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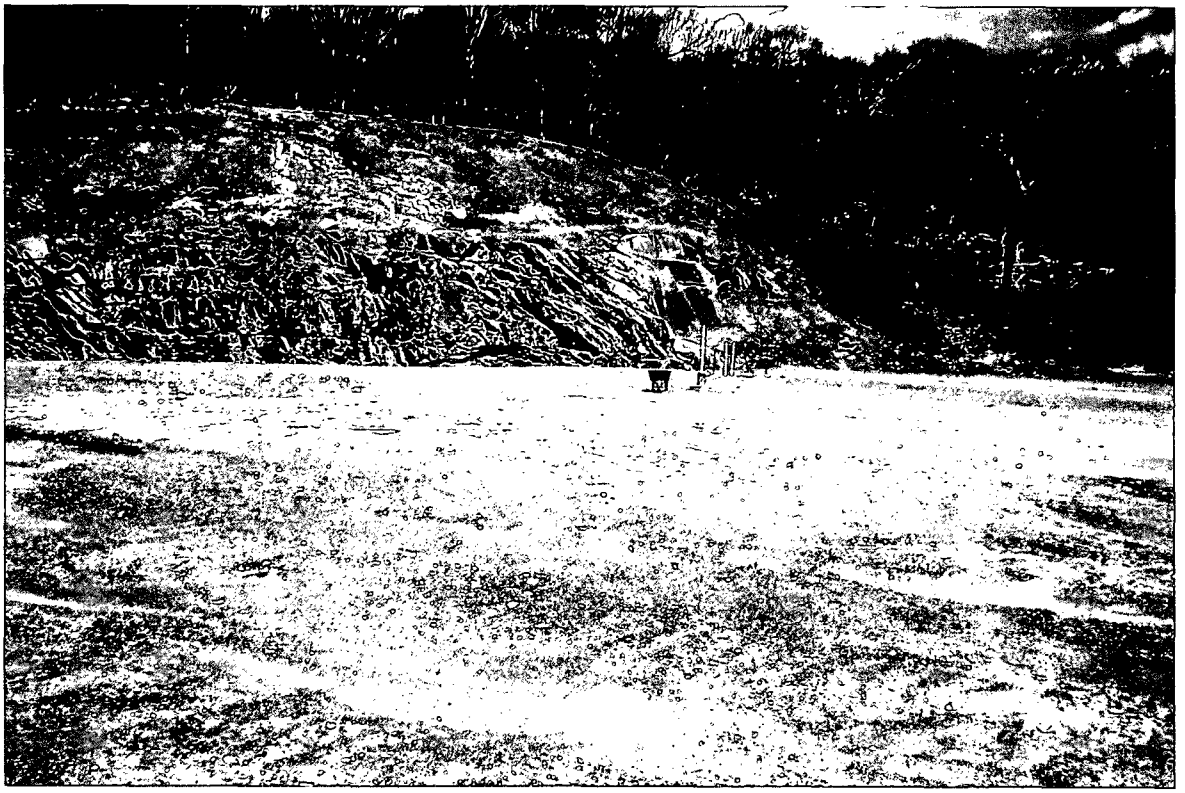

Final Status Survey Final Report Phase VII

Appendix A10

Survey Unit Release Record 9312-0008, 115 kV West Side GW Treatment Facility (Former Radiologically Controlled Area)

May 2007

CYAPCO
FINAL STATUS SURVEY RELEASE RECORD
115KV WEST SIDE GW TREATMENT FACILITY
(FORMER RADIOLOGICALLY CONTROLLED AREA)
SURVEY UNIT 9312-0008

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Revision 0

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1. SURVEY UNIT DESCRIPTION

Survey Unit 9312-0008 (115kV West Side GW Treatment Facility) is designated as Final Status Survey (FSS) Class 1 and consists of approximately one thousand three hundred fifty-one (1,351) square meters of open land and is located approximately one thousand six hundred eight six (1,686) feet to the southeast of the site reference coordinate system benchmark used at Haddam Neck Plant (HNP) (see Attachment 1). The survey unit is bounded as follows: land Survey Unit 9312-0003 to the north (called north as oriented with the north to south flow of the Connecticut River), land Survey Unit 9306-0000 to the west, land Survey Area 9522 to the south, and land Survey Unit 9312-0007 to the east. As a result of demolition and remediation activities, the area topography is mostly flat and de-vegetated. The survey unit has a moderate slope running from east to west.

The reference coordinates associated with this survey unit are E009 through E011 by S069 through S072 (refer to "*HNP 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) based on the Connecticut State Plane System North American Datum (NAD) 1927.

2. CLASSIFICATION BASIS

The survey unit was classified in accordance with Procedure RPM 5.1-10, *"Survey Unit Classification."*

The *"Classification Basis Summary"* conducted for Survey Unit 9312-0008 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 *"Initial and Supplemental Characterization Reports"* as well as the previous *"Classification Basis Summaries"* was performed. The source documents, the "*Connecticut Yankee Haddam Neck Characterization Report*" and "*Initial Classification for Survey Areas at Connecticut Yankee*", were incorporated by reference in LTP, Revision 0.

During plant operation, Survey Unit 9312-0008 was the location of significant reactor support structures and systems, primarily the southwestern quadrant of the 115kV Switchyard. The 115 kV Switchyard was situated outside the former Radiologically Controlled Area (RCA) just south of the Containment building.

This area included two Station Service Transformers and the 115 kV Tie Breaker. Also, Bus 12 was located at the southwest corner of the yard. In addition to these, there were several other transformers with associated power lines that extended beyond the switchyard area.

A review of the historical documentation indicated a significant number of operational events that may have impacted Survey Unit 9312-0008. Operational events were considered to be spills and leakage from contaminated systems. These events would have had the most impact on the radiological condition of subsurface structures and footers; and the underlying soil and bedrock prior to system and structural decontamination and demolition. Some of the major events are summarized as follows;

- The De-mineralized Water Storage Tank (DWST) and the Condensate Storage Tank (CST) were located in adjacent Survey Unit 9312-0003 to the north of Survey Unit 9312-0008. Even though these tanks were designed to normally contain only non-radioactive water, there was a documented history of radiologically contaminated water occasionally being introduced into these systems. Events that have contributed to the introduction of contaminated water into these tanks were steam generator tube failures and misalignment of valves. Historical surveys in the vicinity of these tanks did not indicate any contamination of the surrounding soils. During April of 1999, a shallow monitoring well and a deep monitoring well located to the west of the DWST location produced samples that showed positive results for tritium.
- In February of 1989 there was a release of radioactive liquid from the Spent Fuel Building drainpipe that resulted in distribution of plant related radioactivity to the drain trench located in the 115 kV Switchyard, the storm drain system components and soils at the storm drain outfall. Remediation of the plant related radioactivity associated with this event resulted in decontamination of the drain trench, the storm drain system and removal of a significant volume of soil.
- A hot particle was discovered during a routine survey of the area adjacent to the 115 kV Switchyard on June 9, 1977. The contaminant was removed and a resurvey of the entire area and the equipment removed from the area indicated no detectable activity. Gamma spectrometry of the speck indicated it to be Co-60.
- A routine survey of the RCA boundary on February 24, 1989, alerted Radiation Protection personnel to the presence of exposure rates as high as 160 mr/hr at the switchyard trench. The source of contamination was discovered to be a fifty (50) gallon discharge of radioactive liquid into an uncontrolled drain from the Spent Fuel Building. The discharge occurred following filtration of sludge removed from the containment sump. The drain discharged the liquid into the trench at the southeast corner of the 115 kV Switchyard and subsequently into the leach field east of the discharge canal. Identified contaminated soil in the trench area was remediated.

- During an annual survey performed on August 1, 1995, radioactive particles were found in and around the switchyard area. Some of the particles were embedded in the pavement around the switchyard. Gamma spectrometry of dirt samples collected from the switchyard identified Co-60 and Cs-137. The contaminated soil in the switchyard and portions of pavement were removed.

Major demolition and remediation activities began in 2002. All systems and components located inside this survey unit were removed and building structural surfaces were decontaminated to ensure contamination levels were acceptable for controlled demolition. Confirmatory radiological surveys were performed throughout the demolition process. All above grade structures were then demolished to grade.

Outside of the Containment shell, extensive soil remediation was performed in Survey Area 9312. A large excavation was created to the north of the Containment that was designated as Excavation #2. This excavation included the area in the vicinity of the Refueling Waster Storage Tank and the Primary Auxiliary Building (PAB) corridor. A second large excavation, designated as Excavation #1 was located over the PAB footprint. A third excavation, designated as Excavation #3 was located in the area between the Containment Building and Spent Fuel Building (SFB). Soil was excavated and removed as adjacent structures were demolished. This process continued until bedrock was exposed. Subsurface structures and footings that remained following demolition and excavation include the Containment Mat, the Cable Vault wall, the Service Building east wall, a remnant of the PAB northwest wall, the Waste Disposal Building footing and miscellaneous fragments of footings and slabs on the bedrock. As with the Containment basement shell, all excavations were backfilled with clean fill following the performance of a radiological assessment. No above grade structures currently reside within Survey Unit 9312-0008.

In Survey Area 9312, post-remediation soil samples were taken from the as-left surface soils under two (2) Survey and Sampling Work Plans, SSWP-06-08-000 and SSWP-06-12-001. Thirty-five (35) post remediation surface soil samples were collected from the various locations within Survey Area 9312. All samples were collected and analyzed by gamma spectroscopy by an approved off-site laboratory. Ten (10) of the thirty-five (35) post remediation samples collected were analyzed for the full suite of "Hard-to-Detect" (HTD) radionuclides specified in the LTP, Table 2-12, "*Radionuclides Potentially Present at Haddam Neck Plant*" and as provided in Table 3. Statistical quantities (mean, median and standard deviation) from the 2006 post-remediation survey conducted under SSWP-06-08-000 and SSWP-06-12-001 are provided in Table 1.

Table 1 – Basic Statistical Quantities for Cs-137 and Co-60 from the 2006 Post Remediation Survey

	Cs-137 (pCi/g)	Co-60 (pCi/g)
Minimum Value :	1.32E-02	-5.00E-02
Maximum Value :	1.70E+00	1.43E+00
Mean :	2.38E-01	1.08E-01
Median :	1.65E-01	1.46E-02
Standard Deviation :	3.10E-01	2.76E-01

A review of this sample data shows Cs-137 and Co-60 to be the primary radionuclides of concern, which both isotopes reported at fairly low concentrations. The sample population as a whole was evaluated to assess the distribution of the detected radionuclides. The radionuclide distribution percentage for each sample in the population was calculated by dividing the concentration of each detected radionuclide by the total activity concentration in the sample, expressing the abundance of the specific nuclide in the sample compared against the total activity. The mean radionuclide distribution was then calculated by taking the average of the individual sample distribution fractions. The results are provided in Table 2.

Table 2 – Distribution Fraction for Detectable Radionuclides in Soil Sample Population

Detected Radionuclide	Distribution Fraction
Cs-137	0.689
Co-60	0.311

No HTD radionuclides were positively identified in concentrations meeting the accepted criteria for detection (i.e., a result greater than two (2) standard deviations uncertainty). Radionuclide screening or de-selection is a process where an individual radionuclide or aggregates 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. While Sr-90 was not identified in the soil characterization results, it was decided to include Sr-90 is a radionuclide of concern for this survey unit as Sr-90 was prevalent in the soils prior to remediation. Therefore, all volumetric soil samples taken as part of the survey design for this survey unit were subjected to direct analysis for Sr-90.

The FSS Engineer performed a visual inspection and walk-down during December 2006 to assess the physical condition of the survey unit, evaluate access points, travel paths and identify potentially hazardous conditions.

This survey area is affected by existing and future groundwater (reference CY memo ISC 06-024) which will be a source of dose from residual radioactivity, as discussed in Section 3 under the Data Quality Objectives.

Based upon the identification of radioactive material above the Derived Concentration Guideline Levels (DCGLs), and the need for radiological remediation, it was concluded that there was some probability for residual radioactivity in concentrations greater than the DCGLs, justifying a final survey unit classification of Class 1 (refer to Section 3).

3. DATA QUALITY OBJECTIVES (DQO)

FSS design and planning used 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 indicate that residual activity within the survey unit does not exceed the release criteria.

The primary objective of the FSS plan was to demonstrate that the level of residual radioactivity in Survey Unit 9312-0008 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).

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 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 future groundwater radioactivity that will be contributed by building basements and footings.

The DCGLs presented in Chapter 6 of the LTP were developed for exposures from three (3) components, that is, residual radioactivity in soil, existing groundwater radioactivity, and future groundwater radioactivity from the burial of concrete foundations or footings from site buildings containing residual radioactivity. Equation 1 shows the mathematical relationship between the three (3) components and the total dose.

Equation 1

$$H_{Total} = H_{Soil} + H_{ExistingGW} + H_{FutureGW}$$

The total dose under the LTP criteria is twenty-five (25) mrem/yr Total Effective Dose Equivalent (TEDE) from all three (3) components. The allowable total dose under the Connecticut Department of Environmental Protection (CTDEP) radiological remediation standard for CY is nineteen (19) mrem/yr TEDE. To satisfy both the LTP and CY CTDEP criteria, the dose from soil must be reduced when using the existing and future groundwater dose values discussed above.

This survey area is affected by existing groundwater (reference CY memo ISC 06-024). Therefore, the dose contribution from existing groundwater is bounded by two (2) mrem/yr TEDE.

This survey unit is considered impacted by future groundwater radioactive contamination, as there are underground foundations containing residual radioactive material within the groundwater saturated zone in the area (reference CY memo ISC 06-024). The dose contribution from future groundwater, the third dose component, is bounded by two (2) mrem/yr TEDE.

Equation 2

$$19\ \text{mrem/yr}_{Total} = 15\ \text{mrem/yr}_{Soil} + 2\ \text{mrem/yr}_{Existing\ GW} + 2\ \text{mrem/yr}_{FutureGW}$$

The allowable dose for soil in this survey unit is fifteen (15) mrem/yr TEDE as shown by Equation 2 above. The concentration of residual radioactivity resulting in fifteen (15) mrem/yr TEDE is designated as the Operational DCGL ($DCGL_{op}$), and has been established for the radionuclides of concern as provided in Table 3.

Table 3 – Radionuclide Specific Base Case Soil DCGLs, Operational DCGLs and Required Minimum Detectable Concentrations (MDCs)

Radionuclide (1)	Base Case Soil DCGL (ρC/g) (2)	Operational DCGL (ρC/g) (3)	Required MDC (ρC/g) (4)
H-3	4.12E+02	2.47E+02	1.65E+01
C-14	5.66E+00	3.40E+00	2.26E-01
Mn-54	1.74E+01	1.04E+01	6.96E-01
Fe-55	2.74E+04	1.64E+04	1.10E+03
Co-60	3.81E+00	2.29E+00	1.52E-01
Ni-63	7.23E+02	4.34E+02	2.89E+01
Sr-90	1.55E+00	9.30E-01	6.20E-02
Nb-94	7.12E+00	4.27E+00	2.85E-01
Tc-99	1.26E+01	7.56E+00	5.04E-01
Ag-108m	7.14E+00	4.28E+00	2.86E-01
Cs-134	4.67E+00	2.80E+00	1.87E-01
Cs-137	7.91E+00	4.75E+00	3.16E-01
Eu-152	1.01E+01	6.06E+00	4.04E-01
Eu-154	9.29E+00	5.57E+00	3.72E-01
Eu-155	3.92E+02	2.35E+02	1.57E+01
Pu-238	2.96E+01	1.78E+01	1.18E+00
Pu-239/240	2.67E+01	1.60E+01	1.07E+00
Am-241 (5)	2.58E+01	1.55E+01	1.03E+00
Pu-241	8.70E+02	5.22E+02	3.48E+01
Cm-243/244	2.90E+01	1.74E+01	1.16E+00

(1) Bold indicates those radionucldies considered Hard to Detect (HTD)

(2) The Base Case Soil DCGL(s) are specified by the LTP in Chapter 6 and are equivalent to twenty-five (25) mrem/yr TEDE

(3) The Operational DCGL is equivalent to achieving fifteen (15) mrem/yr TEDE

(4) The required MDC is equivalent to achieving one (1) mrem/yr TEDE

(5) Americium-241 can be analyzed by gamma and alpha spectroscopy and is considered to be Easy to Detect (ETD). The preferred result is the alpha spectroscopy's when both analyses are performed

Another important facet of the DQO process is to identify the radionuclides of concern and determine the concentration variability. Soil samples were collected in 2006 to establish the radiological condition of Survey Unit 9312-0008 for FSS. Cs-137 and Co-60 were the two (2) gamma emitting radionuclides reported in concentrations with the potential for exceeding the release criteria. Sr-90 was included as a radionuclide of concern due to it's prevalence in the soil prior to remediation. The characterization data were used for the survey design and are provided in Table 1.

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 required prior to issue and after the instrument had been used. Control and accountability of survey instruments was required to assure the quality and prevent the loss of data.

As part of the DQOs applied to laboratory processes, analysis results were reported as actual calculated results. Results reported as less than Minimum Detectable Concentration (MDC) were not accepted for FSS. Sample report summaries included unique sample identification, analytical method, radionuclide, result, and uncertainty to two (2) 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. Guidance for preparing FSS plans is provided in Procedure RPM 5.1-11, "*Preparation of Final Status Survey Plans*". The FSS plan uses an integrated sample design that combines scanning surveys and sampling which can be either random or biased.

