\sqrt{(sq(TPU)+sq(TPD))})$ as defined by ICPT BOA.rptSTLRichDupV3.9
6 A97

MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.

U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 20-Nov-02

DUPLICATE RESULTS

Lab Name: STL Richland

SDG: 21414

Collection Date: 10/17/2002 2:10:00 PM

Lot-Sample No.: J2J240387-2

Report No.: 20994

Received Date: 10/24/2002 11:55:00 AM

Client Sample ID: 9523-0000-01AFS DUP

COC No.:

Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Anal Method, Primary Detector
Batch: 2298424	Work Order: FAPTF1AE				Report DB ID: FAPTF1ER		Orig Sa DB ID:					
TECHNETIUM-99	-1.02E-01	U	1.3E-01	2.2E-01	3.12E-01	pCi/g	100.00%	-0.33	11/16/02 03:47 a		5.0	RICHRC5078
	-1.17E-01	U RER	0.1			5.04E-01		-0.94			g	LSC6

Number of Results: 1

Comments:

STL Richland RER - Replicate Error Ratio = $(S-D)/\sqrt{\text{sq}(IPU)+\text{sq}(IPUD))}$ as defined by ICPT BOA.

rptSTLRichDupV3.9 MDC/MDA, Le - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

6 A57

U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 20-Nov-02

DUPLICATE RESULTS

Lab Name: STL Richland

SDG: 21414

Collection Date: 10/21/2002 1:28:00 PM

Lot-Sample No.: J2J240307-4

Report No.: 20994

Received Date: 10/24/2002 11:55:00 AM

Client Sample ID: 9531-0000-013AF DUP

COC No.:

Matrix: SOIL

Parameter	Result, Orig Rat	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Anal Method, Primary Detector
Batch: 2298425	Work Order: FAPTR1AE				Report DB ID: FAPTR1ER	Orig Sa DB ID:						
CARBON-14	-3.88E-02	U	8.0E-02	7.5E-02	1.43E-01	pCi/g	100.00%	-0.27	11/10/02 10:43 p		5.025	RC5022
	-3.73E-02	U RER	0.0			2.26E-01		-(1.)			9	LSC3

Number of Results: 1

Comments:

STL Richland RER - Replicate Error Ratio = $(S-D)/\sqrt{[sq(TPU)+sq(TPUD)]}$ as defined by ICFT BOA.rptSTLRichDupV3.9 MDC/MDA, Le - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
6 A57 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 20-Nov-02

BLANK RESULTS

Lab Name: STL Richland

SDG: 21414

Lot-Sample No.: J2J250000-423

Report No.: 20994

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Lo	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/Tot/cert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2298423	Work Order: FAR8F1AA				Report DB ID: FAR8F1AB							
TRITIUM	-3.20E-02	U	1.2E-01	1.4E-01	3.08E-01	pCi/g	100.00%	-0.1	11/8/02 08:51 p		10.0	ES06.0
					1.43E-01	1.65E+00		-0.48			8	LSCB

Number of Results: 1

Comments:

STL Richland MDC/MDA,Lo - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRchBlank U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.
 V3.98 A97

FORM II
BLANK RESULTS

Date: 20-Nov-02

Lab Name: STL Richland

SDG: 21414

Lot-Sample No.: J2J250000-424

Report No.: 20994

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Anal Method, Primary Detector
Batch: 2298424	Work Order: FAR8K1AA											
	Report DB ID: FAR8K1AB											
TECHNETIUM-99	2.02E-01	U	1.3E-01	2.3E-01	3.05E-01	pCi/g	100.00%	0.66	11/16/02 08:57 a		5.0	RICHRC5078
					1.48E-01	5.04E-01		(1.8)			g	LSC6

Number of Results: 1

Comments:

STL Richland
rptSTLRichBlank
V3.86 A97MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM II
BLANK RESULTS

Date: 20-Nov-02

Lab Name: STL Richland

SDG: 21414

Lot-Sample No.: J2J250000-425

Report No.: 20994

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Data	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2298425	Work Order: FAR8M1AA				Report DB ID: FAR8M1AB							
CARBON-14	-4.78E-02	U	6.0E-02	7.5E-02	1.44E-01	pCi/g	100.00%	-0.83	11/10/02 02:28 a		5.0	RC5022
					7.05E-02	2.28E-01		-(1.3)			8	LSC3

Number of Results: 1

Comments:

STL Richland MDC(MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
rptSTLRichBlank U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.
V3.68 A57

FORM II
LCS RESULTS

Date: 20-Nov-02

Lab Name: STL Richland

SDG: 21414

Lot-Sample No.: J2J250000-423

Report No.: 20994

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Alliquot Size	Analy Method, Primary Detector
Batch: 2298423	Work Order: FAR8F1AC					Report DB ID: FAR8F1CS							
TRITIUM	6.74E+00		3.5E-01	3.8E-01	3.07E-01	pCi/g	100.00%	6.83E+00	2.3E-01	98.78%	11/6/02 09:33 p	10.0	E906.0
							Rec Limits:	70.	130.	0.0		g	LSC6

Number of Results: 1

Comments:

STL Richland Bias $-(\text{Result}/\text{Expected})-1$ as defined by ANSI N13.39.
rptSTLRichLcs
V3.96.A97

FORM II
LCS RESULTS

Date: 20-Nov-02

Lab Name: STL Richland

SDG: 21414

Lot-Sample No.: J2J250000-424

Report No.: 20994

Matrix: SOIL

Parameter	Result	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA)	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prop Date	Aliquot Size	Analy Method, Primary Detector
Batch: 2298424	Work Order: FAR8K1AC	Report DB ID: FAR8K1CS										
TECHNETIUM-99	1.31E+01	3.2E-01	1.0E+00	3.06E-01	pCi/g	100.00%	1.38E+01	3.1E-01	95.89%	11/16/02 09:59 a	5.0	RICHRCS078
Rec Limits:							70.	130.	0.0		8	LSC8

Number of Results: 1

Comments:

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.
rptSTLRichLes
V3.95 A97

FORM II
LCS RESULTS

Date: 20-Nov-02

Lab Name: STL Richland
Lot-Sample No.: J2J250000-425SDG: 21414
Report No.: 20994

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Data	Aliquot Size	Anal. Method, Primary Detector
Batch: 2298425	Work Order: FAR6M1AC												
CARBON-14	2.69E+00		9.5E-02	1.5E-01	1.44E-01	pCi/g	100.00%	2.72E+00	8.8E-02	99.00%	11/10/02 05:50 a	5.0	RC5022
							Rec Limits:	70.	130.	0.0		g	LSC3

Number of Results: 1

Comments:

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.39.
rptSTLRchLcs
V3.86 A97

FORM II

Date: 20-Nov-02

MATRIX SPIKE RESULTS

Lab Name: STL Richland

SDG: 21414

Lot-Sample No.: J2J240307-3

Report No.: 20994

Matrix: SOIL

Parameter	Spike Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert (2 s)	MDC/MDA	Rpt Unit, CRDL	Yield	Rec- overy	Exp- ected	Exp Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: Z298424	Work Order: FAPTL1AE			Report DB ID: FAPTL1EW		Orig Sa DB ID:							
TECHNETIUM-99	2.62E+01		4.4E-01	1.8E+00	3.25E-01	pCi/g	100.00%	92.70%	2.72E+01	6.1E-01	11/16/02 05:51 a	5.0	RICHRC5078
			RER									g	LSC6

Number of Results: 1

Comments:

STL Richland RER - Replicate Error Ratio = $(S-D)/[\text{sqrt}(\text{sq}(TPUs)+\text{sq}(TPUd))]$ as defined by ICPT BOA.
rptSTLRechMs Bias - (Result/Expected)-1 as defined by ANSI N13.30.
V3.85 A97

W-4 12/10

14 day
TAT

J20 240307

8007 21414
Due 11-8

24265-000-GPP-GGGR-R5104-003 Attachment A

Page 1 of 1

Bechtel Power Corporation 362 Injun Hollow Road, East Hampton, CT 06424 860-267-2556			Chain of Custody Form							COC No: 00101 P.O. #: 24265-FSB-S-00552-AC Activity Code: 24265-200-034AA3	
Project Name: Haddam Neck Decommissioning							Analyses Requested			Lab Use Only	
Contact Name: Jack McCarthy Phone: 1-860-267-2556 ext 3024			Media Code	Sample Type Code	Container Size & Type Code	Number of Containers	Analysis Type 1 H3 C14 TC99	Analysis Type 2	Analysis Type 3	Comments:	
Analytical Lab (Name, City, State): STL Richland, 2800 George Washington Way Richland, WA 99352 Attention: Barb Gillespi										Comment, Preservation	Lab Sample ID
Priority: ☐ 30 D. ☐ 15 D. ☐ 7 D. ☒ ASAP											
Sample Designation	Date	Time									
9523-0000-001AF	10/17/2002	1410	TS	G	BP	1	BFS SOTHR			N/A	FAPR7
9523-0000-001AFS	10/17/2002	1410	TS	G	BP	1	BFS SOTHR			N/A	FAPTE
9523-0000-025AF	10/17/2002	1430	TS	G	BP	1	BFS SOTHR			N/A	FAPIN
NOTES: Multiple individuals performing sampling, refer to Daily Survey Journal sheet for list of team members											
1) Sampled By <i>John J. Gustin</i>			Date/Time 10/17/02 1515			2) Received By <i>Shulerberg</i>			Date/Time 10-24-02 1155		
3) Relinquished By			Date/Time			4) Received By			Date/Time		
5) Relinquished By			Date/Time			6) Received By			Date/Time		
Media Code	WG: Ground Water, WF: Surface Water, RW: River Water, WE: Estuary Water, WS: Sea Water, EW: Effluent Water, TS: Soil, SE: Sediment, AS: Asphalt, TG: Vegetation, CT: Concrete, OT: Other										
Sample Type Code	G: Grab, C: Composite, CR: Core, D: Duplicate, S: Split, FB: Field Blank, RB: Rinsate Blank, MSB: Matrix Spike Dup. OT: Other										
Container Type	BP: Plastic Bag, BC: Cloth Bag, P: Plastic, SC: Steel Can, G: Glass, A: Amber glass, V: Vial, LLM: 1 liter marmetelli, OT: Other										
Samples Shipped Via: ☐ Fed Ex ☐ UPS ☐ Hand ☐ Other										Internal Container Temp.: _____ Deg. C Custody Sealed? Y. ☐ N. ☐ Custody Seal Intact? Y. ☐ N. ☐	
Bill of Lading #											

Bechtel

MATRIX OF REQUIRED ANALYSES AND DETECTION SENSITIVITIES

Column 1	Column 2	Column 3	Column 4
Radionuclide	Analyses	Soil MDC (pCi/g)	BFSOTHR Required analysis?
C-14	(Liquid Scintillation)	2.26E-01	Y
H-3	(Liquid Scintillation)	1.65E+01	Y
Tc-99	(Liquid Scintillation)	5.04E-01	Y

Bechtel Power Corporation 361 Injun Hollow Road, East Hampton, CT 06424 860-267-2556			Chain of Custody Form					COC No: 2002-00102 P.O. #: 24265-FSB-S-00552-AC Activity Code: 24265-200-034AA3				
Project Name: Haddam Neck Decommissioning							Analyses Requested			Lab Use Only		
Contact Name: Jack McCarthy Phone: 1-860-267-2556 ext 3024			Media Code	Sample Type Code	Container Size & Type Code	Number of Containers	Analysis Type 1 C14 H3 TC99	Analysis Type 2	Analysis Type 3	Comments:		
Analytical Lab (Name, City, State): STL Richland, 2800 George Washington Way Richland, WA 99352 Attention: Barb Gillespi										Comment, Preservation	Lab Sample ID	
Priority: ☐ 30 D. ☐ 15 D. ☐ 7 D. ☒ ASAP												
Sample Designation												
Date			Time									
9531-0000-013AF ✓			10/21/2002			1328			TS		G	
9531-0000-015AF ✓			10/21/2002			1320			TS		G	
NOTES: Multiple individuals performing sampling, refer to Daily Survey Journal sheet for list of team members												
1) Sampled By <i>[Signature]</i>			Date/Time 10/21/02-1530			2) Received By <i>[Signature]</i>			Date/Time 10/21/02-1155			
3) Relinquished By			Date/Time			4) Received By			Date/Time			
5) Relinquished By			Date/Time			6) Received By			Date/Time			
Media Code			WG: Ground Water, WF: Surface Water, RW: River Water, WE: Estuary Water, WS: Sea Water, EW: Effluent Water, TS: Soil, SE: Sediment, AS: Asphalt, TG: Vegetation, CT: Concrete, OT: Other									
Sample Type Code			G: Grab, C: Composite, CR: Core, D: Duplicate, S: Split, FB: Field Blank, RB: Rinse Blank, MSD: Matrix Spike Dup, OT: Other									
Container Type			BP: Plastic Bag, BC: Cloth Bag, P: Plastic, SC: Steel Can, G: Glass, A: Amber glass, V: Vial, ILM: 1 liter polyurethane, OT: Other									
									Samples Shipped Via: ☒ Fed Ex ☐ UPS ☐ Hand ☐ Other			
									Internal Container Temp.: ____ Deg. C Custody Sealed? Y ☐ N ☐ Custody Seal Intact? Y ☐ N ☐			
									Bill of Lading #			

MATRIX OF REQUIRED ANALYSES AND DETECTION SENSITIVITIES

Column 1	Column 2	Column 3	Column 4 BFSOTHR
Radionuclide	Analyses	Soil MDC (pCi/g)	Required analysis?
C-14	(Liquid Scintillation)	2.26E-01	Y
H-3	(Liquid Scintillation)	1.65E+01	Y
Tc-99	(Liquid Scintillation)	5.04E-01	Y

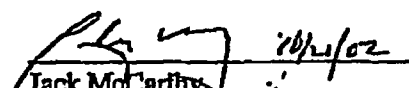
**Standing Order HPM 02-002
Attachment B
Sample Notification**

Date: October 21, 2002

To: Barbara Gillespie

From: Jack McCarthy

Please be advised that sample numbers 9521-0000-008F, 9521-0000-009F, 9521-0000-013F and 9521-0000-015F in this package may contain trace amounts of radioactive material that has been determined to be below the DOT requirement to be regulated in commerce. Please handle them with standard laboratory practices.


Jack McCarthy
860-267-2556 X3024

Analytical Data Package Prepared For
Bechtel CT Yankee Project

Radiochemical Analysis By

STL Richland

2800 G.W. Way, Richland Wa, 99352, (509)-375-3131.

Assigned Laboratory Code: STLRL

Data Package Contains _____ Pages

Report No.: 21071

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
21203		9531-0000-013F	J2J010260-2	E87CN1AL	9E87CN10	2275373
		9531-0000-013F	J2J010260-2	E87CN1AG	9E87CN10	2275384
		9531-0000-013F	J2J010260-2	E87CN1AH	9E87CN10	2275389
		9531-0000-013F	J2J010260-2	E87CN1AC	9E87CN10	2275400
		9531-0000-013F	J2J010260-2	E87CN1AA	9E87CN10	2275403
		9531-0000-013F	J2J010260-2	E87CN1AF	9E87CN10	2275404
		9531-0000-013F	J2J010260-2	E87CN1AE	9E87CN10	2275407
		9531-0000-013F	J2J010260-2	E87CN1AK	9E87CN10	2275409
		9531-0000-013F	J2J010260-2	E87CN2AD	9E87CN20	2305287
		9531-0000-015F	J2J010260-1	E87CA1AL	9E87CA10	2275373
		9531-0000-015F	J2J010260-1	E87CA1AG	9E87CA10	2275384
		9531-0000-015F	J2J010260-1	E87CA1AH	9E87CA10	2275389
		9531-0000-015F	J2J010260-1	E87CA1AC	9E87CA10	2275400
		9531-0000-015F	J2J010260-1	E87CA1AA	9E87CA10	2275403
		9531-0000-015F	J2J010260-1	E87CA1AF	9E87CA10	2275404
		9531-0000-015F	J2J010260-1	E87CA1AE	9E87CA10	2275407
		9531-0000-015F	J2J010260-1	E87CA1AK	9E87CA10	2275409
		9531-0000-015F	J2J010260-1	E87CA2AD	9E87CA20	2305287

CERTIFICATE OF ANALYSIS

December 18, 2002

Bechtel Corporation
362 Injun Hollow Road
East Hampton, CT 06424

Attention: Alan Heter

AMENDED

SDG Number	:	21203
Date SDG Received	:	September 25, 2002
Number of Samples	:	Two (2)
Sample Type	:	Soil
Data deliverable	:	Summary Report

I. Introduction

On September 25, 2002, two soil samples were received at STL Richland (STLR) for radiochemical analysis on one chain-of-custody (2002-0064). Upon receipt, the samples were assigned to Lot Number J2J010260 with the laboratory ID numbers to correspond with the Bechtel Corp. (BCT) specific IDs as listed on the cover page.

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical errors.

The requested analyses are:

Alpha Spectroscopy
Americium/Curium-isotopic by method RICH-RC-5080
Plutonium-238, 239/240 by method RICH-RC-5010
Gas Proportional Counting
Strontium-90 by method RICH-RC-5006
Gamma Spectroscopy
Gamma Spec by method RICH-RC-5017
Liquid Scintillation Counting
Tritium by method RICH-RC-5037

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Technetium-99 by method RICH-RC-5065
Carbon-14 by method RICH-RC-5022
Iron-55 by method RICH-RC-5074
Nickel-63 by method RICH-RC-5069
Plutonium-241 by method RICH-RC-5010

III. Quality Control

The analytical results for each analysis performed under SDG 21203 includes a minimum of one Laboratory Control Sample (LCS) and one method (reagent) blank and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

IV. Comments

Alpha Spectroscopy

Americium/Curium-isotopic by method RICH-RC-5080:

All results are below the CRDL and/or below the MDC. Except as noted, the LCS, sample duplicate, batch blank and sample results are within contractual requirements.

Plutonium-238, 239/240 by method RICH-RC-5010:

All results are below the CRDL and/or below the MDC. The LCS, sample duplicate, batch blank and sample results are within contractual requirements.

Gas Proportional Counting

Strontium-90 by method RICH-RC-5006:

The samples were processed twice. For the first process batch, the chemical yields were very low or zero. For the second processing set, the yields were low but acceptable. However, the MDAs are greater than the CRDL. Through all the failed analyses and re-batching, a sample duplicate was inadvertently left out. Except as noted, the LCS, batch blank and sample results are within contractual requirements.

Gamma Spectroscopy

Gamma Spec by method RICH-RC-5017:

Seventeen of the eighteen requested radionuclides have been reported for each sample. The Bi-212 was over eight half lives since collection, therefore, not reported. Except as noted, the LCS, sample duplicate, batch blank and sample results are within required limits.

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December 18, 2002
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Liquid Scintillation Counting

Tritium by method RICH-RC-5007:

The samples were dried and prepared for analysis before the technician realized these samples were supposed to have tritium analysis performed on non-dried sample. No results will be reported for this test.

Technetium-99 by method RICH-RC-5065:

The samples were dried and prepared for analysis before the technician realized these samples were supposed to have technetium-99 analysis performed on non-dried sample. Any volatile technetium will not be captured by this test. All results are below the CRDL and/or below the MDC. The LCS, sample duplicate, batch blank, matrix spike, and sample results are within contractual requirements.

Carbon-14 by method RICH-RC-5022:

The samples were dried and prepared for analysis before the technician realized these samples were supposed to have carbon-14 analysis performed on non-dried sample. Any volatile carbon that would be driven off during the drying process will not be captured by this test. All results are below the CRDL and below the MDC. The LCS, sample duplicate, batch blank and sample results are within contractual requirements.

Iron-55 by method RICH-RC-5074:

All results are below the CRDL and below the MDC. The LCS is at 48%. Since all results are well below the CRDL, the data are accepted as is. Except as noted, the LCS, sample duplicate, batch blank, matrix spike, and sample results are within contractual requirements.

Nickel-63 by method RICH-RC-5069:

All results are below the CRDL and/or below the MDC. The LCS, sample duplicate, batch blank, matrix spike, and sample results are within contractual requirements.

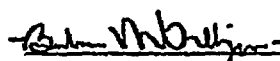
Plutonium-241 by method RICH-RC-5080:

The batch blank result is greater than the MDA but below the CRDL. There appears to be some background counts, although most likely not Pu-241, in all the samples due to an extraneous source. The laboratory does not subtract the batch blank from sample results unless directed by the client, therefore, all samples may be slightly elevated in activity due to this source of beta energy. All results are below the CRDL and/or below the MDC. The LCS, sample duplicate, batch blank, matrix spike, and sample results are within contractual requirements.

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I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:


Barbara M. Gillespie
Project Manager

Drinking Water Method Cross References

DRINKING WATER ASTM METHOD CROSS REFERENCES		
Referenced Method	Isotope(s)	STL Richland's SOP number
EPA 801.1	Cs-134, I-131	RICH-RC-5017
EPA 800.0	Alpha & Beta	RICH-RC-5014
EPA 803.1	Ra-226	RICH-RC-5005
EPA 804.0	Ra-228	RICH-RC-5005
EPA 805.0	Sr89/90	RICH-RC-5006
ASTM D2460	Total Radium	RICH-RC-5027
Standard Method 7500-U-C & ASTM D5174	Uranium	RICH-RC-5058
EPA 906.0	Tritium	RICH-RC-5007
NOTE:		
The Gross Alpha LCS is prepared with Am-241 (unless otherwise specified in the case narrative)		
The Gross Beta LCS is prepared with Sr/Y-90 (unless otherwise specified in the case narrative)		

Uncertainty Estimation

STL Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, $R = \text{constants} * f(x,y,z,...)$. The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value ($S/\sqrt{n}$), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation $(\text{Result}/\text{Expected}) - 1$ as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or STL Richland.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) u_c - Combined Uncertainty.	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, u_c the combined uncertainty. The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval. 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or STL Richland "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. $Lc = (1.645 * \text{Sqrt}(2 * (\text{BkgndCnt}/\text{BkgndCntMin}) / \text{SCntMin})) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol}) * \text{IngrFct})$. For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC/MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. $MDC = (4.65 * \text{Sqrt}((\text{BkgndCnt}/\text{BkgndCntMin}) / \text{SCntMin}) + 2.71 / \text{SCntMin}) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol}) * \text{IngrFct})$. For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUncert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the Work Order Number.
RER	The equation Replicate Error Ratio = $(S-D)/\text{sqrt}(TPUs^2 + TPUs^2)$ as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUs is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Sample Results Summary
STL Richland STLRL
 Ordered by Client Sample ID, Batch No.

Date: 18-Dec-02

Report No. : 21071

SDG No: 21203

Client ID	Work Order Number	Parameter	Result ± Uncertainty (2s)	Qual	Units	Yield	MDG/MDA	RER
9531-0000-013F	E87CN1AL	ACTINIUM-228	1.04E+00 ± 2.7E-01		pCi/g		2.21E-01	
		AG-108M	1.20E-02 ± 2.8E-02	U	pCi/g		5.19E-02	
		AMERICIUM-241	1.29E-02 ± 7.8E-02	U	pCi/g		1.14E-01	
		BISMUTH-214	6.86E-01 ± 1.7E-01	U	pCi/g		2.57E-01	
		COBALT-60	1.58E-02 ± 3.7E-02	U	pCi/g		7.32E-02	
		CESIUM-134	6.81E-02 ± 4.6E-02	U	pCi/g		9.14E-02	
		CESIUM-137	5.60E-01 ± 1.1E-01		pCi/g		7.20E-02	
		EUROPIUM-152	-3.29E-02 ± 9.7E-02	U	pCi/g		1.66E-01	
		EUROPIUM-154	-8.67E-02 ± 1.1E-01	U	pCi/g		1.81E-01	
		EUROPIUM-155	8.30E-02 ± 8.8E-02	U	pCi/g		1.55E-01	
		POTASSIUM-40	1.42E+01 ± 2.2E+00		pCi/g		5.20E-01	
		MAGNESIUM-54	4.71E-03 ± 3.6E-02	U	pCi/g		8.62E-02	
		NIOBIUM-94	-6.38E-03 ± 3.1E-02	U	pCi/g		5.51E-02	
		LEAD-212	7.93E-01 ± 1.7E-01		pCi/g		1.21E-01	
		LEAD-214	8.36E-01 ± 1.7E-01		pCi/g		1.18E-01	
		RADIUM-226	6.86E-01 ± 1.7E-01	U	pCi/g		2.57E-01	
		THALLIUM-208	3.03E-01 ± 8.8E-02	U	pCi/g		1.17E-01	
9531-0000-013F	E87CN1AG	NICKEL-63	1.06E+01 ± 5.3E+00	J	pCi/g	98.26%	5.91E+00	
9531-0000-013F	E87CN1AH	IRON-55	1.45E+01 ± 1.4E+01	U	pCi/g	81.28%	4.05E+01	
9531-0000-013F	E87CN1AC	TECHNETIUM-99	2.22E-01 ± 2.2E-01	U	pCi/g	100.00%	3.17E-01	
9531-0000-013F	E87CN1AA	CARBON-14	6.76E-02 ± 8.1E-02	U	pCi/g	100.00%	1.43E-01	
9531-0000-013F	E87CN1AF	PLUTONIUM-241	1.09E+01 ± 1.4E+00	J	pCi/g	72.80%	1.64E+00	
9531-0000-013F	E87QN1AE	PLUTONIUM-238	0.00E+00 ± 1.2E-02	U	pCi/g	72.80%	1.32E-02	
		PLUTONIUM-239/40	2.34E-02 ± 2.2E-02	J	pCi/g	72.80%	2.33E-02	
9531-0000-013F	E87CN1AK	AMERICIUM-241	8.01E-03 ± 1.3E-02	U	pCi/g	98.43%	2.13E-02	
		CURIUM-242	0.00E+00 ± 1.4E-02	U	pCi/g	98.43%	1.60E-02	
		CURIUM-243/244	3.58E-03 ± 9.2E-03	U	pCi/g	98.43%	2.16E-02	
9531-0000-013F	E87CN2AD	STRONTIUM-90	1.69E-01 ± 1.0E-01		pCi/g	19.98%	1.65E-01	
9531-0000-013F DUP	E87CN1AV	CARBON-14	9.39E-02 ± 8.2E-02	U	pCi/g	100.00%	1.43E-01	0.6
9531-0000-013F DUP	E87CN1AW	PLUTONIUM-241	1.62E+01 ± 2.0E+00	J	pCi/g	47.90%	2.36E+00	4.4
9531-0000-013F DUP	E87CN1AX	PLUTONIUM-238	0.00E+00 ± 1.7E-02	U	pCi/g	47.94%	1.93E-02	0.0
		PLUTONIUM-239/40	2.13E-02 ± 2.6E-02	J	pCi/g	47.94%	1.92E-02	0.1

STL Richland RER = Replicate Error Ratio = $(S-D)/[sq(1+(sq(TPLb)+sq(TPLd)))]$ as defined by ICPT SOA.

rp1STLRchSeSum J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V3.87 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda Total Uncert or gamma scan software did not identify the nuclide.

Sample Results Summary
STL Richland STLRL
 Ordered by Client Sample ID, Batch No.

Date: 18-Dec-02

Report No. : 21071

SDG No: 21203

Client ID	Work Order Number	Parameter	Result +/- Uncertainty (2s)	Qual	Units	Yield	MDC/MDA	RER
9531-0000-015F	E87CA1AL	ACTINIUM-228	7.49E-01 + 2.4E-01		pCi/g		1.78E-01	
		AG-108M	2.16E-02 + 2.4E-02	U	pCi/g		4.39E-02	
		AMERICIUM-241	4.80E-02 + 5.5E-02	U	pCi/g		9.42E-02	
		BISMUTH-214	5.47E-01 + 1.3E-01	U	pCi/g		2.06E-01	
		COBALT-60	1.09E-02 + 2.9E-02	U	pCi/g		5.87E-02	
		CESIUM-134	5.29E-02 + 3.6E-02	U	pCi/g		7.13E-02	
		CESIUM-137	9.24E-02 + 5.3E-02	J	pCi/g		5.47E-02	
		EUROPIUM-152	-2.19E-02 + 8.2E-02	U	pCi/g		1.36E-01	
		EUROPIUM-154	-2.98E-02 + 9.1E-02	U	pCi/g		1.59E-01	
		EUROPIUM-155	-3.79E-03 + 7.3E-02	U	pCi/g		1.24E-01	
		POTASSIUM-40	1.08E+01 + 1.7E+00		pCi/g		4.03E-01	
		MAGNESIUM-54	1.12E-02 + 3.4E-02	U	pCi/g		6.27E-02	
		NIOSIUM-94	-6.22E-03 + 2.4E-02	U	pCi/g		4.25E-02	
		LEAD-212	6.40E-01 + 1.5E-01		pCi/g		1.09E-01	
		LEAD-214	6.16E-01 + 1.6E-01		pCi/g		8.81E-02	
		RADIUM-226	5.47E-01 + 1.3E-01	U	pCi/g		2.06E-01	
		THALLIUM-208	2.53E-01 + 6.5E-02	U	pCi/g		9.80E-02	
9531-0000-015F	E87CA1AG	NICKEL-63	1.51E+01 + 5.8E+00	J	pCi/g	93.42%	6.16E+00	
9531-0000-015F	E87CA1AH	IRON-55	-1.11E+00 + 1.5E+01	U	pCi/g	62.91%	4.19E+01	
9531-0000-015F	E87CA1AC	TECHNETIUM-99	8.73E-02 + 2.2E-01	U	pCi/g	100.00%	3.07E-01	
9531-0000-015F	E87CA1AA	CARBON-14	5.22E-02 + 8.1E-02	U	pCi/g	100.00%	1.42E-01	
9531-0000-015F	E87CA1AF	PLUTONIUM-241	9.71E+00 + 1.5E+00	J	pCi/g	53.90%	2.16E+00	
9531-0000-015F	E87CA1AE	PLUTONIUM-238	0.00E+00 + 1.6E-02	U	pCi/g	53.87%	1.76E-02	
		PLUTONIUM-239/40	0.00E+00 + 1.6E-02	U	pCi/g	53.87%	1.76E-02	
9531-0000-015F	E87CA1AK	AMERICIUM-241	9.36E-03 + 1.3E-02	U	pCi/g	94.79%	1.27E-02	
		CURIUM-242	0.00E+00 + 1.5E-02	U	pCi/g	94.79%	1.69E-02	
		CURIUM-243/244	0.00E+00 + 1.2E-02	U	pCi/g	94.79%	1.28E-02	
9531-0000-015F	E87CA2AD	STRONTIUM-90	5.86E-02 + 5.4E-02	U	pCi/g	37.03%	9.45E-02	
9531-0000-015F DUP	E87CA1AM	ACTINIUM-228	6.23E-01 + 2.0E-01	U	pCi/g		3.42E-01	0.8
		AG-108M	-1.03E-02 + 2.3E-02	U	pCi/g		3.82E-02	1.9
		AMERICIUM-241	2.38E-02 + 5.1E-02	U	pCi/g		1.40E-01	0.5
		BISMUTH-214	4.88E-01 + 1.3E-01	U	pCi/g		1.89E-01	0.6

STL Richland RER = Replicate Error Ratio = $(S-D)/(\sqrt{(\sum(TFUs)^2) + (\sum(TPUs)^2)})$ as defined by ICPT BOA.
 rptSTLRechSaSum J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V3.87 AS7 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

Sample Results Summary
STL Richland STLRL
 Ordered by Client Sample ID, Batch No.

Date: 18-Dec-02

Report No. : 21071

SDG No: 21203

Client ID	Work Order Number	Parameter	Result ± Uncertainty (2s)	Qual	Units	Yield	MDC/MDA	RER
9531-0000-015F DUP	E87CA1AM	COBALT-60	8.72E-03 ± 2.9E-02	U	pCi/g		5.64E-02	0.1
		CESIUM-134	3.17E-02 ± 3.4E-02	U	pCi/g		6.45E-02	0.9
		CESIUM-137	7.45E-02 ± 5.8E-02	J	pCi/g		4.65E-02	0.5
		EUROPIUM-152	-2.38E-02 ± 8.7E-02	U	pCi/g		1.27E-01	0.0
		EUROPIUM-154	-6.60E-02 ± 6.4E-02	U	pCi/g		1.58E-01	0.6
		EUROPIUM-155	6.10E-02 ± 6.9E-02	U	pCi/g		1.22E-01	1.3
		POTASSIUM-40	9.68E+00 ± 1.6E+00		pCi/g		3.03E-01	0.9
		MAGNESIUM-64	-6.07E-03 ± 3.2E-02	U	pCi/g		5.63E-02	0.7
		NIOBIUM-94	-5.87E-03 ± 2.6E-02	U	pCi/g		4.63E-02	0.0
		LEAD-212	6.71E-01 ± 1.4E-01		pCi/g		6.60E-02	0.3
		LEAD-214	4.87E-01 ± 1.5E-01		pCi/g		8.84E-02	1.2
		RADIUM-226	4.88E-01 ± 1.3E-01	U	pCi/g		1.89E-01	0.6
		THALLIUM-208	1.79E-01 ± 6.0E-02		pCi/g		4.37E-02	1.7
9531-0000-015F DUP	E87CA1AN	NICKEL-63	2.01E+01 ± 6.1E+00	J	pCi/g	94.98%	6.09E+00	1.2
9531-0000-015F DUP	E87CA1AQ	IRON-55	4.16E+00 ± 1.4E+01	U	pCi/g	63.01%	3.73E+01	0.5
9531-0000-015F DUP	E87CA1AV	TECHNETIUM-99	1.82E-01 ± 2.2E-01	U	pCi/g	100.00%	3.09E-01	0.5
9531-0000-015F DUP	E87CA1AW	AMERICIUM-241	1.47E-02 ± 1.7E-02	J	pCi/g	89.06%	1.33E-02	0.5
		CURIUM-242	0.00E+00 ± 1.6E-02	U	pCi/g	89.06%	1.76E-02	0.0
		CURIUM-243/244	0.00E+00 ± 1.2E-02	U	pCi/g	89.06%	1.34E-02	0.0

Number of Results: 83

STL Richland RER - Replicate Error Ratio = $(S-D)/(\sqrt{sq(TPUd)+sq(TPUD)})$ as defined by ICPT BOA.
 rptSTLRichSaSum J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V3.97 A87 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

QC Results Summary
STL Richland STLRL
 Ordered by QC Type, Batch No.

Date: 18-Dec-02

Report No. : 21071

SDG No.: 21203

QC Type	Work Order Number	Parameter	Result + Uncertainty (2σ)	Qual	Units	Yield	Recovery	Bias	MDC/MDA
MATRIX SPIK	E87CN1AM	NICKEL-63	4.81E+02 + 4.4E+01		pCi/g	95.59%	85.56%	0.0	6.00E+00
MATRIX SPIK	E87CN1AT	IRON-55	7.46E+01 + 1.8E+01		pCi/g	80.93%	65.92%	-0.3	1.25E+01
MATRIX SPIK	E87CN1AR	TECHNETIUM-99	2.43E+01 + 1.7E+00		pCi/g	100.00%	89.70%	-0.1	3.12E-01
BLANK QC	E888N1AA	ACTINIUM-228	-9.35E-03 + 1.2E-01	U	pCi/g				2.18E-01
		AG-108M	-1.97E-02 + 2.8E-02	U	pCi/g				4.58E-02
		AMERICIUM-241	1.28E-01 + 2.9E-01	U	pCi/g				6.13E-01
		BISMUTH-214	-2.21E-02 + 8.3E-02	U	pCi/g				1.47E-01
		COBALT-60	-1.84E-03 + 3.2E-02	U	pCi/g				8.28E-02
		CESIUM-134	-1.15E-02 + 3.7E-02	U	pCi/g				6.60E-02
		CESIUM-137	-3.78E-04 + 3.8E-02	U	pCi/g				6.88E-02
		EUROPIUM-152	-1.56E-02 + 8.1E-02	U	pCi/g				1.59E-01
		EUROPIUM-154	1.78E-02 + 1.0E-01	U	pCi/g				1.88E-01
		EUROPIUM-155	-3.87E-02 + 1.1E-01	U	pCi/g				1.87E-01
		POTASSIUM-40	-5.63E-01 + 6.3E-01	U	pCi/g				1.37E+00
		MAGNESIUM-54	3.46E-03 + 3.0E-02	U	pCi/g				6.91E-02
		NIOBIUM-94	4.52E-02 + 3.7E-02	U	pCi/g				7.84E-02
		LEAD-212	-2.48E-02 + 5.0E-02	U	pCi/g				1.03E-01
		LEAD-214	3.41E-02 + 7.0E-02	U	pCi/g				1.29E-01
		RADIUM-228	-2.19E-02 + 8.3E-02	U	pCi/g				1.47E-01
		THALLIUM-208	8.82E-03 + 4.4E-02	U	pCi/g				8.27E-02
BLANK QC	E889J1AA	NICKEL-63	1.21E+01 + 5.8E+00	J	pCi/g	89.51%			6.41E+00
BLANK QC	E889W1AA	IRON-55	-1.57E+01 + 9.7E+00	U	pCi/g	71.35%			2.04E+01
BLANK QC	E88991AA	TECHNETIUM-99	-2.22E-02 + 2.1E-01	U	pCi/g	100.00%			2.86E-01
BLANK QC	E89AW1AA	CARBON-14	6.42E-02 + 8.1E-02	U	pCi/g	100.00%			1.43E-01
BLANK QC	E89A01AA	PLUTONIUM-241	1.20E+01 + 1.4E+00	J	pCi/g	71.70%			1.58E+00
BLANK QC	E89A71AA	PLUTONIUM-238	0.00E+00 + 1.2E-02	U	pCi/g	71.72%			1.27E-02
		PLUTONIUM-239/40	0.00E+00 + 1.2E-02	U	pCi/g	71.72%			1.27E-02
BLANK QC	E89CD1AA	AMERICIUM-241	0.00E+00 + 1.1E-02	U	pCi/g	101.16%			1.18E-02
		CURIUM-242	0.00E+00 + 1.4E-02	U	pCi/g	101.16%			1.55E-02

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.36.

rp1STLRchQcSum J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V3.97 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

QC Results Summary
STL Richland STLRL
 Ordered by QC Type, Batch No.

Date: 18-Dec-02

Report No. : 21071

SDG No.: 21203

QC Type	Work Order Number	Parameter	Result + Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC/MDA
BLANK QC	E89CD1AA	CURIUM-243/244	-8.83E-04 + 1.7E-03	U	pCi/g	101.16%			2.07E-02
BLANK QC	FA8EK1AA	STRONTIUM-90	8.08E-03 + 2.6E-02	U	pCi/g	72.00%			4.97E-02
LCS	E888N1AC	CESIUM-137	1.07E+00 + 1.8E-01		pCi/g		104.77%	0.0	8.10E-02
LCS	E889J1AC	NICKEL-63	4.96E+02 + 4.4E+01		pCi/g	95.82%	97.89%	0.0	5.98E+00
LCS	E889W1AC	IRON-55	2.78E+01 + 1.2E+01		pCi/g	69.01%	48.57%	-0.5	2.05E+01
LCS	E88991AC	TECHNETIUM-99	1.23E+01 + 9.3E-01	J	pCi/g	100.00%	90.55%	-0.1	3.07E-01
LCS	E89AW1AC	CARBON-14	2.85E+00 + 1.5E-01	J	pCi/g	100.00%	100.67%	0.0	1.43E-01
LCS	E89A01AC	PLUTONIUM-241	2.67E+01 + 2.1E+00		pCi/g	76.10%	112.49%	0.1	1.48E+00
LCS	E89A71AC	PLUTONIUM-239/40	5.61E-01 + 1.3E-01	J	pCi/g	78.07%	113.80%	0.1	1.22E-02
LCS	E89CD1AC	AMERICIUM-241	4.49E+00 + 8.2E-01		pCi/g	103.19%	97.82%	0.0	2.07E-02
LCS	FA8EK1AC	STRONTIUM-90	5.11E-01 + 1.2E-01		pCi/g	62.76%	112.00%	0.1	4.11E-02

Number of Results: 40

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.

rp1STLRLchQcSum J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V3.97 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 18-Dec-02

Lab Name: STL Richland
Lot-Sample No.: J2J010260-2
Client Sample ID: 9531-0000-013F

SDG: 21203
Report No.: 21071
COC No.:

Collection Date: 8/20/2002 2:55:00 PM
Received Date: 9/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert (2 s)	MDC/MDA, Action Lev	Rpt Unit, Lo	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2275373	Work Order: E87CN1AL				Report DB ID: 9E87CN10							
ACTINIUM-228	1.04E+00		2.7E-01	2.7E-01	2.21E-01	pCi/g		(4.7) (7.6)	10/24/02 01:21 p		237.5	E901.1 GER8S1
AG-108M	1.20E-02	U	2.8E-02	2.8E-02	5.19E-02	pCi/g		0.23 0.84	10/24/02 01:21 p		237.5	E901.1 GER8S1
AMERICIUM-241	1.29E-02	U	7.8E-02	7.8E-02	1.14E-01	pCi/g		0.11 0.33	10/24/02 01:21 p		237.5	E901.1 GER8S1
BISMUTH-214	8.86E-01	U	1.7E-01	1.7E-01	2.57E-01	pCi/g		(2.7) (8.2)	10/24/02 01:21 p		237.5	E901.1 GER8S1
COBALT-60	1.56E-02	U	3.7E-02	3.7E-02	7.32E-02	pCi/g		0.21 1.52E-01	10/24/02 01:21 p		237.5	E901.1 GER8S1
CESIUM-134	6.81E-02	U	4.8E-02	4.8E-02	9.14E-02	pCi/g		0.75 1.87E-01	10/24/02 01:21 p		237.5	E901.1 GER8S1
CESIUM-137	5.50E-01		1.1E-01	1.1E-01	7.20E-02	pCi/g		(7.5) 3.16E-01	10/24/02 01:21 p		237.5	E901.1 GER8S1
EUROPIUM-152	-3.29E-02	U	9.7E-02	9.7E-02	1.66E-01	pCi/g		-0.2 4.04E-01	10/24/02 01:21 p		237.5	E901.1 GER8S1
EUROPIUM-164	-8.67E-02	U	1.1E-01	1.1E-01	1.81E-01	pCi/g		-0.48 3.72E-01	10/24/02 01:21 p		237.5	E901.1 GER8S1
EUROPIUM-165	8.30E-02	U	8.8E-02	8.8E-02	1.55E-01	pCi/g		0.64 1.57E+01	10/24/02 01:21 p		237.5	E901.1 GER8S1

STL Richland
rptSTL RichSample
V3.97 A97

MDC/MDA, Lo - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 18-Dec-02

Lab Name: STL Richland
Lot-Sample No.: J2J010250-2
Client Sample ID: 9531-0000-013F

SDG: 21203
Report No.: 21071
COC No.:

Collection Date: 8/20/2002 2:55:00 PM
Received Date: 9/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotalUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Anal Method, Primary Detector
POTASSIUM-40	1.42E+01		2.2E+00	2.2E+00	5.20E-01	pCi/g		(27.4) (13.1)	10/24/02 01:21 p		237.5	E901.1 GER8\$1
MAGNESIUM-54	4.71E-03	U	3.6E-02	3.6E-02	6.62E-02	pCi/g	6.96E-01	0.07 0.26	10/24/02 01:21 p		237.5	E901.1 GER8\$1
NIOBIUM-94	-6.38E-03	U	3.1E-02	3.1E-02	5.51E-02	pCi/g	2.85E-01	-0.12 -0.41	10/24/02 01:21 p		237.5	E901.1 GER8\$1
LEAD-212	7.93E-01		1.7E-01	1.7E-01	1.21E-01	pCi/g		(5.5) (9.6)	10/24/02 01:21 p		237.5	E901.1 GER8\$1
LEAD-214	8.36E-01		1.7E-01	1.7E-01	1.18E-01	pCi/g		(7.1) (10.)	10/24/02 01:21 p		237.5	E901.1 GER8\$1
RADIUM-226	6.86E-01	U	1.7E-01	1.7E-01	2.57E-01	pCi/g		(2.7) (8.2)	10/24/02 01:21 p		237.5	E901.1 GER8\$1
THALLIUM-208	3.03E-01	U	6.8E-02	6.8E-02	1.17E-01	pCi/g		(2.6) (8.9)	10/24/02 01:21 p		237.5	E901.1 GER8\$1
Batch: 2275384	Work Order: E87CN1AG				Report DB ID: 9E87CN10							
NICKEL-63	1.06E+01	J	2.7E+00	5.3E+00	5.91E+00	pCi/g	95.28% 2.88E+00	(1.8) 2.89E+01 (4.)	11/16/02 12:57 p		0.2521 g	RC5069 LSC4
Batch: 2275389	Work Order: E87CN1AH				Report DB ID: 8E87CN10							
IRON-55	1.45E+01	U		1.4E+01	4.05E+01	pCi/g	81.28% 1.89E+01	0.36 1.10E+02 (2.1)	11/19/02 12:58 p		0.2521 g	FBXZ LSC7
Batch: 2275400	Work Order: E87CN1AC				Report DB ID: 9E87CN10							

STL Richland
rptSTLRichSample
V3.97 A57

MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 18-Dec-02

Lab Name: STL Richland
Lot-Sample No.: J2J010260-2
Client Sample ID: 9531-0000-013F

SDG: 21203
Report No.: 21071
COC No.:

Collection Date: 8/20/2002 2:55:00 PM
Received Date: 9/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, Lo	Yield CRDL(RL)	Rst/MDG, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
TECHNETIUM-99	2.22E-01	U	1.4E-01	2.2E-01	3.17E-01	pCi/g	100.00%	0.7	10/23/02 09:54 a		5.0	RICHRC5078
						1.54E-01	5.04E-01	(2.)			g	LSC4
Batch: 2275403	Work Order: E87CN1AA				Report DB ID: 9E87CN10							
CARBON-14	5.75E-02	U	8.1E-02	8.1E-02	1.49E-01	pCi/g	100.00%	0.4	10/18/02 08:29 p		5.003	RC5022
						7.00E-02	2.26E-01	(1.4)			g	LSC3
Batch: 2275404	Work Order: E87CN1AF				Report DB ID: 9E87CN10							
PLUTONIUM-241	1.09E+01	J	1.1E+00	1.4E+00	1.84E+00	pCi/g	72.90%	(8.7)	11/16/02 12:51 a		1.97	RICHRC5010
						7.69E-01	3.48E+01	(15.1)			g	LSC7
Batch: 2275407	Work Order: E87CN1AE				Report DB ID: 9E87CN10							
PLUTONIUM-238	0.00E+00	U	0.0E+00	1.2E-02	1.32E-02	pCi/g	72.90%	0.	10/31/02 01:10 p		1.97	RICHRC5010
							1.18E+00	0.			g	ALP123
PLUTONIUM-239/40	2.34E-02	J	2.2E-02	2.2E-02	2.33E-02	pCi/g	72.90%	(1.)	10/31/02 01:10 p		1.97	RICHRC5010
						5.06E-03	1.07E+00	(2.1)			g	ALP123
Batch: 2275409	Work Order: E87CN1AK				Report DB ID: 9E87CN10							
AMERICIUM-241	8.01E-03	U	1.3E-02	1.3E-02	2.13E-02	pCi/g	96.43%	0.38	10/26/02 05:37 p		1.99	RICHRC5080
						4.63E-03	1.03E+00	(1.3)			g	ALP124
CURIUM-242	0.00E+00	U	0.0E+00	1.4E-02	1.80E-02	pCi/g	96.43%	0.	10/26/02 05:37 p		1.99	RICHRC5080
								0.			g	ALP124
CURIUM-243/244	3.58E-03	U	9.1E-03	9.2E-03	2.15E-02	pCi/g	96.43%	0.17	10/26/02 05:37 p		1.99	RICHRC5080
						4.66E-03	1.16E+00	0.78			g	ALP124

STL Richland
rp:STLRichSample
V3.97 AS7

MDC/MDA, Lo - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I

Date: 18-Dec-02

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: J2J010280-2
 Client Sample ID: 9531-0000-013F

SDG: 21203
 Report No.: 21071
 COC No.:

Collection Date: 8/20/2002 2:55:00 PM
 Received Date: 9/25/2002 3:13:00 PM
 Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, Lo	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Anal Method, Primary Detector
Batch: 2305287	Work Order: E87CN2AD			Report DB ID: SE87CN20								
STRONTIUM-90	1.69E-01		1.0E-01	1.0E-01	1.65E-01	pCi/g	19.98%	(1.)	11/29/02 01:02 p		10.01	CMUD
						7.77E-02	6.00E-02	(3.2)			9	GPC1B

Number of Results: 28

Comments:

STL Richland MDC/MDA,Lo - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRichSample J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V3.97 AS7 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 18-Dec-02

Lab Name: STL Richland
Lot-Sample No.: J2J010250-1
Client Sample ID: 9531-0000-015F

SDG: 21203
Report No.: 21071
COC No.:

Collection Date: 8/20/2002 2:48:00 PM
Received Date: 9/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2273373	Work Order: E57CA1AL				Report DB ID: 8E87CA10							
ACTINIUM-228	7.49E-01		2.4E-01	2.4E-01	1.78E-01	pCi/g		(4.2) (5.2)	10/24/02 01:24 p		341.4 g	E901.1 GER551
AG-108M	2.16E-02	U	2.4E-02	2.4E-02	4.39E-02	pCi/g		0.49 (1.8)	10/24/02 01:24 p		341.4 g	E901.1 GER551
AMERICIUM-241	4.80E-02	U	5.5E-02	5.5E-02	9.42E-02	pCi/g		0.51 (1.7)	10/24/02 01:24 p		341.4 g	E901.1 GER551
BISMUTH-214	8.47E-01	U	1.3E-01	1.3E-01	2.06E-01	pCi/g		(2.7) (8.6)	10/24/02 01:24 p		341.4 g	E901.1 GER551
COBALT-60	1.09E-02	U	2.9E-02	2.9E-02	5.67E-02	pCi/g		0.19 1.52E-01	10/24/02 01:24 p		341.4 g	E901.1 GER551
CESIUM-134	5.29E-02	U	3.6E-02	3.6E-02	7.13E-02	pCi/g		0.74 1.87E-01	10/24/02 01:24 p		341.4 g	E901.1 GER551
CESIUM-137	9.24E-02	J	5.3E-02	5.3E-02	5.47E-02	pCi/g		(1.7) 3.16E-01	10/24/02 01:24 p		341.4 g	E901.1 GER551
EUROPIUM-152	-2.19E-02	U	8.2E-02	8.2E-02	1.36E-01	pCi/g		-0.16 4.04E-01	10/24/02 01:24 p		341.4 g	E901.1 GER551
EUROPIUM-154	-2.98E-02	U	9.1E-02	9.1E-02	1.59E-01	pCi/g		-0.19 3.72E-01	10/24/02 01:24 p		341.4 g	E901.1 GER551
EUROPIUM-155	-3.78E-03	U	7.3E-02	7.3E-02	1.24E-01	pCi/g		-0.03 1.57E+01	10/24/02 01:24 p		341.4 g	E901.1 GER551

STL Richland
rptSTLRichSample
V3.57 AS7

MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 18-Dec-02

Lab Name: STL Richland
Lot-Sample No.: J2J010260-1
Client Sample ID: 9531-0000-015F

SDG: 21203
Report No.: 21071
COC No.:

Collection Date: 8/20/2002 2:48:00 PM
Received Date: 8/25/2002 3:13:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
POTASSIUM-40	1.08E+01		1.7E+00	1.7E+00	4.03E-01	pCi/g		(26.7) (12.3)	10/24/02 01:24 p		341.4 g	E901.1 GER5\$1
MAGNESIUM-54	1.12E-02	U	3.4E-02	3.4E-02	6.27E-02	pCi/g	6.96E-01	0.18 0.65	10/24/02 01:24 p		341.4 g	E901.1 GER5\$1
NIOBIUM-94	-6.22E-03	U	2.4E-02	2.4E-02	4.25E-02	pCi/g	2.65E-01	-0.15 -0.51	10/24/02 01:24 p		341.4 g	E901.1 GER5\$1
LEAD-212	6.40E-01		1.5E-01	1.5E-01	1.08E-01	pCi/g		(5.9) (3.8)	10/24/02 01:24 p		341.4 g	E901.1 GER5\$1
LEAD-214	6.16E-01		1.6E-01	1.6E-01	8.81E-02	pCi/g		(7.) (7.5)	10/24/02 01:24 p		341.4 g	E901.1 GER5\$1
RADIUM-226	5.47E-01	U	1.3E-01	1.3E-01	2.06E-01	pCi/g		(2.7) (8.6)	10/24/02 01:24 p		341.4 g	E901.1 GER5\$1
THALLIUM-208	2.53E-01	U	6.5E-02	6.5E-02	9.90E-02	pCi/g		(2.6) (7.8)	10/24/02 01:24 p		341.4 g	E901.1 GER5\$1
Batch: 2275384	Work Order: E87CA1AG				Report DB ID: 9E87CA10							
NICKEL-63	1.51E+01	J	2.9E+00	5.8E+00	6.16E+00	pCi/g	93.42%	(2.5)	11/16/02 09:33 a		0.2501	RCS069
						3.00E+00	2.89E+01	(5.2)			g	LSC4
Batch: 2275389	Work Order: E87CA1AH				Report DB ID: 9E87CA10							
IRON-55	-1.11E+00	U		1.5E+01	4.19E+01	pCi/g	62.91%	-0.03	11/18/02 12:58 p		0.2501	FBXZ
						1.96E+01	1.10E+02	-0.15			g	LSC7
Batch: 2275400	Work Order: E87CA1AC				Report DB ID: 9E87CA10							

STL Richland MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
rptSTLRichSample J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
V3.97 A57 U Qual - Analyzed for, but the result is less than the Mdc/Mdc[Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 18-Dec-02

Lab Name: STL Richland

SDG: 21203

Collection Date: 8/20/2002 2:48:00 PM

Lot-Sample No.: J2J010260-1

Report No.: 21071

Received Date: 9/25/2002 3:13:00 PM

Client Sample ID: 9531-0000-015F

COC No.:

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, Lo	Yield CRDL(RL)	Rst/MDG, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Allquot Size	Anal Method, Primary Detector
TECHNETIUM-99	8.73E-02	U	1.3E-01	2.2E-01	3.07E-01	pCi/g	100.00%	0.28	10/23/02 07:50 a		5.0	RICHRC5078
						1.49E-01	5.04E-01	0.81			g	LSC4
Batch: 2275403	Work Order: E87CA1AA			Report DB ID: 9E87CA10								
CARBON-14	5.22E-02	U	6.1E-02	8.1E-02	1.42E-01	pCi/g	100.00%	0.97	10/18/02 03:07 p		5.017	RC5022
						8.98E-02	2.26E-01	(1.9)			g	LSC3
Batch: 2275404	Work Order: E87CA1AF			Report DB ID: 9E87CA10								
PLUTONIUM-241	9.71E+00	J	1.3E+00	1.5E+00	2.16E+00	pCi/g	53.80%	(4.5)	11/16/02 12:51 a		2.0	RICHRC5010
						1.01E+00	3.48E+01	(12.8)			g	LSC7
Batch: 2275407	Work Order: E87CA1AE			Report DB ID: 9E87CA10								
PLUTONIUM-238	0.00E+00	U	0.0E+00	1.8E-02	1.75E-02	pCi/g	53.87%	0.	10/31/02 01:10 p		2.0	RICHRC5010
							1.18E+00	0.			g	ALP121
PLUTONIUM-239/40	0.00E+00	U	0.0E+00	1.8E-02	1.75E-02	pCi/g	53.87%	0.	10/31/02 01:10 p		2.0	RICHRC5010
							1.07E+00	0.			g	ALP121
Batch: 2275409	Work Order: E87CA1AK			Report DB ID: 9E87CA10								
AMERICIUM-241	9.36E-03	U	1.3E-02	1.3E-02	1.27E-02	pCi/g	94.79%	0.74	10/26/02 05:37 p		2.0	RICHRC5080
							1.03E+00	(1.4)			g	ALP121
CURIUM-242	0.00E+00	U	0.0E+00	1.5E-02	1.69E-02	pCi/g	94.79%	0.	10/26/02 05:37 p		2.0	RICHRC5080
								0.			g	ALP121
CURIUM-243/244	0.00E+00	U	0.0E+00	1.2E-02	1.28E-02	pCi/g	94.79%	0.	10/26/02 05:37 p		2.0	RICHRC5080
							1.16E+00	0.			g	ALP121

STL Richland
rptSTLRichSample
V3.97 AS7

MDC/MDA, Lo - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.