The DQO process determined that Cs-137, Co-60 and Sr-90 would be the radionuclides of concern in Survey Unit 9312-0008 (refer to Section 3). The characterization survey did not include any other additional HTD radionuclides of concern for this survey unit. As Sr-90 concentrations were determined by direct analysis, surrogate DCGLs were not required as part of the survey design for this survey unit via screening under LTP Section 5.4.7.2, "*Gross Activity DCGLs*". Other radionuclides that were positively identified in concentrations greater than the screening criteria during the performance of this FSS would be evaluated to ensure adequate survey design.

As the survey unit is classified as a Class 1 surface soils area, and discrete, elevated areas of contamination was possible, the application of the Elevated Measurement Comparison (EMC) remained an option.

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 0.73 to achieve a relative shift (Δ/σ) in the range of 1 and 3. The resulting adjusted relative shift was 2.0. 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 (10CFR20, Subpart E). The result of the COMPASS computer run showed adequate power for the survey design. The survey design specified fifteen (15) surface soil samples for non-parametric statistical testing. Based upon a review of the historical information and Characterization Survey data, the acquisition of additional judgmental surface soil samples from within this survey unit was deemed unnecessary.

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 1 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 4.

Table 4 - Sample Measurement Locations with Associated GPS Coordinates

Designation	Northing	Easting
9312-0008-001F	236475.90	668844.00
9312-0008-002F	236475.90	668877.34
9312-0008-003F	236447.02	668827.33
9312-0008-004F	236447.02	668860.67
9312-0008-005F	236447.02	668894.01
9312-0008-006F	236447.02	668927.35
9312-0008-007F	236418.15	668810.66
9312-0008-008F	236418.15	668844.00

Table 4 - (continued)

Designation	Northing	Easting
9312-0008-009F	236418.15	668877.34
9312-0008-010F	236418.15	668910.68
9312-0008-011F	236389.28	668827.33
9312-0008-012F	236389.28	668860.67
9312-0008-013F	236389.28	668894.01
9312-0008-014F	236360.40	668844.00
9312-0008-015F	236360.40	668877.34

Procedure RPM 5.1-11 specifies that 5% of the samples are required to be selected for HTD analysis. Two (2) soil samples, or about 10% 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 was 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*" and as provided in Table 3.

The LTP requires a minimum of 5% of the samples taken for non-parametric statistical testing be selected for QC evaluation. The implementation of quality control measures as referenced by Procedure RPM 5.1-24, "*Split Sample Assessment for Final Status Survey*," included the collection of one (1) soil sample for "split sample" analysis by the off-site laboratory. This location was selected randomly using the Microsoft Excel "RANDBETWEEN" function.

The LTP specifies a required scanning coverage of 100% for outdoor Class 1 areas.

For this Class 1 survey unit, the "Investigation Level" for area scanning and soil sample measurement results are those levels specified in LTP, Table 5-8. Table 5 provides a synopsis of the survey design.

Table 5 – Synopsis of the Survey Design

Feature	Design Criteria	Basis
Survey Unit Land Area	1,351 m^2	Based on AutoCAD-LT
Number of Measurements	15 (15 systematic grid)	Type 1 and Type 2 errors were 0.05, sigma was 0.14 ρCi/g, the LBGR was set at 0.73 to achieve a Relative Shift in the range of 1 and 3
Grid Spacing	10.14 m	Based on triangular grid
Operational DCGL	4.75 ρCi/g Cs-137 2.29 ρCi/g Co-60	Administratively set to achieve fifteen (15) mrem/yr TEDE (1)
Soil Investigation Level	4.75 ρCi/g Cs-137 2.29 ρCi/g Co-60	The Operational DCGL meets the LTP criteria for a Class 1 survey unit
Scan Survey Area Coverage	Approximately 100% of the area	The LTP requires 100% area coverage for Class 1 survey units
Scan Investigation Level	An instrument response greater than the Scan MDC($DCGL_{EMC}$) of 2,810 cpm plus ambient background	Based upon a Minimum Detectable Count Rate (MDCR) of 2,020 cpm and a corresponding MDC_{scan} of 13.92 ρCi/g Cs-137 and 3.23 ρCi/g Co-60

(1) The allowable dose for soil in this survey unit is fifteen (15) mrem/yr TEDE as the bounding dose from existing and future groundwater has been established based on field data (reference CY memo ISC 06-024)

5. SURVEY IMPLEMENTATION

Final status survey field activities were conducted under Work Plan and Inspection Record (WP&IR) 2006-0047. The WP&IR package included a detailed FSS plan, 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.

A single scan area was established that constituted approximately 100% of the surface area of Survey Unit 9312-0008. Grid lines, one (1) meter wide, were painted on the ground of the scan area. A background survey was performed around the survey unit and it was determined that, using an Eberline E-600 with a SPA-3 sodium iodide detector, background ranged from 5,910 counts per minute (cpm) up to 11,600 cpm.

The scan area was established and scanned for elevated readings (see Attachment 2 for all scan 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. Approximately 100% of the survey unit was scanned.

Measurement locations were identified in North American Datum (NAD) 1927 coordinates using GPS coordinates; sample locations were identified and marked with a surveyor's flag or paint for identification. At each sample location, a one (1) meter radius circle was established around the sample flag or paint mark 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 (9312-0008-006F and 9312-0008-011F) were randomly selected for HTD radionuclide analysis.

The implementation of survey specific quality control measures included the collection of one (1) sample (9312-0008-003F) for "split sample" analysis.

6. SURVEY RESULTS

All field survey activities were conducted between January 24, 2007 and January 25, 2007.

The sample locations identified in the FSS plan were scanned over approximately a one (1) meter radius for elevated radiation levels. Table 6 provides an overview of the scan results for sample measurement locations. Scan results are provided in Attachment 2.

Table 6 - Scan Results for Sample Measurement Locations

Sample Measurement Location	Highest Logged Reading (kcpm)	Action Level (1) (kcpm)	> Action Level
1	7.06	9.55	NO
2	7.91	9.68	NO
3	7.02	9.41	NO
4	6.88	9.96	NO
5	7.21	10.82	NO
6	7.58	10.88	NO
7	7.51	10.20	NO
8	8.30	10.64	NO
9	6.40	10.44	NO
10	7.49	9.78	NO
11	7.17	10.58	NO
12	7.17	10.25	NO
13	7.08	10.01	NO
14	8.67	11.27	NO
15	10.80	13.11	NO

(1) The action level is based on a measurement in accordance with the FSS plan (MDC($DCGL_{EMC}$) of 2,810 cpm plus ambient background)

The scan area, that comprised approximately 100% of the total surface area for the survey unit, were scanned for elevated radiation levels. The area was scanned in accordance with the FSS plan on January 24, 2007 through January 25, 2007.

Forty-four (44) scan strips were initially established in this survey unit. Several elevated measurement locations were identified during scanning. Table 7 provides an overview of the scan area survey. Scan results are provided in Attachment 2.

Table 7 - Scan Area Results

Scan Strips	Highest Logged Reading (kcpm)	Action Level (1) (kcpm)	Elevated Reading Identification (2)	Investigation Sample
1 thru 10	8.45	10.53	None	None
11 thru 20	9.07	10.52	None	None
21 thru 30	9.83	11.66	None	None
31 thru 40	14.4	12.61	9312-08-ER-00-31-1	9312-0008-016I
			9312-08-ER-00-32-1	9312-0008-017I
			9312-08-ER-00-35-1	9312-0008-018I
41 thru 44	10.7	12.19	None	None

(1) The action level is based on a measurement in accordance with the FSS plan (MDC($DCGL_{EMC}$) of 2,810 cpm plus ambient background)

(2) ER is an abbreviation associated with the barcodes used in the field where ER stands for Elevated Reading.

The off-site laboratory employed for the radiological analyses of samples was General Engineering Laboratories, LLC. The laboratory analyzed the fifteen (15) samples collected for non-parametric statistical testing, the associated field splits and the three (3) investigation samples using gamma spectroscopy. Gamma spectroscopy analysis was performed to the required MDCs. Gamma spectroscopy results identified some radionuclides meeting the accepted criteria for detection (i.e., a result greater than two (2) standard deviations uncertainty). However, Cs-137 was the only gamma-emitting radionuclide reported in any appreciable concentration.

Cs-137 was identified in five (5) of the fifteen (15) samples collected for non-parametric statistical testing. Co-60 was not positively identified in any sample from the statistical sample population. The mean of the gamma spectroscopic analysis results for the sample population indicated that Cs-137 was present at levels slightly lower than expected environmental levels for Cs-137 within the vicinity of the HNP as presented in the Health Physics TSD BCY-HP-0063. A summary of the fifteen (15) samples collected for non-parametric statistical testing results is provided in Table 8.

Table 8 - Summary of Gamma Spectroscopy Results for Surface Soil Samples Comprising the Statistical Sample Population

Sample Number	Cs-137 pCi/g
9312-0008-001F	1.88E-02
9312-0008-002F	1.70E-02
9312-0008-003F	1.27E-02
9312-0008-004F	0.00E+00
9312-0008-005F	2.10E-03
9312-0008-006F	5.37E-03
9312-0008-007F	2.14E-02
9312-0008-008F	2.10E-02
9312-0008-009F	8.38E-02
9312-0008-010F	3.41E-02
9312-0008-011F	3.45E-02
9312-0008-012F	-3.17E-03
9312-0008-013F	2.20E-02
9312-0008-014F	1.40E-02
9312-0008-015F	3.34E-03

In addition to Cs-137 and Co-60, Sr-90 was also identified during the DQO process as a radionuclide of concern. Subsequently, all samples were subjected to analysis by gas proportional counting for Sr-90. All analyses met the required minimum MDC.

Sr-90 was positively identified (i.e., a result greater than two (2) standard deviations uncertainty) in three (3) of the fifteen (15) samples collected for non-parametric statistical testing. The results of the Sr-90 analysis for the statistical sample population are provided below in Table 9.

Table 9 - Summary of Sr-90 Analysis Results for Surface Soil Samples Comprising the Statistical Sample Population

Sample Number	Sr-90 pCi/g
9312-0008-001F	2.35E-02
9312-0008-002F	2.96E-01
9312-0008-003F	3.08E-02
9312-0008-004F	-4.36E-03
9312-0008-005F	5.33E-03
9312-0008-006F	3.56E-03
9312-0008-007F	3.95E-03
9312-0008-008F	1.44E-02
9312-0008-009F	-1.70E-03
9312-0008-010F	-5.00E-03
9312-0008-011F	4.26E-03
9312-0008-012F	1.38E-02
9312-0008-013F	9.52E-03
9312-0008-014F	3.92E-03
9312-0008-015F	4.41E-02

In addition to Sr-90, the off-site laboratory also processed, as required by the sample plan, two (2) samples for the full suite of HTD radionuclides as specified in LTP, Table 2-12, "*Radionuclides Potentially Present at Haddam Neck Plant*" and as provided in Table 3. The requested analyses included alpha spectroscopy, gas proportional counting, and liquid scintillation depending on the radionuclide and the measurement method. All analyses performed met the required minimum MDC.

H-3 was the only HTD other than Sr-90, which by analysis, met the criteria for detection (i.e., a result greater than two standard deviations uncertainty). The highest result for H-3 was at less than 1% of the $DCGL_{op}$ for H-3. Therefore, H-3 will not be considered in the final dose determination for this survey unit. As previously stated in Section 4 of this report, the criteria for de-selection of a radionuclide is a concentration that is less than 5% of the Operational DCGL for individual radionuclides and less than 10% of the Operational DCGLs for aggregates.

The "sum-of-fractions" or "unity rule" is the mathematical test used to evaluate compliance with radiological criteria for license termination when more than one radionuclide has been determined to be potentially present. The combination of the fractions of each detected radionuclide against their respective Operational DCGL must be less than or equal to one (1). The unity rule is:

Equation 3

$$\frac{C_1}{DCGL_1} + \frac{C_2}{DCGL_2} + \ldots\ldots \frac{C_n}{DCGL_n} \leq 1$$

Where: C_n = concentration of radionuclide *n* and
$DCGL_n$ = DCGL of radionuclide *n*.

The results of the unity rule calculation for the radionuclides of concern in the statistical sample population for Survey Unit 9312-0008 are provided in Table 10 below.

Table 10 – Results of Unity Calculation for Surface Soil Samples Comprising the Statistical Sample Population(1)(2)(3)

Sample Number	Fraction of the Operational DCGL		Unity
	Cs-137	Sr-90	
9312-0008-001F	-	-	-
9312-0008-002F	0.004	0.318	0.322
9312-0008-003F	-	0.033	0.033
9312-0008-004F	-	-	-
9312-0008-005F	-	-	-
9312-0008-006F	-	-	-
9312-0008-007F	0.005	-	0.005
9312-0008-008F	-	-	-
9312-0008-009F	0.018	-	0.018
9312-0008-010F	0.007	-	0.007
9312-0008-011F	0.007	-	0.007
9312-0008-012F	-	-	-
9312-0008-013F	-	-	-

Table 10 – Results of Unity Calculation for Surface Soil Samples Comprising the Statistical Sample Population(1)(2)(3)

Sample Number	Fraction of the Operational DCGL		Unity
	Cs-137	Sr-90	
9312-0008-014F	-	-	-
9312-0008-015F	-	0.047	0.047

(1) "-" indicate that the radionuclide was not positively detected in the sample

(2) Although listed as a radionuclide of concern, Co-60 was not positively detected in any of the samples comprising the statistical sample population

(3) The Operational DCGL from Table 2 is 4.75 ρCi/g for Cs-137 and 0.93 ρCi/g for Sr-90 to achieve fifteen (15) mrem/yr TEDE respectively.

7. QUALITY CONTROL

The off-site laboratory processed the split samples and performed gamma spectroscopy analysis. One sample location was 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*".

Cs-137 was not detected in sufficient quantity in the field split results at location 9312-0008-003F to evaluate in accordance with procedure. Evaluation using the reported results for naturally occurring K-40 resulted in acceptable agreement between the field-split results at this location.

The sample analysis vendor, General Engineering Laboratories, LLC, maintains quality control and quality assurance plans as part of normal operation. Refer to Attachments 3 and 4 for data and data quality analysis results

8. INVESTIGATIONS AND RESULTS

Three (3) investigative surface soil samples were collected from scan areas exhibiting elevated scan readings. These confirmatory soil samples were analyzed for Cs-137, Co-60 and Sr-90 in accordance with the DQOs used during the survey design. Investigative Sample designations are listed with the GPS coordinates in Table 11.

Table 11 - Investigative Sample Designations with Associated GPS Coordinates

Designation	Northing	Easting
9312-0008-016-I	236358.70	668868.21
9312-0008-017-I	236354.14	668865.13
9312-0008-018-I	236430.44	668940.73

The samples are denoted as shown in Table 7, with the sample results shown in Table 12 below.

Table 12 - Investigation Sample Results(2)

Sample Number	Cs-137 pCi/g	Co-60 pCi/g	Sr-90 pCi/g	Unity Fraction (1)
9312-0008-016-I	4.91E-02	7.91E-02	4.99E-02	0.099
9312-0008-017-I	4.21E-02	-8.17E-03	1.89E-02	0.009
9312-0008-018-I	3.86E-02	-1.15E-02	4.54E-03	-

(1) The Operational DCGL from Table 2 is 4.75 pCi/g for Cs-137, 2.29 pCi/g for Co-60 and 0.93 pCi/g for Sr-90 to achieve fifteen (15) mrem/yr TEDE respectively.

(2) "-" indicate that the radionuclide was not positively detected in the sample

Cs-137 was positively identified in two (2), Co-60 was positively identified in one (1) and Sr-90 was positively identified in one (1) of the three (3) investigative samples taken. All samples results were less than the Operational DCGL for each respective radionuclide and less than the unity value of one (1) when combined.

9. REMEDIATION AND RESULTS

Radiological remedial action as described by MARSSIM Section 5.4 was performed in this survey unit prior to FSS. All excavations were characterized and backfilled with "clean" fill prior to performing FSS. In the area where remediation occurred, the ground area is comprised of barren dirt with no vegetation, and the soils have been graded relatively flat to the corresponding elevation of the adjacent survey units. The results for Cs-137 following remediation were well below the Operational DCGL provided in Table 3. 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 is unnecessary and that the remaining residual radioactivity in soil was ALARA.

10. CHANGES FROM THE FINAL STATUS SURVEY PLAN

No changes were made to the FSS plan.

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 evaluation of the Sign Test results demonstrates that the survey unit passes the unrestricted release criteria, thus, the null hypothesis is rejected.

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 1.

The preliminary data review consisted of calculating basic statistical quantities (e.g., mean, median, standard deviation). The mean and median values are well below the Operational DCGL. Also, the retrospective power curve shows that a sufficient number of samples were collected to achieve the desired power. Therefore, the survey unit meets the unrestricted release criteria with adequate power as required by the DQOs. The basic statistical quantities for the statistical sample population are provided below in Table 13.

Table 13 – Basic Statistical Quantities for Cs-137, Co-60 and Sr-90 from the Final Status Survey

	Cs-137 ρCi/g	**Co-60 ρCi/g**	**Sr-90 ρCi/g**
$DCGL_{op}$:	4.75E+00	2.29E+00	9.30E-01
Minimum Value:	-3.17E-03	-2.21E-02	-5.00E-03
Maximum Value:	8.38E-02	6.56E-03	2.96E-01
Mean:	1.91E-02	-4.45E-03	2.95E-02
Median:	1.70E-02	-3.88E-03	5.33E-03
Standard Deviation:	2.13E-02	8.32E-03	7.50E-02

The range of the data, about four (4) standard deviations for Cs-137 and Sr-90, was not a particularly large variation. The difference between the mean and median was about 3% to 10% of the standard deviation which indicates some skewness in the data. The data was represented graphically through posting plots, a frequency plot, and a quantile plot. The frequency plot indicates a slight positive skewness as confirmed by the calculated skew of 2.13 for Cs-137 and 3.67 for Sr-90.

Co-60, although included in the FSS plan for compliance purposes, was not positively identified in any of the fifteen (15) samples collected for non-parametric statistical testing. Assessment of the basic statistical quantities and graphical representation of Co-60 was not considered useful given the non-existent number of actual data points to represent the distribution.

All data, assessments, and graphical representations are provided in Attachment 4.

12. ANOMALIES

No anomalies were noted.

13. CONCLUSION

Survey Unit 9312-0008 has met the final DQOs of the FSS plan. The ALARA criteria for soils as specified in Chapter 4 of the LTP were achieved. Elevated Measurement Comparison was not required.

All identified radionuclides of concern were used for statistical testing to determine the adequacy of the survey unit for FSS.

The sample data passed the Sign Test. The null hypothesis was rejected. The Retrospective Power Curve generated using COMPASS shows adequate power was achieved. The survey unit is properly designated as Class 1.

The dose contribution from soil is 0.54 mrem/yr TEDE based on the average concentration of the samples used for non-parametric statistical sampling.

This survey area is affected by existing groundwater (reference CY memo ISC 06-024); therefore the dose contribution from existing groundwater is bounded at two (2) mrem/yr TEDE.

This survey unit is considered impacted by future groundwater radioactive contamination, as there are underground foundations containing residual radioactive material within the groundwater saturated zone in the area (reference CY memo ISC 06-024). The dose contribution from future groundwater, the third dose component, is bounded by two (2) mrem/yr TEDE.

The average total dose from residual radioactivity in this survey unit, including exposures from the three (3) components as described in Section 3, that is, residual radioactivity in soil, existing groundwater radioactivity, and future groundwater radioactivity from the burial of concrete foundations or footings from site buildings containing residual radioactivity will not exceed 4.54 mrem/yr TEDE. Therefore, Survey Unit 9312-0008 is acceptable for unrestricted release.

14. ATTACHMENTS

14.1 Attachment 1 – Figures

14.2 Attachment 2 – Scan Results

14.3 Attachment 3 – Laboratory Results

14.4 Attachment 4 – DQA Results

ATTACHMENT 1 (FIGURES)

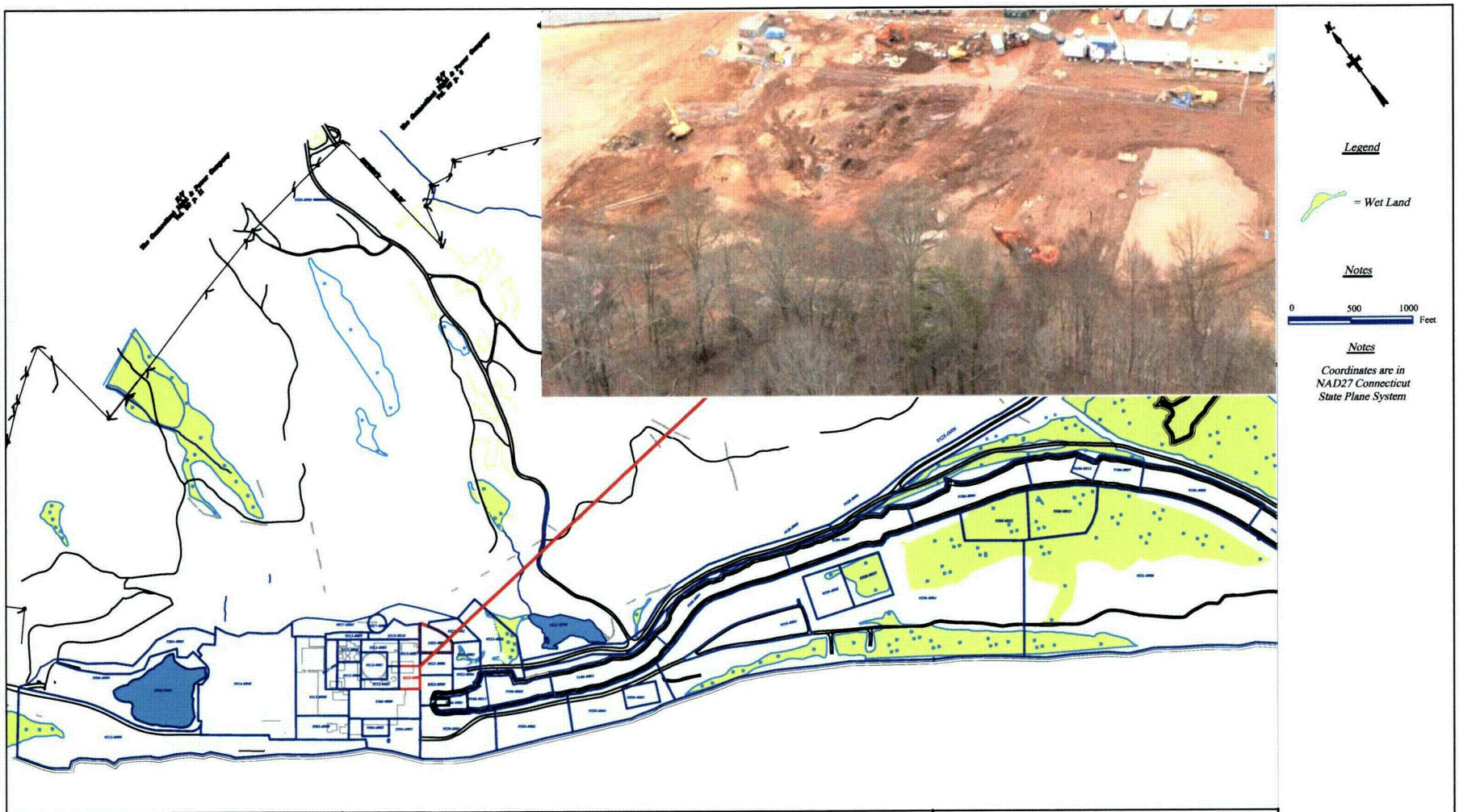

Figure 1	*Connecticut Yankee Atomic Power Company* *Survey Unit 9312-0008*	*Date: February 2007* *Revision: 0*

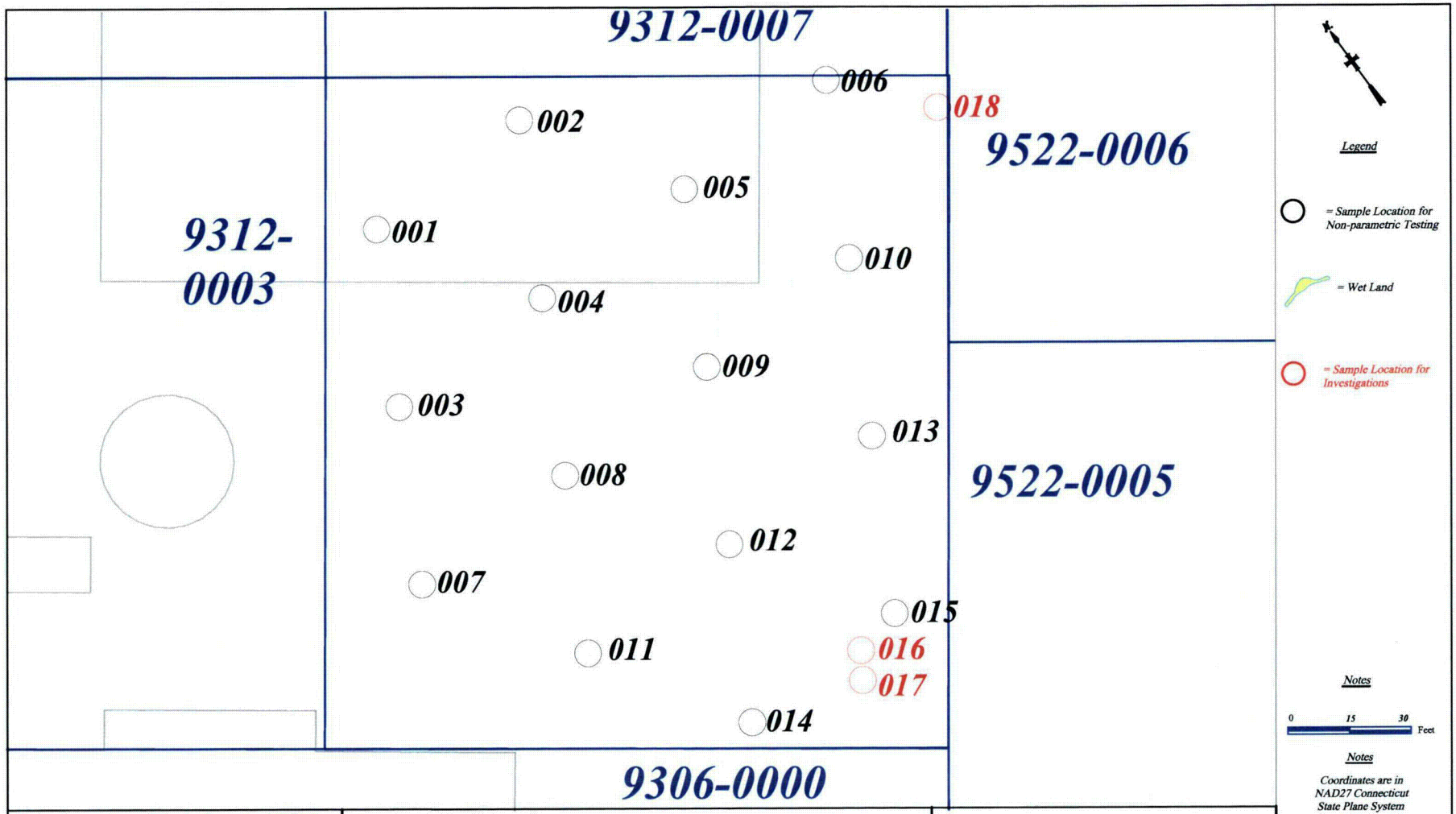

Figure 2	Connecticut Yankee Atomic Power Company Sample Location Map for Survey Unit 9312-0008	Date: February 2007 Revision: 0

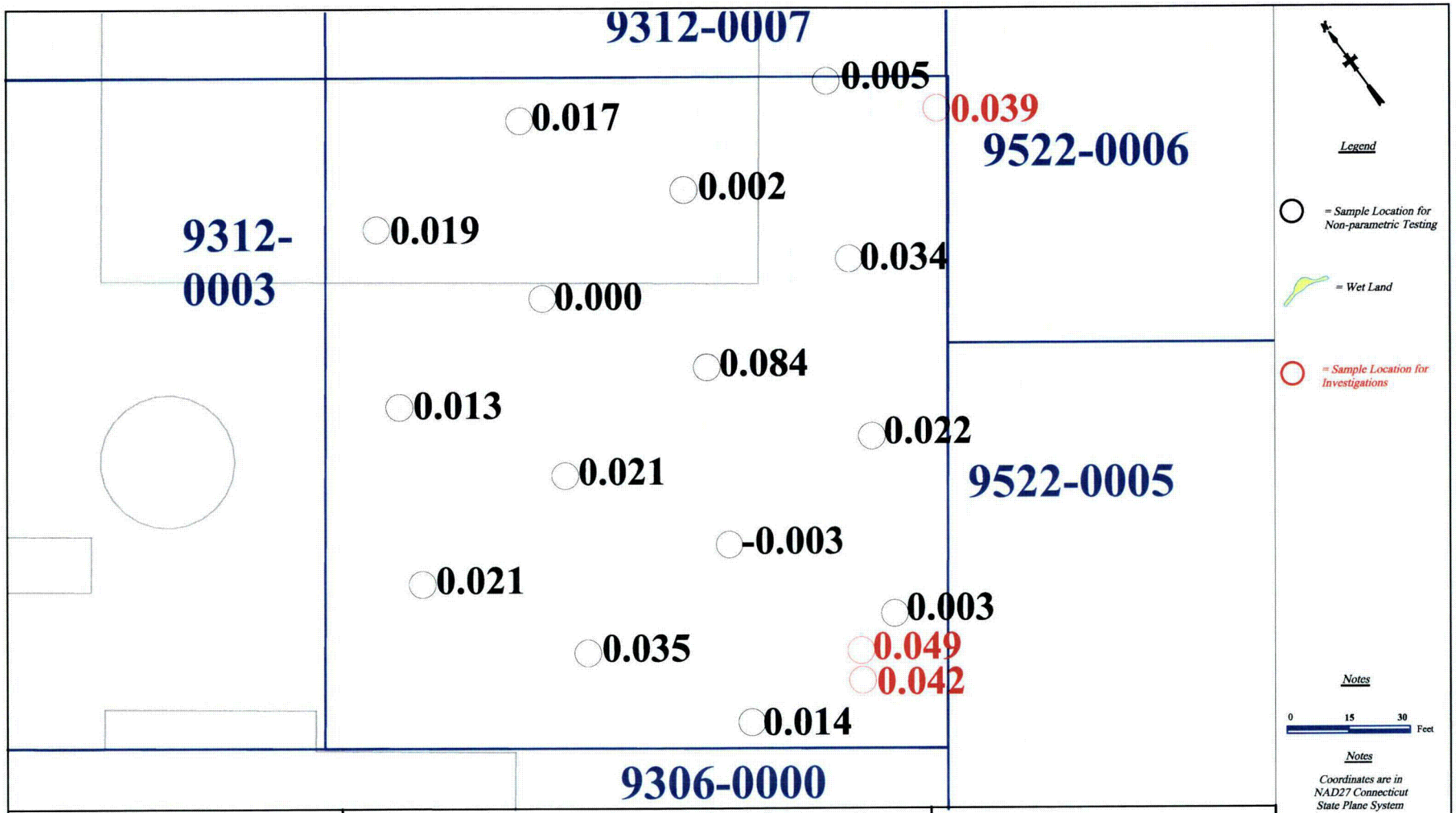

Figure 3	*Connecticut Yankee Atomic Power Company* *9312-0008 Final Status Survey Design* *Posting Plot for Cs-137*	*Date: February 2007* *Revision: 0*

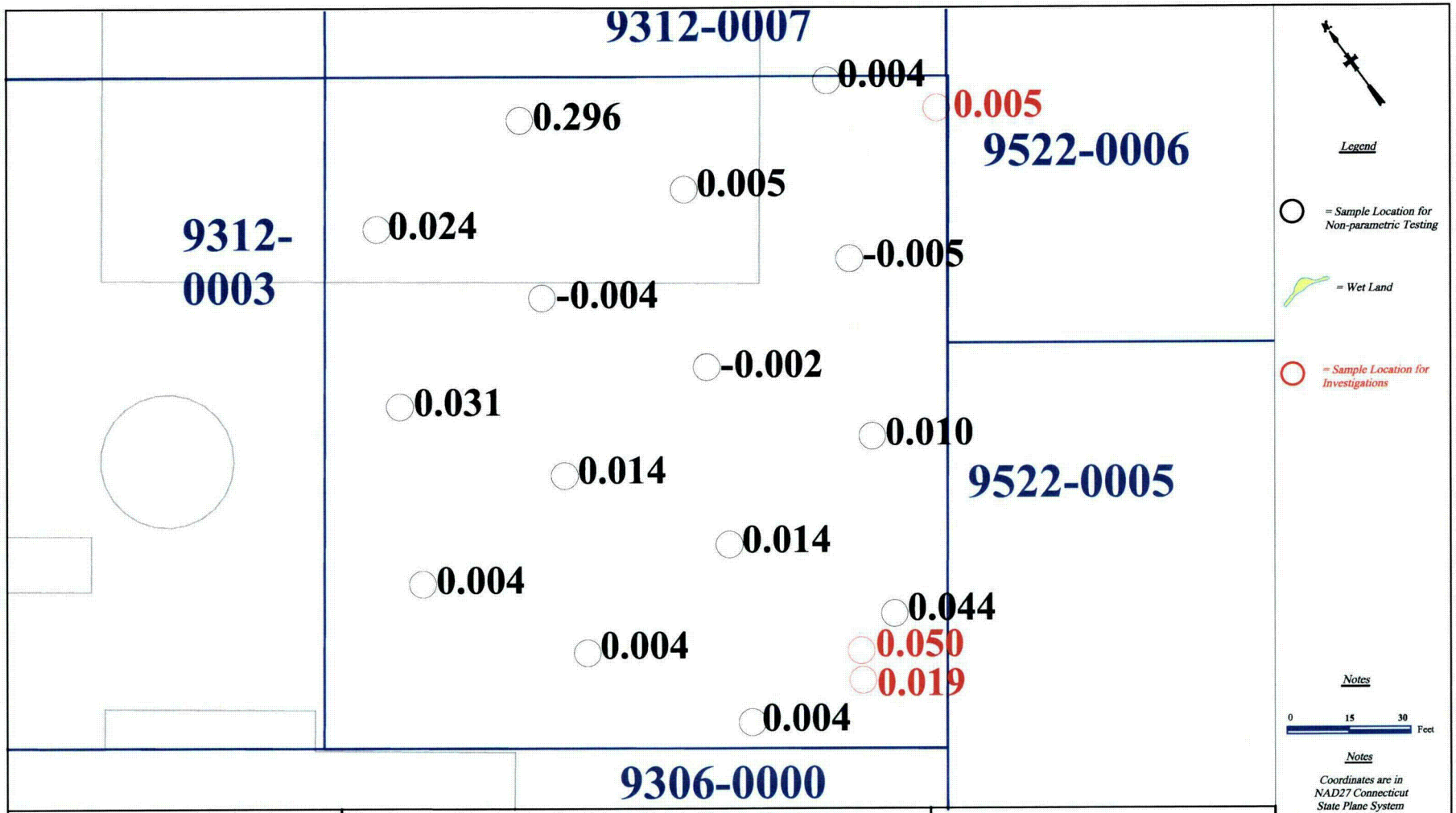

Figure 4	*Connecticut Yankee Atomic Power Company* *9312-0008 Final Status Survey Design* *Posting Plot for Sr-90*	*Date: February 2007* *Revision: 0*