U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I

Date: 18-Dec-02

SAMPLE RESULTS

Lab Name: STL Richland

SDG: 21203

Collection Date: 8/20/2002 2:48:00 PM

Lot-Sample No.: J2J010260-1

Report No.: 21071

Received Date: 9/25/2002 3:18:00 PM

Client Sample ID: 9531-0000-015F

COC No.:

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert (2 s)	MDC/MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2305287	Work Order: E87CA2AD				Report DB ID: 9E87CA20							
STRONTIUM-90	5.86E-02	U	5.4E-02	5.4E-02	9.45E-02	pCi/g	37.03%	0.62	11/29/02 01:02 p		10.01	CMUD
						4.48E-02	6.00E-02	(2.2)			9	GPC1A

Number of Results: 28

Comments:

STL Richland MDC/MDA Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTL RichSample J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 VS.97 AS7 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 18-Dec-02

DUPLICATE RESULTS

Lab Name: STL Richland

SDG: 21203

Collection Date: 8/20/2002 2:55:00 PM

Lot-Sample No.: J2J010260-2

Report No.: 21071

Received Date: 9/25/2002 3:13:00 PM

Client Sample ID: 9531-0000-013F DUP

COC No.:

Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2275403	Work Order: E87CN1AV				Report DB ID: E87CN1VR	Orig Sa DB ID: 9E87CN10						
CARBON-14	9.39E-02	U	6.2E-02	8.2E-02	1.43E-01	pCi/g	100.00%	0.66	10/18/02 09:51 p		5.009	RC5022
	5.75E-02	U RER	0.6			2.26E-01		(2.3)			9	LSC3
Batch: 2275404	Work Order: E87CN1AW				Report DB ID: E87CN1WR	Orig Sa DB ID: 9E87CN10						
PLUTONIUM-241	1.62E+01	J	1.6E+00	2.0E+00	2.36E+00	pCi/g	47.90%	(6.9)	11/16/02 12:51 a		1.99	RICHRC5010
	1.09E+01	J RER	4.4			3.48E+01		(16.3)			9	LSC7
Batch: 2275407	Work Order: E87CN1AX				Report DB ID: E87CN1XR	Orig Sa DB ID: 9E87CN10						
PLUTONIUM-238	0.00E+00	U	0.0E+00	1.7E-02	1.93E-02	pCi/g	47.94%	0.	10/31/02 01:11 p		1.99	RICHRC5010
	0.00E+00	U RER	0.0			1.18E+00		0.			9	ALP124
PLUTONIUM-239/40	2.13E-02	J	2.6E-02	2.5E-02	1.92E-02	pCi/g	47.94%	(1.1)	10/31/02 01:11 p		1.89	RICHRC5010
	2.34E-02	J RER	0.1			1.07E+00		(1.7)			9	ALP124

Alpha Spec Result Sum = 2.1E-02

Number of Results: 4

Comments:

STL Richland

RER - Replicate Error Ratio = $(S-D)/[\sqrt{(sq(TPU)+sq(TPD))}]$ as defined by ICPT BOA.rptSTLRechDupV3.9
7 A97

MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.

U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 18-Dec-02

DUPLICATE RESULTS

Lab Name: STL Richland

SDG: 21203

Collection Date: 8/20/2002 2:48:00 PM

Lot-Sample No.: J2J010260-1

Report No.: 21071

Received Date: 9/25/2002 3:13:00 PM

Client Sample ID: 9531-0000-015F DUP

COC No.:

Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Anal Method, Primary Detector
Batch: 2275373	Work Order: E87CA1AM			Report DB ID: E87CA1MR			Orig Sa DB ID: 9E87CA10					
ACTINIUM-228	6.23E-01	U	2.0E-01	2.0E-01	3.42E-01	pCi/g		(1.8)	10/24/02 01:20 p		340.7	E901.1
	7.49E-01	U RER	0.8					(8.1)			g	GER6\$1
AG-108M	-1.03E-02	U	2.3E-02	2.3E-02	3.82E-02	pCi/g		-0.27	10/24/02 01:20 p		340.7	E901.1
	2.16E-02	U RER	1.9					-0.9			g	GER6\$1
AMERICIUM-241	2.36E-02	U	8.1E-02	8.1E-02	1.40E-01	pCi/g		0.17	10/24/02 01:20 p		340.7	E901.1
	4.80E-02	U RER	0.6					0.58			g	GER6\$1
BISMUTH-214	4.88E-01	U	1.3E-01	1.3E-01	1.89E-01	pCi/g		(2.6)	10/24/02 01:20 p		340.7	E901.1
	5.47E-01	U RER	0.6					(7.5)			g	GER6\$1
COBALT-60	8.72E-03	U	2.9E-02	2.9E-02	5.84E-02	pCi/g		0.15	10/24/02 01:20 p		340.7	E901.1
	1.09E-02	U RER	0.1				1.52E-01	0.6			g	GER6\$1
CESIUM-134	3.17E-02	U	3.4E-02	3.4E-02	6.45E-02	pCi/g		0.49	10/24/02 01:20 p		340.7	E901.1
	5.29E-02	U RER	0.9				1.87E-01	(1.9)			g	GER6\$1
CESIUM-137	7.45E-02	J	5.6E-02	5.6E-02	4.85E-02	pCi/g		(1.6)	10/24/02 01:20 p		340.7	E901.1
	9.24E-02	J RER	0.5				3.16E-01	(2.6)			g	GER6\$1
EUROPIUM-152	-2.36E-02	U	8.7E-02	8.7E-02	1.27E-01	pCi/g		-0.19	10/24/02 01:20 p		340.7	E901.1
	-2.19E-02	U RER	0.0				4.04E-01	-0.55			g	GER6\$1
EUROPIUM-154	-6.60E-02	U	9.4E-02	9.4E-02	1.58E-01	pCi/g		-0.42	10/24/02 01:20 p		340.7	E901.1
	-2.98E-02	U RER	0.6				3.72E-01	-(1.4)			g	GER6\$1
EUROPIUM-155	6.10E-02	U	6.9E-02	6.9E-02	1.22E-01	pCi/g		0.5	10/24/02 01:20 p		340.7	E901.1
	-3.79E-03	U RER	1.3				1.57E+01	(1.8)			g	GER6\$1
POTASSIUM-40	9.68E+00		1.6E+00	1.6E+00	3.03E-01	pCi/g		(31.8)	10/24/02 01:20 p		340.7	E901.1
	1.08E+01	RER	0.9					(11.8)			g	GER6\$1

STL Richland RER - Replicate Error Ratio = $(S-D)/\sqrt{sq(TFU)+sq(TFD)}$ as defined by ICFT BOA.

MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.

U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 18-Dec-02

DUPLICATE RESULTS

Lab Name: STL Richland

SDG: 21203

Collection Date: 8/20/2002 2:48:00 PM

Lot-Sample No.: J2J010260-1

Report No.: 21071

Received Date: 9/25/2002 3:13:00 PM

Client Sample ID: 9531-0000-015F DUP

COC No.:

Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analys Method, Primary Detector
MAGNESIUM-24	-6.07E-03	U	3.2E-02	3.2E-02	5.63E-02	pCi/g		-0.11	10/24/02 01:20 p		340.7	E901.1
	1.12E-02	U RER	0.7			6.86E-01		-0.38			g	GER6S1
NIOBIUM-94	-6.87E-03	U	2.6E-02	2.6E-02	4.63E-02	pCi/g		-0.16	10/24/02 01:20 p		340.7	E901.1
	-8.22E-03	U RER	0.0			2.85E-01		-0.52			g	GER6S1
LEAD-212	6.71E-01		1.4E-01	1.4E-01	6.60E-02	pCi/g		(10.2)	10/24/02 01:20 p		340.7	E901.1
	6.40E-01	RER	0.3					(9.7)			g	GER6S1
LEAD-214	4.87E-01		1.5E-01	1.5E-01	8.84E-02	pCi/g		(5.5)	10/24/02 01:20 p		340.7	E901.1
	6.16E-01	RER	1.2					(6.6)			g	GER6S1
RADIUM-226	4.88E-01	U	1.3E-01	1.3E-01	1.89E-01	pCi/g		(2.6)	10/24/02 01:20 p		340.7	E901.1
	5.47E-01	U RER	0.6					(7.5)			g	GER6S1
THALLIUM-208	1.79E-01		6.0E-02	6.0E-02	4.37E-02	pCi/g		(4.1)	10/24/02 01:20 p		340.7	E901.1
	2.69E-01	RER	1.7					(5.9)			g	GER6S1
Batch: 2275384	Work Order: E87CA1AN			Report DB ID: E87CA1NR		Orig Sa DB ID: 9E87CA10						
NICKEL-63	2.01E+01	J	3.0E+00	6.1E+00	6.09E+00	pCi/g	94.38%	(3.3)	11/16/02 11:15 a		0.2516	RC5089
	1.51E+01	J RER	1.2			2.89E+01		(6.6)			g	LSC4
Batch: 2275389	Work Order: E87CA1AQ			Report DB ID: E87CA1QR		Orig Sa DB ID: 9E87CA10						
IRON-65	4.15E+00	U		1.4E+01	3.73E+01	pCi/g	63.01%	0.11	11/19/02 12:58 p		0.2515	FBXZ
	-1.11E+00	U RER	0.5			1.10E+02		0.58			g	LSC7
Batch: 2275400	Work Order: E87CA1AV			Report DB ID: E87CA1VR		Orig Sa DB ID: 9E87CA10						
TECHNETIUM-99	1.82E-01	U	1.3E-01	2.2E-01	3.09E-01	pCi/g	100.00%	0.52	10/23/02 08:52 a		5.0	RICHRC5078
	8.73E-02	U RER	0.5			5.04E-01		(1.5)			g	LSC4
Batch: 2275409	Work Order: E87CA1AW			Report DB ID: E87CA1WR		Orig Sa DB ID: 9E87CA10						

STL Richland RER - Replicate Error Ratio = $(S-D)/\sqrt{[sq(TPU)+sq(TPD)]}$ as defined by ICPT BOA.

MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.

U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

rptSTLRichDupV3.9
7 A97

FORM II

Date: 18-Dec-02

DUPLICATE RESULTS

Lab Name: STL Richland

SDG: 21203

Collection Date: 8/20/2002 2:48:00 PM

Lot-Sample No.: J2J010260-1

Report No.: 21071

Received Date: 9/25/2002 3:13:00 PM

Client Sample ID: 9531-0000-015F DUP

COC No.:

Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Anal Method, Primary Detector
AMERICIUM-241	1.47E-02	J	1.7E-02	1.7E-02	1.33E-02	pCi/g	89.06%	(1.1)	10/26/02 05:37 p		1.98	RICHRC5080
	9.36E-03	U RER	0.5			1.09E+00		(1.7)			g	ALP123
CURIUM-242	0.00E+00	U	0.0E+00	1.8E-02	1.76E-02	pCi/g	89.06%	0.	10/26/02 05:37 p		1.98	RICHRC5080
	0.00E+00	U RER	0.0					0.			g	ALP123
CURIUM-243/244	0.00E+00	U	0.0E+00	1.2E-02	1.34E-02	pCi/g	89.06%	0.	10/26/02 05:37 p		1.98	RICHRC5080
	0.00E+00	U RER	0.0			1.16E+00		0.			g	ALP123

Alpha Spec Result Sum = 1.5E-02

Number of Results: 23

Comments:

STL Richland RER - Replicate Error Ratio = $(3-D)/(\sqrt{sq(TPU)} + \sqrt{sq(TPUd)})$ as defined by ICFT SOA.

MDC|MDA,Le - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II
BLANK RESULTS

Date: 18-Dec-02

Lab Name: STL Richland

SDG: 21180

Lot-Sample No.: J2J020000-373

Report No.: 21071

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Lo	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2275373	Work Order: E888N1AA			Report DB ID: E888N1AB								
ACTINIUM-228	-9.35E-03	U	1.2E-01	1.2E-01	2.16E-01	pCi/g		-0.04	10/24/02 03:17 p		200.0	E901.1
								-0.16			g	GER2S1
AG-108M	-1.97E-02	U	2.8E-02	2.8E-02	4.58E-02	pCi/g		-0.43	10/24/02 03:17 p		200.0	E901.1
								-(1.4)			g	GER2S1
AMERICIUM-241	1.26E-01	U	2.9E-01	2.9E-01	5.13E-01	pCi/g		0.25	10/24/02 03:17 p		200.0	E901.1
								0.88			g	GER2S1
BISMUTH-214	-2.21E-02	U	8.3E-02	8.3E-02	1.47E-01	pCi/g		-0.15	10/24/02 03:17 p		200.0	E901.1
								-0.54			g	GER2S1
COBALT-60	-1.64E-03	U	3.2E-02	3.2E-02	6.26E-02	pCi/g		-0.03	10/24/02 03:17 p		200.0	E901.1
								1.52E-01			g	GER2S1
CESIUM-134	-1.15E-02	U	3.7E-02	3.7E-02	6.60E-02	pCi/g		-0.17	10/24/02 03:17 p		200.0	E901.1
								1.87E-01			g	GER2S1
CESIUM-137	-3.79E-04	U	3.8E-02	3.8E-02	6.96E-02	pCi/g		-0.01	10/24/02 03:17 p		200.0	E901.1
								3.16E-01			g	GER2S1
EUROPIUM-152	-1.55E-02	U	9.1E-02	9.1E-02	1.59E-01	pCi/g		-0.1	10/24/02 03:17 p		200.0	E901.1
								4.04E-01			g	GER2S1
EUROPIUM-154	1.76E-02	U	1.0E-01	1.0E-01	1.98E-01	pCi/g		0.09	10/24/02 03:17 p		200.0	E901.1
								3.72E-01			g	GER2S1
EUROPIUM-155	-3.67E-02	U	1.1E-01	1.1E-01	1.87E-01	pCi/g		-0.2	10/24/02 03:17 p		200.0	E901.1
								1.57E+01			g	GER2S1
POTASSIUM-40	-8.63E-01	U	6.3E-01	6.3E-01	1.37E+00	pCi/g		-0.41	10/24/02 03:17 p		200.0	E901.1
								-(1.8)			g	GER2S1
MAGNESIUM-54	3.46E-03	U	3.0E-02	3.0E-02	5.91E-02	pCi/g		0.06	10/24/02 03:17 p		200.0	E901.1
								6.96E-01			g	GER2S1

STL Richland
rptSTLRichBlank
V3.97 AS7

MDC|MDA,Lo - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II
BLANK RESULTS

Date: 18-Dec-02

Lab Name: STL Richland

SDG: 21180

Lot-Sample No.: J2J020000-373

Report No.: 21071

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
NIOSIUM-94	4.52E-02	U	3.7E-02	3.7E-02	7.64E-02	pCi/g		0.59 (2.5)	10/24/02 03:17 p		200.0	E901.1
						2.85E-01					g	GER2S1
LEAD-212	-2.48E-02	U	6.0E-02	6.0E-02	1.03E-01	pCi/g		-0.24 -0.83	10/24/02 03:17 p		200.0	E901.1
											g	GER2S1
LEAD-214	3.41E-02	U	7.0E-02	7.0E-02	1.29E-01	pCi/g		0.26 0.97	10/24/02 03:17 p		200.0	E901.1
											g	GER2S1
RADIUM-226	-2.18E-02	U	8.3E-02	8.3E-02	1.47E-01	pCi/g		-0.15 -0.53	10/24/02 03:17 p		200.0	E901.1
											g	GER2S1
THALLIUM-208	8.82E-03	U	4.4E-02	4.4E-02	8.27E-02	pCi/g		0.11 0.4	10/24/02 03:17 p		200.0	E901.1
											g	GER2S1

Number of Results: 17

Comments:

STL Richland
rptSTLRchBlank
V3.97 A97

MDC/MDA Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM II
BLANK RESULTS

Date: 18-Dec-02

Lab Name: STL Richland

SDG: 21203

Lot-Sample No.: J2J020000-384

Report No.: 21071

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2275384	Work Order: E889J1AA											
	Report DB ID: E889J1AB											
NICKEL-63	1.21E+01	J	3.0E+00	5.8E+00	6.41E+00	pCi/g	89.51%	(1.8)	11/18/02 04:21 p		0.25	RCS069
					3.13E+00	2.89E+01		(4.2)			g	LSC4

Number of Results: 1

Comments:

STL Richland
rptSTLRichBlank
V3.87 AS7MDC(MDA)Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.

FORM II
BLANK RESULTS

Date: 18-Dec-02

Lab Name: STL Richland

SDG: 21203

Lot-Sample No.: J2J020000-389

Report No.: 21071

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA, Le	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Anal Method, Primary Detector
Batch: 2275389	Work Order: E889W1AA			Report DB ID: E889W1AB								
IRON-55	-1.57E+01	U		9.7E+00	2.04E+01	pCi/g	71.35%	-0.77	11/18/02 12:58 p		0.25	FBXZ
					9.54E+00	1.10E+02		-(3.2)			g	LSC7

Number of Results: 1

Comments:

STL Richland
rptSTLRchBlank
V3.57 AS7MDC(MDA)Le - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM II
BLANK RESULTS

Date: 18-Dec-02

Lab Name: STL Richland

SDG: 21203

Lot-Sample No.: J2J020000-400

Report No.: 21071

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Ss Size	Aliquot Size	Anal Method, Primary Detector
Batch: 2275400	Work Order: E88991AA			Report DB ID: E88991AB								
TECHNETIUM-99	-2.22E-02	U	1.2E-01	2.1E-01	2.98E-01	pCi/g	100.00%	-0.07	10/23/02 11:58 a		5.0	RICRRC5078
					1.44E-01	5.04E-01		-0.21			g	LSC4

Number of Results: 1

Comments:

STL Richland
rptSTLRichBlank
V3.97 AS7

MDC(MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM II
BLANK RESULTS

Date: 18-Dec-02

Lab Name: STL Richland
Lot-Sample No.: J2J020000-403SDG: 21203
Report No.: 21071

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Le	Rpt Unit, CROD	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2275403	Work Order: E89AW1AA				Report DB ID: E89AW1AB							
CARBON-14	6.42E-02	U	6.1E-02	8.1E-02	1.43E-01	pCi/g	100.00%	0.45	10/18/02 08:21 a		5.0	RC5022
					7.01E-02	2.26E-01		(1.6)			g	LSC3

Number of Results: 1

Comments:

STL Richland
rptSTLRichBlank
V3.57 A97MDC|MDA,Le - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II
BLANK RESULTS

Date: 18-Dec-02

Lab Name: STL Richland

SDG: 21203

Lot-Sample No.: J2J020000-404

Report No.: 21071

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA, Lo	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2275404	Work Order: E89A01AA											
	Report DB ID: E89A01AB											
PLUTONIUM-241	1.20E+01	J	1.1E+00	1.4E+00	1.56E+00	pCi/g	71.70%	(7.7)	11/16/02 12:51 a		2.0	RICHRCS010
					7.39E-01	3.48E+01		(17.2)			g	LSC7

Number of Results: 1

Comments:

STL Richland
rptSTLRichBlank
V3.87 A97MDC(MDA)Lo - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.

FORM II

Date: 18-Dec-02

BLANK RESULTS

Lab Name: STL Richland

SDG: 21203

Lot-Sample No.: J2J020000-407

Report No.: 21071

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sn Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2275407	Work Order: E89A71AA				Report DB ID: E89A71AB							
PLUTONIUM-238	0.00E+00	U	0.0E+00	1.2E-02	1.27E-02	pCi/g	71.72%	0.	10/31/02 01:11 p		2.0	RICHRC5010
						1.18E+00		0.			g	ALP125
PLUTONIUM- 239/40	0.00E+00	U	0.0E+00	1.2E-02	1.27E-02	pCi/g	71.72%	0.	10/31/02 01:11 p		2.0	RICHRC5010
						1.07E+00		0.			g	ALP125

Number of Results: 2

Comments:

STL Richland MDC|MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTL RichBlank U Qual - Analyzed for, but the result is less than the Mdc|MDa|Total Uncert or gamma scan software did not identify the nuclide.
 V3.87 AS7

FORM II
BLANK RESULTS

Date: 18-Dec-02

Lab Name: STL Richland

SDG: 21203

Lot-Sample No.: J2J020000-409

Report No.: 21071

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2275409 Work Order: E89GD1AA Report DB ID: E89GD1AB												
AMERICIUM-241	0.00E+00	U	0.0E+00	1.1E-02	1.16E-02	pCi/g	101.16%	0.	10/26/02 05:37 p		2.0	RICHRC5080
						1.03E+00		0.			g	ALP127
CURIUM-242	0.00E+00	U	0.0E+00	1.4E-02	1.55E-02	pCi/g	101.16%	0.	10/26/02 05:37 p		2.0	RICHRC5080
								0.			g	ALP127
CURIUM-243/244	-8.63E-04	U	1.7E-03	1.7E-03	2.07E-02	pCi/g	101.16%	-0.04	10/26/02 05:37 p		2.0	RICHRC5080
					4.49E-03	1.16E+00		-1.			g	ALP127

Number of Results: 3

Comments:

STL Richland
rptSTLRichBlank
V3.97 A97

MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM II
BLANK RESULTS

Date: 18-Dec-02

Lab Name: STL Richland
Lot-Sample No.: J2K010000-287SDG: 21203
Report No.: 21071

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2305287	Work Order: FA8EK1AA											
	Report DB ID: FA8EK1AB											
STRONTIUM-90	8.08E-03	U	2.6E-02	2.6E-02	4.97E-02	pCi/g	72.00%	0.16	11/29/02 01:02 p		10.0	CMUD
					2.36E-02	6.00E-02		0.62			g	GPC1D

Number of Results: 1

Comments:

STL Richland MDC(MDA, Lc - Detection, Decision Level) based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
rptSTLRichBlank U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.
V3.97 A97

FORM II
LCS RESULTS

Date: 18-Dec-02

Lab Name: STL Richland

SDG: 21180

Lot-Sample No.: J2J020000-373

Report No.: 21071

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 2275373	Work Order: E888N1AG					Report DB ID: E888N1CS							
CESIUM-137	1.07E+00		1.8E-01	1.8E-01	8.10E-02	pCi/g		1.02E+00	3.4E-02	104.77%	10/24/02 03:19 p	200.0	E901.1
						Rec Limits:		70.	130.	0.0		g	GER1\$1

Number of Results: 1

Comments:

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.
rptSTLRichLcs
V3.87 A97

FORM II
LCS RESULTS

Date: 18-Dec-02

Lab Name: STL Richland

SDG: 21203

Lot-Sample No.: J2J020000-384

Report No.: 21071

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 2275384	Work Order: E889J1AG					Report DB ID: E889J1CS							
NICKEL-63	4.96E+02		8.2E+00	4.4E+01	5.98E+00	pCi/g	85.82%	5.06E+02	1.7E+01	97.89%	11/16/02 06:02 p	0.25	RC5089
						Rec Limits:		70.	130.	0.0		g	LSC4

Number of Results: 1

Comments:

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.
rptSTLRehLes
V3.97 A97

FORM II
LCS RESULTS

Date: 18-Dec-02

Lab Name: STL Richland

SDG: 21203

Lot-Sample No.: J2J020000-389

Report No.: 21071

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC(MDA)	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analys Method, Primary Detector
Batch: 2275389	Work Order: E888W1AC					Report DB ID: E888W1CS							
IRON-55	2.78E+01			1.2E+01	2.05E+01	pCi/g	69.01%	5.71E+01	3.0E+00	48.57%	11/19/02 12:58 p	0.25	FBXZ
							Rec Limits:	70.	130.	-0.5		g	LSC7

Number of Results: 1

Comments:

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.
rptSTLRichLcs
V3.87 A97

FORM II
LCS RESULTS

Date: 18-Dec-02

Lab Name: STL Richland

SDG: 21203

Lot-Sample No.: J2J020000-400

Report No.: 21071

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 2275400	Work Order: E88991AC												
TECHNETIUM-99	1.23E+01		3.1E-01	9.3E-01	3.07E-01	pCi/g	100.00%	1.38E+01	3.1E-01	90.55%	10/23/02 01:00 p	5.0	RICHRCS078
							Rec Limits:	70.	130.	-0.1		g	LSC4

Number of Results: 1

Comments:

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.31.
rptSTLRchLcs
V3.97 A97

FORM II
LCS RESULTS

Date: 18-Dec-02

Lab Name: STL Richland

SDG: 21203

Lot-Sample No.: J2J020000-403

Report No.: 21071

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analys Method, Primary Detector
Batch: 2275403	Work Order: E89AW1AC												
CARBON-14	2.65E+00		9.4E-02	1.5E-01	1.43E-01	pCi/g	100.00%	2.83E+00	8.6E-02	100.67%	10/18/02 11:44 a	5.0	RC5022
							Rec Limits:	70.	130.	0.0		g	LSC3

Number of Results: 1

Comments:

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.
rpt:STLRehLes
V3.97 A97

FORM II
LCS RESULTS

Date: 18-Dec-02

Lab Name: STL Richland

SDG: 21203

Lot-Sample No.: J2J020000-404

Report No.: 21071

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Anal. Method, Primary Detector
Batch: 2275404	Work Order: E89A01AC					Report DB ID: E89A01CS							
PLUTONIUM-241	2.57E+01		1.4E+00	2.1E+00	1.48E+00	pCi/g	76.10%	2.28E+01	1.0E+00	112.49%	11/16/02 12:51 a	2.0	RICHRCS010
							Rec Limits:	70.	130.	0.1		g	LSC7

Number of Results: 1

Comments:

STL Richland Bias = (Result/Expected)-1 as defined by ANSI N13.31.
rptSTLRichLcs
V3.97 A57

FORM II
LCS RESULTS

Date: 18-Dec-02

Lab Name: STL Richland

SDG: 21203

Lot-Sample No.: J2J020000-407

Report No.: 21071

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Anal. Method, Primary Detector
Batch: 2275407	Work Order: E89A71AC					Report DB ID: E89A71CS							
PLUTONIUM- 239/40	5.61E-01		1.0E-01	1.3E-01	1.22E-02	pCi/g	75.07%	4.93E-01	2.5E-02	113.80%	10/31/02 01:11 p	2.0	RICHRCS010
						Rec Limits:		70.	130.	0.1		9	ALP127

Number of Results: 1

Comments:

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.
rptSTLRchLcs
V3.97 A97

FORM II
LCS RESULTS

Date: 18-Dec-02

Lab Name: STL Richland

SDG: 21203

Lot-Sample No.: J2J020000-409

Report No.: 21071

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Anal. Method, Primary Detector
Batch: 2275409	Work Order: E89CD1AC					Report DB ID: E89CD1CS							
AMERICIUM-241	4.49E+00		2.8E-01	8.2E-01	2.07E-02	pCi/g	103.19%	4.59E+00	1.5E-01	97.82%	10/26/02 05:38 p	2.0	RICHRC5080
							Rec Limits:	70.	130.	0.0		0	ALP128

Number of Results: 1

Comments:

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.10.
rptSTLRchLcs
V3.57 A97

FORM II
LCS RESULTS

Date: 18-Dec-02

Lab Name: STL Richland
Lot-Sample No.: J2K010000-287SDG: 21203
Report No.: 21071

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 2305287	Work Order: FA8EK1AC												
	Report DB ID: FA8EK1CS												
STRONTIUM-90	5.11E-01		5.5E-02	1.2E-01	4.11E-02	pCi/g	62.75%	4.56E-01	8.9E-03	112.00%	11/29/02 01:04 p	10.0	CMUD
							Rec Limits:	70.	130.	0.1		g	GPC2A

Number of Results: 1

Comments:

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.
rp1STLRchLcs
V3.97 AS7

FORM II MATRIX SPIKE RESULTS

Date: 18-Dec-02

Lab Name: STL Richland

SDG: 21203

Lot-Sample No.: J2J010260-2

Report No.: 21071

Matrix: SOIL

Parameter	Spike Result, Orig Rst	Count Qual Error (2 s)	Total Uncert(2 s)	MDC/MDA	Rpt Unit, CRDL	Yield	Recovery	Expected	Exp Uncert	Analysis, Prep Data	Alliquot Size	Analy Method, Primary Detector
Batch: 2275384	Work Order: E87CN1AM		Report DB ID: E87CN1MW	Orig Sa DB ID:								
NICKEL-63	4.81E+02	8.2E+00	4.4E+01	6.00E+00	pCi/g	95.59%	95.58%	5.03E+02	1.7E+01	11/16/02 02:39 p	0.2517	RC5059
	RER										g	LSC4
Batch: 2275388	Work Order: E87CN1AT		Report DB ID: E87CN1TW	Orig Sa DB ID:								
IRON-55	7.46E+01		1.9E+01	1.25E+01	pCi/g	80.93%	65.92%	1.13E+02	6.0E+00	11/19/02 12:58 p	0.2517	FBXZ
	RER										g	LSC7
Batch: 2275400	Work Order: E87CN1AR		Report DB ID: E87CN1RW	Orig Sa DB ID:								
TECHNETIUM-99	2.43E+01	4.2E-01	1.7E+00	3.12E-01	pCi/g	100.00%	89.70%	2.70E+01	6.1E-01	10/23/02 10:56 a	5.0	RICHRC5078
	RER										g	LSC4

Number of Results: 3

Comments:

STL Richland RER - Replicate Error Ratio = $(S-D)/(\sqrt{sq(TPU_s)} + \sqrt{sq(TPU_d)})$ as defined by ICPT BOA.
 rptSTLRichMa Bias - (Result/Expected)-1 as defined by ANSI N13.30.
 V3.87 A97

5061 21203
J2J010260 Due 10.25

Bechtel Power Corporation 362 Injun Hollow Road, East Hampton, CT 06424 860-267-2536			Chain of Custody Form						COC No: 2002-0064 P.O. #: 24265-FSB-S-00552-AC Activity Code: 24265-200-034AA3		
Project Name: Haddam Neck Decommissioning							Analyses Requested			Lab Use Only	
Contact Name: Jack McCarthy Phone: 1-860-267-2556 ext 3024			Media Code	Sample Type Code	Container Size & Type Code	Number of Containers	Analysis Type 1	Analysis Type 2	Analysis Type 3	Comments	
Analytical Lab (Name, City, State): STL Richland, 2800 George Washington Way Richland, WA 99352 Attention: Barb Gillespi											
Priority: ☒ 30 D. ☐ 15 D. ☐ 7 D. ☐ ASAP											
Sample Designation											
Date	Time									Comment, Preservation	Lab Sample ID
✓ 9531-0000-014F	8/20/2002	1350	TS	G	BP	1	BFSSGAM	EB4VT		N/A	
✓ 9531-0000-001F	8/20/2002	1353	TS	G	BP	1	BFSSGAM	EB4V1		N/A	
✓ 9531-0000-003F	8/20/2002	1420	TS	G	BP	1	BFSSGAM	EB4V5		N/A	
✓ 9531-0000-011F	8/20/2002	1423	TS	G	BP	1	BFSSGAM	EB4VB		N/A	
✓ 9531-0000-015F	8/20/2002	1448	TS	G	BP	1	BFSSALL	EB4V4	EB7CA	N/A	
✓ 9531-0000-013F	8/20/2002	1455	TS	G	BP	1	BFSSALL	EB4V4	EB7CA	N/A	
NOTES: Multiple individuals performing sampling, refer to Daily Survey Journal sheet for list of team members											
1) Sampled By <i>[Signature]</i> Date/Time 8/20/02 1530			2) Received By <i>[Signature]</i> Date/Time 9/25/02 15:13			Samples Shipped Via: ☒ Fed Ex ☐ UPS ☐ Hand ☐ Other			Internal Container Temp.: _____ Deg. C Custody Sealed? Y ☐ N ☐ Custody Seal Intact? Y ☐ N ☐		
3) Relinquished By _____ Date/Time _____			4) Received By _____ Date/Time _____			791637100236 Bill of Lading #					
5) Relinquished By _____ Date/Time _____			6) Received By _____ Date/Time _____								
Media Code	WG: Ground Water, WF: Surface Water, RW: River Water, WE: Estuary Water, WS: Sea Water, EW: Effluent Water, TS: Soil, SE: Sediment, AS: Asphalt, TG: Vegetation, CT: Concrete, OT: Other										
Sample Type Code	G: Grab, C: Composite, CR: Core, D: Duplicate, S: Split, FB: Field Blank, RB: Rinse Blank, MSB: Matrix Spike Dup. OT: Other										
Container Type	BP: Plastic Bag, BC: Cloth Bag, P: Plastic, SC: Steel Can, G: Glass, A: Amber glass, V: Vial, LLM: 1 liter maricelli, OT: Other										

MATRIX OF REQUIRED ANALYSES AND DETECTION SENSITIVITIES

Column 1	Column 2	Column 3	Column 4 BFSSGAM	Column 5 BFSSALL
Radionuclide	Analyses	Soil MDC (pCi/g)	Required analysis?	Required analysis ?
Ac-228	(GEA)	N/A	YES	YES
Ag-108m	(GEA)	2.86E-01	YES	YES
Am-241	(GEA)	1.03E+00	YES	YES
Am-241	(AEA)	1.03E+00		YES
Bi-212	(GEA)	N/A	YES	YES
Bi-214	(GEA)	N/A	YES	YES
C-14	(Liquid Scintillation)	2.26E-01		YES
Cm-243/244	(AEA)	1.16E+00		YES
Cd-60	(GEA)	1.52E-01	YES	YES
Cs-134	(GEA)	1.87E-01	YES	YES
Cs-137	(GEA)	3.16E-01	YES	YES
Eu-152	(GEA)	4.04E-01	YES	YES
Eu-154	(GEA)	3.72E-01	YES	YES
Eu-155	(GEA)	1.57E+01	YES	YES
Fe-55		1.10E+03		YES
H-3	(Liquid Scintillation)	1.65E+01		YES
K-40	(GEA)	N/A	YES	YES
Mn-54	(GEA)	6.96E-01	YES	YES
Nb-94	(GEA)	2.85E-01	YES	YES
Ni-63	(Liquid Scintillation)	2.89E+01		YES
Pb-212	(GEA)	N/A	YES	YES
Pb-214	(GEA)	N/A	YES	YES
Pu-238	(AEA)	1.18E+00		YES
Pu-239/240	(AEA)	1.07E+00		YES
Pu-241	(Liquid Scintillation)	3.48E+01		YES
Ra-226	(GEA)	N/A	YES	YES
Sr-90	(GPC)	6.20E-02		YES
Tc-99	(Liquid Scintillation)	5.04E-01		YES
Tl-208	(GEA)	N/A	YES	YES

Analytical Data Package Prepared For
Bechtel CT Yankee Project

Radiochemical Analysis By

STL Richland

2800 G.W. Way, Richland Wa, 99352, (509)-375-3131.

Assigned Laboratory Code: STLRL

Data Package Contains _____ Pages

Report No.: 20994

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
21414		9523-0000-011AF	J2J240307-1	FAPR71AD	9FAPR710	2298423
		9523-0000-011AF	J2J240307-1	FAPR71AC	9FAPR710	2298424
		9523-0000-011AF	J2J240307-1	FAPR71AA	9FAPR710	2298425
		9523-0000-011AFS	J2J240307-2	FAPTF1AD	9FAPTF10	2298423
		9523-0000-011AFS	J2J240307-2	FAPTF1AC	9FAPTF10	2298424
		9523-0000-011AFS	J2J240307-2	FAPTF1AA	9FAPTF10	2298425
		9523-0000-026AF	J2J240307-3	FAPTL1AD	9FAPTL10	2298423
		9523-0000-026AF	J2J240307-3	FAPTL1AC	9FAPTL10	2298424
		9523-0000-026AF	J2J240307-3	FAPTL1AA	9FAPTL10	2298425
		9531-0000-013AF	J2J240307-4	FAPTR1AD	9FAPTR10	2298423
		9531-0000-013AF	J2J240307-4	FAPTR1AC	9FAPTR10	2298424
		9531-0000-013AF	J2J240307-4	FAPTR1AA	9FAPTR10	2298425
		9531-0000-015AF	J2J240307-5	FAPTV1AD	9FAPTV10	2298423
		9531-0000-015AF	J2J240307-5	FAPTV1AC	9FAPTV10	2298424
		9531-0000-015AF	J2J240307-5	FAPTV1AA	9FAPTV10	2298425

CERTIFICATE OF ANALYSIS

November 20, 2002

Bechtel Corporation
362 Injun Hollow Road
East Hampton, CT 06424

Attention: Alan Heter

SDG Number	:	21414
Date SDG Received	:	October 24, 2002
Number of Samples	:	Five (5)
Sample Type	:	Soil
Data deliverable	:	Summary Report

I. Introduction

On October 24, 2002, five soil samples were received at STL Richland (STLR) for radiochemical analysis. Upon receipt, the samples were assigned to Lot Number J2J240307 with the laboratory ID numbers to correspond with the Bechtel Corp. (BCT) specific IDs as listed on the cover page.

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical errors.

The requested analyses are:

Liquid Scintillation Counting
Tritium by method RICH-RC-5037
Technetium-99 by method RICH-RC-5078
Carbon-14 by method RICH-RC-5022

III. Quality Control

The analytical results for each analysis performed under SDG 21414 includes a minimum of one Laboratory Control Sample (LCS) and one method (reagent) blank and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

Bechtel Corporation
November 20, 2002
Page 2

QC and sample results are reported in the same units.

IV. Comments

Liquid Scintillation Counting

Tritium by method RICH-RC-5037:

The LCS, sample duplicate, batch blank and sample results are within contractual requirements.

Technetium-99 by method RICH-RC-5078:

The LCS, sample duplicate, batch blank, matrix spike, and sample results are within contractual requirements.

Carbon-14 by method RICH-RC-5022:

The LCS, sample duplicate, batch blank and sample results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:


Barbara M. Gillespie
Project Manager

Drinking Water Method Cross References

DRINKING WATER ASTM METHOD CROSS REFERENCES		
Referenced Method	Isotope(s)	STL Richland's SOP number
EPA 901.1	Cs-134, I-131	RICH-RC-5017
EPA 900.0	Alpha & Beta	RICH-RC-5014
EPA 903.1	Ra-226	RICH-RC-5005
EPA 904.0	Ra-228	RICH-RC-5005
EPA 905.0	Sr89/90	RICH-RC-5006
ASTM D2460	Total Radium	RICH-RC-5027
Standard Method 7500-U-C & ASTM D5174	Uranium	RICH-RC-5058
EPA 906.0	Tritium	RICH-RC-5007
NOTE:		
The Gross Alpha LCS is prepared with Am-241 (unless otherwise specified in the case narrative)		
The Gross Beta LCS is prepared with Sr/Y-90 (unless otherwise specified in the case narrative)		

Uncertainty Estimation

STL Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, $R = \text{constants} * f(x,y,z,...)$. The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value ($S/\sqrt{n}$), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation $(\text{Result}/\text{Expected}) - 1$ as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or STL Richland.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) u_c - Combined Uncertainty.	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, u_c , the combined uncertainty. The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or STL Richland "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. $Lc = (1.645 * \text{Sqrt}(2 * (\text{BkgndCnt}/\text{BkgndCntMin}) / \text{SCntMin})) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol})) * \text{IngrFct}$. For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. $MDC = (4.65 * \text{Sqrt}((\text{BkgndCnt}/\text{BkgndCntMin}) / \text{SCntMin}) + 2.71 / \text{SCntMin}) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol})) * \text{IngrFct}$. For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the Work Order Number.
RER	The equation Replicate Error Ratio = $(S - D) / [\text{sqrt}(\text{TPUs}^2 + \text{TPUd}^2)]$ as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Sample Results Summary
STL Richland STLRL
 Ordered by Client Sample ID, Batch No.

Date: 20-Nov-02

Report No. : 20994

SDG No: 21414

Client ID	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	MDC MDA	RER
9523-0000-011AF	FAPR71AD	TRITIUM	7.21E-02 +- 3.6E-02	J	pCi/g	100.00%	7.19E-02	
9523-0000-011AF	FAPR71AC	TECHNETIUM-99	-7.50E-02 +- 2.2E-01	U	pCi/g	100.00%	3.14E-01	
9523-0000-011AF	FAPR71AA	CARBON-14	1.28E-02 +- 7.7E-02	U	pCi/g	100.00%	1.43E-01	
9523-0000-011AF DUP	FAPR71AE	TRITIUM	3.88E-02 +- 3.7E-02	U	pCi/g	100.00%	7.61E-02	
9523-0000-011AFS	FAPTF1AD	TRITIUM	2.68E-02 +- 4.1E-02	U	pCi/g	100.00%	8.85E-02	
9523-0000-011AFS	FAPTF1AC	TECHNETIUM-99	-1.17E-01 +- 2.1E-01	U	pCi/g	100.00%	3.10E-01	
9523-0000-011AFS	FAPTF1AA	CARBON-14	-1.01E-02 +- 7.6E-02	U	pCi/g	100.00%	1.43E-01	
9523-0000-01AFS DUP	FAPTF1AE	TECHNETIUM-99	-1.02E-01 +- 2.2E-01	U	pCi/g	100.00%	3.12E-01	
9523-0000-026AF	FAPTL1AD	TRITIUM	7.48E-02 +- 6.6E-02	U	pCi/g	100.00%	1.38E-01	
9523-0000-026AF	FAPTL1AC	TECHNETIUM-99	1.69E-01 +- 2.3E-01	U	pCi/g	100.00%	3.19E-01	
9523-0000-026AF	FAPTL1AA	CARBON-14	5.12E-03 +- 7.6E-02	U	pCi/g	100.00%	1.43E-01	
9531-0000-013AF	FAPTR1AD	TRITIUM	1.72E-01 +- 6.1E-02	J	pCi/g	100.00%	1.32E-01	
9531-0000-013AF	FAPTR1AC	TECHNETIUM-99	3.15E-01 +- 2.4E-01	J	pCi/g	100.00%	3.08E-01	
9531-0000-013AF	FAPTR1AA	CARBON-14	-3.73E-02 +- 7.5E-02	U	pCi/g	100.00%	1.43E-01	
9531-0000-013AF DUP	FAPTR1AE	CARBON-14	-3.89E-02 +- 7.5E-02	U	pCi/g	100.00%	1.43E-01	
9531-0000-015AF	FAPTV1AD	TRITIUM	4.86E-02 +- 3.0E-02	U	pCi/g	100.00%	8.03E-02	
9531-0000-015AF	FAPTV1AC	TECHNETIUM-99	3.17E-01 +- 2.4E-01	J	pCi/g	100.00%	3.08E-01	
9531-0000-015AF	FAPTV1AA	CARBON-14	1.31E-02 +- 7.6E-02	U	pCi/g	100.00%	1.43E-01	

Number of Results: 18

STL Richland RER - Replicate Error Ratio = $(S-D)/\sqrt{(sq(TPU_s)+sq(TPU_d))}$ as defined by ICPT BOA.
 rptSTLRchSaSum J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V3.96 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

QC Results Summary
STL Richland STLRL
 Ordered by QC Type, Batch No.

Date: 20-Nov-02

Report No. : 20994

SDG No.: 21414

QC Type	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC MDA
MATRIX SPIK	FAPTL1AE	TECHNETIUM-99	2.52E+01 +- 1.8E+00		pCi/g	100.00%	92.70%	-0.1	3.25E-01
BLANK QC	FAR8F1AA	TRITIUM	-3.20E-02 +- 1.4E-01	U	pCi/g	100.00%			3.08E-01
BLANK QC	FAR8K1AA	TECHNETIUM-99	2.02E-01 +- 2.3E-01	U	pCi/g	100.00%			3.05E-01
BLANK QC	FAR8M1AA	CARBON-14	-4.78E-02 +- 7.5E-02	U	pCi/g	100.00%			1.44E-01
LCS	FAR8F1AC	TRITIUM	6.74E+00 +- 3.9E-01	J	pCi/g	100.00%	98.78%	0.0	3.07E-01
LCS	FAR8K1AC	TECHNETIUM-99	1.31E+01 +- 1.0E+00	J	pCi/g	100.00%	95.89%	0.0	3.06E-01
LCS	FAR8M1AC	CARBON-14	2.69E+00 +- 1.5E-01	J	pCi/g	100.00%	99.00%	0.0	1.44E-01

Number of Results: 7

STL Richland

rptSTLRchQcSum
V3.96 A97

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM I

SAMPLE RESULTS

Date: 20-Nov-02

Lab Name: STL Richland
 Lot-Sample No.: J2J240307-1
 Client Sample ID: 9523-0000-011AF

SDG: 21414
 Report No.: 20994
 COC No.:

Collection Date: 10/17/2002 2:10:00 PM
 Received Date: 10/24/2002 11:55:00 AM
 Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Allquot Size	Analy Method, Primary Detector
Batch: 2298423	Work Order: FAPR71AD		Report DB ID: 9FAPR710									
TRITIUM	7.21E-02	J	3.3E-02	3.6E-02	7.19E-02	pCi/g	100.00%	(1.)	11/6/02 10:15 p		100.2	E906.0
						3.34E-02	1.65E+01	(4.1)			g	LSC6
Batch: 2298424	Work Order: FAPR71AC		Report DB ID: 9FAPR710									
TECHNETIUM-99	-7.50E-02	U	1.3E-01	2.2E-01	3.14E-01	pCi/g	100.00%	-0.24	11/16/02 01:43 a		5.0	RICHR5078
						1.52E-01	5.04E-01	-0.69			g	LSC6
Batch: 2298425	Work Order: FAPR71AA		Report DB ID: 9FAPR710									
CARBON-14	1.28E-02	U	6.1E-02	7.7E-02	1.43E-01	pCi/g	100.00%	0.09	11/10/02 09:13 a		5.004	RC5022
						7.04E-02	2.26E-01	0.34			g	LSC3

Number of Results: 3

Comments:

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRchSample J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V3.96 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM I

Date: 20-Nov-02

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: J2J240307-2
 Client Sample ID: 9523-0000-011AFS

SDG: 21414
 Report No.: 20994
 COC No.:

Collection Date: 10/17/2002 2:10:00 PM
 Received Date: 10/24/2002 11:55:00 AM
 Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2298423	Work Order: FAPTF1AD											
TRITIUM	2.68E-02	U	3.7E-02	4.1E-02	8.85E-02	pCi/g	100.00%	0.3	11/6/02 11:39 p		100.2	E906.0
							4.11E-02	1.65E+01	(1.3)		g	LSC6
Batch: 2298424	Work Order: FAPTF1AC											
TECHNETIUM-99	-1.17E-01	U	1.3E-01	2.1E-01	3.10E-01	pCi/g	100.00%	-0.38	11/16/02 02:45 a		5.0	RICHRC5078
							1.51E-01	5.04E-01	-(1.1)		g	LSC6
Batch: 2298425	Work Order: FAPTF1AA											
CARBON-14	-1.01E-02	U	6.0E-02	7.6E-02	1.43E-01	pCi/g	100.00%	-0.07	11/10/02 12:35 p		5.011	RC5022
							7.04E-02	2.26E-01	-0.26		g	LSC3

Number of Results: 3

Comments:

STL Richland MDC/MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRchSample J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V3.96 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I

Date: 20-Nov-02

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: J2J240307-3
 Client Sample ID: 9523-0000-026AF

SDG: 21414
 Report No.: 20994
 COC No.:

Collection Date: 10/17/2002 2:30:00 PM
 Received Date: 10/24/2002 11:55:00 AM
 Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2298423	Work Order: FAPTL1AD		Report DB ID: 9FAPTL10									
TRITIUM	7.48E-02	U	5.9E-02	6.6E-02	1.38E-01	pCi/g	100.00%	0.54	11/7/02 12:21 a		50.6	E906.0
						6.41E-02	1.65E+01	(2.3)			g	LSC6
Batch: 2298424	Work Order: FAPTL1AC		Report DB ID: 9FAPTL10									
TECHNETIUM-99	1.69E-01	U	1.4E-01	2.3E-01	3.19E-01	pCi/g	100.00%	0.53	11/16/02 04:49 a		5.0	RICHRC5078
						1.55E-01	5.04E-01	(1.5)			g	LSC6
Batch: 2298425	Work Order: FAPTL1AA		Report DB ID: 9FAPTL10									
CARBON-14	5.12E-03	U	6.0E-02	7.6E-02	1.43E-01	pCi/g	100.00%	0.04	11/10/02 03:58 p		5.027	RC5022
						7.00E-02	2.26E-01	0.13			g	LSC3

Number of Results: 3

Comments:

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRchSample J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V3.96 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM I

Date: 20-Nov-02

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: J2J240307-4
 Client Sample ID: 9531-0000-013AF

SDG: 21414
 Report No.: 20994
 COC No.:

Collection Date: 10/21/2002 1:28:00 PM
 Received Date: 10/24/2002 11:55:00 AM
 Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Allquot Size	Analy Method, Primary Detector
Batch: 2298423	Work Order: FAPTR1AD											
TRITIUM	1.72E-01	J	5.7E-02	6.1E-02	1.32E-01	pCi/g	100.00%	(1.3)	11/7/02 01:04 a		50.6	E906.0
						6.13E-02	1.65E+01	(5.7)			g	LSC6
Batch: 2298424	Work Order: FAPTR1AC											
TECHNETIUM-99	3.15E-01	J	1.4E-01	2.4E-01	3.08E-01	pCi/g	100.00%	(1.)	11/16/02 06:53 a		5.0	RICHRC5078
						1.49E-01	5.04E-01	(2.7)			g	LSC6
Batch: 2298425	Work Order: FAPTR1AA											
CARBON-14	-3.73E-02	U	6.0E-02	7.5E-02	1.43E-01	pCi/g	100.00%	-0.26	11/10/02 07:20 p		5.043	RC5022
						6.99E-02	2.26E-01	-1.			g	LSC3

Number of Results: 3

Comments:

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRchSample J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V3.96 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM I SAMPLE RESULTS

Date: 20-Nov-02

Lab Name: STL Richland
 Lot-Sample No.: J2J240307-5
 Client Sample ID: 9531-0000-015AF

SDG: 21414
 Report No.: 20994
 COC No.:

Collection Date: 10/21/2002 1:20:00 PM
 Received Date: 10/24/2002 11:55:00 AM
 Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2298423	Work Order: FAPTV1AD			Report DB ID: 9FAPTV10								
TRITIUM	4.86E-02	U	2.8E-02	3.0E-02	8.03E-02	pCi/g	100.00%	0.61	11/7/02 01:46 a		100.2	E906.0
						3.73E-02	1.65E+01	(3.3)			g	LSC6
Batch: 2298424	Work Order: FAPTV1AC			Report DB ID: 9FAPTV10								
TECHNETIUM-99	3.17E-01	J	1.4E-01	2.4E-01	3.08E-01	pCi/g	100.00%	(1.)	11/16/02 07:55 a		5.0	RICHRC5078
						1.50E-01	5.04E-01	(2.7)			g	LSC6
Batch: 2298425	Work Order: FAPTV1AA			Report DB ID: 9FAPTV10								
CARBON-14	1.31E-02	U	6.1E-02	7.6E-02	1.43E-01	pCi/g	100.00%	0.09	11/11/02 02:05 a		5.016	RC5022
						7.03E-02	2.26E-01	0.34			g	LSC3

Number of Results: 3

Comments:

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRchSample J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V3.96 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 20-Nov-02

DUPLICATE RESULTS

Lab Name: STL Richland

SDG: 21414

Collection Date: 10/17/2002 2:10:00 PM

Lot-Sample No.: J2J240307-1

Report No.: 20994

Received Date: 10/24/2002 11:55:00 AM

Client Sample ID: 9523-0000-011AF DUP

COC No.:

Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2298423	Work Order: FAPR71AE			Report DB ID: FAPR71ER		Orig Sa DB ID:						
TRITIUM	3.88E-02	U	3.3E-02	3.7E-02	7.61E-02	pCi/g	100.00%	0.51	11/6/02 10:57 p		100.2	E906.0
	7.21E-02	J RER	1.3			1.65E+01		(2.1)			9	LSC6

Number of Results: 1

Comments:

STL Richland RER - Replicate Error Ratio = $(S-D)/[\text{sqrt}(\text{sq}(\text{TPUa})+\text{sq}(\text{TPUd}))]$ as defined by ICPT BOA.rptSTLRchDupV3.9
6 A97

MDC|MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

J Qual - No U qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 20-Nov-02

DUPLICATE RESULTS

Lab Name: STL Richland

SDG: 21414

Collection Date: 10/17/2002 2:10:00 PM

Lot-Sample No.: J2J240307-2

Report No.: 20994

Received Date: 10/24/2002 11:55:00 AM

Client Sample ID: 9523-0000-01AFS DUP

COC No.:

Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2298424	Work Order: FAPTF1AE			Report DB ID: FAPTF1ER		Orig Sa DB ID:						
TECHNETIUM-99	-1.02E-01	U	1.3E-01	2.2E-01	3.12E-01	pCi/g	100.00%	-0.33	11/16/02 03:47 a		5.0	RICHRC5078
	-1.17E-01	U RER	0.1			5.04E-01		-0.94			g	LSC6

Number of Results: 1

Comments:

STL Richland RER - Replicate Error Ratio = $(S-D)/[\sqrt{sq(TPUs)+sq(TPUd)}]$ as defined by ICPT BOA.

rptSTLRchDupV3.9 MDC|MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

6 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 20-Nov-02

DUPLICATE RESULTS

Lab Name: STL Richland

SDG: 21414

Collection Date: 10/21/2002 1:28:00 PM

Lot-Sample No.: J2J240307-4

Report No.: 20994

Received Date: 10/24/2002 11:55:00 AM

Client Sample ID: 9531-0000-013AF DUP

COC No.:

Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2298425	Work Order: FAPTR1AE			Report DB ID: FAPTR1ER		Orig Sa DB ID:						
CARBON-14	-3.89E-02	U	6.0E-02	7.5E-02	1.43E-01	pCi/g	100.00%	-0.27	11/10/02 10:43 p		5.026	RC5022
	-3.73E-02	U RER	0.0			2.26E-01		-(1.)			g	LSC3

Number of Results: 1

Comments:

STL Richland

RER - Replicate Error Ratio = $(S-D)/[\text{sqrt}(\text{sq}(TPUs)+\text{sq}(TPUd))]$ as defined by ICPT BOA.rptSTLRchDupV3.9
6 A97

MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM II
BLANK RESULTS

Date: 20-Nov-02

Lab Name: STL Richland

SDG: 21414

Lot-Sample No.: J2J250000-423

Report No.: 20994

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2298423	Work Order: FAR8F1AA											
	Report DB ID: FAR8F1AB											
TRITIUM	-3.20E-02	U	1.2E-01	1.4E-01	3.08E-01	pCi/g	100.00%	-0.1	11/6/02 08:51 p		10.0	E906.0
					1.43E-01	1.65E+00		-0.46			g	LSC6

Number of Results: 1

Comments:

STL Richland
rptSTLRchBlank
V3.96 A97MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II
BLANK RESULTS

Date: 20-Nov-02

Lab Name: STL Richland

SDG: 21414

Lot-Sample No.: J2J250000-424

Report No. : 20994

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Lc	Rpt Unit, CRDL	Yield	Rst MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2298424	Work Order: FAR8K1AA			Report DB ID: FAR8K1AB								
TECHNETIUM-99	2.02E-01	U	1.3E-01	2.3E-01	3.05E-01	pCi/g	100.00%	0.66	11/16/02 08:57 a		5.0	RICHR5078
					1.48E-01	5.04E-01		(1.8)			g	LSC6

Number of Results: 1

Comments:

FORM II
BLANK RESULTS

Date: 20-Nov-02

Lab Name: STL Richland
Lot-Sample No.: J2J250000-425SDG: 21414
Report No. : 20994

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Allquot Size	Analy Method, Primary Detector
Batch: 2298425	Work Order: FAR8M1AA											
	Report DB ID: FAR8M1AB											
CARBON-14	-4.78E-02	U	6.0E-02	7.5E-02	1.44E-01	pCi/g	100.00%	-0.33	11/10/02 02:28 a		5.0	RC5022
					7.05E-02	2.26E-01		-(1.3)			g	LSC3

Number of Results: 1

Comments:

STL Richland
rptSTLRchBlank
V3.96 A97MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM II
LCS RESULTS

Date: 20-Nov-02

Lab Name: STL Richland

SDG: 21414

Lot-Sample No.: J2J250000-423

Report No.: 20994

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Allquot Size	Analy Method, Primary Detector
Batch: 2298423	Work Order: FAR8F1AC					Report DB ID: FAR8F1CS							
TRITIUM	6.74E+00		3.5E-01	3.9E-01	3.07E-01	pCi/g	100.00%	6.83E+00	2.3E-01	98.78%	11/6/02 09:33 p	10.0	E906.0
							Rec Limits:	70.	130.	0.0		g	LSC6

Number of Results: 1

Comments:

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.

rptSTLRchLcs
V3.96 A97

FORM II
LCS RESULTS

Date: 20-Nov-02

Lab Name: STL Richland

SDG: 21414

Lot-Sample No.: J2J250000-424

Report No.: 20994

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Allquot Size	Analy Method, Primary Detector
Batch: 2298424	Work Order: FAR8K1AC					Report DB ID: FAR8K1CS							
TECHNETIUM-99	1.31E+01		3.2E-01	1.0E+00	3.06E-01	pCi/g	100.00%	1.36E+01	3.1E-01	95.89%	11/16/02 09:59 a	5.0	RICHRC5078
							Rec Limits:	70.	130.	0.0		g	LSC6

Number of Results: 1

Comments:

FORM II
LCS RESULTS

Date: 20-Nov-02

Lab Name: STL Richland

SDG: 21414

Lot-Sample No.: J2J250000-425

Report No. : 20994

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Allquot Size	Analy Method, Primary Detector
Batch: 2298425	Work Order: FAR8M1AC		Report DB ID: FAR8M1CS										
CARBON-14	2.69E+00		9.5E-02	1.5E-01	1.44E-01	pCi/g	100.00%	2.72E+00	8.8E-02	99.00%	11/10/02 05:50 a	5.0	RC5022
Rec Limits:								70.	130.	0.0		g	LSC3

Number of Results: 1

Comments:

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.

rptSTLRchLcs
V3.96 A97

FORM II
MATRIX SPIKE RESULTS

Date: 20-Nov-02

Lab Name: STL Richland

SDG: 21414

Lot-Sample No.: J2J240307-3

Report No.: 20994

Matrix: SOIL

Parameter	SpikeResult, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA	Rpt Unit, CRDL	Yield	Rec- overy	Exp- ected	Exp Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 2298424	Work Order: FAPTL1AE			Report DB ID: FAPTL1EW		Orig Sa DB ID:							
TECHNETIUM-99	2.52E+01		4.4E-01	1.8E+00	3.25E-01	pCi/g	100.00%	92.70%	2.72E+01	6.1E-01	11/16/02 05:51 a	5.0	RICHRC5078
			RER									g	LSC6

Number of Results: 1

Comments:

STL Richland RER - Replicate Error Ratio = $(S-D)/[\sqrt{sq(TPUs)+sq(TPUd)}]$ as defined by ICPT BOA.
rptSTLRchMs Bias - (Result/Expected)-1 as defined by ANSI N13.30.
V3.96 A97

Q-4'17'10

14 day
TAT

J2J 240307

805 21414
Due 11-8

24265-000-GPP-GGGR-R5104-003 Attachment A

Page 1 of 1

Bechtel Power Corporation 362 Injun Hollow Road, East Hampton, CT 06424 860-267-2556			Chain of Custody Form							COC No: 00101 P.O. #: 24265-FSB-S-00552-AC Activity Code: 24265-200-034AA3	
Project Name: Haddam Neck Decommissioning							Analyses Requested			Lab Use Only	
Contact Name: Jack McCarthy Phone: 1-860-267-2556 ext 3024			Media Code	Sample Type Code	Container Size & Type Code	Number of Containers	Analysis Type 1 H3 C14 TC99	Analysis Type 2	Analysis Type 3	Comments:	
Analytical Lab (Name, City, State): STL Richland, 2800 George Washington Way Richland, WA 99352 Attention: Barb Gillespi											
Priority: ☐ 30 D. ☐ 15 D. ☐ 7 D. ☒ ASAP											
Sample Designation	Date	Time									
9523-0000-001AF	10/17/2002	1410	TS	G	BP	1	BFSSOTHR			Comment, Preservation	Lab Sample ID
9523-0000-001AFS	10/17/2002	1410	TS	G	BP	1	BFSSOTHR			N/A	FAPR7
9523-0000-026AF	10/17/2002	1430	TS	G	BP	1	BFSSOTHR			N/A	FAPTE
NOTES: Multiple individuals performing sampling, refer to Daily Survey Journal sheet for list of team members										Samples Shipped Via:	
1) Sampled By <i>John J. Guter</i> Date/Time 10/17/02 1515			2) Received By <i>Wiederberg</i> Date/Time 10-24-02 1155						☐ Fed Ex ☐ UPS ☐ Hand ☐ Other		
3) Relinquished By			4) Received By						Internal Container Temp.: _____ Deg. C		
5) Relinquished By			6) Received By						Custody Sealed? Y ☐ N ☐		
									Custody Seal Intact? Y ☐ N ☐		
									Bill of Lading #		
Media Code	WG: Ground Water, WF: Surface Water, RW: River Water, WE: Estuary Water, WS: Sea Water, EW: Effluent Water, TS: Soil, SE: Sediment, AS: Asphalt, TG: Vegetation, CT: Concrete, OT: Other										
Sample Type Code	G: Grab, C: Composite, CR: Core, D: Duplicate, S: Split, FB: Field Blank, RB: Rinsate Blank, MSB: Matrix Spike Dup. OT: Other										
Container Type	BP: Plastic Bag, BC: Cloth Bag, P: Plastic, SC: Steel Can, G: Glass, A: Amber glass, V: Vial, ILM: 1 liter marinelli, OT: Other										

MATRIX OF REQUIRED ANALYSES AND DETECTION SENSITIVITIES

Column 1	Column 2	Column 3	Column 4
			BFSSOTHR
Radionuclide	Analyses	Soil MDC (pCi/g)	Required analysis?
C-14	(Liquid Scintillation)	2.26E-01	Y
H-3	(Liquid Scintillation)	1.65E+01	Y
Tc-99	(Liquid Scintillation)	5.04E-01	Y

Bechtel Power Corporation 362 Injun Hollow Road, East Hampton, CT 06424 860-267-2556			Chain of Custody Form					COC No: 2002-00102 P.O. #: 24265-FSB-S-00552-AC Activity Code: 24265-200-034AA3			
Project Name: Haddam Neck Decommissioning							Analyses Requested		Lab Use Only		
Contact Name: Jack McCarthy Phone: 1-860-267-2556 ext 3024			Media Code	Sample Type Code	Container Size & Type Code	Number of Containers	Analysis Type 1 C14 H3 TC99	Analysis Type 2	Analysis Type 3	Comments:	
Analytical Lab (Name, City, State): STL Richland, 2800 George Washington Way Richland, WA 99352 Attention: Barb Gillespi											
Priority: ☐ 30 D. ☐ 15 D. ☐ 7 D. ☒ ASAP											
Sample Designation	Date	Time									
9531-0000-013AF ✓	10/21/2002	1328	TS	G	BP	1	BFSSOTHR			Comment, Preservation N/A	Lab Sample ID FAPTR
9531-0000-015AF ✓	10/21/2002	1320	TS	G	BP	1	BFSSOTHR			N/A	FAPTV
NOTES: Multiple individuals performing sampling, refer to Daily Survey Journal sheet for list of team members							Samples Shipped Via: ☒ Fed Ex ☐ UPS ☐ Hand ☐ Other		Internal Container Temp.: ____ Deg. C Custody Sealed? Y ☐ N ☐ Custody Seal Intact? Y ☐ N ☐		
1) Sampled By <i>[Signature]</i> Date/Time 10/21/02 - 1530			2) Received By <i>[Signature]</i> Date/Time 10/24/02 1155			Bill of Lading #					
3) Relinquished By _____ Date/Time _____			4) Received By _____ Date/Time _____								
5) Relinquished By _____ Date/Time _____			6) Received By _____ Date/Time _____								
Media Code	WG: Ground Water, WF: Surface Water, RW: River Water, WE: Estuary Water, WS: Sea Water, EW: Effluent Water, TS: Soil, SE: Sediment, AS: Asphalt, TG: Vegetation, CT: Concrete, OT: Other										
Sample Type Code	G: Grab, C: Composite, CR: Core, D: Duplicate, S: Split, FB: Field Blank, RB: Rinsate Blank, MSB: Matrix Spike Dup. OT: Other										
Container Type	BP: Plastic Bag, BC: Cloth Bag, P: Plastic, SC: Steel Can, G: Glass, A: Amber glass, V: Vial, 1LM: 1 liter marinelli; OT: Other										

MATRIX OF REQUIRED ANALYSES AND DETECTION SENSITIVITIES

Column 1	Column 2	Column 3	Column 4
			BFSSOTHR
Radionuclide	Analyses	Soil MDC (pCi/g)	Required analysis?
C-14	(Liquid Scintillation)	2.26E-01	Y
H-3	(Liquid Scintillation)	1.65E+01	Y
Tc-99	(Liquid Scintillation)	5.04E-01	Y

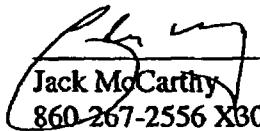
**Standing Order HPM 02-002
Attachment B
Sample Notification**

Date: October 21, 2002

To: Barbara Gillespie

From: Jack McCarthy

Please be advised that sample numbers 9521-0000-008F, 9521-0000-009F, 9521-0000-013F and 9521-0000-015F in this package may contain trace amounts of radioactive material that has been determined to be below the DOT requirement to be regulated in commerce. Please handle them with standard laboratory practices.

 10/21/02
Jack McCarthy
860-267-2556 X3024

26-AUG-2002 16:52:52.26

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMPLE 9531-0000-016 FM

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020826023

* SAMPLE GEOMETRY : 1LMARSAND

SAMPLE TIME : 21-AUG-2002 14:59

* GEO EFFICIENCY DATE: 1-JUL-1998

SAMPLE TYPE : DIRT/SEDIMENT

* SAMPLE QUANTITY : 1.48200E+03 GM

DETECTOR : DET 5

* LIBRARY : FSS_DIRT

LAST ENERGY CAL : 26-AUG-2002 07:13

* ENERGY TOLERANCE: 1.00000

KEV/CHANNEL : 5.00707E-01

* HALF LIFE RATIO : 9.00000

START CHANNEL : 100

* END CHANNEL : 4096

ACQ DATE & TIME : 26-AUG-2002 16:35

* DEADTIME (%) : 0.0%

PRESET LIVE TIME : 0 00:16:40

* SENSITIVITY : 5.00000

ELAPSED REAL TIME : 1000.3 Secs

* GAUSSIAN SEN : 10.00000

ELAPSED LIVE TIME : 1000.0 Secs

* CORRECTION FACTOR: 1.00000E+06

DECAYED TO 5 DAYS HOURS

FILE IDENT : CAS\$DISK: [NEU.SAMPLE.RP.NEW] 020826023_ADC5_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTIMEAN V1.8 INTERF V2.4

Collected by : TORRES

REVIEWED BY :

COMMENTS :

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	83.40	40	115	0.85	126.93	124	6	45.6		TH-234
2	74.86	103	114	0.86	149.84	146	14	17.6	2.58E+00	PB-212
										PB-214
2	77.12	153	82	0.87	154.32	146	14	12.2		PB-214
										PB-212
0	92.91	89	124	1.45	185.88	182	9	25.0		
1	145.59	46	54	1.15	371.00	367	11	30.4	7.11E+00	
1	186.59	26	46	1.15	373.00	367	11	53.2		RA-226
0	238.95	246	73	1.31	477.61	472	14	9.7		PB-212
0	270.13	24	40	0.87	539.92	535	10	53.4		AC-228
0	295.18	69	33	1.18	589.96	586	11	19.7		PB-214
0	337.98	73	16	0.91	675.49	670	11	15.9		AC-228
0	352.04	108	46	1.15	703.58	698	13	16.1		PB-214
0	511.01	45	18	1.02	1021.30	1016	11	24.1		
0	583.45	50	16	1.42	1166.10	1158	11	20.3		TL-208
0	609.44	84	21	1.57	1218.07	1211	16	16.1		BI-214
0	661.61	74	12	1.12	1322.36	1317	10	14.7		CS-137
0	727.63	20	2	0.96	1454.37	1451	7	24.8		BI-212
0	911.32	31	14	1.01	1821.72	1816	11	29.0		AC-228

Post-MID Peak Search Report (continued)
Sample ID : 020826023

Page : 2
Acquisition date : 26-AUG-2002 16:35:57

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	968.74	27	9	1.54	1936.58	1932	9	27.4		AC-228
0	1460.60	212	0	2.09	2920.87	2915	13	6.9		K-40

---- Identified Nuclides ----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	4.611E+00	3.833E-01	5.894E-02	2.761E-03	78.229
CS-137	1.036E-01	1.633E-02	1.900E-02	1.065E-03	5.454
TL-208	6.410E-02	1.344E-02	1.596E-02	8.607E-04	4.017
BI-212	2.226E-01	5.660E-02	1.504E-01	8.180E-03	1.480
PB-212	2.964E-01	3.232E-02	2.543E-02	1.287E-03	11.654
BI-214	2.035E-01	3.461E-02	3.720E-02	2.037E-03	5.469
PB-214	2.111E-01	2.737E-02	2.768E-02	1.327E-03	7.625
RA-226	3.747E-01	2.003E-01	3.238E-01	1.615E-02	1.157
AC-228	2.739E-01	3.670E-02	7.522E-02	3.390E-03	3.641
TH-234	4.610E-01	2.145E-01	3.925E-01	3.722E-02	1.175

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	-4.631E-02		3.636E-02	1.051E-01	5.222E-03	-0.441
MN-54	-2.179E-05		4.437E-03	1.933E-02	9.528E-04	-0.001
CO-60	4.021E-03		4.164E-03	2.274E-02	1.057E-03	0.177
NB-94	-1.526E-03		3.428E-03	1.492E-02	7.001E-04	-0.102
RU-106	-8.989E-03		2.828E-02	1.259E-01	6.938E-03	-0.071
AG-106M	-6.337E-03		5.131E-03	1.743E-02	9.569E-04	-0.364
AG-110M	2.094E-03		4.430E-03	1.894E-02	1.060E-03	0.111
SB-125	6.273E-03		9.764E-03	4.066E-02	1.917E-03	0.154
CS-134	1.228E-03		2.503E-03	1.160E-02	6.335E-04	0.106
EU-152	5.298E-02		2.841E-02	1.519E-01	7.107E-03	0.349
EU-154	1.866E-03		1.405E-02	6.427E-02	3.363E-03	0.029
EU-155	2.439E-02		1.413E-02	5.653E-02	2.640E-03	0.431
RA-223	1.026E-01		5.498E-02	1.078E-01	5.450E-03	0.952
TH-228	6.470E-02		2.956E-01	1.074E+00	5.208E-02	0.060
PA-234	1.292E-01	+	1.696E-02	2.624E-02	1.290E-03	4.924
U-235	3.974E-02	+	1.226E-02	3.194E-02	1.592E-03	1.244
AM-241	-1.700E-03		1.005E-02	3.651E-02	1.974E-03	-0.047

---- Interference between AC-228 and RA-223 ----

**** AC-228 energy lines ****

Energy	# Disint.	% Error	Comments
209.28	-----	-----	Line not identified
270.23	-----	-----	Line interferes with RA-223
338.32	2.398E+04	16.63	
463.00	-----	-----	Line not identified
794.70	-----	-----	Line not identified
835.50	-----	-----	Line not identified
911.07	9.845E+03	29.37	
964.60	-----	-----	Line not identified
969.11	1.514E+04	27.73	

Average: 1.482E+04 13.80

Interfered energy lines

Nuclide	Energy	Old Area	New Area	Critical Level	New Activity (pCi/GM)	% Error
RA-228	269.46	24.0	7.3	19.5	0.000E+00	0.00
269.46 Line invalidated: New Area less than critical level						
RA-228 has been rejected: Failed abundance Test						

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 26-AUG-2002 16:52
REQUESTOR : CAS_TECH

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CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE 9531-0000-016 FM

SAMPLE No. : 020826023 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
COUNT TIME : 26-AUG-2002 16:35:57 SAMPLE QUANTITY : 1.48200E+03
SAMPLE TIME : 21-AUG-2002 14:59:00 DETECTOR : DET 5
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	-0.20	4.611E+00	QA Results OK
CS-137	661.65	-0.04	1.036E-01	QA Results OK
TL-208	583.14	0.31	6.410E-02	QA Results OK
BI-212	727.17	0.46	2.226E-01	QA Results OK
PB-212	238.63	0.32	2.964E-01	QA Results OK
BI-214	609.31	0.13	2.035E-01	QA Results OK
PB-214	351.92	0.12	2.111E-01	QA Results OK
RA-226	186.21	0.38	3.747E-01	QA Results OK
AC-228	911.07	0.25	2.739E-01	QA Results OK
TH-234	63.29	0.11	4.610E-01	QA Results OK
AVG ENERGY DIFF = 0.18				6.821E+00 = TOTAL GAMMA ACTIVITY

74.88 KeV Peak was used in identifying 2 isotopes
77.12 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
92.91	89.	1.45	1.957E+00	1.320E-03	25.0	P	PE X-RAY	0.000E+00
						P	AC-228	1.026E+00
						P	TH-234	1.328E+00
185.59	46.	1.15	1.176E+00	7.938E-04	30.4	P	RA-226	6.541E-01
						R	U-235	3.976E-02
511.01	45.	1.02	2.350E+00	1.586E-03	24.1	U	ANN-RD	0.000E+00

[Handwritten signature]

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 26-AUG-2002 16:52
REQUESTOR : CAS_TECH

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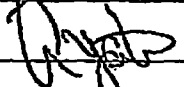
CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

Total Unidentified/Rejected Peaks = 3
% Unidentified/Rejected Peaks = 15.79

Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

Performed by: 

Reviewed by: 

**** End Of Report (2 Pages) ****

26-AUG-2002 17:19:38.11

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMPLE 9531-0000-017 FM

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020826024

* SAMPLE GEOMETRY : 1LMARSAND

SAMPLE TIME : 21-AUG-2002 14:10

* GEO EFFICIENCY DATE: 24-SEP-1997

SAMPLE TYPE : DIRT/SEDIMENT

* SAMPLE QUANTITY : 1.67600E+03 GM

DETECTOR : DET 1

* LIBRARY : FSS DIRT

LAST ENERGY CAL : 26-AUG-2002 08:36

* ENERGY TOLERANCE: 1.00000

KEV/CHANNEL : 5.00823E-01

* HALF LIFE RATIO : 9.00000

START CHANNEL : 100

* END CHANNEL : 4096

ACQ DATE & TIME : 26-AUG-2002 17:02

* DEADTIME (%) : 0.0%

PRESET LIVE TIME : 0 00:16:40

* SENSITIVITY : 5.00000

ELAPSED REAL TIME : 1000.1 Secs

* GAUSSIAN SEN : 10.00000

ELAPSED LIVE TIME : 1000.0 Secs

* CORRECTION FACTOR: 1.00000E+06

DECAYED TO 5 DAYS HOURS

FILE IDENT : CAS\$DISK:[NEU.SAMPLE.RP.NEW]020826024_ADC1_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WMEAN V1.8

Collected by : TORRES

REVIEWED BY :

COMMENTS :

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	77.29	71	115	1.05	154.50	152	8	28.7		PB-214
										PB-212
0	86.99	57	77	1.45	173.88	170	7	29.0		PB-212
0	186.02	68	81	1.12	371.67	365	13	30.1		RA-226
0	209.36	44	67	1.27	418.28	413	12	39.8		AC-228
4	228.70	174	54	1.16	476.88	472	21	9.8	1.91E+00	PB-212
4	241.62	29	59	1.60	482.71	472	21	60.7		PB-214
1	294.94	56	18	1.27	589.23	583	13	20.7	2.28E+00	PB-214
1	295.71	27	25	1.27	590.77	583	13	43.0		
0	318.40	56	14	1.15	676.05	671	11	18.6		AC-228
0	352.26	74	31	1.15	703.74	698	12	19.3		PB-214
0	510.77	46	7	2.42	1020.48	1015	14	19.1		
0	583.51	61	13	1.31	1165.86	1160	10	16.7		TL-208
0	609.61	76	8	1.25	1218.04	1213	12	14.0		BI-214
0	661.76	95	9	1.66	1322.27	1317	12	12.1		CS-137
0	811.54	34	4	1.78	1821.69	1815	14	20.6		AC-228
0	1461.07	108	6	2.26	2921.20	2916	11	10.5		K-40

---- Identified Nuclides ----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	4.954E+00	5.725E-01	4.272E-01	2.033E-02	11.599
CS-137	2.596E-01	3.474E-02	3.445E-02	1.972E-03	7.538
TL-208	1.510E-01	2.660E-02	3.733E-02	2.045E-03	4.046
PB-212	3.889E-01	4.044E-02	4.769E-02	2.299E-03	8.154
BI-214	3.525E-01	5.296E-02	3.881E-02	2.162E-03	9.081
PB-214	2.898E-01	4.120E-02	5.412E-02	2.514E-03	5.355
RA-226	1.694E+00	5.160E-01	5.227E-01	2.540E-02	3.241
AC-228	4.836E-01	6.702E-02	7.960E-02	3.690E-03	6.075

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	1.835E-01		6.574E-02	3.298E-01	1.648E-02	0.556
MN-54	4.212E-03		8.723E-03	4.006E-02	2.030E-03	0.105
CO-60	1.474E-02		1.205E-02	6.033E-02	2.843E-03	0.244
NB-94	-2.051E-03		6.996E-03	3.103E-02	1.497E-03	-0.066
RU-106	-4.370E-02		8.023E-02	2.706E-01	1.518E-02	-0.161
AG-106M	-3.730E-03		7.307E-03	2.535E-02	1.416E-03	-0.147
AG-110M	3.102E-03		8.781E-03	3.450E-02	1.971E-03	0.090
SB-125	2.042E-02		1.912E-02	8.358E-02	3.939E-03	0.244
CS-134	1.984E-03		6.248E-03	2.600E-02	1.444E-03	0.076
EU-152	1.686E-02		4.949E-02	2.381E-01	1.131E-02	0.071
EU-154	1.569E-02		2.735E-02	1.349E-01	7.181E-03	0.116
EU-155	4.449E-02		2.919E-02	1.181E-01	5.065E-03	0.377
BI-212	1.550E-01		7.738E-02	3.808E-01	2.121E-02	0.407
RA-223	-3.590E-02		4.661E-02	1.585E-01	7.487E-03	-0.227
TH-228	1.433E+00		6.173E-01	2.617E+00	1.352E-01	0.548
PA-234	1.811E-01	+	5.318E-02	7.037E-02	4.216E-03	2.574
TH-234	-3.268E-01		3.581E-01	1.318E+00	1.766E-01	-0.248
U-235	1.028E-01	+	3.130E-02	4.777E-02	2.321E-03	2.152
AM-241	6.530E-02		4.608E-02	1.935E-01	2.645E-02	0.337

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 26-AUG-2002 17:19
REQUESTOR : CAS_TECH

PAGE 1 OF

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE 9531-0000-017 FM

SAMPLE No. : 020826024 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
COUNT TIME : 26-AUG-2002 17:02:39 SAMPLE QUANTITY : 1.67600E+03
SAMPLE TIME : 21-AUG-2002 14:10:00 DETECTOR : DET 1
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	0.27	4.954E+00	QA Results OK
CS-137	661.65	0.11	2.596E-01	QA Results OK
TL-208	583.14	0.37	1.510E-01	QA Results OK
PE-212	238.63	0.07	3.889E-01	QA Results OK
Bi-214	609.31	0.30	3.525E-01	QA Results OK
PE-214	351.92	0.34	2.898E-01	QA Results OK
RA-226	186.21	-0.19	1.694E+00	QA Results OK
AC-228	911.07	0.47	4.836E-01	QA Results OK
AVG ENERGY DIFF = 0.22			8.574E+00	= TOTAL GAMMA ACTIVITY

77.29 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
295.71	27.	1.27	1.922E+00	1.146E-03	43.0	U	PE-214	1.624E-01
510.77	46.	2.42	5.239E+00	3.126E-03	19.1	U	ANN-RD	0.000E+00

Total Unidentified/Rejected Peaks = 2
% Unidentified/Rejected Peaks = 12.50

Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

Performed by: Greg Givens

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 26-AUG-2002 17:19
REQUESTOR : CAS_TECH

PAGE 2 OF ____

CYAPCO
HADDAM NECK STATION
POST NID QA ANALYSIS

Reviewed by: _____

**** End Of Report (2 Pages) ****

26-AUG-2002 17:21:04.75

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMPLE 9531-0000-018 FM

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020826025 * SAMPLE GEOMETRY : 1LMARSAND
SAMPLE TIME : 21-AUG-2002 14:30 * GEO EFFICIENCY DATE: 19-AUG-1997
SAMPLE TYPE : DIRT/SEDIMENT * SAMPLE QUANTITY : 1.48200E+03 GM

DETECTOR : DET 2 * LIBRARY : FSS_DIRT
LAST ENERGY CAL : 26-AUG-2002 07:54 * ENERGY TOLERANCE: 1.00000
KEV/CHANNEL : 5.01038E-01 * HALF LIFE RATIO : 9.00000
START CHANNEL : 100 * END CHANNEL : 4096
ACQ DATE & TIME : 26-AUG-2002 17:04 * DEADTIME (%) : 0.0%
PRESET LIVE TIME : 0 00:16:40 * SENSITIVITY : 5.00000
ELAPSED REAL TIME : 1000.3 Secs * GAUSSIAN SEN : 10.00000
ELAPSED LIVE TIME : 1000.0 Secs * CORRECTION FACTOR: 1.00000E+06
DECAYED TO 5 DAYS HOURS
FILE IDENT : CAS\$DISK: [NEU.SAMPLE.RP.NEW] 020826025_ADC2_DIRTSediment.CNF;1

ANALYSIS : PEAK V16.8 NID V3.2 MINACT V2.8 WMEAN V1.8

Collected by : TORRES

REVIEWED BY :

COMMENTS :

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
3	74.78	110	137	1.11	149.82	144	15	19.6	1.25E+00	PB-212
										PB-214
3	77.15	125	105	0.93	154.57	144	15	15.7		PB-214
										PB-212
0	86.97	56	129	1.03	174.16	172	7	35.8		PB-212
0	185.50	57	110	0.94	370.88	366	11	38.3		RA-226
1	238.52	292	39	1.28	476.76	471	20	7.0	1.71E+00	PB-212
1	241.03	37	50	1.34	481.76	471	20	44.2		
1	242.17	36	52	1.34	484.05	471	20	40.3		PB-214
0	294.88	83	55	0.91	589.30	584	11	20.6		PB-214
0	378.65	64	68	1.21	676.73	670	14	29.6		AC-228
0	511.84	144	48	0.97	703.07	697	12	12.7		PB-214
0	511.51	62	19	1.74	1022.07	1016	15	20.7		
0	583.13	111	0	1.48	1165.21	1160	10	9.5		TL-208
0	609.30	135	17	1.42	1217.50	1212	12	10.7		BI-214
0	661.55	136	12	1.41	1321.95	1316	12	10.0		CS-137
0	727.47	30	5	1.46	1453.74	1448	12	24.5		BI-212
0	911.18	57	29	1.53	1821.11	1815	14	23.0		AC-228
0	969.39	35	17	0.79	1937.54	1932	11	29.5		AC-228

Post-MID Peak Search Report (continued)
Sample ID : 020826025

Page : 2
Acquisition date : 26-AUG-2002 17:04:05

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	1120.46	32	5	0.83	2239.80	2234	11	22.8		BI-214
0	1460.61	271	3	2.24	2920.74	2914	13	6.2		K-40

----- Identified Nuclides -----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	8.783E+00	6.897E-01	3.026E-01	1.446E-02	29.021
CS-137	2.820E-01	3.252E-02	3.530E-02	2.041E-03	7.990
TL-208	2.088E-01	2.289E-02	1.589E-02	8.721E-04	13.141
BI-212	4.821E-01	1.212E-01	1.799E-01	1.008E-02	2.680
PB-212	5.209E-01	4.307E-02	4.001E-02	1.913E-03	13.020
BI-214	4.944E-01	5.300E-02	4.798E-02	2.684E-03	10.303
PB-214	4.004E-01	4.393E-02	5.026E-02	2.316E-03	7.968
RA-226	1.193E+00	4.609E-01	5.721E-01	2.777E-02	2.085
AC-228	5.094E-01	8.020E-02	1.258E-01	5.828E-03	4.049

----- Non-Identified Nuclides -----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	-8.682E-02		7.383E-02	2.187E-01	1.089E-02	-0.397
MN-54	7.749E-03		7.367E-03	3.423E-02	1.735E-03	0.226
CO-60	-9.369E-03		8.424E-03	2.992E-02	1.425E-03	-0.313
NB-94	-3.837E-03		6.269E-03	2.534E-02	1.223E-03	-0.151
RU-106	6.381E-02		6.306E-02	2.889E-01	1.630E-02	0.221
AG-108M	-4.398E-03		5.364E-03	2.153E-02	1.208E-03	-0.204
AG-114M	6.930E-03		4.572E-03	2.418E-02	1.395E-03	0.287
SB-125	3.754E-03		1.583E-02	6.090E-02	2.859E-03	0.062
CS-134	-5.215E-03		5.694E-03	2.035E-02	1.135E-03	-0.256
EU-152	9.423E-02		5.108E-02	2.551E-01	1.219E-02	0.369
EU-154	9.030E-03		1.499E-02	8.119E-02	4.331E-03	0.111
EU-155	1.124E-02		2.504E-02	9.318E-02	4.061E-03	0.121
RA-223	4.082E-02		4.397E-02	1.643E-01	7.706E-03	0.248
TH-228	2.195E+00		6.048E-01	2.522E+00	1.281E-01	0.870
PA-234	2.377E-01	+	3.968E-02	5.893E-02	3.335E-03	4.034
TH-234	1.287E-01		3.110E-01	1.161E+00	1.362E-01	0.111
U-235	7.238E-02	+	2.797E-02	4.876E-02	2.367E-03	1.484
AM-241	4.032E-02		3.875E-02	1.488E-01	1.524E-02	0.271

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 26-AUG-2002 17:21
REQUESTOR : CAS_TECH

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CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE 9531-0000-018 FM

SAMPLE No. : 020826025 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
COUNT TIME : 26-AUG-2002 17:04:05 SAMPLE QUANTITY : 1.48200E+03
SAMPLE TIME : 21-AUG-2002 14:30:00 DETECTOR : DET 2
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	-0.19	8.783E+00	QA Results OK
CS-137	661.65	-0.10	2.820E-01	QA Results OK
TL-208	583.14	-0.01	2.088E-01	QA Results OK
BI-212	727.17	0.30	4.821E-01	QA Results OK
PB-212	238.63	-0.10	5.209E-01	QA Results OK
BI-214	609.31	-0.02	4.944E-01	QA Results OK
PB-214	351.92	-0.08	4.004E-01	QA Results OK
RA-226	186.21	-0.71	1.193E+00	QA Results OK
AC-228	911.07	0.11	5.094E-01	QA Results OK
AVG ENERGY DIFF = -0.09				1.287E+01 = TOTAL GAMMA ACTIVITY

74.78 KeV Peak was used in identifying 2 isotopes
77.15 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
241.03	37.	1.34	1.621E+00	1.094E-03	44.2	P	PB-214	3.972E-01
511.51	62.	1.74	4.835E+00	3.262E-03	20.7	P	ANN-RD	0.000E+00

Total Unidentified/Rejected Peaks = 2
% Unidentified/Rejected Peaks = 10.53

Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

Ryab

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 26-AUG-2002 17:21
REQUESTOR : CAS_TECH

PAGE 2 OF ____

CYAPCO
HADDAM NECK STATION
POST NID QA ANALYSIS

Performed by: *Greg Conrad*

Reviewed by: *Qyab*

**** End of Report (2 Pages) ****

26-AUG-2002 14:56:34.69

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMPLE: 9531-0000-019FM

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020826017 * SAMPLE GEOMETRY : 1LMARSAND
SAMPLE TIME : 22-AUG-2002 10:47 * GEO EFFICIENCY DATE: 1-JUL-1998
SAMPLE TYPE : DIRT/SEDIMENT * SAMPLE QUANTITY : 1.47000E+03 GM

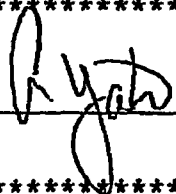
DETECTOR : DET 5 * LIBRARY : FSS_DIRT
LAST ENERGY CAL : 26-AUG-2002 07:13 * ENERGY TOLERANCE: 1.00000
KEV/CHANNEL : 5.00707E-01 * HALF LIFE RATIO : 9.00000
START CHANNEL : 100 * END CHANNEL : 4096
ACQ DATE & TIME : 26-AUG-2002 14:39 * DEADTIME (%) : 0.1%
PRESET LIVE TIME : 0 00:16:40 * SENSITIVITY : 5.00000
ELAPSED REAL TIME : 1000.5 Secs * GAUSSIAN SEN : 10.00000
ELAPSED LIVE TIME : 1000.0 Secs * CORRECTION FACTOR: 1.00000E+06

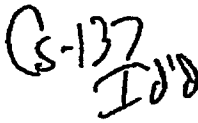
DECAYED TO 4 DAYS HOURS

FILE IDENT : CAS\$DISK:[NEU.SAMPLE.RP.NEW]020826017_ADC5_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTMEAN V1.8

Collected by : SOSA

REVIEWED BY : 

COMMENTS : 

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	63.55	103	265	1.12	127.22	123	9	30.0		TH-234
2	74.83	259	180	1.10	149.76	144	20	10.7	2.57E+00	PB-212
										PB-214
2	77.14	350	148	1.05	154.37	144	20	7.9		PB-214
										PB-212
4	84.20	78	197	1.47	168.46	164	19	33.4	1.61E+00	TH-228
4	87.18	163	175	1.47	174.42	164	19	16.9		PB-212
4	89.81	102	102	1.35	179.67	164	19	19.7		
0	93.08	176	137	1.46	186.20	183	8	13.8		
0	185.11	111	189	1.60	370.06	364	15	28.6		
0	208.91	71	98	0.99	417.59	414	8	27.0		AC-228
2	238.56	418	83	0.98	476.83	472	16	6.0	8.93E-01	PB-212
2	241.39	56	122	1.46	482.49	472	16	41.2		PB-214
0	295.46	119	80	1.11	590.52	584	11	17.1		PB-214
0	300.38	29	42	1.25	600.36	596	8	43.7		
0	338.31	104	58	1.17	676.14	670	13	18.0		AC-228
0	351.83	204	69	1.10	703.17	697	12	10.7		PB-214
0	463.59	34	46	1.62	926.51	921	14	45.8		AC-228
0	510.49	76	27	1.25	1020.26	1014	13	17.9		

Post-NID Peak Search Report (continued)
Sample ID : 020826017

Page : 2
Acquisition date : 26-AUG-2002 14:39:35

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	583.34	124	36	1.45	1165.89	1160	12	13.5		TL-208
0	609.31	156	33	1.42	1217.81	1212	11	10.7		BI-214
0	661.46	211	12	1.51	1322.07	1317	10	7.6		CS-137
0	727.52	33	21	1.62	1454.14	1449	11	32.6		BI-212
0	861.40	36	12	0.95	1721.87	1714	16	27.0		
0	911.29	108	22	1.75	1821.66	1812	18	14.1		AC-228
0	970.20	36	31	0.88	1939.49	1930	12	34.9		
0	1110.86	14	7	1.41	2220.90	2215	11	46.7		
0	1120.51	34	7	1.13	2240.21	2235	9	22.0		BI-214
0	1460.57	448	10	1.81	2920.80	2914	14	5.0		K-40
0	1764.39	28	3	1.69	3529.19	3522	12	22.9		BI-214

---- Identified Nuclides ----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	9.814E+00	6.702E-01	2.599E-01	1.218E-02	37.755
CS-137	2.991E-01	2.818E-02	2.214E-02	1.241E-03	13.510
TL-208	1.589E-01	2.305E-02	2.406E-02	1.298E-03	6.603
BI-212	3.649E-01	1.208E-01	1.426E-01	7.757E-03	2.559
PB-212	5.297E-01	3.828E-02	3.724E-02	1.884E-03	14.223
BI-214	3.983E-01	3.856E-02	4.807E-02	2.632E-03	8.285
PB-214	3.906E-01	3.730E-02	4.454E-02	2.135E-03	8.769
AC-228	6.456E-01	6.735E-02	8.066E-02	3.635E-03	8.005
TH-228	2.629E+00	8.880E-01	1.046E+00	5.071E-02	2.513
TH-234	1.205E+00	3.795E-01	4.791E-01	4.544E-02	2.515