ATTACHMENT 2 (SCAN RESULTS)

Scan Survey Results
Sample Location Scans

Survey Location	Log Date	Log Time	Reading	Alarm Level	>Alarm Level	Probe S/N	E-600 S/N
9312-08-BL-00-01-0	1/24/2007	13:12:00	6.74E+03			1114	1014
9312-08-SL-00-01-0	1/24/2007	13:13:00	7.06E+03	9.55E+03		1114	1014
9312-08-BL-00-02-0	1/24/2007	13:14:00	6.87E+03			1114	1014
9312-08-SL-00-02-0	1/24/2007	13:15:00	7.91E+03	9.68E+03		1114	1014
9312-08-BL-00-03-0	1/24/2007	13:17:00	6.60E+03			1114	1014
9312-08-SL-00-03-0	1/24/2007	13:18:00	7.02E+03	9.41E+03		1114	1014
9312-08-BL-00-04-0	1/24/2007	13:20:00	7.15E+03			1114	1014
9312-08-SL-00-04-0	1/24/2007	13:21:00	6.88E+03	9.96E+03		1114	1014
9312-08-BL-00-05-0	1/24/2007	13:21:00	8.01E+03			1114	1014
9312-08-SL-00-05-0	1/24/2007	13:22:00	7.21E+03	1.08E+04		1114	1014
9312-08-BL-00-06-0	1/24/2007	13:23:00	8.07E+03			1114	1014
9312-08-SL-00-06-0	1/24/2007	13:23:00	7.58E+03	1.09E+04		1114	1014
9312-08-BL-00-07-0	1/24/2007	13:25:00	7.39E+03			1114	1014
9312-08-SL-00-07-0	1/24/2007	13:25:00	7.51E+03	1.02E+04		1114	1014
9312-08-BL-00-08-0	1/24/2007	13:26:00	7.83E+03			1114	1014
9312-08-SL-00-08-0	1/24/2007	13:27:00	8.30E+03	1.06E+04		1114	1014
9312-08-BL-00-09-0	1/24/2007	13:28:00	7.63E+03			1114	1014
9312-08-SL-00-09-0	1/24/2007	13:29:00	6.40E+03	1.04E+04		1114	1014
9312-08-BL-00-10-0	1/24/2007	13:29:00	6.97E+03			1114	1014
9312-08-SL-00-10-0	1/24/2007	13:30:00	7.49E+03	9.78E+03		1114	1014
9312-08-BL-00-11-0	1/24/2007	13:31:00	7.77E+03			1114	1014
9312-08-SL-00-11-0	1/24/2007	13:34:00	7.17E+03	1.06E+04		1114	1014
9312-08-BL-00-12-0	1/24/2007	13:34:00	7.44E+03			1114	1014
9312-08-SL-00-12-0	1/24/2007	13:35:00	7.17E+03	1.03E+04		1114	1014
9312-08-BL-00-13-0	1/24/2007	13:36:00	7.20E+03			1114	1014
9312-08-SL-00-13-0	1/24/2007	13:37:00	7.08E+03	1.00E+04		1114	1014
9312-08-BL-00-14-0	1/24/2007	13:38:00	8.46E+03			1114	1014
9312-08-SL-00-14-0	1/24/2007	13:38:00	8.67E+03	1.13E+04		1114	1014
9312-08-BL-00-15-0	1/24/2007	13:39:00	1.03E+04			1114	1014
9312-08-SL-00-15-0	1/24/2007	13:39:00	1.08E+04	1.31E+04		1114	1014

Survey Location	Log Date	Log Time	Reading	Alarm Level	>Alarm Level	E-600 S/N	Probe S/N
9312-08-BC-00-01-0	1/24/2007	9:40:00	7.72E+03			1112	1013
9312-08-SC-00-01-0	1/24/2007	9:47:00	5.95E+03	1.05E+04		1112	1013
9312-08-BC-00-02-0	1/24/2007	9:48:00	6.74E+03			1112	1013
9312-08-SC-00-02-0	1/24/2007	9:51:00	8.45E+03	9.55E+03		1112	1013
9312-08-BC-00-03-0	1/24/2007	9:51:00	7.63E+03			1112	1013
9312-08-SC-00-03-0	1/24/2007	9:53:00	5.73E+03	1.04E+04		1112	1013
9312-08-BC-00-04-0	1/24/2007	9:55:00	6.89E+03			1112	1013
9312-08-SC-00-04-0	1/24/2007	9:57:00	7.61E+03	9.70E+03		1112	1013
9312-08-BC-00-05-0	1/24/2007	9:57:00	7.19E+03			1112	1013
9312-08-SC-00-05-0	1/24/2007	9:59:00	6.65E+03	1.00E+04		1112	1013
9312-08-BC-00-06-0	1/24/2007	10:00:00	6.32E+03			1112	1013
9312-08-SC-00-06-0	1/24/2007	10:03:00	6.25E+03	9.13E+03		1112	1013
9312-08-BC-00-07-0	1/24/2007	10:03:00	6.09E+03			1112	1013
9312-08-SC-00-07-0	1/24/2007	10:06:00	6.86E+03	8.90E+03		1112	1013
9312-08-BC-00-08-0	1/24/2007	10:09:00	5.91E+03			1112	1013
9312-08-SC-00-08-0	1/24/2007	10:11:00	6.27E+03	8.72E+03		1112	1013
9312-08-BC-00-09-0	1/24/2007	10:12:00	6.75E+03			1112	1013
9312-08-SC-00-09-0	1/24/2007	10:15:00	6.84E+03	9.56E+03		1112	1013
9312-08-BC-00-10-0	1/24/2007	10:17:00	6.78E+03			1112	1013
9312-08-SC-00-10-0	1/24/2007	10:20:00	6.61E+03	9.59E+03		1112	1013
9312-08-BC-00-11-0	1/24/2007	10:21:00	7.15E+03			1112	1013
9312-08-SC-00-11-0	1/24/2007	10:23:00	7.33E+03	9.96E+03		1112	1013
9312-08-BC-00-12-0	1/24/2007	10:24:00	6.37E+03			1112	1013
9312-08-SC-00-12-0	1/24/2007	10:26:00	7.08E+03	9.18E+03		1112	1013
9312-08-BC-00-13-0	1/24/2007	10:26:00	7.21E+03			1112	1013
9312-08-SC-00-13-0	1/24/2007	10:28:00	7.11E+03	1.00E+04		1112	1013
9312-08-BC-00-14-0	1/24/2007	10:29:00	6.23E+03			1112	1013
9312-08-SC-00-14-0	1/24/2007	10:32:00	6.92E+03	9.04E+03		1112	1013
9312-08-BC-00-15-0	1/24/2007	10:32:00	6.71E+03			1112	1013
9312-08-SC-00-15-0	1/24/2007	10:35:00	6.28E+03	9.52E+03		1112	1013
9312-08-BC-00-16-0	1/24/2007	10:35:00	6.45E+03			1112	1013
9312-08-SC-00-16-0	1/24/2007	10:38:00	6.06E+03	9.26E+03		1112	1013
9312-08-BC-00-17-0	1/24/2007	9:37:00	7.71E+03			1114	1014
9312-08-SC-00-17-0	1/24/2007	9:39:00	9.07E+03	1.05E+04		1114	1014
9312-08-BC-00-18-0	1/24/2007	9:39:00	7.32E+03			1114	1014
9312-08-SC-00-18-0	1/24/2007	9:42:00	8.01E+03	1.01E+04		1114	1014
9312-08-BC-00-19-0	1/24/2007	9:43:00	7.28E+03			1114	1014
9312-08-SC-00-19-0	1/24/2007	9:45:00	8.49E+03	1.01E+04		1114	1014
9312-08-BC-00-20-0	1/24/2007	9:45:00	7.48E+03			1114	1014
9312-08-SC-00-20-0	1/24/2007	9:47:00	8.34E+03	1.03E+04		1114	1014
9312-08-BC-00-21-0	1/24/2007	9:48:00	7.49E+03			1114	1014

Survey Location	Log Date	Log Time	Reading	Alarm Level	>Alarm Level	E-600 S/N	Probe S/N
9312-08-SC-00-21-0	1/24/2007	9:51:00	8.47E+03	1.03E+04		1114	1014
9312-08-BC-00-22-0	1/24/2007	9:51:00	8.02E+03			1114	1014
9312-08-SC-00-22-0	1/24/2007	9:50:00	8.41E+03	1.08E+04		1114	1014
9312-08-BC-00-23-0	1/24/2007	9:54:00	7.96E+03			1114	1014
9312-08-SC-00-23-0	1/24/2007	9:57:00	8.11E+03	1.08E+04		1114	1014
9312-08-BC-00-24-0	1/24/2007	9:58:00	8.38E+03			1114	1014
9312-08-SC-00-24-0	1/24/2007	10:00:00	7.73E+03	1.12E+04		1114	1014
9312-08-BC-00-25-0	1/24/2007	10:02:00	7.89E+03			1114	1014
9312-08-SC-00-25-0	1/24/2007	10:05:00	7.71E+03	1.07E+04		1114	1014
9312-08-BC-00-26-0	1/24/2007	10:05:00	8.72E+03			1114	1014
9312-08-SC-00-26-0	1/24/2007	10:10:00	9.83E+03	1.15E+04		1114	1014
9312-08-BC-00-27-0	1/24/2007	10:11:00	8.85E+03			1114	1014
9312-08-SC-00-27-0	1/24/2007	10:13:00	8.32E+03	1.17E+04		1114	1014
9312-08-BC-00-28-0	1/24/2007	10:14:00	8.52E+03			1114	1014
9312-08-SC-00-28-0	1/24/2007	10:15:00	7.86E+03	1.13E+04		1114	1014
9312-08-BC-00-29-0	1/24/2007	10:16:00	8.41E+03			1114	1014
9312-08-SC-00-29-0	1/24/2007	10:23:00	7.82E+03	1.12E+04		1114	1014
9312-08-BC-00-30-0	1/24/2007	10:24:00	8.62E+03			1114	1014
9312-08-SC-00-30-0	1/24/2007	10:27:00	8.51E+03	1.14E+04		1114	1014
9312-08-BC-00-31-0	1/24/2007	10:28:00	9.44E+03			1114	1014
9312-08-SC-00-31-0	1/24/2007	10:38:00	8.99E+03	1.23E+04		1114	1014
9312-08-ER-00-31-1	1/24/2007	13:41:00	1.39E+04	1.23E+04	+	1114	1014
9312-08-BC-00-32-0	1/24/2007	10:38:00	9.36E+03			1114	1014
9312-08-SC-00-32-0	1/24/2007	10:40:00	9.41E+03	1.22E+04		1114	1014
9312-08-ER-00-32-1	1/24/2007	13:42:00	1.34E+04	1.22E+04	+	1114	1014
9312-08-BC-00-33-0	1/24/2007	10:41:00	8.67E+03			1114	1014
9312-08-SC-00-33-0	1/24/2007	10:44:00	1.01E+04	1.15E+04		1114	1014
9312-08-BC-00-34-0	1/24/2007	10:45:00	1.02E+04			1114	1014
9312-08-SC-00-34-0	1/24/2007	10:46:00	9.30E+03	1.30E+04		1114	1014
9312-08-BC-00-35-0	1/24/2007	10:47:00	9.80E+03			1114	1014
9312-08-SC-00-35-0	1/24/2007	10:52:00	1.15E+04	1.26E+04		1114	1014
9312-08-ER-00-35-1	1/24/2007	13:43:00	1.44E+04	1.26E+04	+	1114	1014
9312-08-BC-00-36-0	1/24/2007	10:53:00	1.16E+04			1114	1014
9312-08-SC-00-36-0	1/24/2007	10:55:00	1.04E+04	1.44E+04		1114	1014
9312-08-BC-00-37-0	1/25/2007	7:36:00	8.44E+03			1112	1013
9312-08-SC-00-37-0	1/25/2007	7:37:00	7.85E+03	1.13E+04		1112	1013
9312-08-BC-00-38-0	1/25/2007	7:38:00	9.80E+03			1112	1013
9312-08-SC-00-38-0	1/25/2007	7:39:00	9.07E+03	1.26E+04		1112	1013
9312-08-BC-00-39-0	1/25/2007	7:39:00	1.12E+04			1112	1013
9312-08-SC-00-39-0	1/25/2007	7:41:00	1.27E+04	1.40E+04		1112	1013
9312-08-BC-00-40-0	1/25/2007	7:41:00	1.05E+04			1112	1013

Survey Location	Log Date	Log Time	Reading	Alarm Level	>Alarm Level	E-600 S/N	Probe S/N
9312-08-SC-00-40-0	1/25/2007	7:43:00	1.21E+04	1.33E+04		1112	1013
9312-08-BC-00-41-0	1/25/2007	7:44:00	9.38E+03			1112	1013
9312-08-SC-00-41-0	1/25/2007	7:45:00	8.32E+03	1.22E+04		1112	1013
9312-08-BC-00-42-0	1/25/2007	7:46:00	8.66E+03			1112	1013
9312-08-SC-00-42-0	1/25/2007	7:47:00	7.59E+03	1.15E+04		1112	1013
9312-08-BC-00-43-0	1/25/2007	7:48:00	9.07E+03			1112	1013
9312-08-SC-00-43-0	1/25/2007	7:49:00	8.85E+03	1.19E+04		1112	1013
9312-08-BC-00-44-0	1/25/2007	7:50:00	9.37E+03			1112	1013
9312-08-SC-00-44-0	1/25/2007	7:51:00	1.07E+04	1.22E+04		1112	1013

ATTACHMENT 3 (LABORATORY DATA)

General Narrative

General Narrative
for
Connecticut Yankee Atomic Power Co.
Work Order: 179837
SDG: MSR#07-0055

February 2, 2007

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary

Sample receipt

The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on January 30, 2007 for analysis. Shipping container temperatures were checked, documented, and within specifications. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage.

Sample Identification The laboratory received the following samples:

Laboratory Identification	Sample Description
179837001	9312-0008-006F
179837002	9312-0008-011F
179837003	9312-0008-001F
179837004	9312-0008-002F
179837005	9312-0008-003F
179837006	9312-0008-003FS
179837007	9312-0008-004F
179837008	9312-0008-005F
179837009	9312-0008-007F
179837010	9312-0008-008F
179837011	9312-0008-009F
179837012	9312-0008-010F
179837013	9312-0008-012F
179837014	9312-0008-013F
179837015	9312-0008-014F
179837016	9312-0008-015F
179837017	9312-0008-016-I
179837018	9312-0008-017-I
179837019	9312-0008-018-I

Items of Note

There are no items to note.

Case Narrative

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

Analytical Request

Seventeen soil samples were analyzed for FSSGAM and Strontium-90. Two soil samples were analyzed for FSSALL.

Data Package

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, Data Review Qualifier Definitions, and data from the following fractions: Radiochemistry.

I certify that this data package 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.