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	1.224E-01		5.647E-02	2.314E-01	1.150E-02	0.529
MN-54	7.986E-04		5.580E-03	2.360E-02	1.164E-03	0.034
CO-60	-1.262E-03		7.632E-03	3.083E-02	1.434E-03	-0.041
NB-94	6.125E-03		5.565E-03	2.556E-02	1.200E-03	0.240
RU-106	-1.013E-02		3.670E-02	1.564E-01	8.617E-03	-0.065
AG-108M	-5.338E-03		4.725E-03	1.797E-02	9.866E-04	-0.297
AG-110M	-4.048E-03		5.392E-03	1.942E-02	1.087E-03	-0.208
SB-125	2.064E-02		1.560E-02	6.195E-02	2.921E-03	0.333
CS-134	1.933E-04		5.460E-03	1.927E-02	1.053E-03	0.010
EU-152	6.387E-02		3.063E-02	1.629E-01	7.618E-03	0.392
EU-154	6.384E-03		1.881E-02	8.218E-02	4.301E-03	0.078
EU-155	2.355E-02		1.725E-02	6.577E-02	3.071E-03	0.358
RA-223	4.510E-02		3.778E-02	1.385E-01	7.003E-03	0.326
RA-226	6.170E-01		1.488E-01	6.017E-01	3.000E-02	1.026
PA-234	2.978E-01	+	2.778E-02	4.176E-02	2.053E-03	7.131
U-235	9.686E-02	+	2.816E-02	3.949E-02	1.969E-03	2.453
AM-241	4.171E-03		1.446E-02	5.211E-02	2.818E-03	0.080

REPORT NAME : QA_CHECK (V9.1)
 REPORT DATE : 26-AUG-2002 14:56
 REQUESTOR : CAS_TECH

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CYAPCO
 HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE: 9531-0000-019FM

SAMPLE No. : 020826017 OPERATOR NAME : CAS
 SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
 COUNT TIME : 26-AUG-2002 14:39:35 SAMPLE QUANTITY : 1.47000E+03
 SAMPLE TIME : 22-AUG-2002 10:47:00 DETECTOR : DET 5
 LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	-0.23	9.814E+00	QA Results OK
CS-137	661.65	-0.19	2.991E-01	QA Results OK
TL-208	583.14	0.20	1.589E-01	QA Results OK
BI-212	727.17	0.35	3.649E-01	QA Results OK
PB-212	238.63	-0.07	5.297E-01	QA Results OK
BI-214	609.31	0.00	3.983E-01	QA Results OK
PB-214	351.92	-0.09	3.906E-01	QA Results OK
AC-228	911.07	0.22	6.456E-01	QA Results OK
TH-228	84.37	-0.17	2.629E+00	QA Results OK
TH-234	63.29	0.26	1.205E+00	QA Results OK

AVG ENERGY DIFF =		0.03	1.644E+01	= TOTAL GAMMA ACTIVITY

74.83 KeV Peak was used in identifying 2 isotopes
 77.14 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
89.81	102.	1.35	2.252E+00	1.532E-03	19.7	P	BI-214	1.539E+01
						P	AC-228	1.984E+00
93.08	176.	1.46	3.864E+00	2.629E-03	13.8	P	AC-228	2.043E+00
						P	TH-234	2.645E+00
185.11	111.	1.60	2.841E+00	1.932E-03	28.6	P	U-235	9.680E-02
300.38	29.	1.25	1.003E+00	6.822E-04	43.7	P	PB-212	5.441E-01
510.49	76.	1.25	4.008E+00	2.726E-03	17.9	P	AC-228	1.578E+01
						P	ANN-RD	0.000E+00
861.40	36.	0.95	3.012E+00	2.049E-03	27.0	P		
970.20	36.	0.88	3.291E+00	2.239E-03	34.9	P		
1110.86	14.	1.41	1.453E+00	9.887E-04	46.7	P	AC-228	8.149E+00

Ally

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 26-AUG-2002 14:56
REQUESTOR : CAS_TECH

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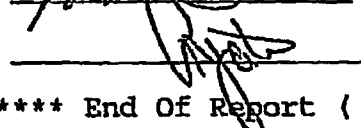
CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

Total Unidentified/Rejected Peaks = 8
% Unidentified/Rejected Peaks = 28.57

Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

Performed by: 

Reviewed by: 

**** End Of Report (2 Pages) ****

26-AUG-2002 16:00:13.21

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMPLE 9531-0000-020 FM

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020826018 * SAMPLE GEOMETRY : 1LMARSAND
SAMPLE TIME : 22-AUG-2002 14:10 * GEO EFFICIENCY DATE: 24-SEP-1997
SAMPLE TYPE : DIRT/SEDIMENT * SAMPLE QUANTITY : 1.55100E+03 GM

DETECTOR : DET 1 * LIBRARY : FSS DIRT
LAST ENERGY CAL : 26-AUG-2002 08:36 * ENERGY TOLERANCE: 1.00000
KEV/CHANNEL : 5.00823E-01 * HALF LIFE RATIO : 9.00000
START CHANNEL : 100 * END CHANNEL : 4096
ACQ DATE & TIME : 26-AUG-2002 15:43 * DEADTIME (%) : 0.0%
PRESET LIVE TIME : 0 00:16:40 * SENSITIVITY : 5.00000
ELAPSED REAL TIME : 1000.1 Secs * GAUSSIAN SEN : 10.00000
ELAPSED LIVE TIME : 1000.0 Secs * CORRECTION FACTOR: 1.00000E+06
DECAYED TO 4 DAYS HOURS
FILE IDENT : CAS\$DISK:[NEU.SAMPLE.RP.NEW]020826018_ADC1_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTIMEAN V1.8

Collected by : TORRES

REVIEWED BY :

COMMENTS :

Ryt

G-137 ID

Post-NID Peak Search Report

It	Energy	Area	Bkgnd.	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
3	74.76	66	67	1.09	149.46	144	19	24.9	1.44E+00	PB-212
										PB-214
3	77.22	82	59	1.10	154.37	144	19	20.1		PB-214
										PB-212
0	238.56	167	85	1.24	476.60	472	9	12.6		PB-212
0	295.15	61	31	1.15	589.66	586	9	18.6		PB-214
0	338.41	41	27	0.77	676.07	672	9	27.7		AC-228
0	351.99	93	33	1.05	703.21	697	12	16.1		PB-214
0	409.27	22	5	1.55	817.66	812	10	28.6		
0	480.70	17	8	1.14	960.39	954	11	39.9		
0	511.22	51	6	2.39	1021.38	1015	19	17.5		
0	583.34	49	22	0.97	1165.53	1160	12	23.5		TL-208
0	609.20	59	7	1.28	1217.21	1210	13	15.9		BI-214
0	662.16	28	10	1.51	1323.07	1317	10	28.5		CS-137
0	861.29	15	3	1.19	1721.20	1718	7	32.5		TL-208
0	911.25	44	0	1.96	1821.11	1815	11	15.1		AC-228
0	968.86	22	4	1.07	1936.34	1932	9	27.2		AC-228
0	1460.93	190	0	2.31	2920.92	2914	16	7.3		K-40

----- Identified Nuclides -----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	9.462E+00	8.210E-01	1.350E-01	6.423E-03	70.111
CS-137	8.270E-02	2.400E-02	3.186E-02	1.824E-03	2.595
TL-208	1.462E-01	3.074E-02	3.288E-02	1.801E-03	4.446
PB-212	3.891E-01	5.262E-02	6.170E-02	2.974E-03	6.307
BI-214	2.951E-01	4.961E-02	4.194E-02	2.336E-03	7.036
PB-214	3.683E-01	4.660E-02	5.849E-02	2.717E-03	6.298
AC-228	5.195E-01	6.403E-02	1.078E-01	4.996E-03	4.820

----- Non-Identified Nuclides -----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	-5.666E-02		5.844E-02	1.862E-01	9.302E-03	-0.304
MN-54	6.908E-03		1.185E-02	5.206E-02	2.638E-03	0.133
CO-60	1.542E-02		1.103E-02	5.953E-02	2.805E-03	0.259
NB-94	9.719E-03		5.664E-03	3.513E-02	1.695E-03	0.277
RU-106	-3.469E-02		7.503E-02	2.625E-01	1.473E-02	-0.132
AG-108M	-4.018E-03		7.898E-03	2.741E-02	1.531E-03	-0.147
AG-110M	-1.334E-02		1.121E-02	3.223E-02	1.841E-03	-0.414
SB-125	7.199E-03		2.524E-02	9.637E-02	4.541E-03	0.075
CS-134	4.770E-03		7.199E-03	3.101E-02	1.722E-03	0.154
EU-152	-2.440E-02		2.443E-02	6.742E-02	3.202E-03	-0.362
EU-154	8.868E-03		2.766E-02	1.347E-01	7.166E-03	0.066
EU-155	-2.632E-02		2.654E-02	9.488E-02	4.069E-03	-0.277
BI-212	1.789E-02		7.516E-02	3.333E-01	1.857E-02	0.054
RA-223	-9.410E-02		4.571E-02	1.324E-01	6.255E-03	-0.711
RA-226	2.062E-01		2.079E-01	7.968E-01	3.872E-02	0.259
TH-228	6.789E-01		6.637E-01	2.666E+00	1.378E-01	0.255
PA-234	2.236E-01	+	4.697E-02	7.487E-02	4.486E-03	2.986
TH-234	8.901E-01		4.353E-01	1.801E+00	2.413E-01	0.494
U-235	3.091E-02		1.256E-02	5.160E-02	2.507E-03	0.599
AM-241	-1.894E-03		4.660E-02	1.849E-01	2.527E-02	-0.010

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 26-AUG-2002 16:00
REQUESTOR : CAS_TECH

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CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE 9531-0000-020 FM

SAMPLE No. : 020826018 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
COUNT TIME : 26-AUG-2002 15:43:14 SAMPLE QUANTITY : 1.55100E+03
SAMPLE TIME : 22-AUG-2002 14:10:00 DETECTOR : DET 1
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	0.13	9.462E+00	QA Results OK
CS-137	661.65	0.51	8.270E-02	QA Results OK
TL-208	583.14	0.20	1.462E-01	QA Results OK
PB-212	238.63	-0.07	3.891E-01	QA Results OK
BI-214	609.31	-0.12	2.951E-01	QA Results OK
PB-214	351.92	0.07	3.683E-01	QA Results OK
AC-228	911.07	0.18	5.195E-01	QA Results OK
AVG ENERGY DIFF = 0.13				1.126E+01 = TOTAL GAMMA ACTIVITY

74.76 KeV Peak was used in identifying 2 isotopes
77.22 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
409.27	22.	1.55	2.052E+00	1.323E-03	28.6	P	AC-228	1.689E+00
480.70	17.	1.14	1.866E+00	1.203E-03	39.9	P	PB-214	9.628E+00
511.22	51.	2.39	5.801E+00	3.740E-03	17.5	V	ANN-RD	0.000E+00

Total Unidentified/Rejected Peaks = 3
% Unidentified/Rejected Peaks = 18.75

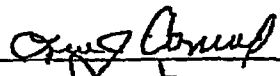
Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

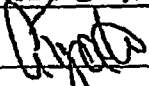
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REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 26-AUG-2002 16:00
REQUESTOR : CAS_TECH

PAGE 2 OF ____

CYAPCO
HADDAM NECK STATION
POST NID QA ANALYSIS

Performed by: 

Reviewed by: 

**** End Of Report (2 Pages) ****

27-AUG-2002 21:12:07.92

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMPLE 9531-0000-021 FM

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020827012 * SAMPLE GEOMETRY : 1LMAR
SAMPLE TIME : 26-AUG-2002 14:20 * GEO EFFICIENCY DATE: 7-JUN-1999
SAMPLE TYPE : DIRT/SEDIMENT * SAMPLE QUANTITY : 1.36100E+03 GM

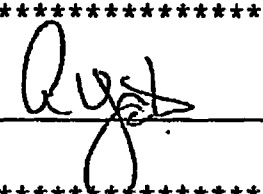
DETECTOR : DET 2 * LIBRARY : FSS_DIRT
LAST ENERGY CAL : 27-AUG-2002 07:14 * ENERGY TOLERANCE: 1.00000
KEV/CHANNEL : 5.00995E-01 * HALF LIFE RATIO : 9.00000
START CHANNEL : 100 * END CHANNEL : 4096
ACQ DATE & TIME : 27-AUG-2002 20:55 * DEADTIME (%) : 0.0%
PRESET LIVE TIME : 0 00:16:40 * SENSITIVITY : 5.00000
ELAPSED REAL TIME : 1000.4 Secs * GAUSSIAN SEN : 10.00000
ELAPSED LIVE TIME : 1000.0 Secs * CORRECTION FACTOR: 1.00000E+06

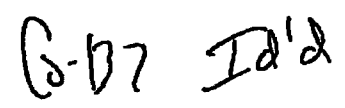
DECAYED TO 1 DAYS HOURS

FILE IDENT : CAS\$DISK: [NEU.SAMPLE.RP.NEW] 020827012_ADC2_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTMEAN V1.8

Collected by : TORRES

REVIEWED BY : 

COMMENTS : 

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	74.79	103	140	0.91	149.88	145	8	22.2		PB-212
										PB-214
0	77.30	144	130	0.98	154.89	152	7	15.5		PB-214
										PB-212
0	186.00	57	115	1.12	371.94	368	9	36.6		RA-226
0	238.44	334	79	1.15	476.65	473	8	7.1		PB-212
0	241.69	67	56	1.48	483.14	481	7	22.7		PB-214
0	295.03	96	43	1.16	589.67	585	9	15.9		PB-214
0	300.50	38	38	0.98	600.60	596	9	33.5		
1	328.11	34	19	1.39	655.75	652	27	29.8	1.88E+00	
1	338.12	86	15	1.19	675.75	652	27	13.5		AC-228
0	351.71	172	49	1.24	702.89	696	14	11.5		PB-214
0	510.62	57	27	1.68	1020.39	1016	10	21.8		
0	583.00	140	14	1.55	1165.05	1157	13	10.0		TL-208
0	609.23	148	22	1.40	1217.47	1210	13	10.6		BI-214
0	661.10	22	14	3.22	1321.16	1316	9	37.6		CS-137
0	727.17	29	21	2.08	1453.25	1447	12	36.2		BI-212
0	860.03	25	2	1.83	1718.93	1714	9	22.7		TL-208
0	911.36	72	23	1.82	1821.59	1814	13	18.0		AC-228

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	969.12	42	31	1.47	1937.13	1930	12	31.5		AC-228
0	1120.15	43	4	1.22	2239.32	2232	13	17.4		BI-214
0	1460.45	307	3	1.48	2920.57	2914	13	5.8		K-40
0	1764.31	17	8	2.08	3529.33	3522	11	41.8		BI-214

----- Identified Nuclides -----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	1.002E+01	6.990E-01	3.949E-01	1.509E-02	25.374
CS-137	4.506E-02	1.702E-02	2.995E-02	1.040E-03	1.504
TL-208	2.771E-01	2.715E-02	2.658E-02	9.564E-04	10.425
BI-212	4.828E-01	1.757E-01	2.499E-01	8.666E-03	1.932
PB-212	5.912E-01	5.597E-02	4.632E-02	2.874E-03	12.764
BI-214	5.564E-01	5.207E-02	6.180E-02	2.183E-03	9.003
PB-214	4.867E-01	4.387E-02	4.632E-02	1.545E-03	10.507
RA-226	1.185E+00	4.395E-01	6.079E-01	3.573E-02	1.949
AC-228	6.843E-01	7.170E-02	1.057E-01	3.337E-03	6.472

----- Non-Identified Nuclides -----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	1.762E-04		4.775E-02	1.786E-01	7.154E-03	0.001
MN-54	2.015E-03		6.458E-03	2.909E-02	9.803E-04	0.069
CO-60	-2.660E-03		7.278E-03	3.080E-02	1.053E-03	-0.086
NE-94	1.140E-02		7.664E-03	3.689E-02	1.210E-03	0.309
RU-106	1.529E-03		5.304E-02	2.333E-01	8.189E-03	0.007
AG-108M	-2.274E-03		7.085E-03	2.905E-02	1.023E-03	-0.078
AG-110M	-5.172E-03		7.067E-03	2.570E-02	8.930E-04	-0.201
SB-125	2.127E-02		1.754E-02	7.377E-02	2.961E-03	0.288
CS-134	-2.854E-04		5.824E-03	2.356E-02	8.345E-04	-0.012
EU-152	-1.549E-02		2.869E-02	1.226E-01	4.539E-03	-0.126
EU-154	1.080E-02		1.979E-02	9.676E-02	3.915E-03	0.112
EU-155	-1.720E-02		2.619E-02	9.218E-02	3.232E-03	-0.187
RA-223	8.132E-02		4.197E-02	1.695E-01	7.686E-03	0.480
TH-228	1.208E+00		5.166E-01	2.112E+00	1.010E-01	0.572
PA-234	2.526E-01	+	4.143E-02	6.210E-02	3.255E-03	4.067
TH-234	7.617E-01		2.935E-01	1.198E+00	1.083E-01	0.636
U-235	7.187E-02	+	2.665E-02	5.545E-02	3.229E-03	1.296
AM-241	7.092E-03		3.146E-02	1.210E-01	6.129E-03	0.059

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 27-AUG-2002 21:12
REQUESTOR : CAS_TECH

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CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE 9531-0000-021 FM

SAMPLE No. : 020827012 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMAR
COUNT TIME : 27-AUG-2002 20:55:09 SAMPLE QUANTITY : 1.36100E+03
SAMPLE TIME : 26-AUG-2002 14:20:00 DETECTOR : DET 2
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	-0.35	1.002E+01	QA Results OK
CS-137	661.65	-0.55	4.506E-02	QA Results OK
TL-208	583.14	-0.14	2.771E-01	QA Results OK
BI-212	727.17	0.00	4.828E-01	QA Results OK
PB-212	238.63	-0.19	5.912E-01	QA Results OK
BI-214	609.31	-0.08	5.564E-01	QA Results OK
PB-214	351.92	-0.21	4.867E-01	QA Results OK
RA-226	186.21	-0.21	1.185E+00	QA Results OK
AC-228	911.07	0.29	6.843E-01	QA Results OK
AVG ENERGY DIFF = -0.16				1.433E+01 = TOTAL GAMMA ACTIVITY

74.79 KeV Peak was used in identifying 2 isotopes
77.30 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
300.50	38.	0.98	1.764E+00	1.296E-03	33.5	P	PB-212	1.034E+00
328.11	34.	1.39	1.691E+00	1.242E-03	29.8	P	BI-212	2.599E+01
						P	AC-228	1.056E+00
510.62	57.	1.68	4.045E+00	2.972E-03	21.8	P	ANN-RD	0.000E+00

Total Unidentified/Rejected Peaks = 3
% Unidentified/Rejected Peaks = 14.29

Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 27-AUG-2002 21:12
REQUESTOR : CAS_TECH

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CYAPCO
HADDAM NECK STATION
POST NID QA ANALYSIS

Performed by: *ang Chaud*

Reviewed by: *Ryoto*

**** End of Report (2 Pages) ****

27-AUG-2002 21:13:54.24

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMPLE 9531-0000-021 FMD

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020827013

* SAMPLE GEOMETRY : 1LMARSAND

SAMPLE TIME : 26-AUG-2002 14:25

* GEO EFFICIENCY DATE: 1-JUL-1998

SAMPLE TYPE : DIRT/SEDIMENT

* SAMPLE QUANTITY : 1.55400E+03 GM

DETECTOR : DET 5

* LIBRARY : FSS DIRT

LAST ENERGY CAL : 27-AUG-2002 16:18

* ENERGY TOLERANCE: 1.00000

KEV/CHANNEL : 5.00876E-01

* HALF LIFE RATIO : 9.00000

START CHANNEL : 100

* END CHANNEL : 4096

ACQ DATE & TIME : 27-AUG-2002 20:56

* DEADTIME (%) : 0.1%

PRESET LIVE TIME : 0 00:16:40

* SENSITIVITY : 5.00000

ELAPSED REAL TIME : 1000.6 Secs

* GAUSSIAN SEN : 10.00000

ELAPSED LIVE TIME : 1000.0 Secs

* CORRECTION FACTOR: 1.00000E+06

DECAYED TO 1 DAYS HOURS

FILE IDENT : CAS\$DISK: [NEU.SAMPLE.RP.NEW] 020827013_ADC5_DIRTSediment.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTMEAN V1.8 INTERF V2.4

Collected by : DORULLA

REVIEWED BY :

COMMENTS :

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	63.09	94	326	0.88	126.38	122	9	36.2		TH-234
2	74.77	247	229	0.87	149.70	146	14	11.0	3.46E-01	PB-212
										PB-214
2	77.10	355	244	0.93	154.35	146	14	8.8		PB-214
										PB-212
0	87.17	114	170	1.05	174.47	172	6	20.3		PB-212
6	89.88	87	109	1.00	179.86	178	15	19.9	8.57E-01	
6	92.97	155	247	1.60	186.05	178	15	21.1		
2	184.22	31	35	1.06	368.26	367	10	26.7	3.08E+00	
2	185.81	85	163	1.25	371.43	367	10	28.4		RA-226
0	209.79	111	147	1.13	419.34	414	12	23.8		AC-228
0	238.55	509	165	0.92	476.77	472	9	6.4		PB-212
0	241.69	77	89	1.40	483.05	481	6	23.0		PB-214
0	270.17	53	78	0.86	539.93	536	9	33.0		AC-228
0	277.52	35	77	0.96	554.61	549	10	51.3		TL-208
0	295.25	179	52	0.85	590.03	586	9	10.4		PB-214
0	328.67	50	61	1.58	656.78	652	11	33.6		
0	338.49	105	44	0.88	676.40	672	9	15.1		AC-228
0	351.78	287	80	1.15	702.96	696	14	8.9		PB-214

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	463.06	40	35	1.20	925.28	919	12	33.8		AC-228
0	511.24	92	35	1.48	1021.56	1015	14	17.5		
0	583.59	167	59	1.19	1166.14	1160	11	11.9		TL-208
0	609.34	208	18	1.21	1217.59	1212	10	7.9		BI-214
0	727.77	46	18	1.52	1454.32	1450	10	23.1		BI-212
0	768.39	31	22	1.39	1535.51	1528	15	38.3		BI-214
0	785.89	21	16	1.20	1570.50	1564	10	43.3		
0	795.35	30	15	1.65	1589.41	1582	12	31.6		AC-228
0	911.21	127	12	1.93	1821.07	1812	16	10.7		AC-228
0	969.24	68	18	1.69	1937.12	1933	10	16.7		AC-228
0	1120.47	67	8	1.95	2239.58	2231	16	15.4		BI-214
0	1238.42	29	24	2.85	2475.55	2465	16	42.3		BI-214
0	1460.86	562	0	1.87	2920.67	2912	18	4.2		K-40
0	1764.51	44	0	1.66	3528.59	3522	12	15.1		BI-214

---- Identified Nuclides ----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	1.166E+01	7.348E-01	2.430E-01	1.138E-02	47.974
TL-208	2.052E-01	2.604E-02	2.544E-02	1.372E-03	8.066
BI-212	4.864E-01	1.155E-01	1.750E-01	9.518E-03	2.780
PB-212	5.802E-01	4.394E-02	3.854E-02	1.950E-03	15.055
BI-214	5.480E-01	3.974E-02	3.163E-02	1.731E-03	17.328
PB-214	5.312E-01	3.847E-02	3.264E-02	1.564E-03	16.276
RA-226	1.157E+00	3.339E-01	4.609E-01	2.298E-02	2.509
AC-228	6.886E-01	5.043E-02	7.044E-02	3.175E-03	9.776
TH-234	1.031E+00	3.860E-01	4.529E-01	4.295E-02	2.277

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	4.630E-02		4.109E-02	1.660E-01	8.246E-03	0.279
MN-54	8.354E-03		5.061E-03	2.432E-02	1.199E-03	0.343
CO-60	1.484E-02		7.794E-03	3.720E-02	1.730E-03	0.399
NB-94	-3.970E-03		5.754E-03	2.251E-02	1.056E-03	-0.176
RU-106	-3.493E-02		4.638E-02	1.495E-01	8.234E-03	-0.234
AG-108M	-5.180E-03		5.693E-03	1.776E-02	9.746E-04	-0.292
AG-110M	-4.403E-03		5.563E-03	1.760E-02	9.846E-04	-0.250
SB-125	6.186E-04		1.452E-02	5.224E-02	2.463E-03	0.012
CS-134	-2.025E-03		4.666E-03	1.588E-02	8.672E-04	-0.128
CS-137	1.131E-02		5.899E-03	2.596E-02	1.455E-03	0.436
EU-152	6.092E-03		2.890E-02	1.284E-01	6.006E-03	0.047
EU-154	2.125E-03		1.504E-02	6.724E-02	3.519E-03	0.032
EU-155	3.061E-02		1.851E-02	7.151E-02	3.339E-03	0.428
RA-223	2.167E-01		7.239E-02	1.303E-01	6.586E-03	1.664
TH-228	3.847E-01		3.760E-01	1.407E+00	6.821E-02	0.273
PA-234	5.347E-03		9.875E-03	3.637E-02	1.788E-03	0.147
U-235	7.016E-02	+	2.026E-02	4.058E-02	2.023E-03	1.729
AM-241	-1.471E-03		1.197E-02	4.416E-02	2.388E-03	-0.033

---- Interference between AC-228 and RA-223 ----

**** AC-228 energy lines ****

Energy	# Disint.	% Error	Comments
209.28	6.914E+04	24.28	
270.23	-----	-----	Line interferes with RA-223
338.32	3.456E+04	15.83	
463.00	4.393E+04	34.14	
794.70	5.043E+04	32.01	
835.50	-----	-----	Line not identified
911.07	4.002E+04	11.64	
964.60	-----	-----	Line not identified
969.11	3.757E+04	17.35	

Average: 3.933E+04 7.50

Interfered energy lines

Nuclide	Energy	Old Area	New Area	Critical Level	New Activity (pCi/GM)	% Error
RA-223	269.46	53.2	8.8	26.3	0.000E+00	0.00
269.46 Line invalidated: New Area less than critical level						
RA-223 has been rejected: Failed abundance Test						

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 27-AUG-2002 21:13
REQUESTOR : CAS_TECH

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CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE 9531-0000-021 FMD

SAMPLE No. : 020827013 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
COUNT TIME : 27-AUG-2002 20:56:54 SAMPLE QUANTITY : 1.55400E+03
SAMPLE TIME : 26-AUG-2002 14:25:00 DETECTOR : DET 5
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	0.06	1.166E+01	QA Results OK
TL-208	583.14	0.46	2.052E-01	QA Results OK
BI-212	727.17	0.60	4.864E-01	QA Results OK
PB-212	238.63	-0.08	5.802E-01	QA Results OK
BI-214	609.31	0.03	5.480E-01	QA Results OK
PB-214	351.92	-0.14	5.312E-01	QA Results OK
RA-226	186.21	-0.40	1.157E+00	QA Results OK
AC-228	911.07	0.14	6.886E-01	QA Results OK
TH-234	63.29	-0.20	1.031E+00	QA Results OK
AVG ENERGY DIFF = 0.05				1.688E+01 = TOTAL GAMMA ACTIVITY

74.77 KeV Peak was used in identifying 2 isotopes
77.10 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
89.88	87.	1.00	1.913E+00	1.231E-03	19.9	P	BI-214	1.236E+01
						P	AC-228	1.595E+00
92.97	155.	1.60	3.402E+00	2.189E-03	21.1	P	PB X-RAY	0.000E+00
						P	AC-228	1.701E+00
						P	TH-234	2.202E+00
184.22	31.	1.06	8.042E-01	5.175E-04	26.7	P		
328.67	50.	1.58	1.844E+00	1.186E-03	33.6	P	BI-212	2.483E+01
511.24	92.	1.48	4.856E+00	3.125E-03	17.5	P	ANN-RD	0.000E+00
785.89	21.	1.20	1.586E+00	1.020E-03	43.3	P	BI-212	1.409E+00
						P	BI-214	8.678E+00
						P	PB-214	2.525E+00

[Handwritten signature]

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 27-AUG-2002 21:13
REQUESTOR : CAS_TECH

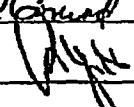
PAGE 2 OF ____

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

Total Unidentified/Rejected Peaks = 6
% Unidentified/Rejected Peaks = 19.35

Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

Performed by: 
Reviewed by: 

**** End Of Report (2 Pages) ****

26-AUG-2002 18:11:35.62

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMPLE 9531-0000-022 FM

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020826027

* SAMPLE GEOMETRY : 1LMARSAND

SAMPLE TIME : 21-AUG-2002 10:45

* GEO EFFICIENCY DATE: 1-JUL-1998

SAMPLE TYPE : DIRT/SEDIMENT

* SAMPLE QUANTITY : 1.62100E+03 GM

DETECTOR : DET 5

* LIBRARY : FSS_DIRT

LAST ENERGY CAL : 26-AUG-2002 07:13

* ENERGY TOLERANCE: 1.00000

KEV/CHANNEL : 5.00707E-01

* HALF LIFE RATIO : 9.00000

START CHANNEL : 100

* END CHANNEL : 4096

ACQ DATE & TIME : 26-AUG-2002 17:54

* DEADTIME (%) : 0.1%

PRESET LIVE TIME : 0 00:16:40

* SENSITIVITY : 5.00000

ELAPSED REAL TIME : 1000.5 Secs

* GAUSSIAN SEN : 10.00000

ELAPSED LIVE TIME : 1000.0 Secs

* CORRECTION FACTOR: 1.00000E+06

DECAYED TO 5 DAYS HOURS

FILE IDENT : CAS\$DISK:[NEU.SAMPLE.RP.NEW]020826027_ADC5_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WMEAN V1.8

Collected by : TORRES

REVIEWED BY :

COMMENTS :

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	63.81	106	363	1.05	127.75	123	10	35.1		TH-234
3	74.86	257	246	1.13	149.81	143	15	11.8	1.27E+00	PB-212
										PB-214
3	77.13	318	183	1.08	154.34	143	15	9.2		PB-214
										PB-212
2	87.50	103	186	1.22	175.06	171	20	24.6	4.20E+00	PB-212
2	92.67	135	201	1.23	185.39	171	20	19.5		
0	185.74	100	192	1.74	371.31	367	11	28.6		RA-226
4	238.59	407	74	1.23	476.89	471	17	6.0	9.52E-01	PB-212
4	241.44	110	84	1.54	482.59	471	17	20.6		PB-214
0	255.35	138	76	1.22	590.31	586	10	14.8		PB-214
0	337.76	135	53	1.54	675.04	668	15	14.5		AC-228
0	351.82	240	49	1.12	703.15	698	12	8.7		PB-214
0	510.81	81	46	1.48	1020.89	1014	13	20.4		
0	563.23	141	38	1.27	1165.66	1160	13	12.4		TL-208
0	603.32	178	22	1.46	1217.83	1212	11	9.1		BI-214
0	661.53	370	12	1.60	1322.21	1316	12	5.5		CS-137
0	727.67	31	34	1.24	1454.45	1448	16	44.4		BI-212
0	911.30	93	18	1.38	1821.69	1816	12	13.9		AC-228

Post-MID Peak Search Report (continued)
Sample ID : 020826027

Page : 2
Acquisition date : 26-AUG-2002 17:54:36

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	934.24	12	15	1.20	1867.56	1863	9	63.8		
0	958.97	56	8	1.82	1937.04	1931	11	16.7		AC-228
0	1220.47	53	17	1.38	2240.13	2233	15	22.4		BI-214
0	1460.44	401	4	1.91	2920.54	2914	14	5.1		K-40
0	1763.95	37	0	1.02	3528.32	3521	14	16.4		BI-214

---- Identified Nuclides ----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	7.979E+00	5.520E-01	1.448E-01	6.784E-03	55.098
CS-137	4.770E-01	3.753E-02	1.923E-02	1.078E-03	24.811
TL-206	1.643E-01	2.223E-02	1.932E-02	1.042E-03	8.503
BI-212	3.159E-01	1.413E-01	1.375E-01	7.479E-03	2.298
PB-212	4.509E-01	3.381E-02	2.874E-02	1.454E-03	15.688
BI-214	4.327E-01	3.678E-02	3.669E-02	2.009E-03	11.794
PB-214	4.284E-01	3.371E-02	3.077E-02	1.475E-03	13.925
RA-226	1.306E+00	3.792E-01	4.423E-01	2.205E-02	2.952
AC-226	5.425E-01	4.973E-02	6.877E-02	3.100E-03	7.888
TH-234	1.114E+00	4.057E-01	4.429E-01	4.201E-02	2.516

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	5.946E-02		5.662E-02	2.103E-01	1.045E-02	0.283
MN-54	-8.222E-04		4.570E-03	1.910E-02	9.417E-04	-0.043
CO-50	1.762E-02		8.869E-03	4.052E-02	1.884E-03	0.435
NB-94	3.846E-04		4.596E-03	1.976E-02	9.273E-04	0.019
RU-100	-1.763E-02		3.641E-02	1.497E-01	8.250E-03	-0.118
AG-106M	8.422E-04		4.433E-03	1.894E-02	1.040E-03	0.044
AG-110M	-3.136E-03		3.654E-03	1.330E-02	7.443E-04	-0.236
SB-121	-1.404E-02		1.495E-02	4.677E-02	2.205E-03	-0.300
CS-134	2.245E-03		4.762E-03	1.788E-02	9.766E-04	0.126
EU-152	3.106E-02		4.245E-02	1.793E-01	8.387E-03	0.173
EU-154	-6.310E-03		1.104E-02	4.645E-02	2.431E-03	-0.136
EU-155	3.120E-02		1.835E-02	6.933E-02	3.237E-03	0.450
RA-223	-1.214E-03		3.605E-02	1.225E-01	6.193E-03	-0.010
TH-228	7.732E-01		3.657E-01	1.381E+00	6.697E-02	0.560
PA-234	2.452E-01	+	2.562E-02	3.758E-02	1.847E-03	6.523
U-235	7.921E-02	+	2.300E-02	3.833E-02	1.911E-03	2.066
AM-241	1.227E-02		1.359E-02	4.988E-02	2.697E-03	0.246

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 26-AUG-2002 18:11
REQUESTOR : CAS_TECH

PAGE 1 OF ____

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE 9531-0000-022 FM

SAMPLE No. : 020826027 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
COUNT TIME : 26-AUG-2002 17:54:36 SAMPLE QUANTITY : 1.62100E+03
SAMPLE TIME : 21-AUG-2002 10:45:00 DETECTOR : DET 5
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	-0.36	7.979E+00	QA Results OK
CS-137	661.65	-0.11	4.770E-01	QA Results OK
TL-208	583.14	0.09	1.643E-01	QA Results OK
BI-212	727.17	0.50	3.159E-01	QA Results OK
PB-212	238.63	-0.04	4.509E-01	QA Results OK
BI-214	609.31	0.01	4.327E-01	QA Results OK
PB-214	351.92	-0.10	4.284E-01	QA Results OK
RA-226	186.21	-0.47	1.306E+00	QA Results OK
AC-228	911.07	0.23	5.425E-01	QA Results OK
TH-234	63.29	0.52	1.114E+00	QA Results OK
AVG ENERGY DIFF = 0.03			1.321E+01 = TOTAL GAMMA ACTIVITY	

74.86 KeV Peak was used in identifying 2 isotopes
77.13 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
92.47	135.	1.23	2.961E+00	1.827E-03	19.5	P	PB X-RAY	0.000E+00
						P	AC-228	1.420E+00
						P	TH-234	1.838E+00
510.81	81.	1.48	4.264E+00	2.631E-03	20.4	U	ANN-RD	0.000E+00
934.24	12.	1.20	1.101E+00	6.792E-04	63.8	P	BI-214	5.758E-01

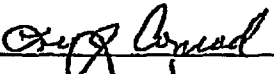
Total Unidentified/Rejected Peaks = 3
% Unidentified/Rejected Peaks = 13.64

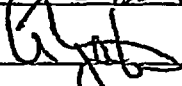
Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 26-AUG-2002 18:11
REQUESTOR : CAS_TECH

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CYAPCO
HADDAM NECK STATION
POST NID QA ANALYSIS

Performed by: 

Reviewed by: 

**** End Of Report (2 Pages) ****

27-AUG-2002 20:46:44.37

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMP[LE 9531-0000-023 FM

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020827008 * SAMPLE GEOMETRY : 1LMAR
SAMPLE TIME : 26-AUG-2002 13:45 * GEO EFFICIENCY DATE: 7-JUN-1999
SAMPLE TYPE : DIRT/SEDIMENT * SAMPLE QUANTITY : 1.18900E+03 GM

DETECTOR : DET 1 * LIBRARY : FSS_DIRT
LAST ENERGY CAL : 27-AUG-2002 07:50 * ENERGY TOLERANCE: 1.00000
KEV/CHANNEL : 5.00828E-01 * HALF LIFE RATIO : 9.00000
START CHANNEL : 100 * END CHANNEL : 4096
ACQ DATE & TIME : 27-AUG-2002 19:56 * DEADTIME (%) : 0.0%
PRESET LIVE TIME : 0 00:16:40 * SENSITIVITY : 5.00000
ELAPSED REAL TIME : 1000.3 Secs * GAUSSIAN SEN : 10.00000
ELAPSED LIVE TIME : 1000.0 Secs * CORRECTION FACTOR: 1.00000E+06
DECAYED TO 1 DAYS HOURS

FILE IDENT : CAS\$DISK: [NEU.SAMPLE.RP.NEW] 020827008_ADC1_DIRTSSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTMEAN V1.8

Collected by : DORULLA

REVIEWED BY :

COMMENTS :

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	74.70	61	106	0.77	149.37	145	8	31.9		PB-212
										PB-214
0	77.23	79	113	0.99	154.41	152	8	26.2		PB-214
										PB-212
0	186.57	37	78	1.61	372.78	368	10	47.3		RA-226
0	238.74	161	68	0.99	476.98	473	8	12.0		PB-212
0	295.17	44	40	0.98	589.73	584	10	30.8		PB-214
0	338.20	41	36	0.95	675.68	670	12	33.4		AC-228
0	351.86	91	25	0.88	702.97	699	9	14.6		PB-214
0	583.65	51	19	0.85	1166.17	1158	12	21.8		TL-208
0	609.46	51	17	1.03	1217.77	1213	11	20.9		BI-214
0	661.92	142	12	1.12	1322.63	1318	11	9.6		CS-137
0	860.82	13	2	1.29	1720.32	1716	8	33.4		TL-208
0	911.54	40	0	1.30	1821.75	1817	11	15.8		AC-228
0	1461.26	161	6	1.97	2921.69	2916	11	8.4		K-40

----- Identified Nuclides -----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	9.575E+00	8.828E-01	5.507E-01	2.111E-02	17.387
CS-137	5.315E-01	5.404E-02	5.256E-02	1.831E-03	10.114
TL-208	1.871E-01	3.648E-02	5.059E-02	1.826E-03	3.699
PB-212	4.611E-01	6.225E-02	7.593E-02	4.721E-03	6.072
BI-214	3.229E-01	6.852E-02	7.868E-02	2.788E-03	4.104
PB-214	4.060E-01	5.485E-02	6.655E-02	2.226E-03	6.101
RA-226	1.218E+00	5.807E-01	7.794E-01	4.589E-02	1.562
AC-228	6.148E-01	8.936E-02	1.727E-01	5.467E-03	3.559

----- Non-Identified Nuclides -----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	-8.738E-02		8.744E-02	2.760E-01	1.108E-02	-0.317
MN-54	-7.038E-03		7.979E-03	3.296E-02	1.114E-03	-0.214
CO-60	1.830E-02		1.542E-02	7.740E-02	2.654E-03	0.236
NB-94	-2.614E-03		6.280E-03	3.025E-02	9.952E-04	-0.086
RU-106	-1.513E-01		1.248E-01	3.613E-01	1.272E-02	-0.419
AG-108M	1.968E-04		8.781E-03	3.511E-02	1.241E-03	0.006
AG-110M	-1.069E-02		9.453E-03	2.677E-02	9.330E-04	-0.399
SB-125	4.541E-02		2.790E-02	1.253E-01	5.044E-03	0.362
CS-134	1.178E-02		8.187E-03	4.038E-02	1.435E-03	0.292
EU-152	-1.505E-02		3.537E-02	1.754E-01	6.513E-03	-0.086
EU-154	-1.394E-02		2.657E-02	1.179E-01	4.782E-03	-0.118
EU-155	-1.372E-02		3.207E-02	1.185E-01	4.153E-03	-0.116
BI-212	2.698E-01		1.131E-01	5.596E-01	1.947E-02	0.482
RA-223	-6.238E-02		5.865E-02	1.935E-01	8.792E-03	-0.322
TH-228	1.424E+00		7.509E-01	3.119E+00	1.493E-01	0.457
PA-234	2.375E-01	+	6.352E-02	8.973E-02	4.707E-03	2.647
TH-234	5.648E-01		4.161E-01	1.734E+00	1.570E-01	0.326
U-235	7.383E-02	+	3.520E-02	5.797E-02	3.382E-03	1.273
AM-241	-2.326E-04		5.021E-02	1.983E-01	1.012E-02	-0.001

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 27-AUG-2002 20:46
REQUESTOR : CAS_TECH

PAGE 1 OF ____

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMP[LE 9531-0000-023 FM

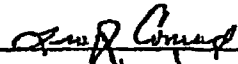
SAMPLE No. : 020827008 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMAR
COUNT TIME : 27-AUG-2002 19:56:46 SAMPLE QUANTITY : 1.18900E+03
SAMPLE TIME : 26-AUG-2002 13:45:00 DETECTOR : DET 1
LIBRARY : FSS_DIRT

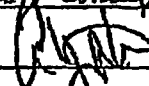
ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	0.46	9.575E+00	QA Results OK
CS-137	661.65	0.27	5.315E-01	QA Results OK
TL-208	583.14	0.51	1.871E-01	QA Results OK
PB-212	238.63	0.11	4.611E-01	QA Results OK
BI-214	609.31	0.15	3.229E-01	QA Results OK
PB-214	351.92	-0.06	4.060E-01	QA Results OK
RA-226	186.21	0.36	1.218E+00	QA Results OK
AC-228	911.07	0.47	6.148E-01	QA Results OK
AVG ENERGY DIFF = 0.28				1.332E+01 = TOTAL GAMMA ACTIVITY

74.70 KeV Peak was used in identifying 2 isotopes
77.23 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
No Unidentified/Rejected Peaks								

Performed by: 

Reviewed by: 

**** End Of Report (1 Page) ****

27-AUG-2002 21:10:36.40

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMPLE 9531-0000-023 FMD

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020827011

* SAMPLE GEOMETRY : 1LMAR

SAMPLE TIME : 26-AUG-2002 13:55

* GEO EFFICIENCY DATE: 7-JUN-1999

SAMPLE TYPE : DIRT/SEDIMENT

* SAMPLE QUANTITY : 1.24600E+03 GM

DETECTOR : DET 1

* LIBRARY : FSS_DIRT

LAST ENERGY CAL : 27-AUG-2002 07:50

* ENERGY TOLERANCE: 1.00000

KEV/CHANNEL : 5.00828E-01

* HALF LIFE RATIO : 9.00000

START CHANNEL : 100

* END CHANNEL : 4096

ACQ DATE & TIME : 27-AUG-2002 20:53

* DEADTIME (%) : 0.0%

PRESET LIVE TIME : 0 00:16:40

* SENSITIVITY : 5.00000

ELAPSED REAL TIME : 1000.1 Secs

* GAUSSIAN SEN : 10.00000

ELAPSED LIVE TIME : 1000.0 Secs

* CORRECTION FACTOR: 1.00000E+06

DECAYED TO 1 DAYS HOURS

FILE IDENT : CAS\$DISK:[NEU.SAMPLE.RP.NEW] 020827011_ADC1_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTIMEAN V1.8 INTERF V2.4

Collected by : DORULLA

REVIEWED BY :

COMMENTS :

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
2	74.84	44	69	1.01	149.65	143	15	35.3	1.68E+00	PB-212
										PB-214
2	77.09	84	69	1.00	154.14	143	15	19.2		PB-214
										PB-212
0	186.16	45	70	1.00	371.96	367	11	39.1		RA-226
2	238.66	187	50	1.13	476.82	472	15	9.4	1.81E+00	PB-212
2	241.48	43	44	1.33	482.46	472	15	35.6		PB-214
0	270.44	23	29	1.00	540.32	534	9	47.8		AC-228
0	295.52	45	33	1.09	590.42	584	10	27.8		PB-214
1	337.98	36	7	1.33	675.24	671	20	25.8	1.14E+00	AC-228
1	338.98	29	9	1.33	677.24	671	20	32.2		
0	352.12	78	53	1.57	703.50	698	14	23.2		PB-214
0	583.65	39	14	1.29	1166.17	1161	10	24.4		TL-208
0	609.60	70	8	1.39	1218.04	1210	16	15.0		BI-214
0	661.92	144	20	1.51	1322.63	1317	15	10.6		CS-137
0	861.17	15	3	0.70	1721.00	1717	8	34.9		TL-208
0	911.38	26	7	1.58	1821.42	1817	9	26.6		AC-228
0	969.86	15	8	1.12	1938.39	1932	11	45.8		AC-228
0	1461.10	170	0	1.84	2921.37	2915	14	7.7		K-40

----- Identified Nuclides -----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	9.678E+00	8.298E-01	4.168E-01	1.597E-02	23.221
CS-137	5.153E-01	5.750E-02	4.473E-02	1.558E-03	11.520
TL-208	1.364E-01	3.013E-02	4.409E-02	1.591E-03	3.093
PB-212	5.119E-01	5.789E-02	5.709E-02	3.550E-03	8.966
BI-214	4.238E-01	6.525E-02	5.028E-02	1.782E-03	8.428
PB-214	3.649E-01	6.014E-02	8.106E-02	2.711E-03	4.501
RA-226	1.414E+00	5.587E-01	6.923E-01	4.076E-02	2.042
AC-228	4.373E-01	7.277E-02	1.648E-01	5.217E-03	2.653

----- Non-Identified Nuclides -----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	4.276E-02		7.283E-02	3.043E-01	1.222E-02	0.141
MN-54	-2.429E-03		7.303E-03	3.372E-02	1.139E-03	-0.072
CO-60	2.198E-02		1.556E-02	7.838E-02	2.687E-03	0.280
NB-94	-1.784E-03		7.845E-03	3.642E-02	1.198E-03	-0.049
RU-106	-5.602E-02		6.704E-02	2.153E-01	7.579E-03	-0.260
AG-108M	-1.049E-02		8.471E-03	2.302E-02	8.132E-04	-0.456
AG-110M	1.176E-02		1.067E-02	4.713E-02	1.642E-03	0.249
SB-125	3.983E-02		2.340E-02	1.102E-01	4.437E-03	0.361
CS-134	-1.269E-03		5.015E-03	2.101E-02	7.465E-04	-0.060
EU-152	8.582E-04		3.965E-02	2.095E-01	7.777E-03	0.004
EU-154	-2.843E-02		3.548E-02	1.390E-01	5.634E-03	-0.205
EU-155	-4.260E-03		3.189E-02	1.196E-01	4.191E-03	-0.036
BI-212	5.664E-02		8.977E-02	4.132E-01	1.437E-02	0.137
RA-223	2.225E-01		1.069E-01	2.253E-01	1.023E-02	0.988
TH-228	-4.379E-01		6.520E-01	2.398E+00	1.148E-01	-0.183
PA-234	-8.393E-03		1.896E-02	7.088E-02	3.718E-03	-0.118
TH-234	4.472E-01		3.646E-01	1.534E+00	1.388E-01	0.292
U-235	8.572E-02	+	3.387E-02	5.819E-02	3.395E-03	1.473
AM-241	6.808E-02		4.533E-02	1.967E-01	1.004E-02	0.346

----- Interference between AC-228 and RA-223 -----

**** AC-228 energy lines ****

Energy	# Disint.	% Error	Comments
209.28	-----	-----	Line not identified
270.23	-----	-----	Line interferes with RA-223
338.32	2.359E+04	26.03	
463.00	-----	-----	Line not identified
794.70	-----	-----	Line not identified
835.50	-----	-----	Line not identified
911.07	1.775E+04	26.78	
964.60	-----	-----	Line not identified
969.11	1.768E+04	45.89	

Average: 1.954E+04 17.46

Interfered energy lines

Nuclide	Energy	Old Area	New Area	Critical Level	New Activity (pCi/GM)	% Error
RA-223	269.46	22.7	11.3	16.0	0.000E+00	0.00
269.46 Line invalidated: New Area less than critical level						
RA-223 has been rejected: Failed abundance Test						

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 27-AUG-2002 21:10
REQUESTOR : CAS_TECH

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CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE 9531-0000-023 FMD

SAMPLE No. : 020827011 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMAR
COUNT TIME : 27-AUG-2002 20:53:38 SAMPLE QUANTITY : 1.24600E+03
SAMPLE TIME : 26-AUG-2002 13:55:00 DETECTOR : DET 1
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	0.30	9.678E+00	QA Results OK
CS-137	661.65	0.27	5.153E-01	QA Results OK
TL-208	583.14	0.51	1.364E-01	QA Results OK
PB-212	238.63	0.03	5.119E-01	QA Results OK
BI-214	609.31	0.29	4.238E-01	QA Results OK
PB-214	351.92	0.20	3.649E-01	QA Results OK
RA-226	186.21	-0.05	1.414E+00	QA Results OK
AC-228	911.07	0.31	4.373E-01	QA Results OK
AVG ENERGY DIFF = 0.23			1.348E+01 = TOTAL GAMMA ACTIVITY	

74.84 KeV Peak was used in identifying 2 isotopes
77.09 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
338.98	29.	1.33	2.159E+00	1.733E-03	32.2	P	AC-228	4.133E-01

Total Unidentified/Rejected Peaks = 1
% Unidentified/Rejected Peaks = 5.88

Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

Performed by: 

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 27-AUG-2002 21:10
REQUESTOR : CAS_TECH

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CYAPCO
HADDAM NECK STATION
POST NID QA ANALYSIS

Reviewed by: _____

**** End Of Report (2 Pages) ****

27-AUG-2002 20:48:47.01

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMPLE 9531-0000-024 FM

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020827009

* SAMPLE GEOMETRY : 1LMAR

SAMPLE TIME : 26-AUG-2002 13:42

* GEO EFFICIENCY DATE: .7-JUN-1999

SAMPLE TYPE : DIRT/SEDIMENT

* SAMPLE QUANTITY : 1.34600E+03 GM

DETECTOR : DET 2

* LIBRARY : FSS DIRT

LAST ENERGY CAL : 27-AUG-2002 07:14

* ENERGY TOLERANCE: 1.00000

KEV/CHANNEL : 5.00995E-01

* HALF LIFE RATIO : 9.00000

START CHANNEL : 100

* END CHANNEL : 4096

ACQ DATE & TIME : 27-AUG-2002 19:58

* DEADTIME (%) : 0.0%

PRESET LIVE TIME : 0 00:16:40

* SENSITIVITY : 5.00000

ELAPSED REAL TIME : 1000.2 Secs

* GAUSSIAN SEN : 10.00000

ELAPSED LIVE TIME : 1000.0 Secs

* CORRECTION FACTOR: 1.00000E+06

DECAYED TO 1 DAYS HOURS

FILE IDENT : CAS\$DISK:[NEU.SAMPLE.RP.NEW]020827009_ADC2_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTMEAN V1.8

Collected by : TORRES

REVIEWED BY :

COMMENTS :

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	76.63	124	185	1.01	153.55	148	11	23.1		PB-214 PB-212
0	186.27	43	81	0.97	372.46	366	9	40.4		RA-226
2	238.49	274	49	1.02	476.75	472	21	7.2	1.17E+00	PB-212
2	240.90	41	46	1.30	481.56	472	21	41.9		
2	241.88	36	45	1.40	483.51	472	21	43.7		PB-214
1	295.28	75	23	1.35	590.17	583	20	16.3	1.36E+00	PB-214
1	300.08	33	13	1.35	599.75	583	20	24.0		
0	338.26	46	40	1.07	676.03	673	9	28.7		AC-228
0	351.90	146	34	1.19	703.27	698	12	11.5		PB-214
0	463.11	31	15	1.22	925.47	920	12	31.1		AC-228
0	511.14	61	22	1.57	1021.44	1016	14	22.0		
0	582.86	91	18	0.94	1164.76	1159	12	14.1		TL-208
0	609.09	112	6	1.08	1217.20	1211	12	10.4		BI-214
0	662.53	48	47	1.74	1324.03	1316	18	35.8		CS-137
0	728.89	26	26	0.66	1456.69	1449	17	49.5		
0	911.11	57	22	1.57	1821.10	1813	15	22.3		AC-228
0	968.86	21	9	1.13	1936.62	1932	9	33.8		AC-228
0	1460.50	275	8	2.03	2920.69	2913	16	6.5		K-40

----- Identified Nuclides -----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	9.083E+00	6.812E-01	3.578E-01	1.367E-02	25.388
CS-137	1.020E-01	3.672E-02	2.870E-02	9.966E-04	3.554
TL-208	1.736E-01	2.519E-02	2.052E-02	7.384E-04	8.462
PB-212	4.915E-01	4.659E-02	4.175E-02	2.591E-03	11.771
BI-214	4.049E-01	4.453E-02	2.441E-02	8.623E-04	16.585
PB-214	3.894E-01	3.694E-02	4.684E-02	1.562E-03	8.315
RA-226	9.104E-01	3.719E-01	4.643E-01	2.729E-02	1.961
AC-228	4.301E-01	6.325E-02	1.290E-01	4.072E-03	3.334

----- Non-Identified Nuclides -----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	-2.771E-03		4.787E-02	1.777E-01	7.115E-03	-0.016
MN-54	-4.325E-03		7.166E-03	2.861E-02	9.639E-04	-0.151
CO-60	1.194E-02		9.016E-03	4.500E-02	1.538E-03	0.265
NB-94	-2.211E-03		6.701E-03	2.803E-02	9.197E-04	-0.079
RU-106	-3.142E-02		3.858E-02	1.620E-01	5.684E-03	-0.194
AG-108M	-1.433E-03		5.865E-03	2.501E-02	8.811E-04	-0.057
AG-110M	-2.090E-03		8.040E-03	3.055E-02	1.061E-03	-0.068
SB-125	6.422E-03		1.905E-02	7.187E-02	2.884E-03	0.089
CS-134	2.003E-03		3.892E-03	1.878E-02	6.650E-04	0.107
EU-152	1.171E-04		3.320E-02	1.540E-01	5.699E-03	0.001
EU-154	2.787E-02		2.924E-02	1.338E-01	5.414E-03	0.208
EU-155	-1.384E-02		2.308E-02	8.216E-02	2.881E-03	-0.168
BI-212	3.369E-01		9.018E-02	4.323E-01	1.499E-02	0.779
RA-223	5.427E-02		3.886E-02	1.547E-01	7.013E-03	0.351
TH-228	1.295E+00		4.997E-01	2.079E+00	9.941E-02	0.623
PA-234	-6.366E-03		1.426E-02	5.172E-02	2.711E-03	-0.123
TH-234	6.840E-01		2.862E-01	1.170E+00	1.057E-01	0.585
U-235	5.522E-02	+	2.255E-02	4.848E-02	2.823E-03	1.139
AM-241	1.610E-02		2.572E-02	1.041E-01	5.272E-03	0.155

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 27-AUG-2002 20:48
REQUESTOR : CAS_TECH

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CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE 9531-0000-024 FM

SAMPLE No. : 020827009 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMAR
COUNT TIME : 27-AUG-2002 19:58:05 SAMPLE QUANTITY : 1.34600E+03
SAMPLE TIME : 26-AUG-2002 13:42:00 DETECTOR : DET 2
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	-0.30	9.083E+00	QA Results OK
CS-137	661.65	0.88	1.020E-01	QA Results OK
TL-208	583.14	-0.28	1.736E-01	QA Results OK
PB-212	238.63	-0.13	4.915E-01	QA Results OK
BI-214	609.31	-0.22	4.049E-01	QA Results OK
PB-214	351.92	-0.02	3.894E-01	QA Results OK
RA-226	186.21	0.05	9.104E-01	QA Results OK
AC-228	911.07	0.04	4.301E-01	QA Results OK
AVG ENERGY DIFF = 0.00				1.198E+01 = TOTAL GAMMA ACTIVITY

76.63 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
240.90	41.	1.30	1.623E+00	1.206E-03	41.9	PB-212		
300.08	33.	1.35	1.543E+00	1.146E-03	24.0	PB-212	PB-212	9.141E-01
511.14	61.	1.57	4.361E+00	3.240E-03	22.0	ANN-RD	ANN-RD	0.000E+00
728.89	26.	0.66	2.499E+00	1.856E-03	49.5			

Total Unidentified/Rejected Peaks = 4

% Unidentified/Rejected Peaks = 22.22

Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 27-AUG-2002 20:48
REQUESTOR : CAS_TECH

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CYAPCO
HADDAM NECK STATION
POST NID QA ANALYSIS

Performed by: *Ken J. Conrad*

Reviewed by: *[Signature]*

**** End Of Report (2 Pages) ****

27-AUG-2002 20:51:21.71

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMPLE 9531-0000-024FMD

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020827010

* SAMPLE GEOMETRY : 1LMARSAND

SAMPLE TIME : 26-AUG-2002 13:50

* GEO EFFICIENCY DATE: 1-JUL-1998

SAMPLE TYPE : DIRT/SEDIMENT

* SAMPLE QUANTITY : 1.46700E+03 GM

DETECTOR : DET 5

* LIBRARY : FSS_DIRT

LAST ENERGY CAL : 27-AUG-2002 16:18

* ENERGY TOLERANCE: 1.00000

KEV/CHANNEL : 5.00876E-01

* HALF LIFE RATIO : 9.00000

START CHANNEL : 100

* END CHANNEL : 4096

ACQ DATE & TIME : 27-AUG-2002 20:00

* DEADTIME (%) : 0.0%

PRESET LIVE TIME : 0 00:16:40

* SENSITIVITY : 5.00000

ELAPSED REAL TIME : 1000.5 Secs

* GAUSSIAN SEN : 10.00000

ELAPSED LIVE TIME : 1000.0 Secs

* CORRECTION FACTOR: 1.00000E+06

DECAYED TO 1 DAYS HOURS

FILE IDENT : CAS\$DISK: [NEU.SAMPLE.RP.NEW] 020827010_ADC5_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTMEAN V1.8

Collected by : TORRES

REVIEWED BY :

COMMENTS :

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	63.33	101	238	1.06	126.85	123	9	29.3		TH-234
3	74.81	207	174	1.07	149.78	144	14	12.1	8.67E-01	PB-212
										PB-214
3	77.07	290	153	0.98	154.29	144	14	9.4		PB-214
										PB-212
0	87.10	97	218	1.05	174.32	171	8	28.4		PB-212
2	92.57	69	90	0.97	185.24	183	7	23.2	2.48E+00	
2	93.36	80	121	0.95	186.82	183	7	26.7		
0	186.17	83	160	1.33	372.16	368	12	33.1		RA-226
1	238.60	405	58	1.06	476.88	472	16	5.8	1.28E+00	PB-212
1	240.56	38	63	1.21	480.78	472	16	59.7		
1	241.78	59	61	1.21	483.22	472	16	27.4		PB-214
1	295.23	111	42	1.27	589.98	586	23	14.2	1.26E+00	PB-214
1	300.13	30	38	1.28	599.77	586	23	41.6		
0	338.71	85	51	1.12	676.84	671	13	20.6		AC-228
0	352.04	206	59	1.13	703.47	698	12	10.3		PB-214
0	463.56	30	31	1.38	926.29	920	14	43.7		AC-228
0	511.27	76	30	1.64	1021.60	1013	17	20.0		
0	583.15	116	20	1.37	1165.25	1160	10	11.8		TL-208

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	609.44	129	27	1.39	1217.80	1213	11	12.0		BI-214
0	661.62	113	15	1.59	1322.09	1316	12	11.6		CS-137
0	727.25	30	16	0.69	1453.27	1448	13	32.8		BI-212
0	795.23	18	4	0.78	1589.17	1585	8	30.4		AC-228
0	911.43	75	9	2.09	1821.50	1817	9	13.6		AC-228
1	964.73	26	15	1.80	1928.09	1923	19	29.8	1.25E+00	AC-228
1	969.09	63	10	1.80	1936.81	1923	19	16.1		AC-228
0	1120.90	40	8	1.71	2240.43	2235	15	23.5		BI-214
0	1460.77	435	4	1.83	2920.50	2914	14	4.9		K-40
0	1764.40	23	5	1.93	3528.38	3521	12	29.2		BI-214

---- Identified Nuclides ----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	9.563E+00	6.469E-01	1.585E-01	7.423E-03	60.349
CS-137	1.609E-01	2.078E-02	1.512E-02	8.475E-04	10.637
TL-208	1.494E-01	1.933E-02	1.764E-02	9.513E-04	8.472
BI-212	3.386E-01	1.124E-01	1.198E-01	6.516E-03	2.826
PB-212	4.936E-01	3.663E-02	3.049E-02	1.542E-03	16.187
BI-214	3.406E-01	3.714E-02	4.219E-02	2.310E-03	8.074
PB-214	3.856E-01	3.339E-02	3.912E-02	1.875E-03	9.856
RA-226	1.195E+00	3.999E-01	4.143E-01	2.066E-02	2.886
AC-228	5.107E-01	4.502E-02	7.934E-02	3.576E-03	6.437
TH-234	1.179E+00	3.630E-01	4.042E-01	3.834E-02	2.918

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	-1.894E-02		4.744E-02	1.617E-01	8.035E-03	-0.117
MN-54	-7.092E-03		4.833E-03	1.755E-02	8.652E-04	-0.404
CO-60	3.796E-03		4.995E-03	2.511E-02	1.168E-03	0.151
NB-94	1.773E-03		5.737E-03	2.477E-02	1.162E-03	0.072
RU-106	3.684E-03		4.404E-02	1.655E-01	9.116E-03	0.022
AG-108M	-3.032E-04		5.657E-03	2.018E-02	1.108E-03	-0.015
AG-110M	-6.699E-03		5.673E-03	1.665E-02	9.317E-04	-0.402
SB-125	1.842E-02		1.392E-02	5.739E-02	2.706E-03	0.321
CS-134	1.110E-04		5.611E-03	1.997E-02	1.090E-03	0.006
EU-152	6.285E-02		2.648E-02	1.523E-01	7.122E-03	0.413
EU-154	4.420E-04		1.559E-02	6.907E-02	3.614E-03	0.006
EU-155	5.507E-02		1.645E-02	6.925E-02	3.233E-03	0.795
RA-223	1.276E-02		2.862E-02	1.062E-01	5.371E-03	0.120
TH-228	5.254E-01		3.692E-01	1.410E+00	6.834E-02	0.373
PA-234	1.049E-03		8.354E-03	3.086E-02	1.517E-03	0.034
U-235	7.252E-02	+	2.426E-02	3.976E-02	1.982E-03	1.824
AM-241	1.358E-02		1.188E-02	4.620E-02	2.498E-03	0.294

REPORT NAME : QA CHECK (V9.1)
 REPORT DATE : 27-AUG-2002 20:51
 REQUESTOR : CAS_TECH

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CYAPCO
 HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE 9531-0000-024FMD

SAMPLE No. : 020827010 OPERATOR NAME : CAS
 SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
 COUNT TIME : 27-AUG-2002 20:00:28 SAMPLE QUANTITY : 1.46700E+03
 SAMPLE TIME : 26-AUG-2002 13:50:00 DETECTOR : DET 5
 LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	-0.03	9.563E+00	QA Results OK
CS-137	661.65	-0.03	1.609E-01	QA Results OK
TL-208	583.14	0.01	1.494E-01	QA Results OK
BI-212	727.17	0.08	3.386E-01	✓ * Peak FWHM = 0.69
PB-212	238.63	-0.02	4.936E-01	QA Results OK
BI-214	609.31	0.13	3.406E-01	QA Results OK
PB-214	351.92	0.12	3.856E-01	QA Results OK
RA-226	186.21	-0.04	1.195E+00	QA Results OK
AC-228	911.07	0.36	5.107E-01	QA Results OK
TH-234	63.29	0.04	1.179E+00	QA Results OK
AVG ENERGY DIFF = 0.06			1.432E+01	= TOTAL GAMMA ACTIVITY

74.81 KeV Peak was used in identifying 2 isotopes
 77.07 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
92.57	69.	0.97	1.526E+00	1.040E-03	23.2	P	PB_X-RAY	0.000E+00
						P	AC-228	8.080E-01
						P	TH-234	1.046E+00
93.36	80.	0.95	1.750E+00	1.193E-03	26.7	P	AC-228	9.269E-01
						P	TH-234	1.200E+00
240.56	38.	1.21	1.131E+00	7.706E-04	59.7	P	Bi	
300.13	30.	1.28	1.031E+00	7.027E-04	41.6	P	PB-212	5.604E-01
511.27	76.	1.64	4.012E+00	2.735E-03	20.0	G	ANN-RD	0.000E+00

Agate

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 27-AUG-2002 20:51
REQUESTOR : CAS_TECH

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CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

Total Unidentified/Rejected Peaks = 5
% Unidentified/Rejected Peaks = 18.52

Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

Performed by: *Greg J. Conrad*

Reviewed by: *R. Gato*

**** End Of Report (2 Pages) ****

26-AUG-2002 14:54:23.78

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMPLE: 9531-0000-025FM

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020826015

* SAMPLE GEOMETRY : 1LMARSAND

SAMPLE TIME : 22-AUG-2002 09:50

* GEO EFFICIENCY DATE: 24-SEP-1997

SAMPLE TYPE : DIRT/SEDIMENT

* SAMPLE QUANTITY : 1.49400E+03 GM

DETECTOR : DET 1

* LIBRARY : FSS_DIRT

LAST ENERGY CAL : 26-AUG-2002 08:36

* ENERGY TOLERANCE: 1.00000

KEV/CHANNEL : 5.00823E-01

* HALF LIFE RATIO : 9.00000

START CHANNEL : 100

* END CHANNEL : 4096

ACQ DATE & TIME : 26-AUG-2002 14:37

* DEADTIME (%) : 0.0%

PRESET LIVE TIME : 0 00:16:40

* SENSITIVITY : 5.00000

ELAPSED REAL TIME : 1000.2 Secs

* GAUSSIAN SEN : 10.00000

ELAPSED LIVE TIME : 1000.0 Secs

* CORRECTION FACTOR: 1.00000E+06

DECAYED TO 4 DAYS HOURS

FILE IDENT : CAS\$DISK:[NEU.SAMPLE.RP.NEW]020826015_ADC1_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTIMEAN V1.8

Collected by : TORRES, E

REVIEWED BY :

COMMENTS :

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw-%Err	Fit	Nuclides
3	74.82	81	88	1.09	149.57	143	19 22.9	2.09E+00	PB-212
									PB-214
3	77.21	123	84	1.10	154.36	143	19 15.7		PB-214
									PB-212
0	93.20	53	111	1.28	186.28	183	8 37.2		
0	185.46	37	85	1.00	370.54	368	9 47.8		RA-226
0	209.31	40	44	1.09	418.19	414	8 32.4		AC-228
1	238.65	265	39	1.14	476.78	472	26 7.3	2.53E+00	PB-212
1	241.15	35	45	1.20	481.78	472	26 42.2		
1	242.26	30	46	1.09	484.00	472	26 43.8		PB-214
2	295.10	71	23	1.10	589.55	583	12 18.1	2.33E+00	PB-214
2	296.08	23	24	1.40	591.51	583	12 57.5		
0	338.53	32	26	0.97	676.32	672	8 32.3		AC-228
0	351.92	100	30	1.03	703.06	699	10 14.3		PB-214
0	511.43	25	26	0.93	1021.80	1016	12 46.7		
0	583.33	79	14	0.74	1165.50	1160	11 14.5		TL-208
0	609.22	75	17	1.17	1317.25	1210	14 16.6		BI-214
0	661.71	41	14	1.39	1322.17	1318	12 23.2		CS-137
0	911.00	49	4	1.48	1820.62	1813	15 16.6		AC-228

Post-NID Peak Search Report (continued)

Page : 2

Sample ID : 020826015

Acquisition date : 26-AUG-2002 14:37:24

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	969.56	26	9	1.31	1937.73	1932	12	30.0		AC-228
0	1460.92	191	0	2.45	2920.90	2915	12	7.2		K-40

----- Identified Nuclides -----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	9.875E+00	8.552E-01	3.799E-01	1.808E-02	25.995
CS-137	1.268E-01	3.024E-02	3.864E-02	2.212E-03	3.280
TL-208	2.188E-01	3.381E-02	4.188E-02	2.294E-03	5.224
PB-212	6.404E-01	5.605E-02	5.771E-02	2.782E-03	11.096
BI-214	3.905E-01	6.838E-02	6.503E-02	3.622E-03	6.004
PB-214	4.210E-01	4.786E-02	6.472E-02	3.007E-03	6.504
RA-226	1.034E+00	4.970E-01	6.941E-01	3.373E-02	1.490
AC-228	5.738E-01	7.402E-02	1.119E-01	5.187E-03	5.129

----- Non-Identified Nuclides -----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	4.657E-02		7.591E-02	3.072E-01	1.535E-02	0.152
MN-54	4.716E-03		9.765E-03	4.485E-02	2.272E-03	0.105
CO-60	1.866E-02		1.392E-02	6.980E-02	3.289E-03	0.267
NB-94	1.437E-02		9.170E-03	4.755E-02	2.295E-03	0.302
RU-106	7.378E-02		6.496E-02	3.158E-01	1.772E-02	0.234
AG-108M	1.023E-02		7.358E-03	3.611E-02	2.017E-03	0.283
AG-110M	1.421E-03		9.528E-03	3.654E-02	2.088E-03	0.039
SB-125	2.154E-02		1.856E-02	8.564E-02	4.036E-03	0.252
CS-134	3.635E-03		7.250E-03	3.077E-02	1.709E-03	0.118
EU-152	4.950E-04		3.618E-02	1.901E-01	9.028E-03	0.003
EU-154	3.788E-02		2.957E-02	1.605E-01	8.540E-03	0.236
EU-155	-6.921E-04		3.120E-02	1.176E-01	5.045E-03	-0.006
BI-212	1.061E-01		1.033E-01	4.581E-01	2.552E-02	0.232
RA-223	6.939E-02		5.451E-02	2.161E-01	1.021E-02	0.321
TH-228	3.505E-01		7.573E-01	2.928E+00	1.513E-01	0.120
PA-234	3.503E-01	+	5.900E-02	9.224E-02	5.526E-03	3.798
TH-234	4.352E-01		4.768E-01	1.904E+00	2.551E-01	0.229
U-235	6.273E-02	+	3.015E-02	5.740E-02	2.789E-03	1.093
AM-241	9.844E-03		4.724E-02	1.908E-01	2.609E-02	0.052

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 26-AUG-2002 14:54
REQUESTOR : CAS_TECH

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CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE: 9531-0000-025FM

SAMPLE No. : 020826015 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
COUNT TIME : 26-AUG-2002 14:37:24 SAMPLE QUANTITY : 1.49400E+03
SAMPLE TIME : 22-AUG-2002 09:50:00 DETECTOR : DET 1
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	0.12	9.875E+00	QA Results OK
CS-137	661.65	0.06	1.268E-01	QA Results OK
TL-208	583.14	0.19	2.188E-01	QA Results OK
PB-212	238.63	0.02	6.404E-01	QA Results OK
BI-214	609.31	-0.09	3.905E-01	QA Results OK
PB-214	351.92	0.00	4.210E-01	QA Results OK
RA-226	186.21	-0.75	1.034E+00	QA Results OK
AC-228	911.07	-0.07	5.738E-01	QA Results OK
AVG ENERGY DIFF = -0.07			1.328E+01	= TOTAL GAMMA ACTIVITY

74.82 KeV Peak was used in identifying 2 isotopes
77.21 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
93.20	53.	1.28	3.037E+00	2.033E-03	37.2	P	AC-228	1.579E+00
						U	TH-234	2.045E+00
241.15	35.	1.20	2.102E+00	1.407E-03	42.2	P	PB-214	5.110E-01
296.08	23.	1.40	1.616E+00	1.082E-03	57.5	P	PB-214	1.533E-01
511.43	25.	0.93	2.802E+00	1.876E-03	46.7	U	ANN-RD	0.000E+00

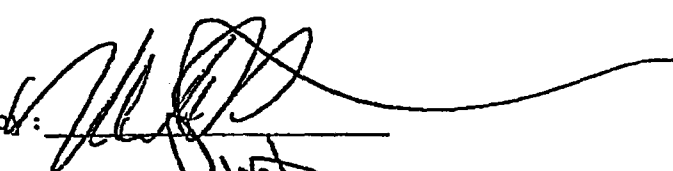
Total Unidentified/Rejected Peaks = 4
% Unidentified/Rejected Peaks = 21.05

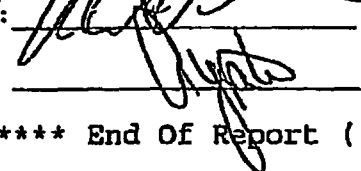
Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 26-AUG-2002 14:54
REQUESTOR : CAS_TECH

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CYAPCO
HADDAM NECK STATION
POST NID QA ANALYSIS

Performed by: 

Reviewed by: 

**** End Of Report (2 Pages) ****

26-AUG-2002 14:55:31.59

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMPLE: 9531-0000-026FM

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020826016

* SAMPLE GEOMETRY : 1LMARSAND

SAMPLE TIME : 22-AUG-2002 09:55

* GEO EFFICIENCY DATE: 19-AUG-1997

SAMPLE TYPE : DIRT/SEDIMENT

* SAMPLE QUANTITY : 1.43700E+03 GM

DETECTOR : DET 2

* LIBRARY : FSS_DIRT

LAST ENERGY CAL : 26-AUG-2002 07:54

* ENERGY TOLERANCE: 1.00000

KEV/CHANNEL : 5.01038E-01

* HALF LIFE RATIO : 9.00000

START CHANNEL : 100

* END CHANNEL : 4096

ACQ DATE & TIME : 26-AUG-2002 14:38

* DEADTIME (%) : 0.0%

PRESET LIVE TIME : 0 00:16:40

* SENSITIVITY : 5.00000

ELAPSED REAL TIME : 1000.2 Secs

* GAUSSIAN SEN : 10.00000

ELAPSED LIVE TIME : 1000.0 Secs

* CORRECTION FACTOR: 1.00000E+06

DECAYED TO 4 DAYS HOURS

FILE IDENT : CAS\$DISK:[NEU.SAMPLE.RP.NEW] 020826016_ADC2_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTMEAN V1.8

Collected by : SOSA

REVIEWED BY :

COMMENTS :

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
2	74.70	146	127	1.09	149.67	144	17	14.9	3.53E+00	PB-212
										PB-214
2	77.17	213	93	1.07	154.60	144	17	10.1		PB-214
										PB-212
1	87.35	74	133	1.10	174.93	171	12	27.7	6.04E+00	PB-212
1	89.94	45	87	0.95	180.08	171	12	39.1		
3	92.63	45	84	1.29	185.46	183	9	37.8	1.08E+00	
3	93.72	39	120	1.34	187.64	183	9	53.2		
0	186.14	91	161	1.34	372.15	365	14	31.3		RA-226
0	209.48	56	83	1.63	418.75	413	9	32.7		AC-228
8	237.46	39	65	2.55	474.64	471	9	56.1	7.60E+00	
8	238.59	302	71	0.94	476.89	471	9	7.3		PB-212
0	242.10	65	67	0.89	483.90	481	7	25.1		PB-214
0	295.35	90	62	1.25	590.24	585	10	19.4		PB-214
0	299.87	40	32	1.36	599.27	595	8	28.8		
0	338.15	71	62	1.52	675.74	671	11	24.5		AC-228
0	352.11	158	59	0.98	703.61	698	12	12.9		PB-214
0	462.56	26	35	0.68	924.26	916	13	51.9		AC-228
0	511.14	64	30	1.93	1021.34	1015	14	22.3		

Sample ID : 020826016

Acquisition date : 26-AUG-2002 14:38:32

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	583.28	96	33	1.25	1165.51	1159	14	16.1		TL-208
0	609.11	137	20	1.21	1217.14	1210	13	10.8		BI-214
0	661.74	131	31	1.25	1322.33	1317	12	12.3		CS-137
0	727.98	18	20	0.81	1454.74	1447	10	51.7		BI-212
0	840.60	13	4	1.40	1679.94	1675	9	41.0		
0	911.29	95	21	1.31	1821.31	1813	13	14.0		AC-228
0	969.68	47	17	0.80	1938.11	1931	14	24.0		AC-228
0	1460.71	294	10	2.01	2920.95	2914	14	6.3		K-40

----- Identified Nuclides -----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	9.831E+00	7.760E-01	3.619E-01	1.729E-02	27.168
CS-137	2.811E-01	3.819E-02	3.640E-02	2.104E-03	7.721
TL-208	1.869E-01	3.171E-02	3.136E-02	1.721E-03	5.959
BI-212	3.039E-01	1.579E-01	2.556E-01	1.432E-02	1.189
PB-212	5.636E-01	4.712E-02	5.366E-02	2.566E-03	10.502
BI-214	5.023E-01	6.121E-02	3.983E-02	2.228E-03	12.611
PB-214	4.726E-01	4.935E-02	5.183E-02	2.388E-03	9.118
RA-226	1.988E+00	6.290E-01	6.010E-01	2.917E-02	3.308
AC-228	7.642E-01	8.045E-02	9.863E-02	4.569E-03	7.748

----- Non-Identified Nuclides -----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	4.421E-02		8.663E-02	3.106E-01	1.546E-02	0.142
MN-54	5.258E-03		7.162E-03	3.287E-02	1.666E-03	0.160
CO-60	-4.240E-03		8.474E-03	3.415E-02	1.626E-03	-0.124
NB-94	1.156E-02		7.243E-03	3.581E-02	1.728E-03	0.323
RU-106	-1.394E-01		6.047E-02	1.911E-01	1.078E-02	-0.729
AG-108M	-9.944E-03		6.713E-03	2.433E-02	1.366E-03	-0.409
AG-110M	3.602E-03		7.464E-03	3.104E-02	1.790E-03	0.116
SB-125	1.982E-02		1.832E-02	7.569E-02	3.553E-03	0.262
CS-134	5.505E-03		4.702E-03	2.312E-02	1.289E-03	0.238
EU-152	8.380E-02		3.769E-02	2.197E-01	1.050E-02	0.381
EU-154	3.035E-02		2.420E-02	1.209E-01	6.451E-03	0.251
EU-155	4.654E-02		2.894E-02	1.123E-01	4.895E-03	0.414
RA-223	8.150E-02		4.300E-02	1.726E-01	8.097E-03	0.472
TH-228	2.942E-01		6.873E-01	2.506E+00	1.273E-01	0.117
PA-234	4.173E-01	+	4.821E-02	6.788E-02	3.842E-03	6.148
TH-234	1.207E-01		3.445E-01	1.273E+00	1.493E-01	0.095
U-235	1.206E-01	+	3.816E-02	5.395E-02	2.619E-03	2.236
AM-241	-1.342E-02		3.958E-02	1.427E-01	1.461E-02	-0.094

REPORT NAME : QA_CHECK (V9.1)
 REPORT DATE : 26-AUG-2002 14:55
 REQUESTOR : CAS_TECH

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CYAPCO
 HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE: 9531-0000-026FM

SAMPLE No. : 020826016 OPERATOR NAME : CAS
 SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
 COUNT TIME : 26-AUG-2002 14:38:32 SAMPLE QUANTITY : 1.43700E+03
 SAMPLE TIME : 22-AUG-2002 09:55:00 DETECTOR : DET 2
 LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	-0.09	9.831E+00	QA Results OK
CS-137	661.65	0.09	2.811E-01	QA Results OK
TL-208	583.14	0.14	1.869E-01	QA Results OK
BI-212	727.17	0.81	3.039E-01	* Peak FWHM = 0.81
PB-212	238.63	-0.03	5.636E-01	QA Results OK
BI-214	609.31	-0.20	5.023E-01	QA Results OK
PB-214	351.92	0.19	4.726E-01	QA Results OK
RA-226	186.21	-0.07	1.988E+00	QA Results OK
AC-228	911.07	0.22	7.642E-01	QA Results OK
AVG ENERGY DIFF = 0.12			1.489E+01	= TOTAL GAMMA ACTIVITY

74.70 KeV Peak was used in identifying 2 isotopes
 77.17 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
89.94	45.	0.95	1.882E+00	1.309E-03	39.1	P	BI-214	1.315E+01
						P	AC-228	1.695E+00
92.63	45.	1.29	1.839E+00	1.280E-03	37.8	P	PB X-RAY	0.000E+00
						P	AC-228	9.940E-01
						U	TH-234	1.287E+00
93.72	39.	1.34	1.591E+00	1.107E-03	53.2	P	AC-228	8.600E-01
237.46	39.	2.55	1.679E+00	1.168E-03	56.1	P		
299.87	40.	1.36	2.056E+00	1.431E-03	28.8	P	PB-212	1.141E+00
511.14	64.	1.93	4.980E+00	3.466E-03	22.3	P	ANN-RD	0.000E+00
840.60	13.	1.40	1.513E+00	1.053E-03	41.0	P	AC-228	3.045E+00

Agst

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 26-AUG-2002 14:55
REQUESTOR : CAS_TECH

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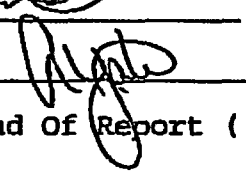
CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

Total Unidentified/Rejected Peaks = 7
% Unidentified/Rejected Peaks = 28.00

Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

Performed by: 

Reviewed by: 

**** End Of Report (2 Pages) ****

26-AUG-2002 16:01:30.54

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMPLE 9531-0000-027

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020826019 * SAMPLE GEOMETRY : 1LMARSAND
SAMPLE TIME : 22-AUG-2002 10:36 * GEO EFFICIENCY DATE: 19-AUG-1997
SAMPLE TYPE : DIRT/SEDIMENT * SAMPLE QUANTITY : 1.53000E+03 GM

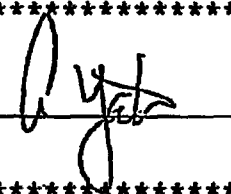
DETECTOR : DET 2 * LIBRARY : FSS DIRT
LAST ENERGY CAL : 26-AUG-2002 07:54 * ENERGY TOLERANCE: 1.00000
KEV/CHANNEL : 5.01038E-01 * HALF LIFE RATIO : 9.00000
START CHANNEL : 100 * END CHANNEL : 4096
ACQ DATE & TIME : 26-AUG-2002 15:44 * DEADTIME (%) : 0.1%
PRESET LIVE TIME : 0 00:16:40 * SENSITIVITY : 5.00000
ELAPSED REAL TIME : 1000.6 Secs * GAUSSIAN SEN : 10.00000
ELAPSED LIVE TIME : 1000.0 Secs * CORRECTION FACTOR: 1.00000E+06

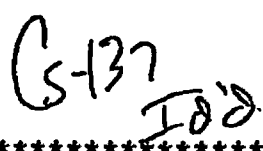
DECAYED TO 4 DAYS HOURS

FILE IDENT : CASSDISK: [NEU.SAMPLE.RP.NEW] 020826019_ADC2_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTMEAN V1.8 INTERF V2.4

Collected by : TORRES

REVIEWED BY : 

COMMENTS : 

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
3	74.73	98	124	1.08	149.73	146	15	20.2	3.00E+00	PB-212
										PB-214
3	77.16	169	125	1.00	154.57	146	15	12.7		PB-214
										PB-212
0	87.09	73	95	1.40	174.41	172	6	24.0		PB-212
0	93.74	48	186	1.39	187.68	182	9	53.2		
0	186.06	73	150	1.41	371.99	366	13	36.8		RA-226
6	238.58	368	56	0.96	476.87	472	17	6.2	1.45E+00	PB-212
6	241.53	61	101	2.16	482.77	472	17	49.6		PB-214
0	270.11	24	47	1.15	539.84	535	10	63.7		RA-223
0	295.04	126	52	1.10	589.63	585	9	13.7		PB-214
0	300.20	21	45	1.08	599.92	596	8	58.8		
0	338.26	76	48	0.87	675.94	672	9	20.0		AC-228
0	351.94	166	83	1.31	703.28	696	15	14.3		PB-214
0	511.62	54	32	1.56	1022.29	1017	14	26.6		
0	583.49	88	27	1.24	1165.93	1159	14	16.5		TL-208
0	609.21	138	20	1.34	1217.32	1209	14	11.0		BI-214
0	662.28	90	41	1.72	1323.41	1316	17	19.7		CS-137
0	727.26	21	17	0.65	1453.32	1449	9	42.6		BI-212

Post-NID Peak Search Report (continued)

Page : 2

Sample ID : 020826019

Acquisition date : 26-AUG-2002 15:44:31

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	794.64	36	3	1.78	1588.03	1582	11	19.0		AC-228
0	911.23	98	4	1.84	1821.20	1814	15	10.9		AC-228
0	969.53	44	28	0.93	1937.82	1930	13	29.2		AC-228
0	1460.52	320	0	1.89	2920.57	2911	18	5.6		K-40
0	1753.86	17	0	1.35	3528.29	3523	10	24.3		BI-214

---- Identified Nuclides ----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	1.006E+01	7.396E-01	2.322E-01	1.109E-02	43.312
CS-137	1.804E-01	3.696E-02	3.034E-02	1.754E-03	5.946
TL-208	1.608E-01	2.802E-02	2.831E-02	1.554E-03	5.680
BI-212	3.267E-01	1.405E-01	2.288E-01	1.281E-02	1.428
PB-212	6.382E-01	4.749E-02	4.500E-02	2.152E-03	14.182
BI-214	4.603E-01	5.094E-02	5.590E-02	3.127E-03	8.234
PB-214	5.057E-01	5.190E-02	5.581E-02	2.572E-03	9.061
RA-223	1.472E-01	9.403E-02	1.118E-01	5.242E-03	1.317
RA-226	1.489E+00	5.531E-01	5.107E-01	2.479E-02	2.915
AC-228	7.774E-01	6.986E-02	8.318E-02	3.853E-03	9.346

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	4.730E-02		6.053E-02	2.365E-01	1.177E-02	0.200
MN-54	3.030E-03		7.423E-03	3.234E-02	1.639E-03	0.094
CO-60	2.699E-02		9.265E-03	5.112E-02	2.434E-03	0.528
NB-94	-7.408E-03		7.171E-03	2.678E-02	1.292E-03	-0.277
RU-106	1.459E-02		5.038E-02	2.274E-01	1.283E-02	0.064
AG-108M	-1.548E-02		5.801E-03	1.674E-02	9.396E-04	-0.925
AG-110M	3.383E-03		7.011E-03	2.915E-02	1.682E-03	0.116
SB-125	-1.090E-02		1.991E-02	6.587E-02	3.092E-03	-0.166
CS-134	-1.041E-03		5.081E-03	2.044E-02	1.140E-03	-0.051
EU-152	-1.254E-02		3.591E-02	1.513E-01	7.232E-03	-0.083
EU-154	-9.566E-03		2.156E-02	8.810E-02	4.699E-03	-0.109
EU-155	4.440E-02		2.722E-02	1.057E-01	4.609E-03	0.420
TH-228	1.367E+00		6.032E-01	2.389E+00	1.214E-01	0.572
PA-234	3.118E-01	+	4.348E-02	6.302E-02	3.567E-03	4.947
TH-234	-1.568E-01		3.005E-01	1.068E+00	1.252E-01	-0.147
U-235	9.033E-02	+	3.355E-02	4.938E-02	2.397E-03	1.829
AM-241	-9.990E-03		3.582E-02	1.299E-01	1.331E-02	-0.077

---- Interference between AC-228 and RA-223 ----

**** AC-228 energy lines ****

Energy	# Disint.	% Error	Comments
209.28	-----	-----	Line not identified
270.23	-----	-----	Line interferes with RA-223
338.32	3.703E+04	20.53	
463.00	-----	-----	Line not identified
794.70	8.750E+04	19.74	
835.50	-----	-----	Line not identified
911.07	4.538E+04	11.88	
964.60	-----	-----	Line not identified
969.11	3.586E+04	29.61	

Average: 4.401E+04 8.99

Nuclide	Energy	Interfered energy lines			New Activity (pCi/GM)	% Error
		Old Area	New Area	Critical Level		
RA-223	269.46	57.7	24.1	21.2	1.472E-01	63.87

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 26-AUG-2002 16:01
REQUESTOR : CAS_TECH

PAGE 1 OF

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE 9531-0000-027

SAMPLE No. : 020826019 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
COUNT TIME : 26-AUG-2002 15:44:31 SAMPLE QUANTITY : 1.53000E+03
SAMPLE TIME : 22-AUG-2002 10:36:00 DETECTOR : DET 2
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	-0.28	1.006E+01	QA Results OK
CS-137	661.65	0.63	1.804E-01	QA Results OK
TL-208	583.14	0.35	1.608E-01	QA Results OK
BI-212	727.17	0.09	3.267E-01	Peak FWHM = 0.65
PB-212	238.63	-0.04	6.382E-01	QA Results OK
BI-214	609.31	-0.11	4.603E-01	QA Results OK
PB-214	351.92	0.02	5.057E-01	QA Results OK
RA-223	269.46	0.65	1.472E-01	* Count Rate Error = 64.
RA-226	186.21	-0.15	1.489E+00	QA Results OK
AC-228	911.07	0.16	7.774E-01	QA Results OK
AVG ENERGY DIFF = 0.13			1.474E+01	= TOTAL GAMMA ACTIVITY

74.73 KeV Peak was used in identifying 2 isotopes
77.16 KeV Peak was used in identifying 2 isotopes
270.11 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
93.74	48.	1.39	1.961E+00	1.282E-03	53.2	P	AC-228	9.960E-01
300.20	21.	1.08	1.072E+00	7.007E-04	58.8	P	PB-212	5.589E-01
511.62	54.	1.56	4.226E+00	2.762E-03	26.6	U	ANN-RD	0.000E+00

Total Unidentified/Rejected Peaks = 3
% Unidentified/Rejected Peaks = 13.64

Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 26-AUG-2002 16:01
REQUESTOR : CAS_TECH

PAGE 2 OF ____

CYAPCO
HADDAM NECK STATION
POST NID QA ANALYSIS

Performed by: *Greg Conrad*

Reviewed by: *[Signature]*

**** End Of Report (2 Pages) ****

4-SEP-2002 10:51:00.93

CONNECTICUT YANKEE
HADDAM NECK STATION

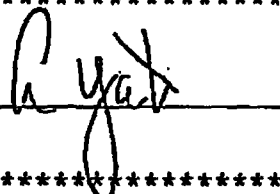
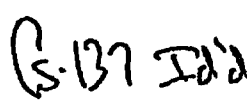
SAMPLE TITLE : - SOIL SAMPLE: 9531-0000-028FM

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020904003 * SAMPLE GEOMETRY : 1LMAR
SAMPLE TIME : 3-SEP-2002 13:16: * GEO EFFICIENCY DATE: 7-JUN-1999
SAMPLE TYPE : DIRT/SEDIMENT * SAMPLE QUANTITY : 1.35700E+03 GM

DETECTOR : DET 1 * LIBRARY : FSS_DIRT
LAST ENERGY CAL : 4-SEP-2002 08:19: * ENERGY TOLERANCE: 1.00000
KEV/CHANNEL : 5.00745E-01 * HALF LIFE RATIO : 9.00000
START CHANNEL : 100 * END CHANNEL : 4096
ACQ DATE & TIME : 4-SEP-2002 10:34: * DEADTIME (%) : 0.0%
PRESET LIVE TIME : 0 00:16:40 * SENSITIVITY : 5.00000
ELAPSED REAL TIME : 1000.1 Secs * GAUSSIAN SEN : 10.00000
ELAPSED LIVE TIME : 1000.0 Secs * CORRECTION FACTOR: 1.00000E+06
DECAYED TO 0 DAYS HOURS
FILE IDENT : CAS\$DISK:[NEU.SAMPLE.RP.NEW] 020904003_ADC1_DIRTSediment.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTMEAN V1.8

Collected by : JOHNSON
REVIEWED BY : 
COMMENTS : 

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
2	74.81	54	84	1.05	149.64	145	14	30.3	2.05E+00	PB-212
										PB-214
2	77.09	79	72	0.91	154.19	145	14	19.5		PB-214
										PB-212
4	238.71	244	46	1.07	477.03	473	16	7.6	4.33E+00	PB-212
4	241.43	36	37	1.37	482.47	473	16	46.4		PB-214
4	242.70	29	27	1.12	485.00	473	16	44.5		
0	270.58	28	30	1.41	540.71	537	9	39.1		AC-228
0	278.74	56	28	2.24	557.00	551	15	23.9		
0	295.54	53	42	1.12	590.58	585	11	27.0		PB-214
0	338.61	64	32	1.24	676.64	671	13	22.0		AC-228
2	350.54	21	13	1.46	700.48	695	14	61.8	2.32E+00	
2	352.03	107	13	1.15	703.45	695	14	11.9		PB-214
0	511.01	23	17	1.27	1021.20	1015	10	40.1		
0	583.35	68	5	1.42	1165.80	1161	10	13.5		TL-208
0	609.56	75	10	1.42	1218.19	1211	14	14.8		BI-214
0	661.73	122	8	1.52	1322.51	1317	10	10.0		CS-137
0	769.12	14	5	1.35	1537.23	1531	11	42.0		BI-214
0	861.21	13	6	0.90	1721.42	1717	9	46.4		TL-208

Post-NID Peak Search Report (continued)

Sample ID : 020904003

Page : 2

Acquisition date : 4-SEP-2002 10:34:06

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	911.54	45	14	1.55	1822.07	1814	13	22.1		AC-228
0	969.76	22	9	0.72	1938.54	1933	9	32.2		AC-228
0	1461.05	151	4	1.74	2921.81	2915	14	8.5		K-40

---- Identified Nuclides ----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	7.915E+00	7.410E-01	3.833E-01	1.469E-02	20.651
CS-137	3.999E-01	4.232E-02	4.386E-02	1.528E-03	9.118
TL-208	2.046E-01	2.765E-02	3.110E-02	1.123E-03	6.579
PB-212	6.118E-01	6.023E-02	5.762E-02	3.583E-03	10.617
BI-214	4.276E-01	6.219E-02	5.933E-02	2.102E-03	7.207
PB-214	4.280E-01	4.701E-02	5.873E-02	1.964E-03	7.287
AC-228	6.634E-01	9.029E-02	1.364E-01	4.318E-03	4.862

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	8.413E-02		7.355E-02	3.182E-01	1.278E-02	0.264
MN-54	5.130E-04		6.112E-03	3.094E-02	1.045E-03	0.017
CO-60	-2.153E-04		1.220E-02	5.445E-02	1.867E-03	-0.004
NB-94	1.848E-03		5.117E-03	2.914E-02	9.588E-04	0.063
RU-106	-1.601E-01		9.429E-02	2.210E-01	7.782E-03	-0.724
AG-108M	-6.463E-03		8.444E-03	2.740E-02	9.682E-04	-0.236
AG-110M	1.042E-02		1.001E-02	4.557E-02	1.588E-03	0.229
SB-125	2.193E-02		2.473E-02	1.028E-01	4.137E-03	0.213
CS-134	3.966E-03		7.739E-03	3.277E-02	1.164E-03	0.121
EU-152	7.585E-02		6.797E-02	3.385E-01	1.257E-02	0.224
EU-154	6.257E-03		4.344E-02	1.862E-01	7.548E-03	0.034
EU-155	8.844E-03		3.032E-02	1.154E-01	4.044E-03	0.077
BI-212	3.092E-02		9.043E-02	3.973E-01	1.382E-02	0.078
RA-223	5.068E-02		3.834E-02	1.658E-01	7.530E-03	0.306
RA-226	4.901E-01		2.509E-01	9.783E-01	5.761E-02	0.501
TH-228	1.048E+00		6.867E-01	2.776E+00	1.329E-01	0.378
PA-234	-4.238E-03		1.873E-02	6.995E-02	3.670E-03	-0.061
TH-234	-2.462E-01		4.163E-01	1.535E+00	1.390E-01	-0.160
U-235	5.259E-03		1.625E-02	5.844E-02	3.409E-03	0.090
AM-241	-2.170E-03		4.987E-02	1.923E-01	9.813E-03	-0.011

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 10:51
REQUESTOR : CAS_TECH

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CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE: 9531-0000-028FM

SAMPLE No. : 020904003 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMAR
COUNT TIME : 4-SEP-2002 10:34:06. SAMPLE QUANTITY : 1.35700E+03
SAMPLE TIME : 3-SEP-2002 13:16:00. DETECTOR : DET 1
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	0.25	7.915E+00	QA Results OK
CS-137	661.65	0.09	3.999E-01	QA Results OK
TL-208	583.14	0.21	2.046E-01	QA Results OK
PB-212	238.63	0.08	6.118E-01	QA Results OK
BI-214	609.31	0.24	4.276E-01	QA Results OK
PB-214	351.92	0.11	4.280E-01	QA Results OK
AC-228	911.07	0.47	6.634E-01	QA Results OK
AVG ENERGY DIFF = 0.21				1.065E+01 = TOTAL GAMMA ACTIVITY

74.81 KeV Peak was used in identifying 2 isotopes
77.09 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
242.70	29.	1.12	1.645E+00	1.212E-03	44.5	P	PB-214	4.403E-01
278.74	56.	2.24	3.560E+00	2.623E-03	23.9	U	SE-75	2.828E-01
						U	HG-203	9.295E-02
						P	AC-228	3.242E+01
350.54	21.	1.46	1.638E+00	1.207E-03	61.8	P	ANN-RD	
511.01	23.	1.27	2.483E+00	1.830E-03	40.1	P	ANN-RD	0.000E+00

Total Unidentified/Rejected Peaks = 4
% Unidentified/Rejected Peaks = 20.00

Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 10:51
REQUESTOR : CAS_TECH

PAGE 2 OF ____

CYAPCO
HADDAM NECK STATION
POST NID QA ANALYSIS

Performed by: _____

Reviewed by: _____

**** End Of Report (2 Pages) ****

4-SEP-2002 12:34:15.25

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMPLE: 9531-0000-028FMD

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020904013

* SAMPLE GEOMETRY : 1LMARSAND

SAMPLE TIME : 3-SEP-2002 13:30:

* GEO EFFICIENCY DATE: 19-AUG-1997

SAMPLE TYPE : DIRT/SEDIMENT

* SAMPLE QUANTITY : 1.55500E+03 GM

DETECTOR : DET 2

* LIBRARY : FSS DIRT

LAST ENERGY CAL : 4-SEP-2002 07:49:

* ENERGY TOLERANCE: 1.00000

KEV/CHANNEL : 5.00931E-01

* HALF LIFE RATIO : 9.00000

START CHANNEL : 100

* END CHANNEL : 4096

ACQ DATE & TIME : 4-SEP-2002 12:17:

* DEADTIME (%) : 0.0%

PRESET LIVE TIME : 0 00:16:40

* SENSITIVITY : 5.00000

ELAPSED REAL TIME : 1000.4 Secs

* GAUSSIAN SEN : 10.00000

ELAPSED LIVE TIME : 1000.0 Secs

* CORRECTION FACTOR: 1.00000E+06

DECAYED TO 0 DAYS HOURS

FILE IDENT : CAS\$DISK: [NEU.SAMPLE.RP.NEW] 020904013_ADC2_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTMEAN V1.8

Collected by : JOHNSON

REVIEWED BY :

COMMENTS :

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
3	74.80	97	110	0.90	149.92	147	14	18.5	3.90E+00	PB-212
3	77.02	156	108	0.85	154.35	147	14	12.6		PB-214
0	87.17	47	142	1.14	174.63	172	7	44.2		PB-212
0	185.96	75	91	0.85	371.90	367	9	25.8		RA-226
0	209.43	41	98	1.21	418.77	413	9	46.7		AC-228
3	238.51	389	49	1.15	476.85	471	16	5.9	9.52E-01	PB-212
3	241.49	86	52	1.47	482.81	471	16	22.2		PB-214
0	295.09	130	39	1.46	589.88	582	14	13.4		PB-214
0	338.61	97	49	1.10	676.81	672	11	17.2		AC-228
0	352.08	165	69	1.15	703.72	698	13	13.1		PB-214
0	511.03	59	27	1.32	1021.35	1015	14	23.1		
0	583.06	132	16	1.21	1165.34	1159	13	10.7		TL-208
0	609.38	114	26	1.07	1217.96	1212	10	12.5		BI-214
0	727.13	30	14	1.03	1453.39	1450	10	29.3		BI-212
0	768.76	14	18	0.97	1536.63	1531	9	62.8		BI-214
0	860.23	26	6	2.44	1719.59	1714	12	27.5		TL-208
0	911.41	74	17	1.93	1821.97	1814	14	16.7		AC-228

Post-NID Peak Search Report (continued)
Sample ID : 020904013

Page : 2
Acquisition date : 4-SEP-2002 12:17:14

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	1120.03	43	0	1.03	2239.44	2233	13	15.2		BI-214
0	1460.30	328	0	2.58	2920.79	2912	15	5.5		K-40
0	1764.23	15	6	1.30	3529.81	3525	8	38.4		BI-214

----- Identified Nuclides -----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	1.014E+01	7.407E-01	2.291E-01	1.094E-02	44.285
TL-208	2.468E-01	2.778E-02	2.107E-02	1.156E-03	11.718
BI-212	4.571E-01	1.366E-01	2.564E-01	1.436E-02	1.783
PB-212	6.469E-01	4.850E-02	3.990E-02	1.908E-03	16.213
BI-214	4.380E-01	4.521E-02	4.562E-02	2.552E-03	9.601
PB-214	5.168E-01	4.806E-02	5.866E-02	2.703E-03	8.811
RA-226	1.507E+00	3.956E-01	5.075E-01	2.463E-02	2.969
AC-228	6.659E-01	8.114E-02	8.185E-02	3.792E-03	8.135

----- Non-Identified Nuclides -----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	-5.240E-02		4.488E-02	1.318E-01	6.561E-03	-0.398
MN-54	3.574E-03		6.366E-03	2.899E-02	1.469E-03	0.123
CO-60	1.204E-02		8.612E-03	4.295E-02	2.045E-03	0.280
NB-94	-8.960E-03		6.801E-03	2.438E-02	1.176E-03	-0.368
RU-106	6.382E-02		5.683E-02	2.657E-01	1.499E-02	0.240
AG-108M	-8.231E-03		5.217E-03	1.871E-02	1.050E-03	-0.440
AG-110M	-7.483E-03		5.957E-03	2.218E-02	1.279E-03	-0.337
SB-125	1.661E-02		1.492E-02	6.411E-02	3.009E-03	0.259
CS-134	6.357E-03		5.591E-03	2.540E-02	1.416E-03	0.250
CS-137	7.715E-03		9.009E-03	3.890E-02	2.249E-03	0.198
EU-152	3.378E-02		4.449E-02	2.062E-01	9.854E-03	0.164
EU-154	-1.547E-02		2.010E-02	7.774E-02	4.147E-03	-0.199
EU-155	2.145E-03		2.903E-02	1.046E-01	4.559E-03	0.021
RA-223	-2.993E-03		4.834E-02	1.664E-01	7.805E-03	-0.018
TH-228	4.907E-01		5.836E-01	2.204E+00	1.120E-01	0.223
PA-234	-3.245E-02		1.631E-02	5.304E-02	3.002E-03	-0.612
TH-234	4.677E-01		2.795E-01	1.108E+00	1.300E-01	0.422
U-235	9.141E-02	+	2.400E-02	5.135E-02	2.492E-03	1.780
AM-241	-8.679E-03		3.555E-02	1.305E-01	1.336E-02	-0.067

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 12:34
REQUESTOR : CAS_TECH

PAGE 1 OF ____

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE: 9531-0000-028FMD

SAMPLE No. : 020904013 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
COUNT TIME : 4-SEP-2002 12:17:14. SAMPLE QUANTITY : 1.55500E+03
SAMPLE TIME : 3-SEP-2002 13:30:00. DETECTOR : DET 2
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	-0.50	1.014E+01	QA Results OK
TL-208	583.14	-0.08	2.468E-01	QA Results OK
BI-212	727.17	-0.04	4.571E-01	QA Results OK
PB-212	238.63	-0.11	6.469E-01	QA Results OK
BI-214	609.31	0.07	4.380E-01	QA Results OK
PB-214	351.92	0.16	5.168E-01	QA Results OK
RA-226	186.21	-0.25	1.507E+00	QA Results OK
AC-228	911.07	0.34	6.659E-01	QA Results OK
AVG ENERGY DIFF = -0.05				1.462E+01 = TOTAL GAMMA ACTIVITY

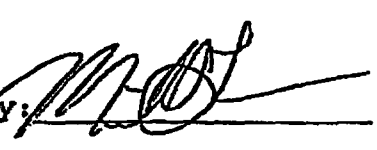
74.80 KeV Peak was used in identifying 2 isotopes
77.02 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
511.03	59.	1.32	4.570E+00	2.939E-03	23.1	✓	ANN-RD	0.000E+00

Total Unidentified/Rejected Peaks = 1
% Unidentified/Rejected Peaks = 5.00

Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

Performed By: 

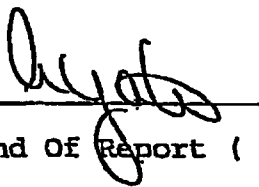
REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 12:34
REQUESTOR : CAS_TECH

PAGE 2 OF ____

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

Reviewed by: _____

A handwritten signature in black ink, appearing to be 'L. J. [unclear]', is written over a horizontal line.