Cheryl Jones
Project Manager

List of current GEL Certifications as of 31 January 2007

State	Certification
Alaska	UST-062
Arizona	AZ0668
Arkansas	88-0651
CLIA	42D0904046
California	01151CA
Colorado	GenEngLabs
Connecticut	PH-0169
Dept. of Navy	NFESC 413
EPA	WG-15J
Florida/NELAP	E87156
Georgia	E87156 (FL/NELAP)
Hawaii	N/A
Idaho	N/A
Illinois	200029
Indiana	C-SC-01
Kansas	E-10332
Kentucky	90129
Louisiana	03046
Maryland	270
Massachusetts	M-SC012
Michigan	9903
Nevada	SC12
New Jersey	SC002
New Mexico	FL NELAP E87156
New York	11501
North Carolina	233
North Carolina Drinking W	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania	68-00485
South Carolina	10120001/10585001/10120002
Tennessee	02934
Texas	TX213-2006A
Texas NELAP	T104704235-06-TX
U.S. Dept. of Agriculture	S-52597
US Army Corps of Engineer	N/A
Utah	8037697376 GEL
Vermont	VT87156
Virginia	00151
Washington	C1641

Chain of Custody and Supporting Documentation

Connecticut Yankee Atomic Power Company

362 Injun Hollow Road, East Hampton, CT 06424
860-267-2556

Chain of Custody Form

No. 2007-00028

Project Name: Haddam Neck Decommissioning

Contact Name & Phone:
Jack McCarthy 860-267-3924

Analytical Lab (Name, City, State):
General Engineering Laboratories
2040 Savage Road
Charleston, SC 29407
ATT: Cheryl Jones (843-556-8171)

Priority: ☐ 30 D. ☐ 15 D. ☒ 7 D.
Other:

Lab Use Only
Comments:
179837

Sample Designation	Date	Time	Media Code	Sample Type Code	Container Size-&Type Code	FSSGAM & Sr-90	FSSALL					Comment, Preservation	Lab Sample ID
9312-0008-001F	01-24-07	1315	TS	G	BP	X							
9312-0008-002F ✓	01-24-07	1317	TS	G	BP	X							
9312-0008-003F ✓	01-24-07	1320	TS	G	BP	X							
9312-0008-003FS ✓	01-24-07	1320	TS	G	BP	X							
9312-0008-004F ✓	01-24-07	1323	TS	G	BP	X							
9312-0008-005F ✓	01-24-07	1325	TS	G	BP	X							
9312-0008-006F ✓	01-24-07	1327	TS	G	BP		X						
9312-0008-007F	01-24-07	1329	TS	G	BP	X							
9312-0008-008F ✓	01-24-07	1330	TS	G	BP	X							
9312-0008-009F ✓	01-24-07	1332	TS	G	BP	X							
9312-0008-010F ✓	01-24-07	1334	TS	G	BP	X							

NOTES: PO #: 002332 MSR #: 07-0055 ☒ LTP QA ☐ Radwaste QA ☐ Non QA

Samples Shipped Via:
☒ Fed Ex
☐ UPS
☐ Hand
☐ Other

Bill of Lading #

Internal Container Temp.: 7° Deg. C

Custody Sealed? Y☒ N☐

Custody Seal Intact? Y☒ N☐

1) Relinquished By [signature]	Date/Time 1/29/07 1400
2) Received By [signature]	Date/Time 1.30.07 0930
3) Relinquished By	Date/Time
4) Received By	Date/Time
5) Relinquished By	Date/Time
6) Received By	Date/Time

Connecticut Yankee Atomic Power Company

362 Injun Hollow Road, East Hampton, CT 06424
860-267-2556

Chain of Custody Form

No. 2007-00029

Project Name: Haddam Neck Decommissioning

Contact Name & Phone:
Jack McCarthy 860-267-3924

Analytical Lab (Name, City, State):
General Engineering Laboratories
2040 Savage Road
Charleston, SC 29407
ATT: Cheryl Jones (843-556-8171)

Priority: ☐ 30 D. ☐ 15 D. ☒ 7 D.
Other:

Lab Use Only
Comments: 179837

Sample Designation	Date	Time	Media Code	Sample Type Code	Container Size-&Type Code	FSSGAM & Sr-90	FSSALL					Comment, Preservation	Lab Sample ID
9312-0008-011F ✓	01-24-07	1336	TS	G	BP		X						
9312-0008-012F ✓	01-24-07	1338	TS	G	BP	X							
9312-0008-013F ✓	01-24-07	1340	TS	G	BP	X							
9312-0008-014F ✓	01-24-07	1342	TS	G	BP	X							
9312-0008-015F ✓	01-24-07	1343	TS	G	BP	X							
9312-0008-016-I	01-24-07	1345	TS	G	BP	X							
9312-0008-017-I	01-24-07	1346	TS	G	BP	X							
9312-0008-018-I ✓	01-24-07	1347	TS	G	BP	X							

NOTES: PO #: 002332 MSR #: 07-0055 ☒ LTP QA ☐ Radwaste QA ☐ Non QA

Samples Shipped Via:
☒ Fed Ex
☐ UPS
☐ Hand
☐ Other
Bill of Lading #

Internal Container Temp.: 7° Deg. C
Custody Sealed? Y ☒ N ☐
Custody Seal Intact? Y ☒ N ☐

1) Relinquished By [signature] Date/Time 1/29/07 1400	2) Received By C. Dunitz Date/Time 1.30.07 0930
3) Relinquished By Date/Time	4) Received By Date/Time
5) Relinquished By Date/Time	6) Received By Date/Time

Jones

Figure 1. Sample Check-in List

Date/Time Received: 01.30.07 @ 0930

SDG#: MSR#07-0054 , MSR#07-0055

Work Order Number: 179836 , 179837

Shipping Container ID: 7985954350 30 @7°C Chain of Custody # 2007-00026 / 2007-00028
" 1142 8462 @8°C — — 25 — — 29

1. Custody Seals on shipping container intact? Yes [X] No [ ]
2. Custody Seals dated and signed? Yes [X] No [ ]
3. Chain-of-Custody record present? Yes [X] No [ ]
4. Cooler temperature 7°C / 8°C
5. Vermiculite/packing materials is: Wet [ ] Dry [X]
6. Number of samples in shipping container: 16 = *5030 / 19 = *8462
7. Sample holding times exceeded? Yes [ ] No [X]

8. Samples have:
   - [X] tape
   - [ ] hazard labels
   - [X] custody seals
   - [X] appropriate sample labels

9. Samples are:
   - [X] in good condition
   - [ ] leaking
   - [ ] broken
   - [ ] have air bubbles

10. Were any anomalies identified in sample receipt? Yes [ ] No [X]
11. Description of anomalies (include sample numbers):

Sample Custodian/Laboratory: C Denich / HEL Date: 1.30.07

Telephoned to: _____ On _____ By _____

Subject: [Fwd: Soil samples]
From: Cheryl Jones <cj@gel.com>
Date: Mon, 29 Jan 2007 15:51:31 -0500
To: Amanda Rasco <ama01354@gel.com>

-------- Original Message --------
Subject: Soil samples
Date: Mon, 29 Jan 2007 15:42:54 -0500
From: Arthur L. Hammond <Hammond@CYAPCO.com>
To: Cheryl Jones <cj@gel.com>

Cheryl,

We are sending 35 samples to GEL today under two MSRs. MSRs 07-0054 and 07-0055. The requested TAT for the samples is 7 days. The requested analyses is FSSGAM and Sr-90 On all the samples and FSSALL on four (4) of the samples, see attached COCs. It is acceptable to use the traced/untraced Tc-99 process for these samples.

Thank you,

Arthur

--

Cheryl A. Jones
Project Manager/PM Team Leader
GEL Laboratories, LLC
2040 Savage Road
Charleston, SC (USA) 29407
Direct: 843.769.7388
Main: 843.556.8171 x 4243
Fax: 843.766.1178
E-mail: cj@gel.com
Web: www.gel.com

SCAN6974_000.pdf **Content-Type:** application/octet-stream
Content-Encoding: base64

Data Review Qualifier Definitions

Data Review Qualifier Definitions

Qualifier	Explanation
*	A quality control analyte recovery is outside of specified acceptance criteria
**	Analyte is a surrogate compound
<	Result is less than value reported
>	Result is greater than value reported
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
A	The TIC is a suspected aldol-condensation product
B	Target analyte was detected in the associated blank
B	Metals-Either presence of analyte detected in the associated blank, or MDL/IDL < sample value < PQL
BD	Results are either below the MDC or tracer recovery is low
C	Analyte has been confirmed by GC/MS analysis
D	Results are reported from a diluted aliquot of the sample
d	5-day BOD-The 2:1 depletion requirement was not met for this sample
E	Organics-Concentration of the target analyte exceeds the instrument calibration range
E	Metals-%difference of sample and SD is >10%. Sample concentration must meet flagging criteria
H	Analytical holding time was exceeded
h	Preparation or preservation holding time was exceeded
J	Value is estimated
N	Metals-The Matrix spike sample recovery is not within specified control limits
N	Organics-Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based on nearest internal standard response factor
N/A	Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
ND	Analyte concentration is not detected above the reporting limit
UI	Gamma Spectroscopy-Uncertain identification
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	QC Samples were not spiked with this compound
Z	Paint Filter Test-Particulates passed through the filter, however no free liquids were observed.

RADIOLOGICAL ANALYSIS

Radiochemistry Case Narrative
Connecticut Yankee Atomic Power Co. (YANK)
Work Order 179837

Method/Analysis Information

Product:	**Alphaspec Am241, Cm, Solid ALL FSS**
Analytical Method:	DOE EML HASL-300, Am-05-RC Modified
Prep Method:	Ash Soil Prep
Dry Soil Prep GL-RAD-A-021 Method:	Dry Soil Prep
Analytical Batch Number:	606029
Prep Batch Number:	606004
Dry Soil Prep GL-RAD-A-021 Batch Number:	606002

Sample ID	Client ID
179837001	9312-0008-006F
179837002	9312-0008-011F
1201269930	Method Blank (MB)
1201269931	179836001(9312-0007-002F) Sample Duplicate (DUP)
1201269932	179836001(9312-0007-002F) Matrix Spike (MS)
1201269933	Laboratory Control Sample (LCS)

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 14.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 179836001 (9312-0007-002F).

QC Information
All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Preparation Information
All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Miscellaneous Information:

NCR Documentation
Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

Manual Integration
No manual integrations were performed on data in this batch.

Additional Comments
Additional comments were not required for this sample set.

Qualifier information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**Alphaspec Pu, Solid-ALL FSS**
Analytical Method:	DOE EML HASL-300, Pu-11-RC Modified
Prep Method:	Ash Soil Prep
Dry Soil Prep GL-RAD-A-021 Method:	Dry Soil Prep
Analytical Batch Number:	606031
Prep Batch Number:	606004
Dry Soil Prep GL-RAD-A-021 Batch Number:	606002

Sample ID	Client ID
179837001	9312-0008-006F
179837002	9312-0008-011F
1201269935	Method Blank (MB)
1201269936	179836001(9312-0007-002F) Sample Duplicate (DUP)
1201269937	179836001(9312-0007-002F) Matrix Spike (MS)
1201269938	Laboratory Control Sample (LCS)

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 14.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 179836001 (9312-0007-002F).

QC Information
All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Preparation Information
All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Miscellaneous Information:

NCR Documentation
Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

Manual Integration
No manual integrations were performed on data in this batch.

Additional Comments
Additional comments were not required for this sample set.

Qualifier information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**Liquid Scint Pu241, Solid-ALL FSS**
Analytical Method:	DOE EML HASL-300, Pu-11-RC Modified
Prep Method:	Ash Soil Prep
Dry Soil Prep GL-RAD-A-021 Method:	Dry Soil Prep
Analytical Batch Number:	606032
Prep Batch Number:	606004
Dry Soil Prep GL-RAD-A-021 Batch Number:	606002

Sample ID	Client ID
179837001	9312-0008-006F
179837002	9312-0008-011F
1201269939	Method Blank (MB)
1201269940	179836001(9312-0007-002F) Sample Duplicate (DUP)
1201269941	179836001(9312-0007-002F) Matrix Spike (MS)
1201269942	Laboratory Control Sample (LCS)

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-035 REV# 8.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 179836001 (9312-0007-002F).

QC Information
All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Preparation Information
All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis
Sample 1201269940 (9312-0007-002F) was recounted due to low quench number.

Miscellaneous Information:

NCR Documentation
Nonconformance reports are generated to document any procedural anomalies that may deviate from

referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

Manual Integration
No manual integrations were performed on data in this batch.

Additional Comments
Additional comments were not required for this sample set.

Qualifier information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**Gamma,Solid-FSS GAM & ALL FSS 226 Ingrowth Waived**
Analytical Method:	EML HASL 300, 4.5.2.3
Prep Method:	Dry Soil Prep
Analytical Batch Number:	606830
Prep Batch Number:	606002

Sample ID	Client ID
179837001	9312-0008-006F
179837002	9312-0008-011F
179837003	9312-0008-001F
179837004	9312-0008-002F
179837005	9312-0008-003F
179837006	9312-0008-003FS
179837007	9312-0008-004F
179837008	9312-0008-005F
179837009	9312-0008-007F
179837010	9312-0008-008F
179837011	9312-0008-009F
179837012	9312-0008-010F
179837013	9312-0008-012F
179837014	9312-0008-013F
179837015	9312-0008-014F
179837016	9312-0008-015F
179837017	9312-0008-016-I
179837018	9312-0008-017-I
179837019	9312-0008-018-I
1201271730	Method Blank (MB)
1201271731	179837001(9312-0008-006F) Sample Duplicate (DUP)
1201271732	Laboratory Control Sample (LCS)

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-013 REV# 13.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 179837001 (9312-0008-006F).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Preparation Information
All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Miscellaneous Information:

NCR Documentation
Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. The following NCR was generated for this SDG:
NCR 404699 was generated due to Failed RPD for DUP. 1. The relative percent difference in sample 179837001 (dup 1201271731) did not meet the duplication criteria for Bi-214 and Ra-226. 1. The nuclides that do not meet are naturally occurring and all other samples meet the duplication criteria. Reporting results.

Additional Comments
Additional comments were not required for this sample set.

Qualifier information

Qualifier	Reason	Analyte	Sample
UI	Data rejected due to high peak-width.	Cesium-137	179837007
UI	Data rejected due to interference.	Manganese-54	179837016
UI	Data rejected due to low abundance.	Actinium-228	179837006
		Cesium-134	179837001
			179837008
			179837012
			179837013
			179837016
			179837017
			179837019
		Europium-155	179837005
		Niobium-94	179837010
		Thallium-208	179837015
UI	Data rejected due to no valid peak.	Americium-241	179837013
		Potassium-40	1201271730

Method/Analysis Information

Product:	**GFPC, Sr90, solid-ALL FSS**
Analytical Method:	EPA 905.0 Modified
Prep Method:	Ash Soil Prep
Dry Soil Prep GL-RAD-A-021 Method:	Dry Soil Prep
Analytical Batch Number:	606160
Prep Batch Number:	606004
Dry Soil Prep GL-RAD-A-021 Batch Number:	606002

Sample ID	Client ID
179837001	9312-0008-006F
179837002	9312-0008-011F
179837003	9312-0008-001F
179837004	9312-0008-002F
179837005	9312-0008-003F
179837006	9312-0008-003FS
179837007	9312-0008-004F
179837008	9312-0008-005F
179837009	9312-0008-007F
179837010	9312-0008-008F
179837011	9312-0008-009F
179837012	9312-0008-010F
179837013	9312-0008-012F
179837014	9312-0008-013F
179837015	9312-0008-014F
179837016	9312-0008-015F
179837017	9312-0008-016-I
179837018	9312-0008-017-I
179837019	9312-0008-018-I
1201270175	Method Blank (MB)
1201270176	179837001(9312-0008-006F) Sample Duplicate (DUP)
1201270177	179837001(9312-0008-006F) Matrix Spike (MS)
1201270178	Laboratory Control Sample (LCS)

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-004 REV# 10.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 179837001 (9312-0008-006F).

QC Information
All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Preparation Information
All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Chemical Recoveries
All chemical recoveries meet the required acceptance limits for this sample set.

Miscellaneous Information:

NCR Documentation
Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

Additional Comments
Additional comments were not required for this sample set.

Qualifier information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**Liquid Scint Tc99, Solid-ALL FSS**
Analytical Method:	DOE EML HASL-300, Tc-02-RC Modified
Analytical Batch Number:	606162

Sample ID	Client ID
179837001	9312-0008-006F
179837002	9312-0008-011F
1201270179	Method Blank (MB)
1201270180	179836001(9312-0007-002F) Sample Duplicate (DUP)
1201270181	179836001(9312-0007-002F) Matrix Spike (MS)
1201270182	Laboratory Control Sample (LCS)

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-005 REV# 13.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 179836001 (9312-0007-002F).

QC Information
All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Preparation Information
All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Miscellaneous Information:

NCR Documentation
Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

Additional Comments
Additional comments were not required for this sample set.

Qualifier information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**Liquid Scint Fe55, Solid-ALL FSS**
Analytical Method:	DOE RESL Fe-1, Modified
Prep Method:	Ash Soil Prep
Dry Soil Prep GL-RAD-A-021 Method:	Dry Soil Prep
Analytical Batch Number:	606165
Prep Batch Number:	606004
Dry Soil Prep GL-RAD-A-021 Batch Number:	606002

Sample ID	Client ID
179837001	9312-0008-006F
179837002	9312-0008-011F
1201270187	Method Blank (MB)
1201270188	179836001(9312-0007-002F) Sample Duplicate (DUP)
1201270189	179836001(9312-0007-002F) Matrix Spike (MS)
1201270190	Laboratory Control Sample (LCS)

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-040 REV# 3.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volumes in this batch.

Designated QC
The following sample was used for QC: 179836001 (9312-0007-002F).

QC Information
All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Preparation Information
All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis
Samples were recounted due to low/high recovery.

Miscellaneous Information:

NCR Documentation
Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

Additional Comments
Additional comments were not required for this sample set.

Qualifier information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**Liquid Scint Ni63, Solid-ALL FSS**
Analytical Method:	DOE RESL Ni-1, Modified
Prep Method:	Ash Soil Prep
Dry Soil Prep GL-RAD-A-021 Method:	Dry Soil Prep
Analytical Batch Number:	606163
Prep Batch Number:	606004
Dry Soil Prep GL-RAD-A-021 Batch Number:	606002

Sample ID	Client ID
179837001	9312-0008-006F
179837002	9312-0008-011F
1201270183	Method Blank (MB)
1201270184	179836001(9312-0007-002F) Sample Duplicate (DUP)
1201270185	179836001(9312-0007-002F) Matrix Spike (MS)
1201270186	Laboratory Control Sample (LCS)

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-022 REV# 8.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 179836001 (9312-0007-002F).

QC Information
All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Preparation Information
All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Miscellaneous Information:

NCR Documentation
Nonconformance reports are generated to document any procedural anomalies that may deviate from

referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

Additional Comments
Additional comments were not required for this sample set.

Qualifier information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**LSC, Tritium Dist, Solid - 3 pCi/g**
Analytical Method:	EPA 906.0 Modified
Analytical Batch Number:	606167

Sample ID	Client ID
179837001	9312-0008-006F
179837002	9312-0008-011F
1201270195	Method Blank (MB)
1201270196	179837001(9312-0008-006F) Sample Duplicate (DUP)
1201270197	179837001(9312-0008-006F) Matrix Spike (MS)
1201270198	Laboratory Control Sample (LCS)

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-002 REV# 13.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 179837001 (9312-0008-006F).

QC Information
All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Preparation Information
All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Miscellaneous Information:

NCR Documentation
Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

Additional Comments
Additional comments were not required for this sample set.

Qualifier information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**Liquid Scint C14, Solid All,FSS**
Analytical Method:	EPA EERF C-01 Modified
Analytical Batch Number:	606166

Sample ID	Client ID
179837001	9312-0008-006F
179837002	9312-0008-011F
1201270191	Method Blank (MB)
1201270192	179836001(9312-0007-002F) Sample Duplicate (DUP)
1201270193	179836001(9312-0007-002F) Matrix Spike (MS)
1201270194	Laboratory Control Sample (LCS)

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-003 REV# 8.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 179836001 (9312-0007-002F).

QC Information
All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Preparation Information
All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Miscellaneous Information:

NCR Documentation
Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

Additional Comments
Additional comments were not required for this sample set.

Qualifier information

Manual qualifiers were not required.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Review Validation:

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer/Date: Pamela Williams 2/16/07

COMPANY - WIDE NONCONFORMANCE REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
06-FEB-07	Radiochemistry	SOP	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
GAMMA SPECTROMETER	EML HASL 300, 4.5.2.3	Solid	YANK
Batch ID:	**Sample Numbers:**		
606830	179837001, 1201271731		

Potentially affected work order(s)(SDG): 179837(MSR#07-0055)

Application Issues:

Failed RPD for DUP

Specification and Requirements Nonconformance Description:	NRG Disposition:
1. The relative percent difference in sample 179837001 (dup 1201271731) did not meet the duplication criteria for Bi-214 and Ra-226.	1. The nuclides that do not meet are naturally occurring and all other samples meet the duplication criteria. Reporting results.

Originator's Name:

Jimmy Hartley 06-FEB-07

Data Validator/Group Leader:

Heather Anderson 06-FEB-07

Quality Review:

Director:

SAMPLE DATA SUMMARY

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis Report
for

YANK001 Connecticut Yankee Atomic Power Co.

Client SDG: MSR#07-0055 GEL Work Order: 179837

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria

** Analyte is a surrogate compound

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

UI Gamma Spectroscopy--Uncertain identification

ND The analyte concentration is not detected above the detection limit.

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

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

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Cheryl Jones.

Reviewed by

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 – (843) 556–8171 – www.gel.com

Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 — Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID:	9312–0008–006F	Project:	YANK01204
Sample ID:	179837001	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	24–JAN–07		
Receive Date:	30–JAN–07		
Collector:	Client		
Moisture:	7.04%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	N
Rad Alpha Spec Analysis													
Alphaspec Am241, Cm, Solid ALL FSS													
Americium–241	U	–0.00588	+/–0.0667	0.0601	+/–0.0667	0.201	pCi/g		DXH2	02/01/07	0743	606029	
Curium–242	U	0.0323	+/–0.0908	0.0557	+/–0.0909	0.195	pCi/g						
Curium–243/244	U	–0.0264	+/–0.0963	0.0931	+/–0.0964	0.267	pCi/g						
Alphaspec Pu, Solid–ALL FSS													
Plutonium–238	U	–0.0998	+/–0.124	0.143	+/–0.125	0.383	pCi/g		DXH2	01/31/07	1554	606031	
Plutonium–239/240	U	0.0813	+/–0.124	0.0554	+/–0.125	0.207	pCi/g						
Liquid Scint Pu241, Solid–ALL FSS													
Plutonium–241	U	2.26	+/–7.19	5.92	+/–7.19	12.5	pCi/g		DXH2	02/01/07	0951	606032	
Rad Gamma Spec Analysis													
Gamma,Solid–FSS GAM & ALL FSS 226 Ingrowth Waived													
Actinium–228		0.587	+/–0.146	0.0619	+/–0.146	0.124	pCi/g		MJH1	02/05/07	0802	606830	
Americium–241	U	0.0353	+/–0.0842	0.0725	+/–0.0842	0.145	pCi/g						
Bismuth–212		0.283	+/–0.205	0.121	+/–0.205	0.242	pCi/g						
Bismuth–214		0.564	+/–0.0926	0.0263	+/–0.0926	0.0526	pCi/g						
Cesium–134	UI	0.00	+/–0.0223	0.0205	+/–0.0223	0.041	pCi/g						
Cesium–137	U	0.00537	+/–0.0187	0.0164	+/–0.0187	0.0328	pCi/g						
Cobalt–60	U	–0.013	+/–0.0185	0.014	+/–0.0185	0.0281	pCi/g						
Europium–152	U	0.0071	+/–0.0593	0.0446	+/–0.0593	0.0891	pCi/g						
Europium–154	U	0.0232	+/–0.0607	0.0534	+/–0.0607	0.107	pCi/g						
Europium–155	U	–0.0124	+/–0.0549	0.0488	+/–0.0549	0.0976	pCi/g						
Lead–212		0.564	+/–0.0677	0.0246	+/–0.0677	0.0492	pCi/g						
Lead–214		0.503	+/–0.080	0.0328	+/–0.080	0.0655	pCi/g						
Manganese–54	U	–0.00293	+/–0.0178	0.0155	+/–0.0178	0.0309	pCi/g						
Niobium–94	U	0.00658	+/–0.0164	0.0145	+/–0.0164	0.029	pCi/g						
Potassium–40		8.96	+/–0.985	0.141	+/–0.985	0.281	pCi/g						
Radium–226		0.564	+/–0.0926	0.0263	+/–0.0926	0.0526	pCi/g						
Silver–108m	U	0.00437	+/–0.0169	0.0153	+/–0.0169	0.0305	pCi/g						
Thallium–208		0.159	+/–0.0453	0.0169	+/–0.0453	0.0337	pCi/g						
Rad Gas Flow Proportional Counting													
GFPC, Sr90, solid–ALL FSS													
Strontium–90	U	0.00356	+/–0.0207	0.0169	+/–0.0207	0.0391	pCi/g		KSD1	02/02/07	1824	606160	
Rad Liquid Scintillation Analysis													
LSC, Tritium Dist, Solid – 3 pCi/g													
Tritium	U	0.452	+/–0.306	0.452	+/–0.306	1.02	pCi/g		AXD2	02/01/07	0235	606167	

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 – (843) 556–8171 – www.gel.com

Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID: 9312–0008–006F Project: YANK01204
Sample ID: 179837001 Client ID: YANK001
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	N
Rad Liquid Scintillation Analysis													
Liquid Scint C14, Solid All,FSS													
Carbon–14	U	–0.0461	+/–0.0748	0.0648	+/–0.0748	0.136	pCi/g		AXD2	01/31/07	1805	606166	
Liquid Scint Fe55, Solid–ALL FSS													
Iron–55	U	13.3	+/–59.5	38.5	+/–59.5	80.4	pCi/g		MXP1	02/03/07	1028	606165	
Liquid Scint Ni63, Solid–ALL FSS													
Nickel–63	U	–5.24	+/–11.8	10.1	+/–11.8	20.8	pCi/g		MXP1	02/01/07	1537	606163	
Liquid Scint Tc99, Solid–ALL FSS													
Technetium–99	U	0.114	+/–0.180	0.146	+/–0.180	0.308	pCi/g		KXR1	02/04/07	2236	606162	

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL–RAD–A–021	JMB1	01/30/07	1121	606002

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL–300, Am–05–RC Modified
2	DOE EML HASL–300, Pu–11–RC Modified
3	DOE EML HASL–300, Pu–11–RC Modified
4	EML HASL 300, 4.5.2.3
5	EPA 905.0 Modified
6	EPA 906.0 Modified
7	EPA EERF C–01 Modified
8	DOE RESL Fe–1, Modified
9	DOE RESL Fe–1, Modified
10	DOE RESL Ni–1, Modified
11	DOE EML HASL–300, Tc–02–RC Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Americium–243	Alphaspec Am241, Cm, Solid ALL	91	(15%–125%)
Plutonium–242	Alphaspec Pu, Solid–ALL FSS	88	(15%–125%)
Plutonium–242	Liquid Scint Pu241, Solid–ALL FS	83	(25%–125%)
Strontium–90	GFPC, Sr90, solid–ALL FSS	64	(25%–125%)
Carrier/Tracer Recovery	GFPC, Sr90, solid–ALL FSS	64	(25%–125%)
Iron–59	Liquid Scint Fe55, Solid–ALL FS	70	(15%–125%)

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 – (843) 556–8171 – www.gel.com

Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID: 9312–0008–006F Project: YANK01204
Sample ID: 179837001 Client ID: YANK001
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	N
Nickel–63		Liquid Scint Ni63, Solid–ALL FS			83		(25%–125%)						
Carrier/Tracer Recovery		Liquid Scint Ni63, Solid–ALL FS			83		(25%–125%)						
Technetium–99		Liquid Scint Tc99, Solid–ALL FS			72		(15%–125%)						
Carrier/Tracer Recovery		Liquid Scint Tc99, Solid–ALL FS			72		(15%–125%)						

Notes:

The Qualifiers in this report are defined as follows :

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol–condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy––Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/–RL. Concentrations are <5X the RL
- h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 – (843) 556-8171 – www.gel.com

Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 — Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID:	9312-0008-011F	Project:	YANK01204
Sample ID:	179837002	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	24-JAN-07		
Receive Date:	30-JAN-07		
Collector:	Client		
Moisture:	7.66%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	M
Rad Alpha Spec Analysis													
Alphaspec Am241, Cm, Solid ALL FSS													
Americium-241	U	-0.00578	+/-0.019	0.0269	+/-0.019	0.135	pCi/g		DXH2	02/01/07	0743	606029	
Curium-242	U	0.031	+/-0.0608	0.00	+/-0.061	0.0841	pCi/g						
Curium-243/244	U	0.0156	+/-0.062	0.038	+/-0.0621	0.157	pCi/g						
Alphaspec Pu, Solid-ALL FSS													
Plutonium-238	U	0.0473	+/-0.0886	0.0395	+/-0.0888	0.163	pCi/g		DXH2	01/31/07	1554	606031	
Plutonium-239/240	U	-0.0298	+/-0.0292	0.0558	+/-0.0295	0.196	pCi/g						
Liquid Scint Pu241, Solid-ALL FSS													
Plutonium-241	U	-6.94	+/-6.22	5.60	+/-6.22	11.8	pCi/g		DXH2	02/01/07	1007	606032	
Rad Gamma Spec Analysis													
Gamma,Solid-FSS GAM & ALL FSS 226 Ingrowth Waived													
Actinium-228		0.541	+/-0.154	0.0531	+/-0.154	0.106	pCi/g		MJH1	02/05/07	0802	606830	
Americium-241	U	-0.0164	+/-0.0981	0.0809	+/-0.0981	0.162	pCi/g						
Bismuth-212		0.502	+/-0.235	0.125	+/-0.235	0.250	pCi/g						
Bismuth-214		0.460	+/-0.0912	0.0319	+/-0.0912	0.0637	pCi/g						
Cesium-134	U	0.0346	+/-0.0224	0.0218	+/-0.0224	0.0435	pCi/g						
Cesium-137		0.0345	+/-0.031	0.0172	+/-0.031	0.0343	pCi/g						
Cobalt-60	U	-0.0044	+/-0.0221	0.0181	+/-0.0221	0.0361	pCi/g						
Europium-152	U	-0.00798	+/-0.055	0.0425	+/-0.055	0.0849	pCi/g						
Europium-154	U	-0.0512	+/-0.0716	0.0557	+/-0.0716	0.111	pCi/g						
Europium-155	U	0.00199	+/-0.0565	0.0518	+/-0.0565	0.104	pCi/g						
Lead-212		0.454	+/-0.0597	0.0257	+/-0.0597	0.0514	pCi/g						
Lead-214		0.450	+/-0.0817	0.0299	+/-0.0817	0.0598	pCi/g						
Manganese-54	U	0.0283	+/-0.0197	0.0179	+/-0.0197	0.0359	pCi/g						
Niobium-94	U	-0.0017	+/-0.0183	0.0155	+/-0.0183	0.0309	pCi/g						
Potassium-40		9.49	+/-0.971	0.136	+/-0.971	0.272	pCi/g						
Radium-226		0.460	+/-0.0912	0.0319	+/-0.0912	0.0637	pCi/g						
Silver-108m	U	0.00117	+/-0.0169	0.015	+/-0.0169	0.0299	pCi/g						
Thallium-208		0.166	+/-0.0439	0.0171	+/-0.0439	0.0342	pCi/g						
Rad Gas Flow Proportional Counting													
GFPC, Sr90, solid-ALL FSS													
Strontium-90	U	0.00426	+/-0.018	0.0145	+/-0.018	0.0338	pCi/g		KSD1	02/02/07	1824	606160	
Rad Liquid Scintillation Analysis													
LSC, Tritium Dist, Solid – 3 pCi/g													
Tritium	U	-0.193	+/-0.264	0.458	+/-0.264	1.04	pCi/g		AXD2	02/01/07	0308	606167	

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID: 9312–0008–011F Project: YANK01204
Sample ID: 179837002 Client ID: YANK001
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	N
Rad Liquid Scintillation Analysis													
Liquid Scint C14, Solid All,FSS													
Carbon–14	U	–0.00628	+/–0.0775	0.0653	+/–0.0775	0.137	pCi/g		AXD2	01/31/07	1908	606166	
Liquid Scint Fe55, Solid–ALL FSS													
Iron–55	U	–9.34	+/–59.2	38.8	+/–59.2	80.9	pCi/g		MXP1	02/03/07	1045	606165	
Liquid Scint Ni63, Solid–ALL FSS													
Nickel–63	U	–1.68	+/–10.4	8.78	+/–10.4	18.2	pCi/g		MXP1	02/01/07	1554	606163	
Liquid Scint Tc99, Solid–ALL FSS													
Technetium–99	U	0.0186	+/–0.200	0.167	+/–0.200	0.353	pCi/g		KXR1	02/04/07	2253	606162	

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL–RAD–A–021	JMB1	01/30/07	1121	606002

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL–300, Am–05–RC Modified
2	DOE EML HASL–300, Pu–11–RC Modified
3	DOE EML HASL–300, Pu–11–RC Modified
4	EML HASL 300, 4.5.2.3
5	EPA 905.0 Modified
6	EPA 906.0 Modified
7	EPA EERF C–01 Modified
8	DOE RESL Fe–1, Modified
9	DOE RESL Fe–1, Modified
10	DOE RESL Ni–1, Modified
11	DOE EML HASL–300, Tc–02–RC Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Americium–243	Alphaspec Am241, Cm, Solid ALL	86	(15%–125%)
Plutonium–242	Alphaspec Pu, Solid–ALL FSS	89	(15%–125%)
Plutonium–242	Liquid Scint Pu241, Solid–ALL FS	86	(25%–125%)
Strontium–90	GFPC, Sr90, solid–ALL FSS	78	(25%–125%)
Carrier/Tracer Recovery	GFPC, Sr90, solid–ALL FSS	78	(25%–125%)
Iron–59	Liquid Scint Fe55, Solid–ALL FS	73	(15%–125%)

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East Hampton, Connecticut 06424 Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID: 9312–0008–011F Project: YANK01204
Sample ID: 179837002 Client ID: YANK001
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	N
Nickel–63		Liquid Scint Ni63, Solid–ALL FS			91		(25%–125%)						
Carrier/Tracer Recovery		Liquid Scint Ni63, Solid–ALL FS			91		(25%–125%)						
Technetium–99		Liquid Scint Tc99, Solid–ALL FS			63		(15%–125%)						
Carrier/Tracer Recovery		Liquid Scint Tc99, Solid–ALL FS			63		(15%–125%)						

Notes:

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- > Result is greater than value reported
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- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy––Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/–RL. Concentrations are <5X the RL
- h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