**** End Of Report (2 Pages) ****

4-SEP-2002 10:54:01.77

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMPLE: 9531-0000-029FM

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020904004 * SAMPLE GEOMETRY : 1LMARSAND
SAMPLE TIME : 3-SEP-2002 13:18: * GEO EFFICIENCY DATE: 19-AUG-1997
SAMPLE TYPE : DIRT/SEDIMENT * SAMPLE QUANTITY : 1.58600E+03 GM

DETECTOR : DET 2 * LIBRARY : FSS_DIRT
LAST ENERGY CAL : 4-SEP-2002 07:49: * ENERGY TOLERANCE: 1.00000
KEV/CHANNEL : 5.00931E-01 * HALF LIFE RATIO : 9.00000
START CHANNEL : 100 * END CHANNEL : 4096
ACQ DATE & TIME : 4-SEP-2002 10:37: * DEADTIME (%) : 0.0%
PRESET LIVE TIME : 0 00:16:40 * SENSITIVITY : 5.00000
ELAPSED REAL TIME : 1000.3 Secs * GAUSSIAN SEN : 10.00000
ELAPSED LIVE TIME : 1000.0 Secs * CORRECTION FACTOR: 1.00000E+06
DECAYED TO 0 DAYS HOURS
FILE IDENT : CAS\$DISK:[NEU.SAMPLE.RP.NEW] 020904004_ADC2_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTMEAN V1.8 INTERF V2.4

Collected by : DEGOSTIN
REVIEWED BY :
COMMENTS :

R. Yates

CS-137 ID'd

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
5	74.95	91	129	0.99	150.22	146	12	22.1	9.16E-01	PB-212
										PB-214
5	77.15	155	111	0.95	154.61	146	12	13.5		PB-214
										PB-212
0	87.31	52	129	1.14	174.90	172	6	37.6		PB-212
0	93.04	55	146	1.14	186.34	182	8	40.4		
0	185.74	79	99	1.33	371.45	368	10	25.9		RA-226
0	209.07	32	71	1.35	418.05	416	7	46.6		AC-228
3	238.61	358	58	1.03	477.05	473	15	6.2	7.11E-01	PB-212
3	241.55	75	72	1.58	482.91	473	15	28.6		PB-214
0	270.41	46	62	1.14	540.58	537	11	35.7		AC-228
0	295.07	119	44	1.39	589.84	585	10	13.8		PB-214
0	338.28	77	50	1.11	676.16	670	10	20.7		AC-228
0	351.97	186	30	1.43	703.51	697	15	9.7		PB-214
0	462.68	41	22	1.88	924.73	919	10	26.9		AC-228
0	510.62	71	40	3.30	1020.54	1013	16	23.2		
0	583.12	100	16	1.23	1165.46	1159	11	12.7		TL-208
0	609.85	131	35	1.66	1218.89	1211	17	13.9		BI-214
0	661.71	115	30	1.10	1322.56	1316	11	13.1		CS-137

----- Identified Nuclides -----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	7.730E+00	6.479E-01	3.670E-01	1.753E-02	21.064
CS-137	2.229E-01	3.198E-02	3.291E-02	1.903E-03	6.773
TL-208	1.763E-01	2.434E-02	2.217E-02	1.217E-03	7.952
BI-212	5.155E-01	1.190E-01	1.679E-01	9.403E-03	3.070
PB-212	5.863E-01	4.508E-02	4.388E-02	2.098E-03	13.360
BI-214	4.832E-01	5.811E-02	4.951E-02	2.770E-03	9.759
PB-214	5.118E-01	4.265E-02	3.507E-02	1.616E-03	14.592
RA-226	1.561E+00	4.120E-01	4.759E-01	2.310E-02	3.281
AC-228	6.613E-01	6.404E-02	6.943E-02	3.217E-03	9.524

----- Non-Identified Nuclides -----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	-8.325E-02		7.160E-02	2.137E-01	1.064E-02	-0.389
MN-54	1.333E-03		6.395E-03	2.797E-02	1.418E-03	0.048
CO-60	1.722E-02		1.028E-02	4.936E-02	2.350E-03	0.349
NB-94	2.035E-03		5.016E-03	2.398E-02	1.157E-03	0.085
RU-106	8.908E-02		5.650E-02	2.715E-01	1.532E-02	0.328
AG-108M	-2.951E-03		5.033E-03	1.931E-02	1.084E-03	-0.153
AG-110M	3.316E-03		6.186E-03	2.636E-02	1.520E-03	0.126
SE-125	1.781E-02		1.789E-02	7.197E-02	3.378E-03	0.248
CS-134	8.386E-03		5.336E-03	2.536E-02	1.414E-03	0.331
EU-152	1.328E-02		2.584E-02	1.380E-01	6.594E-03	0.096
EU-154	8.389E-04		1.620E-02	7.644E-02	4.077E-03	0.011
EU-155	2.340E-02		2.697E-02	1.015E-01	4.422E-03	0.231
RA-223	2.736E-01		9.852E-02	1.674E-01	7.851E-03	1.635
TH-228	-1.996E-01		6.302E-01	2.240E+00	1.138E-01	-0.089
PA-234	2.760E-01	+	4.053E-02	6.170E-02	3.492E-03	4.473
TH-234	1.698E-01		2.815E-01	1.072E+00	1.258E-01	0.158
U-235	9.472E-02	+	2.500E-02	5.074E-02	2.463E-03	1.867
AM-241	-1.452E-03		3.092E-02	1.160E-01	1.188E-02	-0.013

----- Interference between AC-228 and RA-223 -----

**** AC-228 energy lines ****

Energy	# Disint.	% Error	Comments
209.28	2.946E+04	46.82	
270.23	-----	-----	Line interferes with RA-223
338.32	3.743E+04	21.21	
463.00	6.601E+04	27.34	
794.70	-----	-----	Line not identified
835.50	-----	-----	Line not identified
911.07	3.749E+04	12.64	
964.60	-----	-----	Line not identified
969.11	-----	-----	Line not identified

Average: 3.814E+04 10.00

Interfered energy lines

Nuclide	Energy	Old Area	New Area	Critical Level	New Activity (pCi/GM)	% Error
RA-223	269.46	46.4	17.3	24.8	0.000E+00	0.00
269.46 Line invalidated: New Area less than critical level						
RA-223 has been rejected: Failed abundance Test						

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 10:54
REQUESTOR : CAS_TECH

PAGE 1 OF ____

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE: 9531-0000-029FM

SAMPLE No. : 020904004 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
COUNT TIME : 4-SEP-2002 10:37:02. SAMPLE QUANTITY : 1.58600E+03
SAMPLE TIME : 3-SEP-2002 13:18:00. DETECTOR : DET 2
LIBRARY : F88_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	-0.12	7.730E+00	QA Results OK
CS-137	661.65	0.06	2.229E-01	QA Results OK
TL-208	583.14	-0.02	1.763E-01	QA Results OK
BI-212	727.17	0.22	5.155E-01	QA Results OK
PB-212	238.63	-0.01	5.863E-01	QA Results OK
BI-214	609.31	0.54	4.832E-01	QA Results OK
PB-214	351.92	0.05	5.118E-01	QA Results OK
RA-226	186.21	-0.47	1.561E+00	QA Results OK
AC-228	911.07	0.05	6.613E-01	QA Results OK
AVG ENERGY DIFF = 0.03				1.245E+01 = TOTAL GAMMA ACTIVITY

74.95 KeV Peak was used in identifying 2 isotopes
77.15 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
93.04	55.	1.14	2.255E+00	1.422E-03	40.4	P	AC-228	1.105E+00
						P	TH-234	1.430E+00
510.62	71.	3.30	5.512E+00	3.475E-03	23.2	P	ANN-RD	0.000E+00
784.97	14.	1.34	1.518E+00	9.570E-04	35.5	P	BI-212	1.321E+00
						P	PB-214	2.367E+00
967.72	68.	5.85	9.159E+00	5.775E-03	21.0	P		
1377.77	12.	0.64	2.186E+00	1.378E-03	44.3	P	BI-214	9.123E-01

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 10:54
REQUESTOR : CAS_TECH

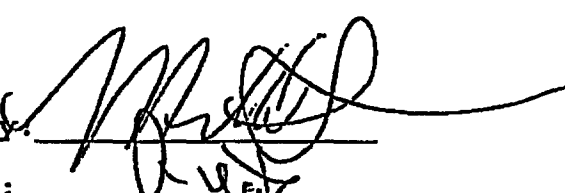
PAGE 2 OF ____

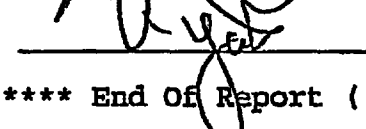
CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

Total Unidentified/Rejected Peaks = 5
% Unidentified/Rejected Peaks = 20.83

Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

Performed by: 

Reviewed by: 

**** End Of Report (2 Pages) ****

4-SEP-2002 12:51:01.44

CONNECTICUT YANKEE
HADDAM NECK STATION

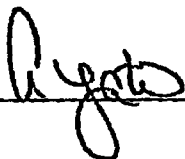
SAMPLE TITLE : - SOIL SAMPLE: 9531-0000-029FMD

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020904014 * SAMPLE GEOMETRY : 11MARSAND
SAMPLE TIME : 3-SEP-2002 13:30: * GEO EFFICIENCY DATE: 24-SEP-1997
SAMPLE TYPE : DIRT/SEDIMENT * SAMPLE QUANTITY : 1.56300E+03 GM

DETECTOR : DET 1 * LIBRARY : FSS_DIRT
LAST ENERGY CAL : 4-SEP-2002 12:28: * ENERGY TOLERANCE: 1.00000
KEV/CHANNEL : 5.00547E-01 * HALF LIFE RATIO : 9.00000
START CHANNEL : 100 * END CHANNEL : 4096
ACQ DATE & TIME : 4-SEP-2002 12:34: * DEADTIME (%) : 0.0%
PRESET LIVE TIME : 0 00:16:40 * SENSITIVITY : 5.00000
ELAPSED REAL TIME : 1000.2 Secs * GAUSSIAN SEN : 10.00000
ELAPSED LIVE TIME : 1000.0 Secs * CORRECTION FACTOR: 1.00000E+06
DECAYED TO 0 DAYS HOURS
FILE IDENT : CAS\$DISK: [NEU.SAMPLE.RP.NEW] 020904014_ADC1_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTIMEAN V1.8

Collected by : DEGOSTIN
REVIEWED BY : 
COMMENTS :

Cs-137 ID's

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	77.95	66	184	0.78	155.91	151	8	38.9		PB-214 PB-212
0	93.06	64	129	1.52	186.10	183	9	34.1		
0	129.05	40	135	0.75	258.01	253	10	56.0		
3	238.59	256	46	1.11	476.93	472	17	7.5	1.28E+00	PB-212
3	241.49	68	43	1.47	482.73	472	17	26.2		PB-214
1	295.17	92	25	1.28	590.03	583	24	13.8	2.45E+00	PB-214
1	300.20	31	27	1.29	600.07	583	24	33.0		
1	338.20	41	20	1.34	676.03	672	9	27.3	3.65E+00	AC-228
1	339.13	27	13	1.34	677.90	672	9	36.4		
0	351.90	114	46	1.19	703.41	696	13	15.4		PB-214
0	511.54	57	23	1.77	1022.60	1015	18	24.9		
0	583.34	76	15	1.59	1166.18	1161	10	14.9		TL-208
0	609.23	89	7	1.54	1217.96	1212	14	12.3		BI-214
0	661.98	43	24	1.52	1323.48	1316	16	29.7		CS-137
0	727.15	28	6	1.09	1453.84	1448	11	25.2		BI-212
0	911.40	62	11	1.54	1822.46	1815	14	16.8		AC-228
0	970.95	27	19	1.66	1941.64	1933	16	44.0		
0	1120.29	27	0	0.83	2240.56	2235	12	19.2		BI-214

Port-NID Peak Search Report (continued)
Sample ID : 020904014

Page :
Acquisition date : 4-SEP-2002 12:34:02

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	1460.77	186	4	2.27	2922.37	2915	13	7.6		K-40

---- Identified Nuclides ----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	9.209E+00	8.258E-01	3.644E-01	1.734E-02	25.274
CS-137	1.265E-01	3.825E-02	3.710E-02	2.124E-03	3.409
TL-208	2.013E-01	3.192E-02	3.674E-02	2.012E-03	5.478
BI-212	6.380E-01	1.648E-01	3.643E-01	2.029E-02	1.751
PB-212	5.922E-01	5.291E-02	4.538E-02	2.187E-03	13.049
BI-214	4.882E-01	5.576E-02	4.179E-02	2.328E-03	11.682
PB-214	5.121E-01	5.273E-02	6.914E-02	3.212E-03	7.408
AC-228	6.293E-01	9.497E-02	1.381E-01	6.401E-03	4.558

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	-1.401E-01		8.280E-02	2.249E-01	1.124E-02	-0.623
MN-54	2.754E-03		8.190E-03	3.816E-02	1.934E-03	0.072
CO-60	9.352E-03		9.541E-03	5.167E-02	2.435E-03	0.181
NB-94	-1.083E-02		7.860E-03	2.831E-02	1.366E-03	-0.383
RU-106	-1.555E-02		7.776E-02	2.842E-01	1.595E-02	-0.055
AG-108M	-5.617E-04		6.874E-03	2.686E-02	1.500E-03	-0.021
AG-110M	2.636E-03		7.964E-03	3.472E-02	1.984E-03	0.076
SB-125	-1.356E-02		2.047E-02	6.996E-02	3.297E-03	-0.194
CS-134	8.335E-03		6.327E-03	3.093E-02	1.718E-03	0.269
EU-152	7.225E-02		7.351E-02	3.457E-01	1.642E-02	0.209
EU-154	-3.595E-02		3.836E-02	1.417E-01	7.538E-03	-0.254
EU-155	1.372E-02		3.433E-02	1.300E-01	5.575E-03	0.106
RA-223	4.460E-02		5.235E-02	2.012E-01	9.507E-03	0.222
RA-226	8.512E-01		2.274E-01	9.582E-01	4.656E-02	0.888
TH-228	-2.286E-01		7.134E-01	2.649E+00	1.369E-01	-0.086
FA-234	1.790E-01	+	7.054E-02	8.516E-02	5.102E-03	2.102
TH-234	-2.139E-02		4.186E-01	1.616E+00	2.165E-01	-0.013
U-235	3.159E-02		1.539E-02	5.976E-02	2.904E-03	0.529
AM-241	-3.867E-02		5.388E-02	2.005E-01	2.741E-02	-0.193

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 12:51
REQUESTOR : CAS_TECH

PAGE 1 OF 1

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE: 9531-0000-029FMD

SAMPLE No. : 020904014 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
COUNT TIME : 4-SEP-2002 12:34:02. SAMPLE QUANTITY : 1.56300E+03
SAMPLE TIME : 3-SEP-2002 13:30:00. DETECTOR : DET 1
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	-0.03	9.209E+00	QA Results OK
CS-137	661.65	0.33	1.265E-01	QA Results OK
TL-208	583.14	0.20	2.013E-01	QA Results OK
BI-212	727.17	-0.02	6.380E-01	QA Results OK
PB-212	238.63	-0.03	5.922E-01	QA Results OK
BI-214	609.31	-0.09	4.882E-01	QA Results OK
PB-214	351.92	-0.02	5.121E-01	QA Results OK
AC-228	911.07	0.33	6.293E-01	QA Results OK
AVG ENERGY DIFF = 0.08				1.240E+01 = TOTAL GAMMA ACTIVITY

77.95 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
93.06	64.	1.52	3.675E+00	2.351E-03	34.1	P	AC-228	1.826E+00
						U	TH-234	2.364E+00
129.05	40.	0.75	1.885E+00	1.206E-03	56.0	U	KR-85M	3.925E+02
						P	AC-228	1.171E+00
300.20	31.	1.29	2.215E+00	1.417E-03	33.0	P	PB-212	1.130E+00
339.13	27.	1.34	2.117E+00	1.354E-03	36.4	P	AC-228	3.230E-01
511.54	57.	1.77	6.506E+00	4.163E-03	24.9	P	ANN-RD	0.000E+00
970.95	27.	1.66	5.657E+00	3.619E-03	44.0	P		

Total Unidentified/Rejected Peaks = 6
% Unidentified/Rejected Peaks = 31.58

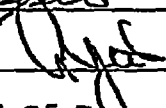
Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 12:51
REQUESTOR : CAS_TECH

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CYAPCO
HADDAM NECK STATION
POST NID QA ANALYSIS

Performed by: 

Reviewed by: 

**** End Of Report (2 Pages) ****

4-SEP-2002 11:17:29.11

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMPLE: 9531-0000-030FM

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020904006 * SAMPLE GEOMETRY : 1LMAR
SAMPLE TIME : 3-SEP-2002 13:20: * GEO EFFICIENCY DATE: 7-JUN-1999
SAMPLE TYPE : DIRT/SEDIMENT * SAMPLE QUANTITY : 1.31600E+03 GM

DETECTOR : DET 1 * LIBRARY : FSS_DIRT
LAST ENERGY CAL : 4-SEP-2002 08:19: * ENERGY TOLERANCE: 1.00000
KEV/CHANNEL : 5.00745E-01 * HALF LIFE RATIO : 9.00000
START CHANNEL : 100 * END CHANNEL : 4096
ACQ DATE & TIME : 4-SEP-2002 11:00: * DEADTIME (%) : 0.0%
PRESET LIVE TIME : 0 00:16:40 * SENSITIVITY : 5.00000
ELAPSED REAL TIME : 1000.1 Secs * GAUSSIAN SEN : 10.00000
ELAPSED LIVE TIME : 1000.0 Secs * CORRECTION FACTOR: 1.00000E+06
DECAYED TO 0 DAYS HOURS

FILE IDENT : CAS\$DISK: [NEU.SAMPLE.RP.NEW] 020904006_ADC1_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTMEAN V1.8

Collected by : RAND
REVIEWED BY :
COMMENTS :

Ryab

G-137 IDA

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	77.40	74	99	0.85	154.81	152	8	27.0		PB-214 PB-212
0	186.02	51	44	0.97	371.78	368	8	26.8		RA-226
0	209.65	29	44	0.93	418.98	415	7	42.2		AC-228
3	238.70	194	29	1.14	477.02	473	16	8.4	1.38E+00	PB-212
3	241.82	34	26	1.50	483.26	473	16	38.1		PB-214
0	295.62	47	22	1.06	590.74	586	9	23.5		PB-214
0	338.61	36	17	1.26	676.65	671	11	27.8		AC-228
0	352.01	76	22	1.21	703.42	698	11	16.5		PB-214
0	511.76	14	17	1.37	1022.68	1017	12	66.0		
0	583.36	52	10	0.93	1165.82	1160	10	18.1		TL-208
0	609.36	68	6	1.28	1217.79	1211	11	14.0		BI-214
0	662.13	61	6	1.60	1323.30	1317	13	15.4		CS-137
0	911.69	37	3	1.07	1822.39	1817	10	18.2		AC-228
0	969.26	22	5	1.40	1937.53	1934	9	28.0		AC-228
0	1461.44	139	4	1.62	2922.58	2915	14	8.9		K-40

----- Identified Nuclides -----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	7.507E+00	7.306E-01	3.952E-01	1.515E-02	18.994
CS-137	2.062E-01	3.252E-02	3.964E-02	1.381E-03	5.201
TL-208	1.560E-01	2.873E-02	3.207E-02	1.158E-03	4.866
PB-212	5.026E-01	5.254E-02	4.917E-02	3.057E-03	10.222
BI-214	3.872E-01	5.583E-02	4.781E-02	1.694E-03	8.098
PB-214	3.344E-01	4.359E-02	5.538E-02	1.852E-03	6.039
RA-226	1.512E+00	4.148E-01	5.487E-01	3.231E-02	2.756
AC-228	5.199E-01	6.723E-02	9.721E-02	3.077E-03	5.348

----- Non-Identified Nuclides -----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	1.179E-02		8.288E-02	3.119E-01	1.253E-02	0.038
MN-54	-6.725E-04		7.371E-03	3.471E-02	1.173E-03	-0.019
CO-60	-1.506E-02		1.152E-02	3.926E-02	1.346E-03	-0.384
NB-94	-5.471E-03		6.479E-03	2.735E-02	8.999E-04	-0.200
RU-106	8.940E-02		8.988E-02	3.949E-01	1.390E-02	0.226
AG-108M	-2.707E-04		9.731E-03	3.664E-02	1.294E-03	-0.007
AG-110M	1.521E-02		6.814E-03	3.982E-02	1.388E-03	0.382
SB-125	-1.692E-02		2.544E-02	8.602E-02	3.461E-03	-0.197
CS-134	0.000E+00		0.000E+00	2.881E-02	1.024E-03	0.000
EU-152	-7.940E-02		5.883E-02	1.953E-01	7.252E-03	-0.406
EU-154	-1.276E-02		2.410E-02	1.066E-01	4.320E-03	-0.120
EU-155	-3.956E-03		2.909E-02	1.088E-01	3.812E-03	-0.036
BI-212	2.264E-01		9.508E-02	4.801E-01	1.670E-02	0.471
RA-223	3.091E-02		5.737E-02	2.158E-01	9.801E-03	0.143
TH-228	4.708E-01		6.640E-01	2.607E+00	1.248E-01	0.181
PA-234	2.005E-01	+	5.521E-02	6.327E-02	3.319E-03	3.169
TH-234	4.870E-01		3.420E-01	1.448E+00	1.311E-01	0.336
U-235	9.167E-02	+	2.514E-02	5.835E-02	3.404E-03	1.571
AM-241	-3.862E-02		3.957E-02	1.461E-01	7.456E-03	-0.264

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 11:17
REQUESTOR : CAS_TECH

PAGE 1 OF ____

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE: 9531-0000-030FM

SAMPLE No. : 020904006 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMAR
COUNT TIME : 4-SEP-2002 11:00:30. SAMPLE QUANTITY : 1.31600E+03
SAMPLE TIME : 3-SEP-2002 13:20:00. DETECTOR : DET 1
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pci/GM	COMMENTS
K-40	1460.80	0.64	7.507E+00	QA Results OK
CS-137	661.65	0.48	2.062E-01	QA Results OK
TL-208	583.14	0.22	1.560E-01	QA Results OK
PB-212	238.63	0.08	5.026E-01	QA Results OK
BI-214	609.31	0.04	3.872E-01	QA Results OK
PB-214	351.92	0.09	3.344E-01	QA Results OK
RA-226	186.21	-0.19	1.512E+00	QA Results OK
AC-228	911.07	0.62	5.199E-01	QA Results OK
AVG ENERGY DIFF = 0.25				1.112E+01 = TOTAL GAMMA ACTIVITY

77.40 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
511.76	14.	1.37	1.523E+00	1.157E-03	66.0	✓	ANN-RD	0.000E+00

Total Unidentified/Rejected Peaks = 1
% Unidentified/Rejected Peaks = 6.67

Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

Performed by: 



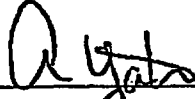
REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 11:17
REQUESTOR : CAS_TECH

PAGE 2 OF ____

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

Reviewed by: _____

A handwritten signature in black ink, appearing to be 'R. Gato', is written over a horizontal line.

**** End Of Report (2 Pages) ****

5-SEP-2002 12:08:56.78

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : 9531-0000-030FMD

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020904016

* SAMPLE GEOMETRY : 1LMARSAND

SAMPLE TIME : 3-SEP-2002 13:45:

* GEO EFFICIENCY DATE: 24-SEP-1997

SAMPLE TYPE : DIRT/SEDIMENT

* SAMPLE QUANTITY : 1.50900E+03 GM

DETECTOR : DET 1

* LIBRARY : FSS_DIRT

LAST ENERGY CAL : 4-SEP-2002 12:28:

* ENERGY TOLERANCE: 1.00000

KEV/CHANNEL : 5.00547E-01

* HALF LIFE RATIO : 9.00000

START CHANNEL : 100

* END CHANNEL : 4096

ACQ DATE & TIME : 4-SEP-2002 13:40:

* DEADTIME (%) : 0.0%

PRESET LIVE TIME : 0 00:16:40

* SENSITIVITY : 5.00000

ELAPSED REAL TIME : 1000.2 Secs

* GAUSSIAN SEN : 10.00000

ELAPSED LIVE TIME : 1000.0 Secs

* CORRECTION FACTOR: 1.00000E+06

DECAYED TO 0 DAYS HOURS

FILE IDENT : CAS\$DISK:[NEU.SAMPLE.RP.NEW]020904016_ADC1_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTIMEAN V1.8

Collected by : RAND

REVIEWED BY :

COMMENTS :

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
2	74.90	53	97	0.89	149.81	147	11	29.1	4.72E+00	PB-212
										PB-214
2	77.06	102	89	0.86	154.12	147	11	17.1		PB-214
										PB-212
3	238.64	256	47	1.09	477.02	471	23	7.6	1.27E+00	PB-212
3	241.76	34	59	1.47	483.27	471	23	46.2		PB-214
1	295.28	73	25	1.29	590.23	585	19	16.1	1.73E+00	PB-214
1	300.08	21	27	1.29	599.83	585	19	48.3		
0	338.92	45	42	1.04	677.46	672	11	31.6		AC-228
0	352.10	103	20	1.10	703.82	701	9	13.2		PB-214
0	510.45	45	13	1.77	1020.42	1014	13	22.2		
0	583.12	69	18	1.05	1165.74	1160	12	17.2		TL-208
0	609.37	82	12	1.37	1218.25	1212	13	14.2		BI-214
0	790.94	11	5	0.63	1581.46	1575	10	48.0		
0	911.46	45	8	1.60	1822.58	1814	14	19.5		AC-228
0	1120.50	25	6	0.84	2240.98	2235	10	28.6		BI-214
0	1460.97	171	3	2.21	2922.77	2916	14	8.0		K-40

----- Identified Nuclides -----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	8.735E+00	8.129E-01	4.763E-01	2.267E-02	18.340
TL-208	1.888E-01	3.410E-02	2.908E-02	1.593E-03	6.494
PB-212	6.127E-01	5.531E-02	5.179E-02	2.496E-03	11.830
BI-214	4.527E-01	6.193E-02	6.468E-02	3.603E-03	6.998
PB-214	4.322E-01	4.537E-02	5.609E-02	2.606E-03	7.705
AC-228	5.686E-01	9.650E-02	1.285E-01	5.956E-03	4.426

----- Non-Identified Nuclides -----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	-1.260E-03		5.758E-02	2.241E-01	1.120E-02	-0.006
MN-54	6.211E-03		9.107E-03	4.315E-02	2.186E-03	0.144
CO-60	1.973E-02		1.220E-02	6.545E-02	3.084E-03	0.301
NB-94	1.086E-03		6.186E-03	3.121E-02	1.506E-03	0.035
RU-106	5.087E-03		6.871E-02	2.747E-01	1.541E-02	0.019
AG-108M	4.665E-03		9.535E-03	3.815E-02	2.131E-03	0.122
AG-110M	-4.092E-03		6.959E-03	2.960E-02	1.692E-03	-0.138
SB-125	-2.236E-02		2.252E-02	7.184E-02	3.386E-03	-0.311
CS-134	-1.222E-02		1.001E-02	2.878E-02	1.599E-03	-0.424
CS-137	-6.717E-03		8.845E-03	3.603E-02	2.062E-03	-0.186
EU-152	1.002E-01		7.186E-02	3.580E-01	1.700E-02	0.280
EU-154	3.265E-03		1.979E-02	1.062E-01	5.653E-03	0.031
EU-155	4.492E-02		3.182E-02	1.282E-01	5.498E-03	0.350
BI-212	1.537E-01		1.048E-01	4.745E-01	2.643E-02	0.324
RA-223	5.983E-02		5.694E-02	2.199E-01	1.039E-02	0.272
RA-226	4.986E-01		2.445E-01	9.602E-01	4.666E-02	0.519
TH-228	6.086E-01		6.478E-01	2.606E+00	1.347E-01	0.234
PA-234	-4.005E-02		2.240E-02	7.640E-02	4.577E-03	-0.524
TH-234	8.485E-01		4.764E-01	1.937E+00	2.596E-01	0.438
U-235	8.370E-03		1.471E-02	5.418E-02	2.633E-03	0.154
AM-241	1.341E-02		4.871E-02	1.959E-01	2.679E-02	0.068

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 5-SEP-2002 12:08
REQUESTOR : CAS_TECH

PAGE 1 OF ____

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : 9531-0000-030FMD

SAMPLE No. : 020904016 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
COUNT TIME : 4-SEP-2002 13:40:54. SAMPLE QUANTITY : 1.50900E+03
SAMPLE TIME : 3-SEP-2002 13:45:00. DETECTOR : DET 1
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	0.17	8.735E+00	QA Results OK
TL-208	583.14	-0.02	1.888E-01	QA Results OK
PB-212	238.63	0.01	6.127E-01	QA Results OK
BI-214	609.31	0.06	4.527E-01	QA Results OK
PB-214	351.92	0.18	4.322E-01	QA Results OK
AC-228	911.07	0.39	5.686E-01	QA Results OK
AVG ENERGY DIFF = 0.13				1.099E+01 = TOTAL GAMMA ACTIVITY

74.90 KeV Peak was used in identifying 2 isotopes
77.06 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
300.08	21.	1.29	1.508E+00	9.990E-04	48.3	P	PB-212	7.965E-01
510.45	45.	1.77	5.122E+00	3.394E-03	22.2	P	AC-228	1.963E+01
790.94	11.	0.63	1.908E+00	1.264E-03	48.0	U	ANN-RD	0.000E+00

Total Unidentified/Rejected Peaks = 3
% Unidentified/Rejected Peaks = 20.00

Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

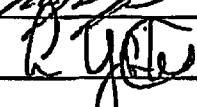
REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 5-SEP-2002 12:08
REQUESTOR : CAS_TECH

PAGE 2 OF ____

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

Performed by: 

Reviewed by: 

**** End Of Report (2 Pages) ****

4-SEP-2002 11:18:53.84

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMPLE: 9531-0000-031FM

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020904007

* SAMPLE GEOMETRY : 1LMAR

SAMPLE TIME : 3-SEP-2002 13:40:

* GEO EFFICIENCY DATE: 7-JUN-1999

SAMPLE TYPE : DIRT/SEDIMENT

* SAMPLE QUANTITY : 1.34100E+03 GM

DETECTOR : DET 2

* LIBRARY : FSS_DIRT

LAST ENERGY CAL : 4-SEP-2002 07:49:

* ENERGY TOLERANCE: 1.00000

KEV/CHANNEL : 5.00931E-01

* HALF LIFE RATIO : 9.00000

START CHANNEL : 100

* END CHANNEL : 4096

ACQ DATE & TIME : 4-SEP-2002 11:01:

* DEADTIME (%) : 0.0%

PRESET LIVE TIME : 0 00:16:40

* SENSITIVITY : 5.00000

ELAPSED REAL TIME : 1000.3 Secs

* GAUSSIAN SEN : 10.00000

ELAPSED LIVE TIME : 1000.0 Secs

* CORRECTION FACTOR: 1.00000E+06

DECAYED TO 0 DAYS HOURS

FILE IDENT : CAS\$DISK:[NEU.SAMPLE.RP.NEW] 020904007_ADC2_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTIMEAN V1.8

Collected by : DEGOSTIN

REVIEWED BY :

COMMENTS :

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
3	74.65	95	85	1.24	149.61	144	17	19.0	3.51E+00	PB-212
										PB-214
3	77.18	154	73	1.25	154.67	144	17	12.8		PB-214
										PB-212
0	93.02	57	75	1.18	186.30	183	7	28.5		
0	186.30	49	84	1.28	372.58	368	9	36.2		RA-226
0	209.16	39	44	1.25	418.22	415	7	32.4		AC-228
0	238.50	230	105	0.90	476.84	472	9	10.4		PB-212
0	241.54	51	53	1.36	482.90	481	6	27.3		PB-214
0	295.08	73	45	1.04	589.85	586	10	20.4		PB-214
0	338.46	85	16	1.38	676.51	669	16	15.1		AC-228
0	351.84	129	39	1.29	703.25	696	14	13.4		PB-214
0	510.43	70	22	2.32	1020.17	1013	19	19.3		
0	583.20	89	14	1.43	1165.61	1160	13	14.1		TL-208
0	609.45	99	18	1.27	1218.10	1212	13	13.6		BI-214
0	661.45	107	11	1.42	1322.06	1316	10	11.4		CS-137
0	910.97	60	0	2.24	1821.10	1814	13	12.9		AC-228
0	969.15	31	6	1.82	1937.49	1931	10	22.5		AC-228
0	1120.48	26	8	1.70	2240.34	2235	11	29.4		BI-214

Post-NID Peak Search Report (continued)
Sample ID : 020904007

Page : 2
Acquisition date : 4-SEP-2002 11:01:55

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	1460.41	221	0	2.08	2921.00	2913	15	6.7		K-40

----- Identified Nuclides -----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	7.326E+00	5.668E-01	2.455E-01	9.383E-03	29.838
CS-137	2.273E-01	2.716E-02	2.723E-02	9.457E-04	8.345
TL-208	1.698E-01	2.471E-02	2.571E-02	9.253E-04	6.603
PB-212	4.133E-01	5.011E-02	5.129E-02	3.183E-03	8.060
BI-214	3.734E-01	4.752E-02	3.072E-02	1.085E-03	12.153
PB-214	3.745E-01	4.018E-02	3.369E-02	1.124E-03	11.115
RA-226	1.043E+00	3.827E-01	5.547E-01	3.260E-02	1.881
AC-228	5.633E-01	5.080E-02	7.674E-02	2.422E-03	7.341

----- Non-Identified Nuclides -----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	-6.078E-02		6.765E-02	2.105E-01	8.431E-03	-0.289
MN-54	9.078E-03		5.305E-03	2.906E-02	9.793E-04	0.312
CO-60	6.542E-03		9.240E-03	4.297E-02	1.469E-03	0.152
NE-94	-9.180E-03		6.851E-03	2.453E-02	8.050E-04	-0.374
RU-106	3.329E-02		4.748E-02	2.290E-01	8.039E-03	0.145
AG-108M	3.499E-03		5.969E-03	2.634E-02	9.279E-04	0.133
AG-110M	2.616E-03		3.581E-03	1.899E-02	6.599E-04	0.138
SB-125	-8.400E-03		1.769E-02	6.036E-02	2.422E-03	-0.139
CS-134	1.326E-03		5.692E-03	2.392E-02	8.472E-04	0.055
EU-152	2.416E-02		3.894E-02	1.888E-01	6.987E-03	0.128
EU-154	-8.900E-03		1.952E-02	8.193E-02	3.315E-03	-0.109
EU-155	-2.890E-03		2.296E-02	8.350E-02	2.928E-03	-0.035
BI-212	1.365E-01		7.729E-02	3.505E-01	1.216E-02	0.389
RA-223	-5.782E-03		3.587E-02	1.272E-01	5.769E-03	-0.045
TH-228	5.565E-01		5.564E-01	2.123E+00	1.015E-01	0.262
PA-234	2.744E-01	+	3.786E-02	5.853E-02	3.068E-03	4.687
TH-234	3.188E-01		2.686E-01	1.060E+00	9.585E-02	0.301
U-235	6.328E-02	+	2.321E-02	4.689E-02	2.730E-03	1.350
AM-241	-4.837E-02		3.017E-02	1.022E-01	5.174E-03	-0.473

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 11:18
REQUESTOR : CAS_TECH

PAGE 1 OF ____

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE: 9531-0000-031FM

SAMPLE No. : 020904007 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMAR
COUNT TIME : 4-SEP-2002 11:01:55. SAMPLE QUANTITY : 1.34100E+03
SAMPLE TIME : 3-SEP-2002 13:40:00. DETECTOR : DET 2
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	-0.39	7.326E+00	QA Results OK
CS-137	661.65	-0.20	2.273E-01	QA Results OK
TL-208	583.14	0.06	1.698E-01	QA Results OK
PB-212	238.63	-0.12	4.133E-01	QA Results OK
BI-214	609.31	0.14	3.734E-01	QA Results OK
PB-214	351.92	-0.08	3.745E-01	QA Results OK
RA-226	186.21	0.09	1.043E+00	QA Results OK
AC-228	911.07	-0.10	5.633E-01	QA Results OK
AVG ENERGY DIFF = -0.07			1.049E+01	= TOTAL GAMMA ACTIVITY

74.65 KeV Peak was used in identifying 2 isotopes
77.18 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
93.02	57.	1.18	1.975E+00	1.473E-03	28.5	P	AC-228	1.144E+00
						U	TH-234	1.482E+00
510.43	70.	2.32	4.979E+00	3.713E-03	19.3	P	AC-228	2.148E+01
						U	ANN-RD	0.000E+00

Total Unidentified/Rejected Peaks = 2
% Unidentified/Rejected Peaks = 11.11

Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

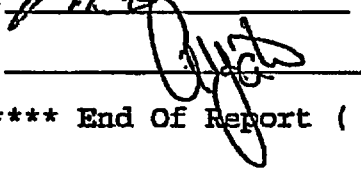
Lyth

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 11:18
REQUESTOR : CAS_TECH

PAGE 2 OF ____

CYAPCO
HADDAM NECK STATION
POST NID QA ANALYSIS

Performed by: 

Reviewed by: 

**** End Of Report (2 Pages) ****

5-SEP-2002 12:10:23.98

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : 9531-0000-031FMD

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020904020

* SAMPLE GEOMETRY : 1LMARSAND

SAMPLE TIME : 3-SEP-2002 13:51:

* GEO EFFICIENCY DATE: 19-AUG-1997

SAMPLE TYPE : DIRT/SEDIMENT

* SAMPLE QUANTITY : 1.50300E+03 GM

DETECTOR : DET 2

* LIBRARY : FSS DIRT

LAST ENERGY CAL : 4-SEP-2002 12:52:

* ENERGY TOLERANCE: 1.00000

KEV/CHANNEL : 5.01030E-01

* HALF LIFE RATIO : 9.00000

START CHANNEL : 100

* END CHANNEL : 4096

ACQ DATE & TIME : 4-SEP-2002 14:37:

* DEADTIME (%) : 0.1%

PRESET LIVE TIME : 0 00:16:40

* SENSITIVITY : 5.00000

ELAPSED REAL TIME : 1000.9 Secs

* GAUSSIAN SEN : 10.00000

ELAPSED LIVE TIME : 1000.0 Secs

* CORRECTION FACTOR: 1.00000E+06

DECAYED TO 1 DAYS HOURS

FILE IDENT : CAS\$DISK:[NEU.SAMPLE.RP.NEW]020904020_ADC2_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTMEAN V1.8

Collected by : DEGOSTIN

REVIEWED BY :

COMMENTS :

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	77.74	61	211	1.03	155.74	151	7	42.2		PB-214
										PB-212
0	87.05	46	100	0.94	174.34	172	6	37.0		PB-212
0	185.89	35	113	1.17	371.67	368	8	55.1		RA-226
3	238.58	289	42	1.10	476.89	472	21	7.0	1.17E+00	PB-212
3	241.49	68	45	1.57	482.70	472	21	25.4		PB-214
0	295.32	81	62	0.95	590.20	585	11	21.6		PB-214
0	338.52	77	22	1.05	676.49	674	8	16.2		AC-228
0	352.04	127	40	1.15	703.49	698	10	12.9		PB-214
0	512.61	46	59	2.28	1024.30	1014	23	47.2		
0	583.31	95	29	1.37	1165.58	1158	15	16.2		TL-208
0	609.41	113	12	1.39	1217.75	1211	12	11.3		BI-214
0	661.67	104	39	1.55	1322.21	1317	14	15.6		CS-137
0	767.74	23	5	3.65	1534.27	1528	11	28.1		BI-214
0	795.73	24	2	0.96	1590.23	1585	13	25.7		
0	911.44	77	0	1.20	1821.62	1816	12	11.4		AC-228
0	969.12	33	3	0.65	1937.01	1931	11	19.9		AC-228
0	1020.03	14	2	0.67	2038.86	2033	10	34.1		
0	1120.35	21	8	1.14	2239.58	2235	8	31.7		BI-214

Post-NID Peak Search Report (continued)

Page : 2

Sample ID : 020904020

Acquisition date : 4-SEP-2002 14:37:57

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	1460.89	245	8	2.69	2921.31	2913	15	6.8		K-40

----- Identified Nuclides -----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	7.834E+00	6.541E-01	2.998E-01	1.432E-02	26.133
CS-137	2.136E-01	3.553E-02	3.081E-02	1.781E-03	6.933
TL-208	1.764E-01	3.013E-02	2.178E-02	1.195E-03	8.100
PB-212	5.025E-01	4.141E-02	3.775E-02	1.805E-03	13.310
BI-214	4.084E-01	4.532E-02	5.453E-02	3.050E-03	7.490
PB-214	3.767E-01	4.081E-02	6.054E-02	2.790E-03	6.222
RA-226	7.281E-01	4.029E-01	6.227E-01	3.022E-02	1.169
AC-228	6.005E-01	5.408E-02	2.246E-02	1.040E-03	26.740

----- Non-Identified Nuclides -----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	-8.135E-02		5.923E-02	1.687E-01	8.401E-03	-0.482
MN-54	4.768E-03		7.271E-03	3.260E-02	1.653E-03	0.146
CO-60	2.861E-02		1.061E-02	5.527E-02	2.632E-03	0.518
NB-94	3.654E-03		6.259E-03	2.914E-02	1.406E-03	0.125
RU-106	-2.907E-02		5.821E-02	2.374E-01	1.340E-02	-0.122
AG-108M	-4.966E-03		5.558E-03	2.201E-02	1.236E-03	-0.226
AG-110M	-2.722E-03		6.752E-03	2.564E-02	1.479E-03	-0.106
SE-125	-3.507E-02		2.161E-02	6.033E-02	2.832E-03	-0.581
CS-134	4.515E-03		4.328E-03	2.125E-02	1.185E-03	0.212
EU-152	8.708E-02		4.399E-02	2.326E-01	1.111E-02	0.374
EU-154	-8.243E-04		2.379E-02	1.015E-01	5.416E-03	-0.008
EU-155	5.556E-02		2.394E-02	9.901E-02	4.316E-03	0.561
BI-212	7.171E-02		7.268E-02	3.155E-01	1.767E-02	0.227
RA-223	5.978E-02		4.740E-02	1.790E-01	8.398E-03	0.334
TH-228	-8.094E-02		5.620E-01	2.047E+00	1.040E-01	-0.040
PA-234	1.148E-01	+	4.884E-02	5.682E-02	3.216E-03	2.021
TH-234	1.007E+00		3.170E-01	1.269E+00	1.489E-01	0.793
U-235	4.417E-02	+	2.445E-02	4.778E-02	2.319E-03	0.924
AM-241	2.444E-02		2.969E-02	1.184E-01	1.213E-02	0.206

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 5-SEP-2002 12:10
REQUESTOR : CAS_TECH

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CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : 9531-0000-031FMD