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East Hampton, Connecticut 06424 — Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID:	9312–0008–001F	Project:	YANK01204
Sample ID:	179837003	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	24–JAN–07		
Receive Date:	30–JAN–07		
Collector:	Client		
Moisture:	7.7%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	M
Rad Gamma Spec Analysis													
Gamma,Solid–FSS GAM & ALL FSS 226 Ingrowth Waived													
Actinium–228		0.542	+/–0.145	0.0541	+/–0.145	0.108	pCi/g		MJH1	02/05/07	0802	606830	
Americium–241	U	0.105	+/–0.0908	0.0785	+/–0.0908	0.157	pCi/g						
Bismuth–212		0.483	+/–0.323	0.130	+/–0.323	0.260	pCi/g						
Bismuth–214		0.339	+/–0.0939	0.0334	+/–0.0939	0.0667	pCi/g						
Cesium–134	U	0.0316	+/–0.0336	0.0229	+/–0.0336	0.0458	pCi/g						
Cesium–137	U	0.0188	+/–0.0237	0.0196	+/–0.0237	0.0392	pCi/g						
Cobalt–60	U	–0.007	+/–0.0217	0.0175	+/–0.0217	0.0349	pCi/g						
Europium–152	U	–0.0227	+/–0.0653	0.0463	+/–0.0653	0.0926	pCi/g						
Europium–154	U	–0.0651	+/–0.061	0.0442	+/–0.061	0.0883	pCi/g						
Europium–155	U	–0.0163	+/–0.0563	0.0503	+/–0.0563	0.101	pCi/g						
Lead–212		0.513	+/–0.0649	0.0241	+/–0.0649	0.0481	pCi/g						
Lead–214		0.438	+/–0.0821	0.0296	+/–0.0821	0.0592	pCi/g						
Manganese–54	U	0.00882	+/–0.0197	0.0178	+/–0.0197	0.0356	pCi/g						
Niobium–94	U	0.00493	+/–0.0188	0.0162	+/–0.0188	0.0324	pCi/g						
Potassium–40		9.26	+/–1.01	0.144	+/–1.01	0.289	pCi/g						
Radium–226		0.339	+/–0.0939	0.0334	+/–0.0939	0.0667	pCi/g						
Silver–108m	U	0.0058	+/–0.0219	0.015	+/–0.0219	0.0301	pCi/g						
Thallium–208		0.161	+/–0.0458	0.0161	+/–0.0458	0.0322	pCi/g						
Rad Gas Flow Proportional Counting													
GFPC, Sr90, solid–ALL FSS													
Strontium–90	U	0.0235	+/–0.024	0.0174	+/–0.024	0.0397	pCi/g		KSD1	02/02/07	1824	606160	

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL–RAD–A–021	JMB1	01/30/07	1121	606002

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3
2	EPA 905.0 Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits

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Company : Connecticut Yankee Atomic Power
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East Hampton, Connecticut 06424 Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID: 9312–0008–001F Project: YANK01204
Sample ID: 179837003 Client ID: YANK001
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	M

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Strontium–90	GFPC, Sr90, solid–ALL FSS	76	(25%–125%)
Carrier/Tracer Recovery	GFPC, Sr90, solid–ALL FSS	76	(25%–125%)

Notes:

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- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy––Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/–RL. Concentrations are <5X the RL
- h Preparation or preservation holding time was exceeded

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Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 — Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID:	9312–0008–002F	Project:	YANK01204
Sample ID:	179837004	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	24–JAN–07		
Receive Date:	30–JAN–07		
Collector:	Client		
Moisture:	7.79%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	M
Rad Gamma Spec Analysis													
Gamma,Solid–FSS GAM & ALL FSS 226 Ingrowth Waived													
Actinium–228		0.600	+/–0.140	0.0462	+/–0.140	0.0923	pCi/g		MJH1	02/05/07	0803	606830	
Americium–241	U	–0.022	+/–0.108	0.0887	+/–0.108	0.177	pCi/g						
Bismuth–212		0.567	+/–0.171	0.0965	+/–0.171	0.193	pCi/g						
Bismuth–214		0.419	+/–0.0701	0.0238	+/–0.0701	0.0475	pCi/g						
Cesium–134	U	0.0245	+/–0.026	0.0163	+/–0.026	0.0325	pCi/g						
Cesium–137	U	0.017	+/–0.017	0.0153	+/–0.017	0.0305	pCi/g						
Cobalt–60	U	–0.00364	+/–0.0157	0.0129	+/–0.0157	0.0258	pCi/g						
Europium–152	U	–0.00902	+/–0.0515	0.0347	+/–0.0515	0.0693	pCi/g						
Europium–154	U	0.0169	+/–0.051	0.0441	+/–0.051	0.0882	pCi/g						
Europium–155	U	0.0247	+/–0.046	0.0427	+/–0.046	0.0853	pCi/g						
Lead–212		0.523	+/–0.0589	0.0197	+/–0.0589	0.0394	pCi/g						
Lead–214		0.537	+/–0.0773	0.0242	+/–0.0773	0.0483	pCi/g						
Manganese–54	U	–0.00546	+/–0.0149	0.0128	+/–0.0149	0.0255	pCi/g						
Niobium–94	U	0.0145	+/–0.0142	0.0127	+/–0.0142	0.0255	pCi/g						
Potassium–40		9.40	+/–0.838	0.139	+/–0.838	0.277	pCi/g						
Radium–226		0.419	+/–0.0701	0.0238	+/–0.0701	0.0475	pCi/g						
Silver–108m	U	0.00824	+/–0.0142	0.0128	+/–0.0142	0.0256	pCi/g						
Thallium–208		0.178	+/–0.0339	0.012	+/–0.0339	0.0239	pCi/g						
Rad Gas Flow Proportional Counting													
GFPC, Sr90, solid–ALL FSS													
Strontium–90		0.296	+/–0.0502	0.0175	+/–0.0507	0.0405	pCi/g		KSD1	02/02/07	1824	606160	

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL–RAD–A–021	JMB1	01/30/07	1121	606002

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3
2	EPA 905.0 Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits

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Company : Connecticut Yankee Atomic Power
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East Hampton, Connecticut 06424 Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID: 9312–0008–002F Project: YANK01204
Sample ID: 179837004 Client ID: YANK001
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	M

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Strontium–90	GFPC, Sr90, solid–ALL FSS	66	(25%–125%)
Carrier/Tracer Recovery	GFPC, Sr90, solid–ALL FSS	66	(25%–125%)

Notes:

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- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy––Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/–RL. Concentrations are <5X the RL
- h Preparation or preservation holding time was exceeded

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 — Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID:	9312–0008–003F	Project:	YANK01204
Sample ID:	179837005	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	24–JAN–07		
Receive Date:	30–JAN–07		
Collector:	Client		
Moisture:	5.88%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	M
Rad Gamma Spec Analysis													
Gamma,Solid–FSS GAM & ALL FSS 226 Ingrowth Waived													
Actinium–228		0.634	+/–0.187	0.0807	+/–0.187	0.161	pCi/g		MJH1	02/05/07	0803	606830	
Americium–241	U	0.0347	+/–0.0434	0.0368	+/–0.0434	0.0736	pCi/g						
Bismuth–212	U	0.359	+/–0.334	0.196	+/–0.334	0.391	pCi/g						
Bismuth–214		0.394	+/–0.107	0.0426	+/–0.107	0.0851	pCi/g						
Cesium–134	U	0.0558	+/–0.0376	0.0292	+/–0.0376	0.0584	pCi/g						
Cesium–137	U	0.0127	+/–0.0303	0.0265	+/–0.0303	0.053	pCi/g						
Cobalt–60	U	0.00405	+/–0.0363	0.0255	+/–0.0363	0.0509	pCi/g						
Europium–152	U	0.020	+/–0.0782	0.0586	+/–0.0782	0.117	pCi/g						
Europium–154	U	–0.0152	+/–0.0866	0.0717	+/–0.0866	0.143	pCi/g						
Europium–155	UI	0.00	+/–0.0798	0.0576	+/–0.0798	0.115	pCi/g						
Lead–212		0.637	+/–0.0833	0.0325	+/–0.0833	0.065	pCi/g						
Lead–214		0.475	+/–0.105	0.0444	+/–0.105	0.0887	pCi/g						
Manganese–54	U	0.00746	+/–0.0278	0.0247	+/–0.0278	0.0494	pCi/g						
Niobium–94	U	–0.0155	+/–0.027	0.022	+/–0.027	0.0439	pCi/g						
Potassium–40		9.77	+/–1.05	0.234	+/–1.05	0.468	pCi/g						
Radium–226		0.394	+/–0.107	0.0426	+/–0.107	0.0851	pCi/g						
Silver–108m	U	–0.00676	+/–0.0259	0.0212	+/–0.0259	0.0423	pCi/g						
Thallium–208		0.189	+/–0.0523	0.0235	+/–0.0523	0.0469	pCi/g						
Rad Gas Flow Proportional Counting													
GFPC, Sr90, solid–ALL FSS													
Strontium–90	U	0.0308	+/–0.0249	0.0173	+/–0.0249	0.0396	pCi/g		KSD1	02/02/07	1825	606160	

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL–RAD–A–021	JMB1	01/30/07	1121	606002

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3
2	EPA 905.0 Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits

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Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID: 9312-0008-003F Project: YANK01204
Sample ID: 179837005 Client ID: YANK001
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	M

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Strontium-90	GFPC, Sr90, solid-ALL FSS	74	(25%-125%)
Carrier/Tracer Recovery	GFPC, Sr90, solid-ALL FSS	74	(25%-125%)

Notes:

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- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
- h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

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East Hampton, Connecticut 06424 — Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID:	9312–0008–003FS	Project:	YANK01204
Sample ID:	179837006	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	24–JAN–07		
Receive Date:	30–JAN–07		
Collector:	Client		
Moisture:	5.98%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	N
Rad Gamma Spec Analysis													
Gamma,Solid–FSS GAM & ALL FSS 226 Ingrowth Waived													
Actinium–228	UI	0.00	+/–0.148	0.111	+/–0.148	0.221	pCi/g		MJH1	02/05/07	0809	606830	
Americium–241	U	0.0525	+/–0.0625	0.0524	+/–0.0625	0.105	pCi/g						
Bismuth–212	U	0.236	+/–0.152	0.146	+/–0.152	0.292	pCi/g						
Bismuth–214		0.359	+/–0.0802	0.0302	+/–0.0802	0.0604	pCi/g						
Cesium–134	U	0.0125	+/–0.0367	0.0198	+/–0.0367	0.0396	pCi/g						
Cesium–137	U	0.0208	+/–0.018	0.0153	+/–0.018	0.0306	pCi/g						
Cobalt–60	U	–0.0119	+/–0.0188	0.0144	+/–0.0188	0.0287	pCi/g						
Europium–152	U	–0.00052	+/–0.0545	0.0418	+/–0.0545	0.0836	pCi/g						
Europium–154	U	–0.0374	+/–0.0643	0.0412	+/–0.0643	0.0823	pCi/g						
Europium–155	U	0.0202	+/–0.0495	0.045	+/–0.0495	0.0899	pCi/g						
Lead–212		0.536	+/–0.0657	0.0238	+/–0.0657	0.0477	pCi/g						
Lead–214		0.438	+/–0.078	0.0301	+/–0.078	0.0601	pCi/g						
Manganese–54	U	0.0022	+/–0.0179	0.0158	+/–0.0179	0.0315	pCi/g						
Niobium–94	U	0.00114	+/–0.0207	0.0158	+/–0.0207	0.0316	pCi/g						
Potassium–40		9.67	+/–0.906	0.127	+/–0.906	0.253	pCi/g						
Radium–226		0.359	+/–0.0802	0.0302	+/–0.0802	0.0604	pCi/g						
Silver–108m	U	0.00644	+/–0.0153	0.0137	+/–0.0153	0.0275	pCi/g						
Thallium–208		0.161	+/–0.040	0.015	+/–0.040	0.0301	pCi/g						
Rad Gas Flow Proportional Counting													
GFPC, Sr90, solid–ALL FSS													
Strontium–90	U	0.0083	+/–0.023	0.0181	+/–0.023	0.0422	pCi/g		KSD1	02/02/07	1825	606160	

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL–RAD–A–021	JMB1	01/30/07	1121	606002

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3
2	EPA 905.0 Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits

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2040 Savage Road Charleston SC 29407 – (843) 556–8171 – www.gel.com

Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID: 9312–0008–003FS Project: YANK01204
Sample ID: 179837006 Client ID: YANK001
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	M

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Strontium–90	GFPC, Sr90, solid–ALL FSS	62	(25%–125%)
Carrier/Tracer Recovery	GFPC, Sr90, solid–ALL FSS	62	(25%–125%)

Notes:

The Qualifiers in this report are defined as follows :

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol–condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy––Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/–RL. Concentrations are <5X the RL
- h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 — Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID:	9312–0008–004F	Project:	YANK01204
Sample ID:	179837007	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	24–JAN–07		
Receive Date:	30–JAN–07		
Collector:	Client		
Moisture:	6.43%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	N
Rad Gamma Spec Analysis													
Gamma,Solid–FSS GAM & ALL FSS 226 Ingrowth Waived													
Actinium–228		0.629	+/–0.133	0.0459	+/–0.133	0.0917	pCi/g		MJH1	02/05/07	0813	606830	
Americium–241	U	0.0388	+/–0.0618	0.0532	+/–0.0618	0.106	pCi/g						
Bismuth–212		0.299	+/–0.218	0.124	+/–0.218	0.247	pCi/g						
Bismuth–214		0.454	+/–0.0766	0.0273	+/–0.0766	0.0545	pCi/g						
Cesium–134	U	0.0217	+/–0.0167	0.0177	+/–0.0167	0.0353	pCi/g						
Cesium–137	UI	0.00	+/–0.0323	0.016	+/–0.0323	0.032	pCi/g						
Cobalt–60	U	0.00104	+/–0.0186	0.0157	+/–0.0186	0.0314	pCi/g						
Europium–152	U	0.016	+/–0.0497	0.0379	+/–0.0497	0.0758	pCi/g						
Europium–154	U	–0.0214	+/–0.0583	0.0473	+/–0.0583	0.0946	pCi/g						
Europium–155	U	0.0588	+/–0.0535	0.0457	+/–0.0535	0.0914	pCi/g						
Lead–212		0.522	+/–0.0596	0.0228	+/–0.0596	0.0455	pCi/g						
Lead–214		0.444	+/–0.0734	0.0271	+/–0.0734	0.0542	pCi/g						
Manganese–54	U	0.00805	+/–0.0189	0.0151	+/–0.0189	0.0301	pCi/g						
Niobium–94	U	–0.000442	+/–0.0166	0.0141	+/–0.0166	0.0282	pCi/g						
Potassium–40		10.1	+/–0.922	0.131	+/–0.922	0.262	pCi/g						
Radium–226		0.454	+/–0.0766	0.0273	+/–0.0766	0.0545	pCi/g						
Silver–108m	U	0.000805	+/–0.0146	0.013	+/–0.0146	0.0259	pCi/g						
Thallium–208		0.109	+/–0.0349	0.0155	+/–0.0349	0.0311	pCi/g						
Rad Gas Flow Proportional Counting													
GFPC, Sr90, solid–ALL FSS													
Strontium–90	U	–0.00436	+/–0.0168	0.0147	+/–0.0168	0.034	pCi/g		KSD1	02/02/07	1825	606160	

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL–RAD–A–021	JMB1	01/30/07	1121	606002

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3
2	EPA 905.0 Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID: 9312–0008–004F Project: YANK01204
Sample ID: 179837007 Client ID: YANK001
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	N

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Strontium–90	GFPC, Sr90, solid–ALL FSS	78	(25%–125%)
Carrier/Tracer Recovery	GFPC, Sr90, solid–ALL FSS	78	(25%–125%)

Notes:

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- ** Analyte is a surrogate compound
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- > Result is greater than value reported
- A The TIC is a suspected aldol–condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy––Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/–RL. Concentrations are <5X the RL
- h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

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Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID:	9312–0008–005F	Project:	YANK01204
Sample ID:	179837008	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	24–JAN–07		
Receive Date:	30–JAN–07		
Collector:	Client		
Moisture:	5.92%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	M
Rad Gamma Spec Analysis													
Gamma,Solid–FSS GAM & ALL FSS 226 Ingrowth Waived													
Actinium–228		0.478	+/–0.105	0.0394	+/–0.105	0.0788	pCi/g		MJH1	02/05/07	0814	606830	
Americium–241	U	0.0172	+/–0.0668	0.0557	+/–0.0668	0.111	pCi/g						
Bismuth–212		0.249	+/–0.185	0.0893	+/–0.185	0.179	pCi/g						
Bismuth–214		0.431	+/–0.0763	0.0245	+/–0.0763	0.049	pCi/g						
Cesium–134	UI	0.00	+/–0.0164	0.016	+/–0.0164	0.0319	pCi/g						
Cesium–137	U	0.0021	+/–0.0151	0.0129	+/–0.0151	0.0259	pCi/g						
Cobalt–60	U	–0.00692	+/–0.017	0.0114	+/–0.017	0.0228	pCi/g						
Europium–152	U	–0.035	+/–0.0534	0.0342	+/–0.0534	0.0684	pCi/g						
Europium–154	U	–0.0264	+/–0.0534	0.0359	+/–0.0534	0.0717	pCi/g						
Europium–155	U	–0.0174	+/–0.0495	0.0445	+/–0.0495	0.0889	pCi/g						
Lead–212		0.508	+/–0.0578	0.0201	+/–0.0578	0.0402	pCi/g						
Lead–214		0.441	+/–0.0672	0.0251	+/–0.0672	0.0501	pCi/g						
Manganese–54	U	–0.00746	+/–0.0141	0.0119	+/–0.0141	0.0237	pCi/g						
Niobium–94	U	0.0193	+/–0.0145	0.0132	+/–0.0145	0.0264	pCi/g						
Potassium–40		9.09	+/–0.805	0.120	+/–0.805	0.240	pCi/g						
Radium–226		0.431	+/–0.0763	0.0245	+/–0.0763	0.049	pCi/g						
Silver–108m	U	–0.00777	+/–0.013	0.0111	+/–0.013	0.0221	pCi/g						
Thallium–208		0.126	+/–0.0283	0.0113	+/–0.0283	0.0227	pCi/g						
Rad Gas Flow Proportional Counting													
GFPC, Sr90, solid–ALL FSS													
Strontium–90	U	0.00533	+/–0.0238	0.0195	+/–0.0238	0.0431	pCi/g		KSD1	02/02/07	1825	606160	