SAMPLE No. : 020904020 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : ILMARSAND
COUNT TIME : 4-SEP-2002 14:37:57. SAMPLE QUANTITY : 1.50300E+03
SAMPLE TIME : 3-SEP-2002 13:51:00. DETECTOR : DET 2
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	0.09	7.834E+00	QA Results OK
CS-137	661.65	0.02	2.136E-01	QA Results OK
TL-208	583.14	0.17	1.764E-01	QA Results OK
PB-212	238.63	-0.04	5.025E-01	QA Results OK
BI-214	609.31	0.10	4.084E-01	QA Results OK
PB-214	351.92	0.12	3.767E-01	QA Results OK
RA-226	186.21	-0.32	7.281E-01	QA Results OK
AC-228	911.07	0.37	6.005E-01	QA Results OK
AVG ENERGY DIFF = 0.06			1.084E+01 = TOTAL GAMMA ACTIVITY	

77.74 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
512.61	46.	2.28	3.575E+00	2.378E-03	47.2	P	Ac-228	
795.73	24.	0.96	2.670E+00	1.776E-03	25.7	R	CS-134	5.627E-02
1020.03	14.	0.67	1.949E+00	1.296E-03	34.1	P		

Total Unidentified/Rejected Peaks = 3
% Unidentified/Rejected Peaks = 15.79

Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

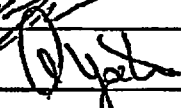
REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 5-SEP-2002 12:10
REQUESTOR : CAS_TECH

PAGE 2 OF ____

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

Performed by: 

Reviewed by: 

**** End Of Report (2 Pages) ****

4-SEP-2002 11:42:50.73

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMPLE: 9531-0000-032FM

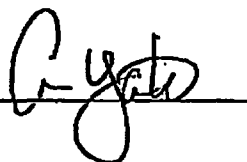
REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020904008 * SAMPLE GEOMETRY : 1LMARSAND
SAMPLE TIME : 3-SEP-2002 13:45: * GEO EFFICIENCY DATE: 24-SEP-1997
SAMPLE TYPE : DIRT/SEDIMENT * SAMPLE QUANTITY : 1.66700E+03 GM

DETECTOR : DET 1 * LIBRARY : FSS_DIRT
LAST ENERGY CAL : 4-SEP-2002 08:19: * ENERGY TOLERANCE: 1.00000
KEV/CHANNEL : 5.00745E-01 * HALF LIFE RATIO : 9.00000
START CHANNEL : 100 * END CHANNEL : 4096
ACQ DATE & TIME : 4-SEP-2002 11:25: * DEADTIME (%) : 0.0%
PRESET LIVE TIME : 0 00:16:40 * SENSITIVITY : 5.00000
ELAPSED REAL TIME : 1000.2 Secs * GAUSSIAN SEN : 10.00000
ELAPSED LIVE TIME : 1000.0 Secs * CORRECTION FACTOR: 1.00000E+06
DECAYED TO 0 DAYS HOURS
FILE IDENT : CAS\$DISK:[NEU.SAMPLE.RP.NEW]020904008_ADC1_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTIMEAN V1.8

Collected by : JOHNSON

REVIEWED BY : 

COMMENTS :

Cs-137 ID

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	.FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	77.64	109	110	1.07	155.29	152	8	19.8		PB-214 PB-212
0	93.79	53	142	1.14	187.53	183	12	48.2		
0	185.86	55	51	1.13	371.46	368	7	25.6		RA-226
3	238.67	241	36	1.20	476.96	471	17	7.7	1.07E+00	PB-212
3	241.55	53	56	1.49	482.70	471	17	32.7		PB-214
0	294.78	90	22	1.23	589.07	583	11	14.5		PB-214
0	300.33	25	16	1.12	600.16	597	7	35.0		
0	338.84	50	26	1.20	677.11	673	9	24.3		AC-228
0	352.22	112	36	1.03	703.84	698	12	14.3		PB-214
0	511.53	59	12	2.39	1022.23	1016	16	19.5		
0	583.66	80	36	1.48	1166.43	1160	14	19.7		TL-208
0	609.73	89	11	1.45	1218.54	1211	13	12.8		BI-214
0	661.78	17	11	1.12	1322.59	1316	11	44.9		CS-137
0	886.37	11	2	1.31	1771.72	1768	7	35.4		
0	911.82	51	9	1.66	1822.64	1816	12	18.3		AC-228
0	969.32	41	4	1.12	1937.66	1933	9	18.3		AC-228
0	1120.63	22	2	1.54	2240.39	2236	9	24.9		BI-214
0	1461.31	183	6	1.52	2922.32	2916	13	7.9		K-40

----- Identified Nuclides -----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	8.470E+00	7.833E-01	4.284E-01	2.039E-02	19.768
CS-137	4.688E-02	2.122E-02	3.235E-02	1.852E-03	1.449
TL-208	1.991E-01	4.072E-02	4.337E-02	2.375E-03	4.590
PB-212	5.229E-01	4.740E-02	4.435E-02	2.137E-03	11.790
BI-214	4.401E-01	5.420E-02	5.009E-02	2.790E-03	8.787
PB-214	4.565E-01	4.734E-02	6.187E-02	2.874E-03	7.378
RA-226	1.387E+00	3.608E-01	5.778E-01	2.808E-02	2.400
AC-228	6.353E-01	7.564E-02	1.290E-01	5.979E-03	4.926

----- Non-Identified Nuclides -----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	5.954E-02		8.056E-02	3.138E-01	1.568E-02	0.190
MN-54	-2.684E-03		8.996E-03	3.777E-02	1.914E-03	-0.071
CO-60	4.929E-03		1.002E-02	4.905E-02	2.312E-03	0.100
NB-94	7.128E-03		4.676E-03	2.995E-02	1.445E-03	0.238
RU-106	5.494E-02		5.591E-02	2.693E-01	1.511E-02	0.204
AG-108M	-7.526E-04		7.881E-03	2.937E-02	1.641E-03	-0.026
AG-110M	0.000E+00		0.000E+00	2.670E-02	1.526E-03	0.000
SB-125	-4.965E-02		2.483E-02	6.388E-02	3.010E-03	-0.777
CS-134	3.184E-03		6.508E-03	2.749E-02	1.527E-03	0.116
EU-152	2.125E-02		3.903E-02	2.107E-01	1.001E-02	0.101
EU-154	-2.151E-02		1.708E-02	5.477E-02	2.914E-03	-0.393
EU-155	5.904E-03		3.119E-02	1.165E-01	4.996E-03	0.051
BI-212	1.547E-01		7.776E-02	3.822E-01	2.129E-02	0.405
RA-223	7.972E-02		4.639E-02	1.904E-01	8.997E-03	0.419
TH-228	1.654E-01		6.551E-01	2.492E+00	1.288E-01	0.066
PA-234	2.767E-01	+	5.728E-02	8.141E-02	4.878E-03	3.399
TH-234	4.374E-01		4.586E-01	1.800E+00	2.411E-01	0.243
U-235	8.411E-02	+	2.189E-02	5.387E-02	2.618E-03	1.561
AM-241	-6.512E-02		5.421E-02	1.911E-01	2.613E-02	-0.341

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 11:42
REQUESTOR : CAS_TECH

PAGE 1 OF ____

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE: 9531-0000-032FM

SAMPLE No. : 020904008 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
COUNT TIME : 4-SEP-2002 11:25:52. SAMPLE QUANTITY : 1.66700E+03
SAMPLE TIME : 3-SEP-2002 13:45:00. DETECTOR : DET 1
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	0.51	8.470E+00	QA Results OK
CS-137	661.65	0.13	4.688E-02	QA Results OK
TL-208	583.14	0.53	1.991E-01	QA Results OK
PB-212	238.63	0.05	5.229E-01	QA Results OK
BI-214	609.31	0.42	4.401E-01	QA Results OK
PB-214	351.92	0.30	4.565E-01	QA Results OK
RA-226	186.21	-0.35	1.387E+00	QA Results OK
AC-228	911.07	0.75	6.353E-01	QA Results OK
AVG ENERGY DIFF = 0.29				1.216E+01 = TOTAL GAMMA ACTIVITY

77.64 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
93.79	53.	1.14	3.021E+00	1.812E-03	48.2	P	AC-228	1.408E+00
300.33	25.	1.12	1.765E+00	1.059E-03	35.0	P	PB-212	8.440E-01
511.53	59.	2.39	6.783E+00	4.069E-03	19.5	P	ANN-RD	0.000E+00
886.37	11.	1.31	2.163E+00	1.298E-03	35.4	P		

Total Unidentified/Rejected Peaks = 4

% Unidentified/Rejected Peaks = 22.22

Flags: U - Unknown Line

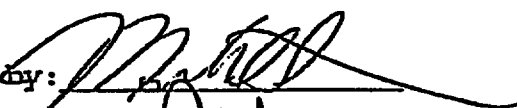
R - Rejected During Analysis

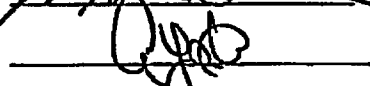
P - Positively Identified (line not in analysis library)

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 11:42
REQUESTOR : CAS_TECH

PAGE 2 OF ____

CYAPCO
HADDAM NECK STATION
POST NID QA ANALYSIS

Performed by: 

Reviewed by: 

**** End Of Report (2 Pages) ****

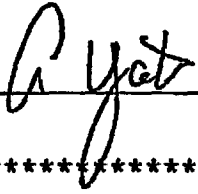
5-SEP-2002 12:11:41.45

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : 9531-0000-032FMD
REASON FOR ANALYSIS: Site Characterization
SAMPLE ID : 020904021 * SAMPLE GEOMETRY : 1LMARSAND
SAMPLE TIME : 3-SEP-2002 13:57: * GEO EFFICIENCY DATE: 24-SEP-1997
SAMPLE TYPE : DIRT/SEDIMENT * SAMPLE QUANTITY : 1.77900E+03 GM

DETECTOR : DET 1 * LIBRARY : FSS DIRT
LAST ENERGY CAL : 4-SEP-2002 12:28: * ENERGY TOLERANCE: 1.00000
KEV/CHANNEL : 5.00547E-01 * HALF LIFE RATIO : 9.00000
START CHANNEL : 100 * END CHANNEL : 4096
ACQ DATE & TIME : 4-SEP-2002 14:39: * DEADTIME (%) : 0.0%
PRESET LIVE TIME : 0 00:16:40 * SENSITIVITY : 5.00000
ELAPSED REAL TIME : 1000.2 Secs * GAUSSIAN SEN : 10.00000
ELAPSED LIVE TIME : 1000.0 Secs * CORRECTION FACTOR: 1.00000E+06
DECAYED TO 1 DAYS HOURS
FILE IDENT : CAS\$DISK:[NEU.SAMPLE.RP.NEW] 020904021_ADC1_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTMEAN V1.8

Collected by : JOHNSON
REVIEWED BY : 
COMMENTS :

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
2	74.96	99	83	0.93	149.93	144	15	17.9	1.54E+00	PB-212
										PB-214
2	77.17	146	71	0.90	154.34	144	15	11.8		PB-214
										PB-212
0	87.17	47	116	1.29	174.32	171	7	41.0		PB-212
0	93.09	72	140	1.50	186.16	183	9	32.0		
0	185.98	51	85	0.92	371.79	368	8	34.8		RA-226
0	209.08	57	74	1.45	417.95	412	10	31.1		AC-228
0	238.95	296	135	1.11	477.65	472	13	9.9		PB-212
0	295.53	54	47	1.25	590.74	586	9	26.5		PB-214
0	338.46	63	42	0.81	676.54	673	9	22.7		AC-228
0	351.91	123	16	1.05	703.45	699	8	10.7		PB-214
0	462.83	33	13	0.63	925.21	919	13	28.6		AC-228
0	510.69	32	19	1.01	1020.91	1016	11	32.3		
0	583.56	94	41	1.52	1166.62	1159	17	19.0		TL-208
0	609.42	91	18	1.76	1218.35	1212	12	14.0		BI-214
0	860.96	19	8	1.46	1721.54	1714	15	39.8		TL-208
0	911.04	58	0	1.13	1821.76	1816	12	13.1		AC-228
0	969.13	40	5	1.47	1938.01	1933	9	18.4		AC-228

Post-NID Peak Search Report (continued)

Sample ID : 020904021

Page : 2

Acquisition date : 4-SEP-2002 14:39:45

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	1120.00	18	3	0.90	2239.99	2233	13	31.3		BI-214
0	1460.89	180	7	1.62	2922.60	2915	13	8.0		K-40

---- Identified Nuclides ----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	7.797E+00	7.280E-01	4.040E-01	1.923E-02	19.299
TL-208	2.298E-01	4.159E-02	3.534E-02	1.936E-03	6.500
PB-212	5.970E-01	6.376E-02	3.527E-02	1.700E-03	16.929
BI-214	4.056E-01	5.526E-02	5.487E-02	3.056E-03	7.392
PB-214	3.824E-01	4.111E-02	5.125E-02	2.381E-03	7.461
RA-226	1.197E+00	4.211E-01	6.208E-01	3.017E-02	1.929
AC-228	6.969E-01	6.482E-02	7.525E-02	3.489E-03	9.261

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	-4.528E-03		3.913E-02	1.576E-01	7.875E-03	-0.029
MN-54	1.369E-02		8.484E-03	4.233E-02	2.145E-03	0.323
CO-60	8.272E-03		1.027E-02	5.073E-02	2.390E-03	0.163
NB-94	3.344E-03		8.475E-03	3.843E-02	1.854E-03	0.087
RU-106	-1.366E-02		6.833E-02	2.497E-01	1.401E-02	-0.055
AG-108M	-2.685E-04		7.468E-03	2.805E-02	1.567E-03	-0.010
AG-110M	6.429E-03		6.043E-03	3.053E-02	1.745E-03	0.211
SB-125	2.324E-02		2.060E-02	8.708E-02	4.104E-03	0.267
CS-134	8.279E-04		6.955E-03	2.674E-02	1.485E-03	0.031
CS-137	1.893E-03		5.612E-03	2.782E-02	1.592E-03	0.068
EU-152	0.000E+00		0.000E+00	5.876E-02	2.791E-03	0.000
EU-154	7.760E-03		1.843E-02	9.990E-02	5.316E-03	0.078
EU-155	1.590E-02		2.842E-02	1.092E-01	4.682E-03	0.146
BI-212	1.220E-01		8.792E-02	3.971E-01	2.212E-02	0.307
RA-223	1.824E-02		4.981E-02	1.829E-01	8.641E-03	0.100
TH-228	9.802E-01		6.708E-01	2.681E+00	1.386E-01	0.366
PA-234	3.490E-01	+	4.631E-02	7.682E-02	4.603E-03	4.543
TH-234	5.428E-01		3.979E-01	1.607E+00	2.154E-01	0.338
U-235	7.262E-02	+	2.554E-02	5.682E-02	2.761E-03	1.278
AM-241	5.773E-02		4.676E-02	1.923E-01	2.630E-02	0.300

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 5-SEP-2002 12:11
REQUESTOR : CAS_TECH

PAGE 1 OF ____

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : 9531-0000-032FMD

SAMPLE No. : 020904021 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
COUNT TIME : 4-SEP-2002 14:39:45. SAMPLE QUANTITY : 1.77900E+03
SAMPLE TIME : 3-SEP-2002 13:57:00. DETECTOR : DET 1
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	0.09	7.797E+00	QA Results OK
TL-208	583.14	0.42	2.298E-01	QA Results OK
PB-212	238.63	0.33	5.970E-01	QA Results OK
BI-214	609.31	0.11	4.056E-01	QA Results OK
PB-214	351.92	-0.01	3.824E-01	QA Results OK
RA-226	186.21	-0.23	1.197E+00	QA Results OK
AC-228	911.07	-0.03	6.969E-01	QA Results OK
AVG ENERGY DIFF =			0.10	1.131E+01 = TOTAL GAMMA ACTIVITY

74.96 KeV Peak was used in identifying 2 isotopes
77.17 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
93.09	72.	1.50	4.081E+00	2.294E-03	32.0	P	AC-228	1.762E+00
						U	TH-234	2.307E+00
510.69	32.	1.01	3.590E+00	2.018E-03	32.3	U	ANN-RD	0.000E+00

Total Unidentified/Rejected Peaks = 2
% Unidentified/Rejected Peaks = 10.53

Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

Ayat

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 5-SEP-2002 12:11
REQUESTOR : CAS_TECH

PAGE 2 OF ____

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

Performed by: _____

Reviewed by: _____

**** End Of Report (2 Pages) ****

4-SEP-2002 11:44:02.92

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMPLE: 9531-0000-033FM

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020904009

* SAMPLE GEOMETRY : 1LMARSAND

SAMPLE TIME : 3-SEP-2002 14:03:

* GEO EFFICIENCY DATE: 19-AUG-1997

SAMPLE TYPE : DIRT/SEDIMENT

* SAMPLE QUANTITY : 1.61600E+03 GM

DETECTOR : DET 2

* LIBRARY : FSS_DIRT

LAST ENERGY CAL : 4-SEP-2002 07:49:

* ENERGY TOLERANCE: 1.00000

KEV/CHANNEL : 5.00931E-01

* HALF LIFE RATIO : 9.00000

START CHANNEL : 100

* END CHANNEL : 4096

ACQ DATE & TIME : 4-SEP-2002 11:27:

* DEADTIME (%) : 0.0%

PRESET LIVE TIME : 0 00:16:40

* SENSITIVITY : 5.00000

ELAPSED REAL TIME : 1000.3 Secs

* GAUSSIAN SEN : 10.00000

ELAPSED LIVE TIME : 1000.0 Secs

* CORRECTION FACTOR: 1.00000E+06

DECAYED TO 0 DAYS HOURS

FILE IDENT : CAS\$DISK:[NEU.SAMPLE.RP.NEW] 020904009_ADC2_DIRTSediment.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTMEAN V1.8

Collected by : DEGOSTIN

REVIEWED BY :

COMMENTS :

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	77.28	103	196	0.81	154.88	152	8	26.1		PB-214
										PB-212
0	87.23	75	129	0.83	174.74	171	7	27.9		PB-212
1	92.47	30	59	0.87	185.19	184	12	38.7	2.69E+00	
1	93.27	64	114	1.07	186.81	184	12	29.7		
0	185.76	63	87	1.23	371.50	368	8	28.3		RA-226
4	238.54	361	45	1.06	476.91	470	18	6.0	1.99E+00	PB-212
4	241.72	88	64	1.56	483.27	470	18	19.9		PB-214
0	295.72	81	75	1.00	591.12	586	11	24.0		PB-214
0	329.30	37	79	1.81	658.21	652	17	56.8		
0	338.51	65	28	1.06	676.61	673	7	18.4		AC-228
0	351.97	168	45	1.18	703.52	697	14	11.5		PB-214
0	462.91	18	25	1.40	925.19	922	9	56.0		AC-228
0	510.85	68	22	1.19	1020.99	1015	13	19.0		
0	583.07	120	18	1.39	1165.36	1158	15	12.0		TL-208
0	609.25	137	17	1.07	1217.69	1213	11	10.3		BI-214
0	661.71	98	30	1.47	1322.57	1316	14	16.1		CS-137
0	727.61	27	15	2.03	1454.34	1449	12	35.0		BI-212
0	910.98	70	9	1.78	1821.12	1815	16	15.1		AC-228

Post-NID Peak Search Report (continued)
Sample ID : 020904009

Page : 2
Acquisition date : 4-SEP-2002 11:27:03

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	969.58	22	24	0.65	1938.34	1930	12	49.4		AC-228
0	1460.28	256	4	2.06	2920.74	2911	18	6.5		K-40

----- Identified Nuclides -----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	7.615E+00	6.169E-01	2.204E-01	1.053E-02	34.548
CS-137	1.866E-01	3.197E-02	3.341E-02	1.931E-03	5.584
TL-208	2.069E-01	2.737E-02	2.313E-02	1.269E-03	8.947
BI-212	3.965E-01	1.406E-01	1.481E-01	8.295E-03	2.677
PB-212	5.931E-01	4.383E-02	4.218E-02	2.017E-03	14.061
BI-214	4.457E-01	5.231E-02	3.847E-02	2.152E-03	11.585
PB-214	4.387E-01	4.410E-02	4.579E-02	2.110E-03	9.582
RA-226	1.226E+00	3.524E-01	5.184E-01	2.516E-02	2.365
AC-228	4.946E-01	5.799E-02	6.814E-02	3.157E-03	7.258

----- Non-Identified Nuclides -----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	1.772E-03		5.449E-02	1.958E-01	9.749E-03	0.009
MN-54	1.727E-03		8.048E-03	3.353E-02	1.700E-03	0.051
CO-60	1.426E-04		8.294E-03	3.543E-02	1.687E-03	0.004
NB-94	-7.623E-04		6.219E-03	2.642E-02	1.275E-03	-0.029
RU-106	3.036E-02		5.319E-02	2.400E-01	1.354E-02	0.127
AG-108M	-2.337E-03		5.865E-03	2.414E-02	1.355E-03	-0.097
AG-110M	-4.965E-03		5.946E-03	2.134E-02	1.231E-03	-0.233
SB-125	-8.954E-03		2.332E-02	7.749E-02	3.637E-03	-0.116
CS-134	1.173E-02		5.291E-03	2.667E-02	1.487E-03	0.440
EU-152	8.940E-02		3.674E-02	2.101E-01	1.004E-02	0.426
EU-154	2.281E-02		2.353E-02	1.112E-01	5.929E-03	0.205
EU-155	3.887E-03		2.462E-02	9.011E-02	3.927E-03	0.043
RA-223	4.003E-02		4.325E-02	1.603E-01	7.521E-03	0.250
TH-228	1.502E+00		5.717E-01	2.304E+00	1.171E-01	0.652
PA-234	1.804E-01	+	4.810E-02	6.224E-02	3.523E-03	2.899
TH-234	7.538E-01		3.191E-01	1.247E+00	1.462E-01	0.605
U-235	7.438E-02	+	2.138E-02	4.761E-02	2.311E-03	1.562
AM-241	8.351E-03		3.523E-02	1.321E-01	1.353E-02	0.063

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 11:44
REQUESTOR : CAS_TECH

PAGE 1 OF ____

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE: 9531-0000-033FM

SAMPLE No. : 020904009 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
COUNT TIME : 4-SEP-2002 11:27:03. SAMPLE QUANTITY : 1.61600E+03
SAMPLE TIME : 3-SEP-2002 14:03:00. DETECTOR : DET 2
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	-0.52	7.615E+00	QA Results OK
CS-137	661.65	0.06	1.866E-01	QA Results OK
TL-208	583.14	-0.07	2.069E-01	QA Results OK
BI-212	727.17	0.44	3.965E-01	QA Results OK
PB-212	238.63	-0.08	5.931E-01	QA Results OK
BI-214	609.31	-0.06	4.457E-01	QA Results OK
PB-214	351.92	0.05	4.387E-01	QA Results OK
RA-226	186.21	-0.45	1.226E+00	QA Results OK
AC-228	911.07	-0.09	4.946E-01	QA Results OK
AVG ENERGY DIFF =			-0.08	1.160E+01 = TOTAL GAMMA ACTIVITY

77.28 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
92.47	30.	0.87	1.218E+00	7.535E-04	38.7	P	PB_X-RAY	0.000E+00
						P	AC-228	5.855E-01
						U	TH-234	7.579E-01
93.27	64.	1.07	2.593E+00	1.605E-03	29.7	P	AC-228	1.247E+00
						U	TH-234	1.614E+00
329.30	37.	1.81	2.015E+00	1.247E-03	56.8	U		
510.85	68.	1.19	5.246E+00	3.246E-03	19.0	U	ANN-RD	0.000E+00

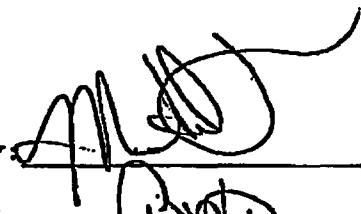
Total Unidentified/Rejected Peaks = 4
% Unidentified/Rejected Peaks = 20.00

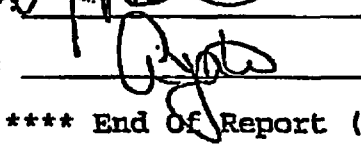
Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 11:44
REQUESTOR : CAS_TECH

PAGE 2 OF ____

CYAPCO
HADDAM NECK STATION
POST NID QA ANALYSIS

Performed by:  _____

Reviewed by:  _____

**** End Of Report (2 Pages) ****

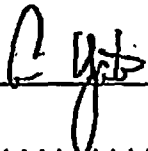
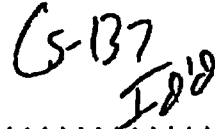
5-SEP-2002 12:28:59.97

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : 9531-0000-033FMD
REASON FOR ANALYSIS: Site Characterization
SAMPLE ID : 020904023 * SAMPLE GEOMETRY : 1LMARSAND
SAMPLE TIME : 3-SEP-2002 14:12: * GEO EFFICIENCY DATE: 1-JUL-1998
SAMPLE TYPE : DIRT/SEDIMENT * SAMPLE QUANTITY : 1.52100E+03 GM

DETECTOR : DET 5 * LIBRARY : FSS_DIRT
LAST ENERGY CAL : 4-SEP-2002 07:50: * ENERGY TOLERANCE: 1.00000
KEV/CHANNEL : 5.00665E-01 * HALF LIFE RATIO : 9.00000
START CHANNEL : 100 * END CHANNEL : 4096
ACQ DATE & TIME : 4-SEP-2002 15:47: * DEADTIME (%) : 0.1%
PRESET LIVE TIME : 0 00:16:40 * SENSITIVITY : 5.00000
ELAPSED REAL TIME : 1000.6 Secs * GAUSSIAN SEN : 10.00000
ELAPSED LIVE TIME : 1000.0 Secs * CORRECTION FACTOR: 1.00000E+06
DECAYED TO 1 DAYS HOURS
FILE IDENT : CAS\$DISK:[NEU.SAMPLE.RP.NEW] 020904023_ADC5_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTMEAN V1.8

Collected by : DEGOSTIN
REVIEWED BY : 
COMMENTS : 

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	63.39	103	273	0.78	126.89	123	8	29.5		TH-234
2	74.87	234	206	0.86	149.82	146	18	11.1	2.30E+00	PB-212
										PB-214
2	77.14	380	156	0.91	154.36	146	18	7.2		PB-214
										PB-212
0	87.28	84	176	1.06	174.62	172	6	27.3		PB-212
4	89.90	84	119	1.06	179.85	178	15	21.2	1.49E+00	
4	92.77	158	173	1.06	185.57	178	15	15.2		
0	186.05	119	149	1.27	371.93	367	10	21.4		RA-226
0	209.52	50	110	1.13	418.82	413	9	40.8		AC-228
1	238.56	529	66	1.02	476.85	473	19	4.9	1.57E+00	PB-212
1	241.03	67	64	1.23	481.78	473	19	30.6		
1	242.09	57	61	1.23	483.90	473	19	31.0		PB-214
0	295.02	162	60	1.40	589.66	584	11	12.2		PB-214
0	300.74	75	84	1.45	601.09	595	14	28.4		
1	337.84	73	62	1.34	675.24	671	10	23.3	1.41E+01	
1	338.72	67	57	1.22	677.00	671	10	23.9		AC-228
0	351.92	245	68	1.16	703.38	697	13	9.4		PB-214
0	510.63	103	41	1.14	1020.60	1014	14	16.6		

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	tErr	Fit	Nuclides
0	583.15	171	34	1.40	1165.56	1159	15	10.7		TL-208
0	609.04	212	25	1.30	1217.33	1210	13	8.5		BI-214
0	661.87	17	17	1.41	1322.97	1319	9	50.2		CS-137
5	726.76	44	12	2.43	1452.71	1446	19	22.3	1.77E+00	BI-212
5	731.13	24	1	2.11	1461.45	1446	19	24.1		
0	910.93	109	21	1.60	1821.06	1814	14	13.1		AC-228
4	964.71	37	10	2.41	1928.65	1922	28	22.6	1.42E+00	AC-228
4	968.93	75	4	1.63	1937.09	1922	28	13.6		AC-228
0	1120.00	38	19	1.60	2239.33	2230	14	29.8		BI-214
0	1460.32	504	6	1.99	2920.51	2914	13	4.6		K-40
0	1763.70	49	0	1.50	3528.06	3522	11	14.3		BI-214

----- Identified Nuclides -----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	1.067E+01	6.988E-01	2.232E-01	1.046E-02	47.798
CS-137	2.362E-02	1.192E-02	2.416E-02	1.354E-03	0.978
TL-208	2.122E-01	2.535E-02	1.709E-02	9.218E-04	12.420
BI-212	4.776E-01	1.095E-01	1.732E-01	9.418E-03	2.758
PB-212	5.943E-01	4.098E-02	3.025E-02	1.530E-03	19.649
BI-214	5.346E-01	4.393E-02	3.833E-02	2.098E-03	13.950
PB-214	4.656E-01	3.724E-02	3.797E-02	1.820E-03	12.264
RA-226	1.657E+00	3.634E-01	4.148E-01	2.068E-02	3.995
AC-228	5.942E-01	5.173E-02	8.106E-02	3.654E-03	7.331
TH-234	1.156E+00	3.586E-01	4.457E-01	4.227E-02	2.593

----- Non-Identified Nuclides -----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	7.863E-02		4.783E-02	1.946E-01	9.671E-03	0.404
MN-54	2.391E-03		5.433E-03	2.364E-02	1.165E-03	0.101
CO-60	2.450E-02		9.992E-03	4.631E-02	2.153E-03	0.529
NB-94	-1.652E-03		4.065E-03	1.727E-02	8.105E-04	-0.096
RU-106	-9.275E-02		6.253E-02	1.758E-01	9.687E-03	-0.528
AG-108M	-2.330E-03		5.278E-03	1.783E-02	9.785E-04	-0.131
AG-110M	-5.415E-03		4.566E-03	1.317E-02	7.368E-04	-0.411
SB-125	-2.309E-03		1.311E-02	4.671E-02	2.203E-03	-0.049
CS-134	4.815E-03		3.726E-03	1.682E-02	9.185E-04	0.286
EU-152	7.042E-02		3.415E-02	1.728E-01	8.084E-03	0.407
EU-154	1.820E-02		1.658E-02	8.029E-02	4.202E-03	0.227
EU-155	2.575E-02		1.834E-02	7.026E-02	3.281E-03	0.366
RA-223	5.531E-02		3.435E-02	1.315E-01	6.649E-03	0.421
TH-228	5.629E-01		3.787E-01	1.433E+00	6.948E-02	0.393
PA-234	3.125E-01	+	2.722E-02	3.884E-02	1.909E-03	8.046
U-235	1.005E-01	+	2.204E-02	4.157E-02	2.072E-03	2.419
AM-241	6.724E-03		1.322E-02	4.935E-02	2.669E-03	0.136

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 5-SEP-2002 12:29
REQUESTOR : CAS_TECH

PAGE 1 OF ____

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : 9531-0000-033FMD

SAMPLE No. : 020904023 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
COUNT TIME : 4-SEP-2002 15:47:19. SAMPLE QUANTITY : 1.52100E+03
SAMPLE TIME : 3-SEP-2002 14:12:00. DETECTOR : DET 5
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	-0.48	1.067E+01	QA Results OK
CS-137	661.65	0.22	2.362E-02	QA Results OK
TL-208	583.14	0.01	2.122E-01	QA Results OK
BI-212	727.17	-0.41	4.776E-01	QA Results OK
PB-212	238.63	-0.06	5.943E-01	QA Results OK
BI-214	609.31	-0.28	5.346E-01	QA Results OK
PB-214	351.92	0.00	4.656E-01	QA Results OK
RA-226	186.21	-0.16	1.657E+00	QA Results OK
AC-228	911.07	-0.14	5.942E-01	QA Results OK
TH-234	63.29	0.10	1.156E+00	QA Results OK
AVG ENERGY DIFF = -0.12			1.639E+01 = TOTAL GAMMA ACTIVITY	

74.87 KeV Peak was used in identifying 2 isotopes
77.14 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
89.90	84.	1.06	1.847E+00	1.215E-03	21.2	P	BI-214	1.220E+01
						P	AC-228	1.573E+00
92.77	158.	1.06	3.464E+00	2.278E-03	15.2	P	PB X-RAY	0.000E+00
						P	AC-228	1.770E+00
						P	TH-234	2.292E+00
241.03	67.	1.23	1.979E+00	1.301E-03	30.6	P	PB-214	4.728E-01
300.74	75.	1.45	2.579E+00	1.696E-03	28.4	P	PB-212	1.353E+00
337.84	73.	1.34	2.748E+00	1.807E-03	23.3	P	AC-228	4.310E-01
510.63	103.	1.14	5.382E+00	3.538E-03	16.6	P	ANN-RD	0.000E+00
731.13	24.	2.11	1.688E+00	1.110E-03	24.1	P		

Qyab

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 5-SEP-2002 12:29
REQUESTOR : CAS_TECH

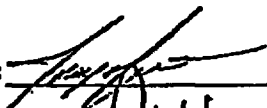
PAGE 2 OF ____

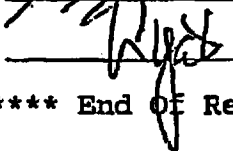
CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

Total Unidentified/Rejected Peaks = 7
% Unidentified/Rejected Peaks = 25.00

Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

Performed by: 

Reviewed by: 

**** End Of Report (2 Pages) ****

4-SEP-2002 12:05:33.52

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMPLE: 9531-0000-034FM

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020904010

* SAMPLE GEOMETRY : 1LMARSAND

SAMPLE TIME : 3-SEP-2002 14:09:

* GEO EFFICIENCY DATE: 24-SEP-1997

SAMPLE TYPE : DIRT/SEDIMENT

* SAMPLE QUANTITY : 1.66100E+03 GM

DETECTOR : DET 1

* LIBRARY : FSS_DIRT

LAST ENERGY CAL : 4-SEP-2002 08:19:

* ENERGY TOLERANCE: 1.00000

KEV/CHANNEL : 5.00745E-01

* HALF LIFE RATIO : 9.00000

START CHANNEL : 100

* END CHANNEL : 4096

ACQ DATE & TIME : 4-SEP-2002 11:48:

* DEADTIME (%) : 0.0%

PRESET LIVE TIME : 0 00:16:40

* SENSITIVITY : 5.00000

ELAPSED REAL TIME : 1000.2 Secs

* GAUSSIAN SEN : 10.00000

ELAPSED LIVE TIME : 1000.0 Secs

* CORRECTION FACTOR: 1.00000E+06

DECAYED TO 0 DAYS HOURS

FILE IDENT : CAS\$DISK: [NEU.SAMPLE.RP.NEW] 020904010_ADC1_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WMEAN V1.8

Collected by : JOHNSON

REVIEWED BY :

COMMENTS :

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
1	74.91	73	79	0.95	149.83	145	15	23.1	1.32E+00	PB-212
										PB-214
1	77.08	128	71	0.87	154.17	145	15	13.2		PB-214
										PB-212
3	90.05	45	98	0.95	180.06	177	25	36.0	9.02E-01	
3	92.90	64	99	1.20	185.76	177	25	28.6		
0	186.06	50	78	1.19	371.85	367	8	33.7		RA-226
0	209.37	31	67	1.34	418.42	413	8	50.1		AC-228
0	238.61	250	47	1.25	476.84	473	8	7.9		PB-212
1	241.24	33	22	1.16	482.08	481	7	25.8	7.28E+00	
1	242.30	39	48	1.24	484.21	481	7	35.6		PB-214
0	278.23	43	31	1.35	556.00	551	13	31.3		TL-208
2	294.00	18	21	1.28	587.50	585	10	56.9	2.87E+00	
2	295.38	74	25	1.43	590.26	585	10	17.7		PB-214
4	337.79	24	20	1.23	675.00	672	15	34.7	6.73E+00	
4	338.53	32	31	1.49	676.48	672	15	36.2		AC-228
4	341.79	22	16	1.81	682.99	672	15	37.5		
0	352.48	99	47	1.05	704.35	698	12	17.2		PB-214
0	511.77	42	27	1.75	1022.71	1014	19	34.0		

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	583.43	73	10	1.28	1165.97	1160	13	14.7		TL-208
0	609.67	88	4	1.28	1218.42	1214	9	11.5		BI-214
0	662.23	63	10	1.50	1323.49	1318	10	15.7		CS-137
0	911.77	39	7	1.63	1822.55	1818	9	19.9		AC-228
0	1121.08	20	8	1.14	2241.31	2237	9	35.2		BI-214
0	1461.29	143	6	1.75	2922.29	2916	12	9.0		K-40

----- Identified Nuclides -----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	6.664E+00	6.795E-01	4.983E-01	2.371E-02	13.372
CS-137	1.743E-01	2.916E-02	2.983E-02	1.708E-03	5.842
TL-208	1.897E-01	2.818E-02	2.640E-02	1.446E-03	7.184
PB-212	5.448E-01	5.034E-02	4.874E-02	2.349E-03	11.179
BI-214	4.207E-01	5.074E-02	3.929E-02	2.188E-03	10.708
PB-214	3.971E-01	4.808E-02	6.528E-02	3.033E-03	6.083
RA-226	1.264E+00	4.306E-01	6.590E-01	3.202E-02	1.917
AC-228	4.361E-01	7.393E-02	1.294E-01	6.001E-03	3.369

----- Non-Identified Nuclides -----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	2.643E-02		6.424E-02	2.541E-01	1.270E-02	0.104
MN-54	-8.032E-03		8.872E-03	3.459E-02	1.752E-03	-0.232
CO-60	6.086E-04		1.097E-02	4.928E-02	2.322E-03	0.012
NB-94	1.907E-03		7.887E-03	3.648E-02	1.760E-03	0.052
RU-106	6.292E-02		7.220E-02	3.143E-01	1.763E-02	0.200
AG-108M	6.005E-03		8.894E-03	3.624E-02	2.025E-03	0.166
AG-110M	-4.996E-03		7.050E-03	2.678E-02	1.530E-03	-0.187
SB-125	9.690E-03		2.224E-02	8.710E-02	4.104E-03	0.111
CS-134	9.527E-03		7.547E-03	3.375E-02	1.875E-03	0.282
EU-152	6.748E-02		3.971E-02	2.470E-01	1.173E-02	0.273
EU-154	5.280E-03		3.009E-02	1.373E-01	7.309E-03	0.038
EU-155	1.748E-02		3.115E-02	1.186E-01	5.087E-03	0.147
BI-212	2.913E-01		1.028E-01	4.898E-01	2.729E-02	0.595
RA-223	-5.242E-02		5.146E-02	1.687E-01	7.971E-03	-0.311
TH-228	1.431E+00		6.475E-01	2.697E+00	1.394E-01	0.530
PA-234	2.565E-02		1.884E-02	7.576E-02	4.539E-03	0.339
TH-234	3.460E-01		4.346E-01	1.710E+00	2.291E-01	0.202
U-235	7.665E-02	+	2.612E-02	5.798E-02	2.818E-03	1.322
AM-241	5.433E-02		5.060E-02	2.054E-01	2.808E-02	0.265

REPORT NAME : QA_CHECK (V9.1)
 REPORT DATE : 4-SEP-2002 12:05
 REQUESTOR : CAS_TECH

PAGE 1 OF ____

CYAPCO
 HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE: 9531-0000-034FM

SAMPLE No. : 020904010 OPERATOR NAME : CAS
 SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
 COUNT TIME : 4-SEP-2002 11:48:34. SAMPLE QUANTITY : 1.66100E+03
 SAMPLE TIME : 3-SEP-2002 14:09:00. DETECTOR : DET 1
 LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	0.49	6.664E+00	QA Results OK
CS-137	661.65	0.58	1.743E-01	QA Results OK
TL-208	583.14	0.30	1.897E-01	QA Results OK
PB-212	238.63	-0.01	5.448E-01	QA Results OK
BI-214	609.31	0.36	4.207E-01	QA Results OK
PB-214	351.92	0.56	3.971E-01	QA Results OK
RA-226	186.21	-0.15	1.264E+00	QA Results OK
AC-228	911.07	0.70	4.361E-01	QA Results OK
AVG ENERGY DIFF = 0.35				1.009E+01 = TOTAL GAMMA ACTIVITY

74.91 KeV Peak was used in identifying 2 isotopes
 77.08 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
90.05	45.	0.95	2.673E+00	1.609E-03	36.0	P	BI-214	1.615E+01
						P	AC-228	2.083E+00
92.90	64.	1.20	3.640E+00	2.192E-03	28.6	P	PB X-RAY	0.000E+00
						P	AC-228	1.703E+00
						U	TH-234	2.204E+00
241.24	33.	1.16	1.987E+00	1.196E-03	25.8	P	PB-214	4.344E-01
294.00	18.	1.28	1.289E+00	7.759E-04	56.9	U		
337.79	24.	1.23	1.895E+00	1.141E-03	34.7	P	AC-228	2.721E-01
341.79	22.	1.81	1.761E+00	1.060E-03	37.5	P	AC-228	6.861E+00
511.77	42.	1.75	4.790E+00	2.884E-03	34.0	U	ANN-RD	0.000E+00

Agate

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 12:05
REQUESTOR : CAS_TECH

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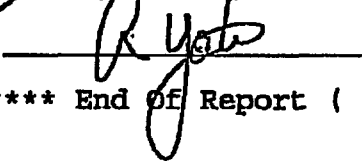
CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

Total Unidentified/Rejected Peaks = 7
% Unidentified/Rejected Peaks = 30.43

Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

Performed by: 

Reviewed by: 

**** End of Report (2 Pages) ****

4-SEP-2002 16:05:16.15

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - 9531-0000-034 FMD

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020904024 * SAMPLE GEOMETRY : 1LMARSAND
SAMPLE TIME : 3-SEP-2002 14:22: * GEO EFFICIENCY DATE: 19-AUG-1997
SAMPLE TYPE : DIRT/SEDIMENT * SAMPLE QUANTITY : 1.46400E+03 GM

DETECTOR : DET 2 * LIBRARY : FSS DIRT
LAST ENERGY CAL : 4-SEP-2002 12:52: * ENERGY TOLERANCE: 1.00000
KEV/CHANNEL : 5.01030E-01 * HALF LIFE RATIO : 9.00000
START CHANNEL : 100 * END CHANNEL : 4096
ACQ DATE & TIME : 4-SEP-2002 15:48: * DEADTIME (%) : 0.0%
PRESET LIVE TIME : 0 00:16:40 * SENSITIVITY : 5.00000
ELAPSED REAL TIME : 1000.2 Secs * GAUSSIAN SEN : 10.00000
ELAPSED LIVE TIME : 1000.0 Secs * CORRECTION FACTOR: 1.00000E+06
DECAYED TO 1 DAYS HOURS
FILE IDENT : CAS\$DISK:[NEU.SAMPLE.RP.NEW] 020904024_ADC2_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTIMEAN V1.8

Collected by : DEGOSTIN
REVIEWED BY :
COMMENTS :

R. Yates

*Cs-137
I'd*

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
2	74.88	113	100	0.86	150.03	147	14	16.0	2.24E+00	PB-212
										PB-214
2	77.06	171	130	1.09	154.38	147	14	13.7		PB-214
										PB-212
0	186.31	72	93	0.91	372.50	368	9	27.1		RA-226
4	238.58	349	53	0.99	476.88	471	23	6.2	1.04E+00	PB-212
4	241.41	68	71	1.69	482.53	471	23	36.5		
4	242.48	34	67	1.73	484.68	471	23	57.7		PB-214
0	295.18	110	60	1.15	589.93	585	12	17.2		PB-214
0	338.47	72	49	1.47	676.39	672	10	21.6		AC-228
0	351.86	173	38	1.25	703.13	698	12	10.3		PB-214
0	462.86	30	14	0.82	924.89	921	8	28.4		AC-228
0	511.01	46	21	1.19	1021.09	1015	13	25.9		
0	583.40	146	15	1.41	1165.76	1161	13	10.0		TL-208
0	609.21	129	14	1.30	1217.35	1213	11	10.4		BI-214
0	661.02	41	8	0.79	1320.92	1315	11	20.8		CS-137
0	727.68	17	17	1.09	1454.17	1448	13	53.8		BI-212
0	911.10	61	11	1.67	1820.95	1815	14	17.1		AC-228
0	969.08	60	12	2.11	1936.93	1931	12	17.2		AC-228

Post-NID Peak Search Report (continued)

Page : 2

Sample ID : 020904024

Acquisition date : 4-SEP-2002 15:48:17

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	1121.51	22	17	1.18	2241.90	2236	13	45.3		
0	1238.13	15	10	1.05	2475.30	2472	9	44.8		BI-214
0	1460.82	272	21	2.34	2921.17	2914	15	7.1		K-40

---- Identified Nuclides ----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	8.946E+00	7.680E-01	4.679E-01	2.235E-02	19.120
CS-137	8.550E-02	1.845E-02	3.015E-02	1.743E-03	2.836
TL-208	2.773E-01	3.173E-02	2.692E-02	1.477E-03	10.300
BI-212	2.843E-01	1.539E-01	1.981E-01	1.109E-02	1.435
PB-212	6.277E-01	4.936E-02	4.330E-02	2.070E-03	14.497
BI-214	4.703E-01	5.417E-02	5.824E-02	3.258E-03	8.075
PB-214	4.954E-01	4.679E-02	4.470E-02	2.060E-03	11.085
RA-226	1.544E+00	4.246E-01	5.800E-01	2.815E-02	2.661
AC-228	6.415E-01	6.747E-02	9.689E-02	4.489E-03	6.621

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	5.661E-02		6.120E-02	2.428E-01	1.209E-02	0.233
MN-54	6.751E-04		6.814E-03	2.957E-02	1.499E-03	0.023
CO-60	1.849E-02		1.288E-02	5.822E-02	2.772E-03	0.318
NB-94	7.309E-04		7.680E-03	3.266E-02	1.576E-03	0.022
RU-106	-4.213E-03		4.439E-02	1.999E-01	1.128E-02	-0.021
AG-108M	2.594E-03		7.172E-03	3.099E-02	1.740E-03	0.084
AG-110M	-3.280E-04		5.463E-03	2.269E-02	1.309E-03	-0.014
SB-125	6.553E-03		1.787E-02	6.847E-02	3.214E-03	0.096
CS-134	-8.924E-04		6.099E-03	2.562E-02	1.429E-03	-0.035
EU-152	4.973E-02		4.388E-02	2.164E-01	1.034E-02	0.230
EU-154	1.641E-03		3.496E-02	1.403E-01	7.482E-03	0.012
EU-155	-2.641E-02		2.890E-02	9.953E-02	4.338E-03	-0.265
RA-223	6.381E-02		4.654E-02	1.783E-01	8.364E-03	0.358
TH-228	9.492E-01		7.387E-01	2.789E+00	1.417E-01	0.340
PA-234	1.433E-02		1.721E-02	6.534E-02	3.698E-03	0.219
TH-234	5.146E-01		3.605E-01	1.385E+00	1.624E-01	0.372
U-235	9.365E-02	+	2.576E-02	5.527E-02	2.683E-03	1.694
AM-241	3.592E-02		3.578E-02	1.405E-01	1.439E-02	0.256

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 16:05
REQUESTOR : CAS_TECH

PAGE 1 OF

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - 9531-0000-034 FMD

SAMPLE No. : 020904024 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
COUNT TIME : 4-SEP-2002 15:48:17. SAMPLE QUANTITY : 1.46400E+03
SAMPLE TIME : 3-SEP-2002 14:22:00. DETECTOR : DET 2
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pci/GM	COMMENTS
K-40	1460.80	0.02	8.946E+00	QA Results OK
CS-137	661.65	-0.63	8.550E-02	QA Results OK
TL-208	583.14	0.26	2.773E-01	QA Results OK
BI-212	727.17	0.51	2.843E-01	QA Results OK
PB-212	238.63	-0.04	6.277E-01	QA Results OK
BI-214	609.31	-0.10	4.703E-01	QA Results OK
PB-214	351.92	-0.06	4.954E-01	QA Results OK
RA-226	186.21	0.10	1.544E+00	QA Results OK
AC-228	911.07	0.03	6.415E-01	QA Results OK
AVG ENERGY DIFF = 0.01				1.337E+01 = TOTAL GAMMA ACTIVITY

74.88 KeV Peak was used in identifying 2 isotopes
77.06 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
241.41	68.	1.69	2.991E+00	2.043E-03	36.5	P	PB-214	7.420E-01
511.01	46.	1.19	3.556E+00	2.429E-03	25.9	P	ANN-RD	0.000E+00
1121.51	22.	1.18	3.412E+00	2.330E-03	45.3	P		

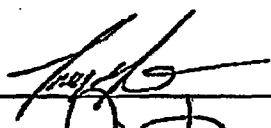
Total Unidentified/Rejected Peaks = 3
% Unidentified/Rejected Peaks = 15.00

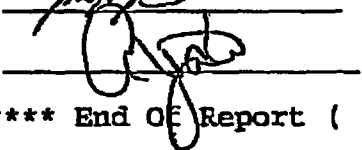
Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 16:05
REQUESTOR : CAS_TECH

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CYAPCO
HADDAM NECK STATION
POST NID QA ANALYSIS

Performed by: 

Reviewed by: 

**** End Of Report (2 Pages) ****

4-SEP-2002 12:06:41.43

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - SOIL SAMPLE: 9531-0000-035FM

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020904011

* SAMPLE GEOMETRY : 1LMARSAND

SAMPLE TIME : 3-SEP-2002 14:11:

* GEO EFFICIENCY DATE: 19-AUG-1997

SAMPLE TYPE : DIRT/SEDIMENT

* SAMPLE QUANTITY : 1.63900E+03 GM

DETECTOR : DET 2

* LIBRARY : FSS DIRT

LAST ENERGY CAL : 4-SEP-2002 07:49:

* ENERGY TOLERANCE: 1.00000

KEV/CHANNEL : 5.00931E-01

* HALF LIFE RATIO : 9.00000

START CHANNEL : 100

* END CHANNEL : 4096

ACQ DATE & TIME : 4-SEP-2002 11:49:

* DEADTIME (%) : 0.0%

PRESET LIVE TIME : 0 00:16:40

* SENSITIVITY : 5.00000

ELAPSED REAL TIME : 1000.3 Secs

* GAUSSIAN SEN : 10.00000

ELAPSED LIVE TIME : 1000.0 Secs

* CORRECTION FACTOR: 1.00000E+06

DECAYED TO 0 DAYS HOURS

FILE IDENT : CAS\$DISK:[NEU.SAMPLE.RP.NEW] 020904011_ADC2_DIRTSediment.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTMEAN V1.8

Collected by : TORRES

REVIEWED BY :

COMMENTS :

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
3	74.72	154	112	1.24	149.75	144	14	13.9	4.04E+00	PB-212
										PB-214
3	77.07	186	85	1.01	154.46	144	14	11.3		PB-214
										PB-212
0	86.95	36	153	0.96	174.17	172	7	60.0		PB-212
0	93.06	65	91	1.09	186.37	184	6	26.5		
0	186.19	52	71	1.06	372.35	369	6	29.6		RA-226
4	238.56	371	58	1.05	476.95	472	17	6.1	6.87E-01	PB-212
4	241.36	84	78	1.70	482.54	472	17	30.5		PB-214
0	295.16	90	55	0.92	590.01	586	9	18.2		PB-214
0	338.36	78	50	0.91	676.31	671	11	20.9		AC-228
0	351.88	153	69	1.33	703.34	697	13	14.0		PB-214
0	462.73	23	40	0.64	924.83	920	10	55.5		AC-228
0	510.49	56	34	1.09	1020.27	1015	12	24.4		
0	582.86	116	19	0.97	1164.93	1159	11	11.9		TL-208
0	609.48	131	18	1.53	1218.15	1213	13	11.1		BI-214
0	661.59	111	23	1.32	1322.33	1318	10	12.6		CS-137
0	727.49	25	6	0.75	1454.10	1450	9	27.4		BI-212
0	911.34	80	14	1.02	1821.84	1815	11	14.4		AC-228

Post-NID Peak Search Report (continued)
Sample ID : 020904011

Page : 2
Acquisition date : 4-SEP-2002 11:49:46

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	969.69	38	29	0.89	1938.57	1930	13	33.2		AC-228
0	1001.83	13	4	2.20	2002.88	1999	7	37.6		
0	1120.81	26	13	1.19	2240.99	2235	13	34.8		BI-214
0	1460.38	287	0	2.26	2920.94	2914	13	5.9		K-40
0	1764.26	26	3	1.06	3529.89	3524	11	22.9		BI-214

---- Identified Nuclides ----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	8.421E+00	6.395E-01	3.182E-01	1.520E-02	26.464
CS-137	2.078E-01	2.890E-02	3.599E-02	2.080E-03	5.774
TL-208	1.965E-01	2.569E-02	2.636E-02	1.446E-03	7.457
BI-212	3.595E-01	1.007E-01	2.133E-01	1.195E-02	1.685
PB-212	5.807E-01	4.482E-02	4.159E-02	1.988E-03	13.964
BI-214	4.417E-01	4.670E-02	5.205E-02	2.912E-03	8.486
PB-214	4.008E-01	4.417E-02	6.265E-02	2.887E-03	6.397
RA-226	9.850E-01	2.953E-01	5.390E-01	2.616E-02	1.827
AC-228	5.967E-01	6.784E-02	1.013E-01	4.693E-03	5.890

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	5.969E-02		3.447E-02	1.712E-01	8.526E-03	0.349
MN-54	-1.217E-02		5.498E-03	1.598E-02	8.102E-04	-0.762
CO-60	2.299E-02		8.251E-03	4.591E-02	2.186E-03	0.501
NB-94	1.849E-03		4.098E-03	2.075E-02	1.001E-03	0.089
RU-106	-4.435E-02		4.752E-02	1.870E-01	1.055E-02	-0.237
AG-108M	-1.556E-03		5.085E-03	2.024E-02	1.136E-03	-0.077
AG-110M	-2.852E-03		7.066E-03	2.635E-02	1.520E-03	-0.108
SB-125	2.884E-02		1.979E-02	8.024E-02	3.766E-03	0.359
CS-134	-7.689E-03		5.643E-03	2.081E-02	1.160E-03	-0.370
EU-152	1.438E-02		3.899E-02	1.764E-01	8.432E-03	0.081
EU-154	-2.249E-02		2.055E-02	7.355E-02	3.923E-03	-0.306
EU-155	2.649E-02		2.730E-02	1.026E-01	4.472E-03	0.258
RA-223	6.262E-02		4.422E-02	1.678E-01	7.870E-03	0.373
TH-228	-2.161E-01		6.372E-01	2.256E+00	1.146E-01	-0.096
PA-234	1.073E-02		1.455E-02	5.518E-02	3.123E-03	0.195
TH-234	6.966E-01		2.774E-01	1.111E+00	1.303E-01	0.627
U-235	5.976E-02	+	1.792E-02	4.408E-02	2.140E-03	1.356
AM-241	-1.272E-02		3.114E-02	1.139E-01	1.167E-02	-0.112

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 12:06
REQUESTOR : CAS_TECH

PAGE 1 OF ____

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - SOIL SAMPLE: 9531-0000-035FM

SAMPLE No. : 020904011 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
COUNT TIME : 4-SEP-2002 11:49:46. SAMPLE QUANTITY : 1.63900E+03
SAMPLE TIME : 3-SEP-2002 14:11:00. DETECTOR : DET 2
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	-0.42	8.421E+00	QA Results OK
CS-137	661.65	-0.06	2.078E-01	QA Results OK
TL-208	583.14	-0.28	1.965E-01	QA Results OK
BI-212	727.17	0.32	3.595E-01	Peak FWHM = 0.75
PB-212	238.63	-0.06	5.807E-01	QA Results OK
BI-214	609.31	0.17	4.417E-01	QA Results OK
PB-214	351.92	-0.04	4.008E-01	QA Results OK
RA-226	186.21	-0.02	9.850E-01	QA Results OK
AC-228	911.07	0.27	5.967E-01	QA Results OK
AVG ENERGY DIFF = -0.01				1.219E+01 = TOTAL GAMMA ACTIVITY

74.72 KeV Peak was used in identifying 2 isotopes
77.07 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
93.06	65.	1.09	2.666E+00	1.627E-03	26.5	P	AC-228	1.264E+00
						U	TH-234	1.636E+00
510.49	56.	1.09	4.377E+00	2.671E-03	24.4	P	AC-228	1.545E+01
						P	ANN-RD	0.000E+00
1001.83	13.	2.20	1.732E+00	1.057E-03	37.6	U		

Total Unidentified/Rejected Peaks = 3
% Unidentified/Rejected Peaks = 13.64

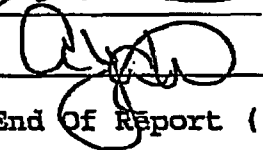
Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 12:06
REQUESTOR : CAS_TECH

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CYAPCO
HADDAM NECK STATION
POST NID QA ANALYSIS

Performed by: 

Reviewed by: 

**** End Of Report (2 Pages) ****

4-SEP-2002 16:06:07.06

CONNECTICUT YANKEE
HADDAM NECK STATION

SAMPLE TITLE : - 9531-0000-035 FMD

REASON FOR ANALYSIS: Site Characterization

SAMPLE ID : 020904025

* SAMPLE GEOMETRY : 1LMARSAND

SAMPLE TIME : 2-SEP-2002 14:30:

* GEO EFFICIENCY DATE: 24-SEP-1997

SAMPLE TYPE : DIRT/SEDIMENT

* SAMPLE QUANTITY : 1.52000E+03 GM

DETECTOR : DET 1

* LIBRARY : FSS_DIRT

LAST ENERGY CAL : 4-SEP-2002 12:28:

* ENERGY TOLERANCE: 1.00000

KEV/CHANNEL : 5.00547E-01

* HALF LIFE RATIO : 9.00000

START CHANNEL : 100

* END CHANNEL : 4096

ACQ DATE & TIME : 4-SEP-2002 15:49:

* DEADTIME (%) : 0.0%

PRESET LIVE TIME : 0 00:16:40

* SENSITIVITY : 5.00000

ELAPSED REAL TIME : 1000.3 Secs

* GAUSSIAN SEN : 10.00000

ELAPSED LIVE TIME : 1000.0 Secs

* CORRECTION FACTOR: 1.00000E+06

DECAYED TO 2 DAYS HOURS

FILE IDENT : CAS\$DISK:[NEU.SAMPLE.RP.NEW]020904025_ADC1_DIRTSEDIMENT.CNF;1

ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WMEAN V1.8

Collected by : DEGOSTIN

REVIEWED BY :

COMMENTS :

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
3	74.97	66	102	1.11	149.95	146	15	27.9	1.40E+00	PB-212
										PB-214
3	77.26	122	93	1.11	154.52	146	15	16.3		PB-214
										PB-212
0	185.76	47	83	1.30	371.35	367	10	39.4		RA-226
0	209.62	41	45	1.05	419.03	415	9	34.2		AC-228
4	238.57	230	31	1.04	476.89	471	17	7.6	1.42E+00	PB-212
4	241.65	30	58	1.62	483.05	471	17	56.0		PB-214
0	295.56	98	40	1.36	590.80	586	13	17.3		PB-214
0	339.03	51	42	1.38	677.68	671	15	30.9		AC-228
0	351.95	115	23	1.06	703.52	699	11	12.3		PB-214
0	510.75	35	17	1.59	1021.01	1014	14	30.8		
0	583.24	80	14	1.46	1165.98	1160	11	14.3		TL-208
0	609.43	64	14	0.92	1218.36	1213	11	16.8		BI-214
0	860.61	13	0	1.45	1720.85	1716	8	27.7		TL-208
0	911.30	54	0	1.79	1822.28	1816	13	13.6		AC-228
0	969.33	28	7	1.26	1938.41	1933	9	25.4		AC-228
0	1119.45	22	8	0.64	2238.87	2232	12	34.7		BI-214
0	1460.80	186	3	1.67	2922.44	2916	13	7.6		K-40

----- Identified Nuclides -----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	9.442E+00	8.469E-01	5.482E-01	2.609E-02	17.225
TL-208	2.313E-01	3.158E-02	3.778E-02	2.069E-03	6.123
PE-212	5.472E-01	4.923E-02	4.989E-02	2.404E-03	10.968
BI-214	3.494E-01	5.632E-02	7.199E-02	4.010E-03	4.853
PE-214	4.847E-01	5.109E-02	3.911E-02	1.817E-03	12.395
RA-226	1.287E+00	5.106E-01	6.722E-01	3.266E-02	1.914
AC-228	6.731E-01	7.464E-02	1.275E-01	5.913E-03	5.278

----- Non-Identified Nuclides -----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	1.214E-02		3.682E-02	1.745E-01	8.717E-03	0.070
MN-54	-3.616E-03		9.027E-03	3.798E-02	1.924E-03	-0.095
CO-60	4.719E-03		1.094E-02	5.310E-02	2.502E-03	0.089
NB-94	-8.347E-03		4.836E-03	9.066E-03	4.375E-04	-0.921
RU-106	9.952E-02		5.007E-02	2.988E-01	1.677E-02	0.333
AG-108M	4.736E-03		8.009E-03	3.407E-02	1.903E-03	0.139
AG-110M	-9.509E-03		5.782E-03	2.032E-02	1.161E-03	-0.468
SB-125	2.174E-03		1.811E-02	7.277E-02	3.429E-03	0.030
CS-134	1.455E-03		8.220E-03	3.184E-02	1.768E-03	0.046
CS-137	2.476E-03		7.489E-03	3.577E-02	2.047E-03	0.069
EU-152	5.097E-02		5.071E-02	2.732E-01	1.297E-02	0.187
EU-154	-3.416E-02		3.538E-02	1.312E-01	6.979E-03	-0.260
EU-155	-2.302E-02		2.990E-02	1.076E-01	4.614E-03	-0.214
BI-212	2.356E-01		9.873E-02	4.764E-01	2.654E-02	0.495
RA-223	8.703E-03		5.074E-02	1.871E-01	8.841E-03	0.047
TH-228	1.004E+00		7.851E-01	3.115E+00	1.610E-01	0.322
PA-234	3.397E-01	+	5.912E-02	8.659E-02	5.188E-03	3.923
TH-234	5.844E-01		4.802E-01	1.923E+00	2.577E-01	0.304
U-235	7.806E-02	+	3.097E-02	5.853E-02	2.844E-03	1.334
AM-241	3.534E-02		4.495E-02	1.878E-01	2.567E-02	0.188

REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 16:06
REQUESTOR : CAS_TECH

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CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - 9531-0000-035 FMD

SAMPLE No. : 020904025 OPERATOR NAME : CAS
SAMPLE TYPE : DIRT/SEDIMENT SAMPLE GEOMETRY : 1LMARSAND
COUNT TIME : 4-SEP-2002 15:49:12. SAMPLE QUANTITY : 1.52000E+03
SAMPLE TIME : 2-SEP-2002 14:30:00. DETECTOR : DET 1
LIBRARY : FSS_DIRT

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40	1460.80	0.00	9.442E+00	QA Results OK
TL-208	583.14	0.10	2.313E-01	QA Results OK
PB-212	238.63	-0.05	5.472E-01	QA Results OK
BI-214	609.31	0.12	3.494E-01	QA Results OK
PB-214	351.92	0.03	4.847E-01	QA Results OK
RA-226	186.21	-0.45	1.287E+00	QA Results OK
AC-228	911.07	0.23	6.731E-01	QA Results OK
AVG ENERGY DIFF = 0.00				1.301E+01 = TOTAL GAMMA ACTIVITY

74.97 KeV Peak was used in identifying 2 isotopes
77.26 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
510.75	35.	1.59	3.932E+00	2.587E-03	30.8	X	ANN-RD	0.000E+00

Total Unidentified/Rejected Peaks = 1
% Unidentified/Rejected Peaks = 5.88

Flags: U - Unknown Line
R - Rejected During Analysis
P - Positively Identified (line not in analysis library)

Performed by: 

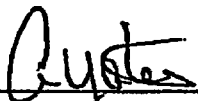
REPORT NAME : QA_CHECK (V9.1)
REPORT DATE : 4-SEP-2002 16:06
REQUESTOR : CAS_TECH

PAGE 2 OF ____

CYAPCO
HADDAM NECK STATION

POST NID QA ANALYSIS

Reviewed by: _____

A handwritten signature in black ink, appearing to read "A. J. [unclear]", is written over the line for the reviewer's name.

**** End Of Report (2 Pages) ****

**SOUTHERN END OF PENINSULA
SURVEY UNIT 9531-0000**

RELEASE RECORD

**Attachment 2b
Sample and Scan Area Data
(5 Pages)**

Survey Release Record Scan Area Results

Survey Unit 9531-0000

<u>Sample Name</u>	<u>Background (cpm)</u>	<u>Action Level (cpm)</u>	<u>Results (cpm)</u>	<u>Above AL</u>	<u>Log Date</u>	<u>Log Time</u>	<u>E600 S/N</u>	<u>Probe S/N</u>
9531-00-SL-00-01-0	5360	6405	5640		08/20/2002	1:51 PM	1109	1004
9531-00-SL-00-02-0	8030	9309	8450		08/19/2002	3:44 PM	1105	1003
9531-00-SL-00-03-0	6680	7846	7580		08/20/2002	2:17 PM	1109	1004
9531-00-SL-00-04-0	7710	8963	7460		08/22/2002	3:00 PM	1105	1003
9531-00-SL-00-05-0	7420	8649	8150		08/19/2002	3:27 PM	1105	1003
9531-00-SL-00-06-0	8380	9686	6440		08/19/2002	3:36 PM	1105	1003
9531-00-SL-00-07-0	6200	7324	6640		08/22/2002	2:39 PM	1105	1003
9531-00-SL-00-08-0	7200	8411	6820		08/19/2002	3:30 PM	1105	1003
9531-00-SL-00-09-0	8010	9287	7890		08/21/2002	1:42 PM	1105	1003
9531-00-SL-00-10-0	7830	9093	8360		08/21/2002	2:24 PM	1105	1003
9531-00-SL-00-11-0	6620	7781	5960		08/20/2002	2:22 PM	1109	1004
9531-00-SL-00-12-0	6430	7574	6660		08/22/2002	2:41 PM	1105	1003
9531-00-SL-00-13-0	6850	8031	7540		08/20/2002	2:52 PM	1109	1004
9531-00-SL-00-14-0	7510	8747	7440		08/20/2002	1:47 PM	1109	1004
9531-00-SL-00-15-0	7370	8595	7150		08/20/2002	2:47 PM	1109	1004
9531-00-SL-00-16-0	6350	7487	6670		08/21/2002	2:17 PM	1105	1003
9531-00-SL-00-17-0	6100	7215	6640		08/21/2002	2:05 PM	1105	1003
9531-00-SL-00-18-0	6650	7814	6520		08/21/2002	2:12 PM	1105	1003
9531-00-SL-00-19-0	7830	9093	7670		08/22/2002	10:03 AM	1105	1003
9531-00-SL-00-20-0	6530	7683	6370		08/22/2002	2:06 PM	1105	1003
9531-00-SL-00-21-0	7610	8855	6610		08/26/2002	2:17 PM	1105	1003
9531-00-SL-00-22-0	8330	9633	8560		08/22/2002	3:10 PM	1105	1003
9531-00-SL-00-23-0	6870	8053	7450		08/26/2002	1:42 PM	1105	1003
9531-00-SL-00-24-0	6760	7933	6230		08/26/2002	1:39 PM	1105	1003
9531-00-SL-00-25-0	7730	8985	6870		08/22/2002	9:44 AM	1105	1003
9531-00-SL-00-26-0	7100	8303	8530	+	08/22/2002	9:50 AM	1105	1003
9531-00-SL-00-27-0	7510	8747	7080		08/22/2002	9:57 AM	1105	1003

AL - Action Level

Survey Release Record Scan Area Results

Survey Unit 9531-0000

9531-0000 SCAN AREA 1

<u>Sample Name</u>	<u>Background (cpm)</u>	<u>Action Level (cpm)</u>	<u>Results (cpm)</u>	<u>Above AL</u>	<u>Log Date</u>	<u>Log Time</u>	<u>E600 S/N</u>	<u>Probe S/N</u>
9531-00-SC-01-01-0	6860	8042	7850		08/27/2002	1:59 PM	1108	1005
9531-00-SC-01-02-0	6580	7738	7300		08/27/2002	1:58 PM	1105	1003
9531-00-SC-01-03-0	6860	8042	7150		08/27/2002	2:02 PM	1108	1005
9531-00-SC-01-04-0	6480	7629	6290		08/28/2002	2:35 PM	1105	1003
9531-00-SC-01-05-0	6860	8042	7220		08/27/2002	2:06 PM	1108	1005
9531-00-SC-01-06-0	6580	7738	6860		08/27/2002	2:05 PM	1105	1003
9531-00-SC-01-07-0	6860	8042	7500		08/27/2002	2:09 PM	1108	1005
9531-00-ER-01-08-1	6580	7738	8160	+	08/27/2002	2:09 PM	1105	1003
9531-00-ER-01-08-2	6580	7738	7740	+	08/27/2002	2:13 PM	1105	1003
9531-00-SC-01-09-0	6860	8042	6730		08/27/2002	2:16 PM	1108	1005
9531-00-SC-01-10-0	6580	7738	6060		08/27/2002	2:16 PM	1105	1003
9531-00-SC-01-11-0	6860	8042	6610		08/27/2002	2:39 PM	1108	1005
9531-00-SC-01-12-0	6580	7738	7100		08/27/2002	2:39 PM	1105	1003
9531-00-SC-01-13-0	6860	8042	6430		08/27/2002	2:46 PM	1108	1005
9531-00-SC-01-14-0	6580	7738	6940		08/27/2002	2:42 PM	1105	1003
9531-00-SC-01-15-0	6860	8042	6210		08/27/2002	2:48 PM	1108	1005
9531-00-SC-01-16-0	6580	7738	7350		08/27/2002	2:46 PM	1105	1003
9531-00-SC-01-17-0	6860	8042	6760		08/27/2002	2:52 PM	1108	1005
9531-00-SC-01-18-0	6580	7738	6900		08/27/2002	2:49 PM	1105	1003
9531-00-SC-01-19-0	6580	7738	6950		08/27/2002	3:00 PM	1105	1003
9531-00-SC-01-20-0	6580	7738	7160		08/27/2002	3:03 PM	1105	1003
9531-00-SC-01-21-0	6580	7738	6980		08/27/2002	3:06 PM	1105	1003
9531-00-SC-01-22-0	6580	7738	6520		08/27/2002	3:08 PM	1105	1003
9531-00-SC-01-23-0	6580	7738	7430		08/27/2002	3:10 PM	1105	1003

AL - Above Action Level

Survey Release Record Scan Area Results

Survey Unit 9531-0000

9531-0000 SCAN AREA 2

<u>Sample Name</u>	<u>Background (cpm)</u>	<u>Action Level (cpm)</u>	<u>Results (cpm)</u>	<u>Above AL</u>	<u>Log Date</u>	<u>Log Time</u>	<u>E600 S/N</u>	<u>Probe S/N</u>
9531-00-SC-02-01-0	7890	9158	7120		08/27/2002	9:45 AM	1105	1003
9531-00-SC-02-02-0	7890	9158	7820		08/27/2002	9:50 AM	1105	1003
9531-00-SC-02-03-0	7890	9158	6820		08/27/2002	9:54 AM	1105	1003
9531-00-SC-02-04-0	7890	9158	7250		08/27/2002	9:58 AM	1105	1003
9531-00-SC-02-05-0	7890	9158	6820		08/27/2002	10:02 AM	1105	1003
9531-00-SC-02-06-0	6850	8031	6940		08/27/2002	10:20 AM	1105	1003
9531-00-SC-02-07-0	7290	8509	6650		08/27/2002	10:25 AM	1108	1005
9531-00-SC-02-08-0	6850	8031	7340		08/27/2002	10:25 AM	1105	1003
9531-00-SC-02-09-0	6850	8031	6380		08/27/2002	10:29 AM	1105	1003
9531-00-SC-02-11-0	6850	8031	6980		08/27/2002	10:33 AM	1105	1003
9531-00-SC-02-12-0	7420	8649	6800		08/27/2002	10:44 AM	1105	1003
9531-00-SC-02-13-0	7050	8248	7200		08/27/2002	10:46 AM	1108	1005
9531-00-SC-02-14-0	7420	8649	7150		08/27/2002	10:48 AM	1105	1003
9531-00-SC-02-15-0	7050	8248	6540		08/27/2002	10:51 AM	1108	1005
9531-00-SC-02-16-0	7420	8649	7740		08/27/2002	10:56 AM	1105	1003
9531-00-SC-02-17-0	7050	8248	6150		08/27/2002	10:58 AM	1108	1005
9531-00-SC-02-18-0	7420	8649	7580		08/27/2002	10:58 AM	1105	1003
9531-00-SC-02-19-0	7050	8248	6410		08/27/2002	11:00 AM	1108	1005

AL - Action Level

Survey Release Record Scan Area Results

Survey Unit 9531-0000

9531-0000 SCAN AREA 3

<u>Sample Name</u>	<u>Background (cpm)</u>	<u>Action Level (cpm)</u>	<u>Results (cpm)</u>	<u>Above AL</u>	<u>Log Date</u>	<u>Log Time</u>	<u>E600 S/N</u>	<u>Probe S/N</u>
9531-00-SC-03-01-0	7170	8378	7780		08/28/2002	9:35 AM	1105	1003
9531-00-SC-03-02-0	7170	8378	7550		08/28/2002	9:37 AM	1107	1006
9531-00-SC-03-03-0	7170	8378	7050		08/28/2002	9:53 AM	1105	1003
9531-00-ER-03-03-1	7170	8378	8420	+	08/28/2002	9:50 AM	1107	1006
9531-00-ER-03-03-2	7170	8378	8530	+	08/28/2002	9:45 AM	1105	1003
9531-00-SC-03-04-0	7170	8378	7520		08/28/2002	9:54 AM	1107	1006
9531-00-ER-03-04-1	7170	8378	8600	+	08/28/2002	9:44 AM	1107	1006
9531-00-ER-03-04-2	7170	8378	8650	+	08/28/2002	9:51 AM	1105	1003
9531-00-SC-03-05-0	7170	8378	6570		08/28/2002	10:05 AM	1105	1003
9531-00-ER-03-05-1	7170	8378	8490	+	08/28/2002	9:57 AM	1105	1003
9531-00-SC-03-06-0	7170	8378	7870		08/28/2002	10:08 AM	1107	1006
9531-00-ER-03-06-1	7170	8378	8970	+	08/28/2002	10:04 AM	1107	1006
9531-00-SC-03-07-0	7170	8378	7080		08/28/2002	10:11 AM	1105	1003
9531-00-SC-03-08-0	7170	8378	7520		08/28/2002	10:13 AM	1107	1006
9531-00-SC-03-09-0	7170	8378	6990		08/28/2002	10:27 AM	1105	1003
9531-00-SC-03-10-0	7170	8378	6790		08/28/2002	10:29 AM	1107	1006
9531-00-SC-03-11-0	7170	8378	6410		08/28/2002	10:31 AM	1105	1003
9531-00-SC-03-12-0	7170	8378	6730		08/28/2002	10:36 AM	1107	1006
9531-00-SC-03-13-0	7170	8378	7170		08/28/2002	10:36 AM	1105	1003
9531-00-SC-03-14-0	7170	8378	7170		08/28/2002	10:42 AM	1107	1006
9531-00-SC-03-15-0	7170	8378	7470		08/28/2002	1:44 PM	1107	1006
9531-00-SC-03-16-0	7170	8378	7530		08/28/2002	1:44 PM	1105	1003
9531-00-SC-03-17-0	7170	8378	6830		08/28/2002	1:49 PM	1107	1006
9531-00-SC-03-18-0	7170	8378	6960		08/28/2002	1:49 PM	1105	1003
9531-00-SC-03-19-0	7170	8378	7120		08/28/2002	1:55 PM	1107	1006
9531-00-SC-03-20-0	7170	8378	7740		08/28/2002	1:54 PM	1105	1003
9531-00-SC-03-21-0	7170	8378	8190		08/28/2002	2:07 PM	1107	1006
9531-00-SC-03-22-0	7170	8378	7550		08/28/2002	2:07 PM	1105	1003
9531-00-SC-03-23-0	7170	8378	6540		08/28/2002	2:13 PM	1107	1006
9531-00-SC-03-24-0	7170	8378	6930		08/28/2002	2:13 PM	1105	1003
9531-00-SC-03-25-0	7170	8378	6390		08/28/2002	2:18 PM	1107	1006
9531-00-SC-03-26-0	7170	8378	6990		08/28/2002	2:16 PM	1105	1003

AL - Action Level

Survey Release Record Scan Area Results

Survey Unit 9531-0000

9531-0000 SCAN AREA 3

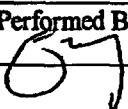
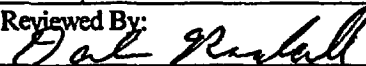
<u>Sample Name</u>	<u>Background (cpm)</u>	<u>Action Level (cpm)</u>	<u>Results (cpm)</u>	<u>Above AL</u>	<u>Log Date</u>	<u>Log Time</u>	<u>E600 S/N</u>	<u>Probe S/N</u>
9531-00-SC-03-27-0	7170	8378	7090		08/28/2002	2:26 PM	1107	1006
9531-00-SC-03-28-0	7170	8378	6940		08/28/2002	2:26 PM	1105	1003
9531-00-SC-03-29-0	7170	8378	6330		08/28/2002	2:31 PM	1107	1006

**SOUTHERN END OF PENINSULA
SURVEY UNIT 9531-0000**

RELEASE RECORD

**Attachment 2c
Split Sample Assessment Forms
(2 Pages)**

Split Sample Assessment Form

Survey Area#: 9531		Survey Unit #: 0000		Survey Unit name: Southern End of Peninsula												
Sample Plan or WPIR#: 24265-000-GEN-0000-00107-000						SML#: 9531-0000-002										
Sample Description: Comparison of split samples collected from sample measurement location #2 and analyzed using gamma spectroscopy by the off-site Vendor Laboratory. The standard sample was 9531-0000-002F, the comparison sample was 9531-0000-002FS.																
STANDARD					COMPARISON											
Radionuclide	Activity Value	Standard Error	Resolution	Agreement Range	Activity Value	Standard Error	Comparison Ratio	Acceptable (Y/N)								
Cs-137	1.06E-1	2.70E-2	4	0.5 - 2.0	1.30E-1	3.40E-2	1.2	Y								
Comments/Corrective Actions: N/A					Table is provided to show acceptance criteria used to assess split samples.											
							<table> <tr> <th>Resolution</th> <th>Agreement Range</th> </tr> <tr> <td>4 - 7</td> <td>0.5 - 2.0</td> </tr> <tr> <td>8 - 15</td> <td>0.6 - 1.66</td> </tr> <tr> <td>16 - 50</td> <td>0.75 - 1.33</td> </tr> <tr> <td>51 - 200</td> <td>0.80 - 1.25</td> </tr> <tr> <td>>200</td> <td>0.85 - 1.18</td> </tr> </table>				Resolution	Agreement Range	4 - 7	0.5 - 2.0	8 - 15	0.6 - 1.66
Resolution	Agreement Range															
4 - 7	0.5 - 2.0															
8 - 15	0.6 - 1.66															
16 - 50	0.75 - 1.33															
51 - 200	0.80 - 1.25															
>200	0.85 - 1.18															
Performed By: 		Date: 5/4/06 ①		Reviewed By: 		Date: 5-4-06 ①										

① Use Envy

Split Sample Assessment Form

Survey Area#: 9531		Survey Unit #: 0000		Survey Unit name: Southern End of Peninsula						
Sample Plan or WPIR#: 24265-000-GEN-0000-00107-000						SML#: 9531-0000-008				
Sample Description: Comparison of split samples collected from sample measurement location #8 and analyzed using gamma spectroscopy by the off-site Vendor Laboratory. The standard sample was 9531-0000-008F, the comparison sample was 9531-0000-008FS.										
STANDARD					COMPARISON					
Radionuclide	Activity Value	Standard Error	Resolution	Agreement Range	Activity Value	Standard Error	Comparison Ratio	Acceptable (Y/N)		
Cs-137	2.22E-1	3.10E-2	7	0.5 - 2.0	1.26E-1	3.0E-2	1.2	Y		
Comments/Corrective Actions: N/A					Table is provided to show acceptance criteria used to assess split samples.					
							Resolution	Agreement Range		
							4 - 7	0.5 - 2.0		
							8 - 15	0.6 - 1.66		
							16 - 50	0.75 - 1.33		
							51 - 200	0.80 - 1.25		
							>200	0.85 - 1.18		
Performed By:		Date		Reviewed By:		Date:				
JACK McGRATH		3/16/06		Dale Runkell		3-16-06				



**SOUTHERN END OF PENINSULA
SURVEY UNIT 9531-0000**

RELEASE RECORD

**Attachment 2d
Preliminary Data Forms
(3 Pages)**

PRELIMINARY DATA REVIEW FORM

WP&IR No. : 24265-000-GEN-0000-00107-000
 Survey Unit : 9531-0000
 Survey Unit Name : Southern End of the Peninsula
 Classification : 3
 Survey Media : Soil
 Type of Survey : Final Status Survey
 Type of Measurement : Radionuclide Specific
 Number of Measurements : 15

BASIC STATISTICAL QUANTITIES

	Cs-137	Co-60	Sr-90	Ni-63	Tc-99	Pu-241
Operational DCGL (pCi/g) :	3.16E+00	1.52E+00	6.20E-01	2.89E+02	5.04E+00	3.48E+02
Minimum Value :	2.75E-02	-3.19E-02	5.86E-02	1.06E+01	1.37E-01	9.71E+00
Maximum Value :	8.45E-01	1.12E-01	1.69E-01	1.51E+01	3.15E-01	1.09E+01
Mean :	3.30E-01	7.63E-03	1.14E-01	1.29E+01	2.26E-01	1.03E+01
Median :	3.54E-01	2.22E-03	1.14E-01	1.29E+01	2.26E-01	1.03E+01
Standard Deviation :	2.43E-01	3.20E-02	7.81E-02	3.18E+00	1.26E-01	8.41E-01

Reported Results

	Cs-137	Co-60	Sr-90	Ni-63	Tc-99	Pu-241	
Sample Identification	Concentration (pCi/g)	Concentration (pCi/g)	Concentration (pCi/g)	Concentration (pCi/g)	Concentration (pCi/g)	Concentration (pCi/g)	Fraction of Target Level
9531-0000-001F	5.42E-01	-7.24E-03					0.167
9531-0000-002F	1.06E-01	1.10E-02					0.041
9531-0000-003F	3.38E-02	-1.51E-03					0.010
9531-0000-004F	8.45E-01	1.12E-01					0.341
9531-0000-005F	1.01E-01	2.22E-03					0.033
9531-0000-006F	3.54E-01	2.16E-02					0.126
9531-0000-007F	3.80E-01	9.16E-03					0.126


 Submitted by/Date 3/16/06

Reviewed  3-16-06

PRELIMINARY DATA REVIEW FORM

Sample Identification	Reported Results						Fraction of Target Level
	Cs-137 Concentration (pCi/g)	Co-60 Concentration (pCi/g)	Sr-90 Concentration (pCi/g)	Ni-63 Concentration (pCi/g)	Tc-99 Concentration (pCi/g)	Pu-241 Concentration (pCi/g)	
9531-0000-008F	2.22E-01	-1.25E-02					0.062
9531-0000-009F	6.14E-01	1.05E-02					0.201
9531-0000-010F	3.86E-01	-1.54E-02					0.112
9531-0000-011F	2.21E-01	-3.19E-02					0.049
9531-0000-012F	4.77E-01	-2.73E-03					0.149
9531-0000-013F	5.50E-01	1.56E-02	1.69E-01	1.06E+01	3.15E-01	1.09E+01	0.403
9531-0000-014F	2.75E-02	-7.30E-03					0.000
9531-0000-015F	9.24E-02	1.09E-02	5.86E-02	1.51E+01	1.37E-01	9.71E+00	0.202

Reported results for the listed radionuclides did not always meet the accepted level of detection (i.e., a result greater than two standard deviations uncertainty)


 JACK MCCARTHY
 Submitted by/Date 3/16/06

Reviewed: Del Russell 3-16-06

PRELIMINARY DATA REVIEW FORM

WP&IR No. : 24265-000-GEN-0000-00107-000
 Survey Unit : 9531-0000
 Survey Unit Name : Southern End of Peninsula
 Classification : 3
 Survey Media : Soil
 Type of Survey : Final Status Survey - Confirmatory
 Type of Measurement : Radionuclide Specific
 Number of Measurements : 16

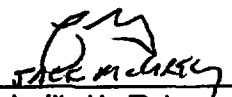
BASIC STATISTICAL QUANTITIES

	Cs-137	Co-60
Operational DCGL (pCi/g) :	3.16E+00	1.52E+00
Minimum Value :	-6.72E-03	-1.51E-02
Maximum Value :	3.99E-01	2.86E-02
Mean :	1.33E-01	1.02E-02
Median :	1.50E-01	8.81E-03
Standard Deviation :	1.16E-01	1.14E-02

Reported Results

Sample Identification	Cs-137	Co-60	Fraction of Target Level
	Concentration (pCi/g)	Concentration (pCi/g)	
9531-0000-028FM	3.99E-01	-2.15E-04	0.126
9531-0000-028FMD	7.72E-03	1.20E-02	0.010
9531-0000-029FM	2.23E-01	1.72E-02	0.082
9531-0000-029FMD	1.27E-01	9.35E-03	0.046
9531-0000-030FM	2.06E-01	-1.51E-02	0.055
9531-0000-030FMD	-6.72E-03	1.97E-02	0.011
9531-0000-031FM	2.27E-01	6.54E-03	0.076
9531-0000-031FMD	2.14E-01	2.86E-02	0.086
9531-0000-032FM	4.69E-02	4.93E-03	0.018
9531-0000-032FMD	1.89E-03	8.27E-03	0.006
9531-0000-033FM	1.87E-01	1.43E-04	0.059
9531-0000-033FMD	2.36E-02	2.45E-02	0.024
9531-0000-034FM	1.74E-01	6.09E-04	0.056
9531-0000-034FMD	8.55E-02	1.85E-02	0.039
9531-0000-035FM	2.08E-01	2.30E-02	0.081
9531-0000-035FMD	2.48E-03	4.72E-03	0.004

Reported results for the listed radionuclides did not always meet the accepted level of detection (i.e., a result greater than two standard deviations uncertainty)


 Submitted by/Date 3/16/06

Reviewed  3-16-06

SOUTHERN END OF PENINSULA
SURVEY UNIT 9531-0000

RELEASE RECORD

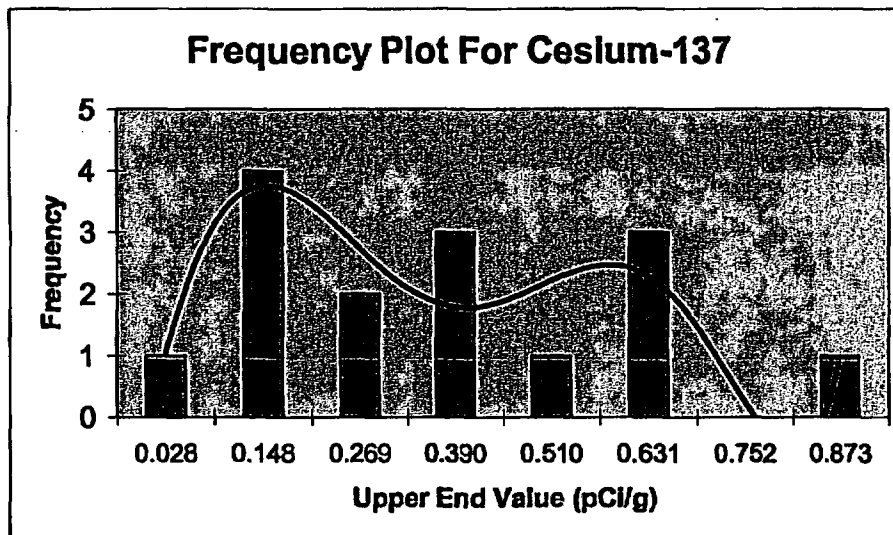
Attachment 2e
Graphical Representation of Data
(2 Pages)

FREQUENCY PLOT FOR CESIUM-137

Survey Unit: 9531-0000

Survey Unit Name: Southern End of Peninsula

Mean: 3.30E-01 pCi/g



Upper End Value	Observation Frequency	Observation Frequency
0.028	1	7%
0.148	4	27%
0.269	2	13%
0.390	3	20%
0.510	1	7%
0.631	3	20%
0.752	0	0%
0.873	1	7%
Total:	15	100%

Dick McCarthy 3/16/06
Submitted By/Date

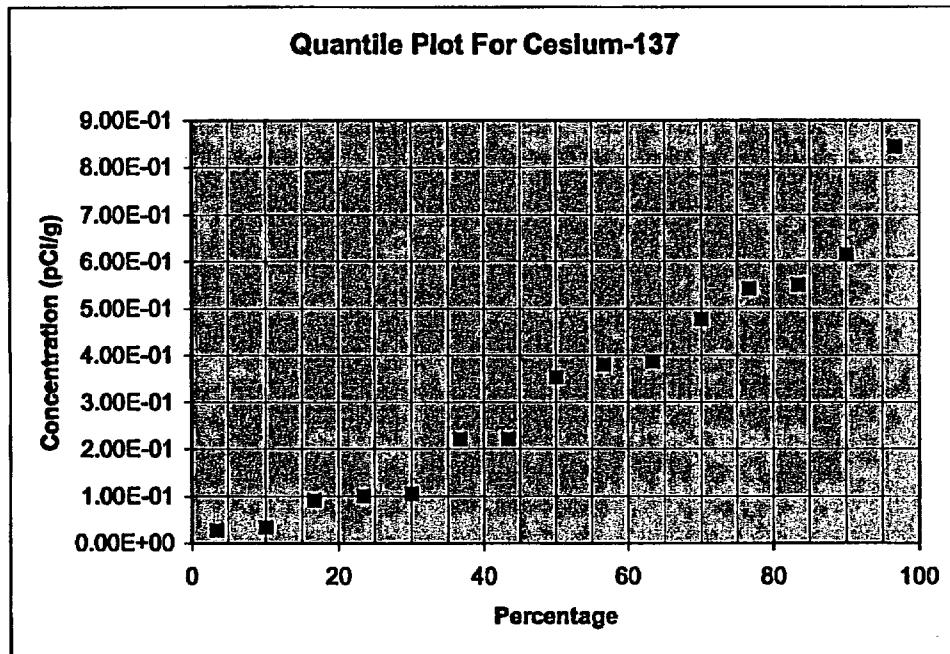
Paul Ruskall 3-16-06
Reviewed By/Date

QUANTILE PLOT FOR CESIUM-137

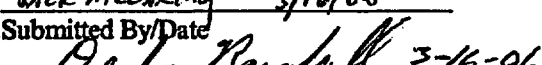
Survey Unit: 9531-0000

Survey Unit Name: Southern End of Peninsula

Mean: 3.30E-01 pCi/g



Cs-137	Rank	Percentage
2.75E-02	1	3%
3.38E-02	2	10%
9.24E-02	3	17%
1.01E-01	4	23%
1.06E-01	5	30%
2.21E-01	6	37%
2.22E-01	7	43%
3.54E-01	8	50%
3.80E-01	9	57%
3.86E-01	10	63%
4.77E-01	11	70%
5.42E-01	12	77%
5.50E-01	13	83%
6.14E-01	14	90%
8.45E-01	15	97%


 Submitted By/Date 3/16/06

 Reviewed By/Date 3-16-06

**SOUTHERN END OF PENINSULA
SURVEY UNIT 9531-0000**

RELEASE RECORD

**Attachment 2f
Sign Test Calculation
(1 Page)**

Sign Test Calculation Sheet For Multiple Radionuclides

Survey Area Number: 9531			Survey Unit Number: 0000			WPIR#: 24265-000-GEN-0000-00107-000		
Survey Area Name: South End of Peninsula			Classification: 3		TYPE I (α error): 0.05		N: 15	
Radionuclides:		Cs-137	Co-60	Sr-90	Ni-63	Tc-99	Pu-241	
DCGL:		3.16E+00	1.52E+00	6.20E-01	2.89E+02	5.04E+00	3.48E+02	
Results 1 st Radionuclide (pCi/g)	Results 2 nd Radionuclide (pCi/g)	Results 3 rd Radionuclide (pCi/g)	Results 4 th Radionuclide (pCi/g)	Results 5 th Radionuclide (pCi/g)	Results 6 th Radionuclide (pCi/g)	Weighted Sum (W _i)	1 - W _i	Sign
5.42E-01	-7.24E-03					0.167	0.833	+
1.06E-01	1.10E-02					0.041	0.959	+
3.38E-02	-1.51E-03					0.010	0.990	+
8.45E-01	1.12E-01					0.341	0.659	+
1.01E-01	2.22E-03					0.033	0.967	+
3.54E-01	2.16E-02					0.126	0.874	+
3.80E-01	9.16E-03					0.126	0.874	+
2.22E-01	-1.25E-02					0.062	0.938	+
6.14E-01	1.05E-02					0.201	0.799	+
3.86E-01	-1.54E-02					0.112	0.888	+
2.21E-01	-3.19E-02					0.049	0.951	+
4.77E-01	-2.73E-03					0.149	0.851	+
5.50E-01	1.56E-02	1.69E-01	1.06E+01	3.15E-01	1.09E+01	0.403	0.597	+
2.75E-02	-7.30E-03					0.000	1.000	+
9.24E-02	1.09E-02	5.86E-02	1.51E+01	1.37E-01	9.71E+00	0.202	0.798	+
Number of positive differences (S+):							15	

Critical Value: 11

Survey Unit Meets Acceptance Criterion

Performed by:

SALE McALPHEY

Date:

3/16/06

Reviewed *Del Rando* 3-16-06

SOUTHERN END OF PENINSULA
SURVEY UNIT 9531-0000

RELEASE RECORD

Attachment 2g
CORASS DA Surface Soil Reprt with
Retrospective Power Cntr
(4Pages)



DQA Surface Soil Report

Assessment Summary

Site: 9531-0001 FSS (retrospective)

Planner(s): McCarthy *G. McCarthy* 3/16/06 *Reviewed Dal Rowland 3-16-06*

Survey Unit Name: Southern End of Peninsula

Report Number: 1

Survey Unit Samples: 15

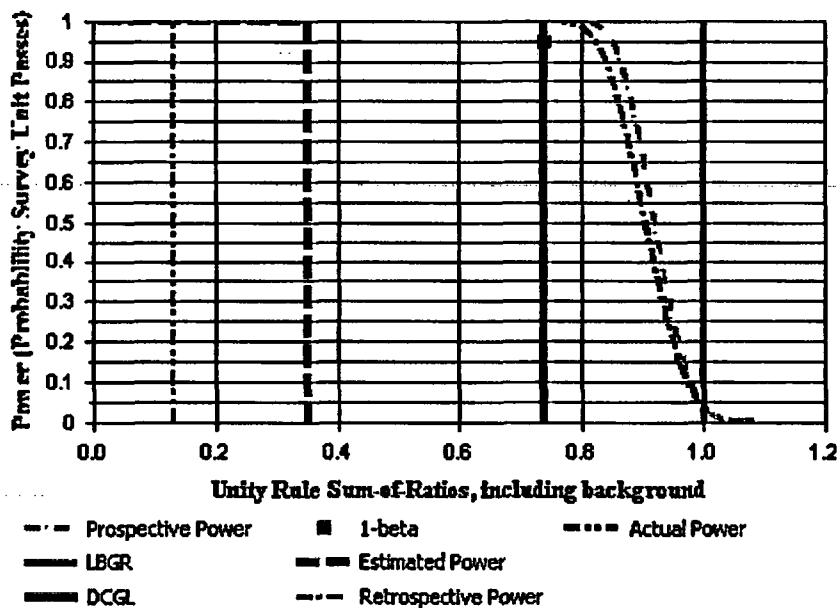
Reference Area Samples: 0

Test Performed: Sign Test Result: Not Performed

Judgmental Samples: 0 EMC Result: Not Performed

Assessment Conclusion: **Reject Null Hypothesis (Survey Unit PASSES)**

Retrospective Power Curve





DQA Surface Soil Report

Survey Unit Data

NOTE: Type = "S" indicates survey unit sample.
Type = "R" indicates reference area sample.

Sample Number	Type	Co-60 (pCi/g)	Cs-137 (pCi/g)	Ni-63 (pCi/g)
9531-0000-001F	S	-0.01	0.54	0
9531-0000-002F	S	0.01	0.11	0
9531-0000-003F	S	0	0.03	0
9531-0000-004F	S	0.11	0.84	0
9531-0000-005F	S	0	0.1	0
9531-0000-006F	S	0.02	0.35	0
9531-0000-007F	S	0.01	0.38	0
9531-0000-008F	S	-0.01	0.22	0
9531-0000-009F	S	0.01	0.61	0
9531-0000-010F	S	-0.02	0.39	0
9531-0000-011F	S	-0.03	0.22	0
9531-0000-012F	S	0	0.48	0
9531-0000-013F	S	0.02	0.55	10.6
9531-0000-014F	S	-0.01	0.03	0
9531-0000-015F	S	0.01	0.09	15.1

Sample Number	Type	Pu-241 (pCi/g)	SrY-90 (pCi/g)	Tc-99 (pCi/g)
9531-0000-001F	S	0	0	0
9531-0000-002F	S	0	0	0
9531-0000-003F	S	0	0	0
9531-0000-004F	S	0	0	0
9531-0000-005F	S	0	0	0
9531-0000-006F	S	0	0	0
9531-0000-007F	S	0	0	0
9531-0000-008F	S	0	0	0
9531-0000-009F	S	0	0	0
9531-0000-010F	S	0	0	0
9531-0000-011F	S	0	0	0
9531-0000-012F	S	0	0	0
9531-0000-013F	S	10.9	0.17	0.32
9531-0000-014F	S	0	0	0
9531-0000-015F	S	9.71	0.06	0.14



DQA Surface Soil Report

Modified Data (Unity Rule SOR)

NOTE: Type = "S" indicates survey unit sample.
Type = "R" indicates reference area sample.

Sample Number	Type	Sum-of-Ratios (SOR)
9531-0000-001F	S	0.17
9531-0000-002F	S	0.04
9531-0000-003F	S	0.01
9531-0000-004F	S	0.34
9531-0000-005F	S	0.03
9531-0000-006F	S	0.13
9531-0000-007F	S	0.13
9531-0000-008F	S	0.06
9531-0000-009F	S	0.2
9531-0000-010F	S	0.11
9531-0000-011F	S	0.05
9531-0000-012F	S	0.15
9531-0000-013F	S	0.59
9531-0000-014F	S	0
9531-0000-015F	S	0.24



DQA Surface Soil Report

Basic Statistical Quantities Summary

Statistic	Survey Unit	Background	DQO Results
Sample Number	15	N/A	N=15
Mean (SOR)	0.15	N/A	0.35
Median (SOR)	0.13	N/A	N/A
Std Dev (SOR)	0.15	N/A	0.13
High Value (SOR)	0.59	N/A	N/A
Low Value (SOR)	0.00	N/A	N/A