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL–RAD–A–021	JMB1	01/30/07	1121	606002

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3
2	EPA 905.0 Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID: 9312–0008–005F Project: YANK01204
Sample ID: 179837008 Client ID: YANK001
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst Date	Time	Batch	N

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Strontium–90	GFPC, Sr90, solid–ALL FSS	70	(25%–125%)
Carrier/Tracer Recovery	GFPC, Sr90, solid–ALL FSS	70	(25%–125%)

Notes:

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- > Result is greater than value reported
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- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy––Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/–RL. Concentrations are <5X the RL
- h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 — Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID:	9312-0008-007F	Project:	YANK01204
Sample ID:	179837009	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	24-JAN-07		
Receive Date:	30-JAN-07		
Collector:	Client		
Moisture:	5.76%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	M
Rad Gamma Spec Analysis													
Gamma,Solid-FSS GAM & ALL FSS 226 Ingrowth Waived													
Actinium-228		0.602	+/-0.146	0.0474	+/-0.146	0.0947	pCi/g		MJH1	02/05/07	0820	606830	
Americium-241	U	-0.0339	+/-0.0624	0.0502	+/-0.0624	0.100	pCi/g						
Bismuth-212		0.460	+/-0.262	0.115	+/-0.262	0.230	pCi/g						
Bismuth-214		0.459	+/-0.0759	0.0254	+/-0.0759	0.0508	pCi/g						
Cesium-134	U	0.0308	+/-0.0277	0.0202	+/-0.0277	0.0403	pCi/g						
Cesium-137	U	0.0214	+/-0.020	0.0183	+/-0.020	0.0367	pCi/g						
Cobalt-60	U	-0.013	+/-0.0181	0.0136	+/-0.0181	0.0273	pCi/g						
Europium-152	U	-0.0163	+/-0.0602	0.0399	+/-0.0602	0.0797	pCi/g						
Europium-154	U	0.0308	+/-0.0617	0.0546	+/-0.0617	0.109	pCi/g						
Europium-155	U	-0.00595	+/-0.0475	0.0432	+/-0.0475	0.0863	pCi/g						
Lead-212		0.522	+/-0.0644	0.0236	+/-0.0644	0.0471	pCi/g						
Lead-214		0.526	+/-0.0863	0.030	+/-0.0863	0.060	pCi/g						
Manganese-54	U	-0.000609	+/-0.0184	0.0161	+/-0.0184	0.0321	pCi/g						
Niobium-94	U	-0.00403	+/-0.0177	0.0148	+/-0.0177	0.0295	pCi/g						
Potassium-40		9.11	+/-0.880	0.154	+/-0.880	0.308	pCi/g						
Radium-226		0.459	+/-0.0759	0.0254	+/-0.0759	0.0508	pCi/g						
Silver-108m	U	-0.00351	+/-0.0164	0.0142	+/-0.0164	0.0284	pCi/g						
Thallium-208		0.181	+/-0.039	0.0152	+/-0.039	0.0303	pCi/g						
Rad Gas Flow Proportional Counting													
GFPC, Sr90, solid-ALL FSS													
Strontium-90	U	0.00395	+/-0.0227	0.0185	+/-0.0227	0.0427	pCi/g		KSD1	02/02/07	1825	606160	

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	01/30/07	1121	606002

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3
2	EPA 905.0 Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID: 9312–0008–007F Project: YANK01204
Sample ID: 179837009 Client ID: YANK001
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	N

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Strontium–90	GFPC, Sr90, solid–ALL FSS	67	(25%–125%)
Carrier/Tracer Recovery	GFPC, Sr90, solid–ALL FSS	67	(25%–125%)

Notes:

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- > Result is greater than value reported
- A The TIC is a suspected aldol–condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy––Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/–RL. Concentrations are <5X the RL
- h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 — Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID:	9312–0008–008F	Project:	YANK01204
Sample ID:	179837010	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	24–JAN–07		
Receive Date:	30–JAN–07		
Collector:	Client		
Moisture:	5.4%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	N
Rad Gamma Spec Analysis													
Gamma,Solid–FSS GAM & ALL FSS 226 Ingrowth Waived													
Actinium–228		0.543	+/–0.146	0.0651	+/–0.146	0.130	pCi/g		MJH1	02/05/07	0820	606830	
Americium–241	U	0.0298	+/–0.0282	0.0244	+/–0.0282	0.0488	pCi/g						
Bismuth–212	U	0.141	+/–0.271	0.135	+/–0.271	0.270	pCi/g						
Bismuth–214		0.375	+/–0.0799	0.0291	+/–0.0799	0.0582	pCi/g						
Cesium–134	U	–0.0112	+/–0.0234	0.0198	+/–0.0234	0.0395	pCi/g						
Cesium–137	U	0.021	+/–0.0267	0.0133	+/–0.0267	0.0267	pCi/g						
Cobalt–60	U	0.00109	+/–0.0214	0.018	+/–0.0214	0.0361	pCi/g						
Europium–152	U	0.0175	+/–0.0662	0.0421	+/–0.0662	0.0841	pCi/g						
Europium–154	U	–0.0135	+/–0.0691	0.0571	+/–0.0691	0.114	pCi/g						
Europium–155	U	–0.0252	+/–0.0412	0.0366	+/–0.0412	0.0732	pCi/g						
Lead–212		0.490	+/–0.0682	0.0225	+/–0.0682	0.0451	pCi/g						
Lead–214		0.511	+/–0.0945	0.0308	+/–0.0945	0.0616	pCi/g						
Manganese–54	U	0.00531	+/–0.0204	0.0182	+/–0.0204	0.0363	pCi/g						
Niobium–94	UI	0.00	+/–0.0316	0.0185	+/–0.0316	0.037	pCi/g						
Potassium–40		9.43	+/–0.946	0.0728	+/–0.946	0.145	pCi/g						
Radium–226		0.375	+/–0.0799	0.0291	+/–0.0799	0.0582	pCi/g						
Silver–108m	U	–0.00012	+/–0.0177	0.0136	+/–0.0177	0.0271	pCi/g						
Thallium–208		0.177	+/–0.0398	0.015	+/–0.0398	0.0299	pCi/g						
Rad Gas Flow Proportional Counting													
GFPC, Sr90, solid–ALL FSS													
Strontium–90	U	0.0144	+/–0.021	0.0159	+/–0.021	0.0363	pCi/g		KSD1	02/02/07	1825	606160	

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL–RAD–A–021	JMB1	01/30/07	1121	606002

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3
2	EPA 905.0 Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID: 9312–0008–008F Project: YANK01204
Sample ID: 179837010 Client ID: YANK001
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	N

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Strontium–90	GFPC, Sr90, solid–ALL FSS	75	(25%–125%)
Carrier/Tracer Recovery	GFPC, Sr90, solid–ALL FSS	75	(25%–125%)

Notes:

The Qualifiers in this report are defined as follows :

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- ** Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol–condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy––Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/–RL. Concentrations are <5X the RL
- h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 — Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID:	9312–0008–009F	Project:	YANK01204
Sample ID:	179837011	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	24–JAN–07		
Receive Date:	30–JAN–07		
Collector:	Client		
Moisture:	6.5%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	N
Rad Gamma Spec Analysis													
Gamma,Solid–FSS GAM & ALL FSS 226 Ingrowth Waived													
Actinium–228		0.515	+/–0.121	0.0424	+/–0.121	0.0847	pCi/g		MJH1	02/05/07	0821	606830	
Americium–241	U	–0.0941	+/–0.107	0.0846	+/–0.107	0.169	pCi/g						
Bismuth–212		0.488	+/–0.227	0.092	+/–0.227	0.184	pCi/g						
Bismuth–214		0.398	+/–0.077	0.0266	+/–0.077	0.0532	pCi/g						
Cesium–134	U	0.0173	+/–0.0224	0.0155	+/–0.0224	0.0309	pCi/g						
Cesium–137	U	0.00838	+/–0.015	0.0133	+/–0.015	0.0267	pCi/g						
Cobalt–60	U	0.00517	+/–0.0137	0.012	+/–0.0137	0.024	pCi/g						
Europium–152	U	0.0188	+/–0.0512	0.0363	+/–0.0512	0.0725	pCi/g						
Europium–154	U	–0.015	+/–0.0486	0.0399	+/–0.0486	0.0797	pCi/g						
Europium–155	U	–0.012	+/–0.0525	0.0478	+/–0.0525	0.0954	pCi/g						
Lead–212		0.475	+/–0.0569	0.0224	+/–0.0569	0.0448	pCi/g						
Lead–214		0.459	+/–0.0756	0.0243	+/–0.0756	0.0486	pCi/g						
Manganese–54	U	–0.00876	+/–0.0141	0.0118	+/–0.0141	0.0235	pCi/g						
Niobium–94	U	–0.0071	+/–0.0139	0.0114	+/–0.0139	0.0227	pCi/g						
Potassium–40		9.88	+/–0.841	0.105	+/–0.841	0.211	pCi/g						
Radium–226		0.398	+/–0.077	0.0266	+/–0.077	0.0532	pCi/g						
Silver–108m	U	–0.00232	+/–0.0127	0.0111	+/–0.0127	0.0222	pCi/g						
Thallium–208		0.125	+/–0.0362	0.0124	+/–0.0362	0.0248	pCi/g						
Rad Gas Flow Proportional Counting													
GFPC, Sr90, solid–ALL FSS													
Strontium–90	U	–0.0017	+/–0.0216	0.0184	+/–0.0216	0.0425	pCi/g		KSD1	02/02/07	1825	606160	

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL–RAD–A–021	JMB1	01/30/07	1121	606002

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3
2	EPA 905.0 Modified

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID: 9312–0008–009F Project: YANK01204
Sample ID: 179837011 Client ID: YANK001
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	M

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Strontium–90	GFPC, Sr90, solid–ALL FSS	63	(25%–125%)
Carrier/Tracer Recovery	GFPC, Sr90, solid–ALL FSS	63	(25%–125%)

Notes:

The Qualifiers in this report are defined as follows :

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- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy––Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/–RL. Concentrations are <5X the RL
- h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 — Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID:	9312–0008–010F	Project:	YANK01204
Sample ID:	179837012	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	24–JAN–07		
Receive Date:	30–JAN–07		
Collector:	Client		
Moisture:	7.51%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	N
Rad Gamma Spec Analysis													
Gamma,Solid–FSS GAM & ALL FSS 226 Ingrowth Waived													
Actinium–228		0.558	+/–0.138	0.0564	+/–0.138	0.113	pCi/g		MJH1	02/05/07	0821	606830	
Americium–241	U	0.0477	+/–0.0758	0.0633	+/–0.0758	0.127	pCi/g						
Bismuth–212		0.509	+/–0.304	0.121	+/–0.304	0.243	pCi/g						
Bismuth–214		0.445	+/–0.084	0.0361	+/–0.084	0.0722	pCi/g						
Cesium–134	UI	0.00	+/–0.0227	0.0209	+/–0.0227	0.0418	pCi/g						
Cesium–137		0.0341	+/–0.0236	0.0166	+/–0.0236	0.0331	pCi/g						
Cobalt–60	U	–0.00388	+/–0.0205	0.0169	+/–0.0205	0.0338	pCi/g						
Europium–152	U	–0.00455	+/–0.0673	0.0452	+/–0.0673	0.0904	pCi/g						
Europium–154	U	0.011	+/–0.0616	0.0532	+/–0.0616	0.106	pCi/g						
Europium–155	U	0.0304	+/–0.0635	0.048	+/–0.0635	0.096	pCi/g						
Lead–212		0.587	+/–0.0716	0.0249	+/–0.0716	0.0497	pCi/g						
Lead–214		0.453	+/–0.0841	0.0342	+/–0.0841	0.0684	pCi/g						
Manganese–54	U	0.0127	+/–0.0197	0.0181	+/–0.0197	0.0361	pCi/g						
Niobium–94	U	–0.00184	+/–0.0181	0.0152	+/–0.0181	0.0305	pCi/g						
Potassium–40		9.86	+/–0.959	0.128	+/–0.959	0.255	pCi/g						
Radium–226		0.445	+/–0.084	0.0361	+/–0.084	0.0722	pCi/g						
Silver–108m	U	0.00512	+/–0.0166	0.0148	+/–0.0166	0.0297	pCi/g						
Thallium–208		0.164	+/–0.0397	0.0161	+/–0.0397	0.0321	pCi/g						
Rad Gas Flow Proportional Counting													
GFPC, Sr90, solid–ALL FSS													
Strontium–90	U	–0.005	+/–0.0187	0.0164	+/–0.0187	0.0376	pCi/g		KSD1	02/02/07	1825	606160	

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL–RAD–A–021	JMB1	01/30/07	1121	606002

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3
2	EPA 905.0 Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID: 9312–0008–010F Project: YANK01204
Sample ID: 179837012 Client ID: YANK001
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	M

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Strontium–90	GFPC, Sr90, solid–ALL FSS	76	(25%–125%)
Carrier/Tracer Recovery	GFPC, Sr90, solid–ALL FSS	76	(25%–125%)

Notes:

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- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy––Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/–RL. Concentrations are <5X the RL
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Certificate of Analysis

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Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 — Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID:	9312-0008-012F	Project:	YANK01204
Sample ID:	179837013	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	24-JAN-07		
Receive Date:	30-JAN-07		
Collector:	Client		
Moisture:	8.11%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	N
Rad Gamma Spec Analysis													
Gamma,Solid-FSS GAM & ALL FSS 226 Ingrowth Waived													
Actinium-228		0.443	+/-0.126	0.0608	+/-0.126	0.122	pCi/g		MJH1	02/05/07	0822	606830	
Americium-241	UI	0.00	+/-0.0781	0.0435	+/-0.0781	0.0869	pCi/g						
Bismuth-212	U	0.201	+/-0.182	0.137	+/-0.182	0.274	pCi/g						
Bismuth-214		0.411	+/-0.088	0.0334	+/-0.088	0.0668	pCi/g						
Cesium-134	UI	0.00	+/-0.0343	0.0223	+/-0.0343	0.0445	pCi/g						
Cesium-137	U	-0.00317	+/-0.0211	0.0178	+/-0.0211	0.0357	pCi/g						
Cobalt-60	U	0.00656	+/-0.0186	0.0163	+/-0.0186	0.0326	pCi/g						
Europium-152	U	-0.00572	+/-0.0629	0.0488	+/-0.0629	0.0975	pCi/g						
Europium-154	U	0.00908	+/-0.0712	0.0524	+/-0.0712	0.105	pCi/g						
Europium-155	U	-0.0478	+/-0.0541	0.046	+/-0.0541	0.0919	pCi/g						
Lead-212		0.490	+/-0.0623	0.028	+/-0.0623	0.056	pCi/g						
Lead-214		0.462	+/-0.0865	0.0339	+/-0.0865	0.0677	pCi/g						
Manganese-54	U	0.00564	+/-0.0194	0.0173	+/-0.0194	0.0346	pCi/g						
Niobium-94	U	0.00625	+/-0.0185	0.016	+/-0.0185	0.0321	pCi/g						
Potassium-40		10.2	+/-0.970	0.143	+/-0.970	0.286	pCi/g						
Radium-226		0.411	+/-0.088	0.0334	+/-0.088	0.0668	pCi/g						
Silver-108m	U	0.00275	+/-0.0194	0.0166	+/-0.0194	0.0331	pCi/g						
Thallium-208		0.148	+/-0.0387	0.0172	+/-0.0387	0.0344	pCi/g						
Rad Gas Flow Proportional Counting													
GFPC, Sr90, solid-ALL FSS													
Strontium-90	U	0.0138	+/-0.0228	0.0174	+/-0.0228	0.0398	pCi/g		KSD1	02/02/07	1825	606160	

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	01/30/07	1121	606002

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3
2	EPA 905.0 Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID: 9312–0008–012F Project: YANK01204
Sample ID: 179837013 Client ID: YANK001
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst Date	Time	Batch	N

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Strontium–90	GFPC, Sr90, solid–ALL FSS	64	(25%–125%)
Carrier/Tracer Recovery	GFPC, Sr90, solid–ALL FSS	64	(25%–125%)

Notes:

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- > Result is greater than value reported
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- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy––Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/–RL. Concentrations are <5X the RL
- h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 — Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID:	9312–0008–013F	Project:	YANK01204
Sample ID:	179837014	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	24–JAN–07		
Receive Date:	30–JAN–07		
Collector:	Client		
Moisture:	7.45%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	M
Rad Gamma Spec Analysis													
Gamma,Solid–FSS GAM & ALL FSS 226 Ingrowth Waived													
Actinium–228		0.546	+/–0.209	0.0801	+/–0.209	0.160	pCi/g		MJH1	02/05/07	0830	606830	
Americium–241	U	–0.0464	+/–0.0329	0.0284	+/–0.0329	0.0569	pCi/g						
Bismuth–212		0.347	+/–0.271	0.149	+/–0.271	0.298	pCi/g						
Bismuth–214		0.516	+/–0.112	0.039	+/–0.112	0.078	pCi/g						
Cesium–134	U	0.0179	+/–0.0303	0.0276	+/–0.0303	0.0553	pCi/g						
Cesium–137	U	0.022	+/–0.027	0.0252	+/–0.027	0.0504	pCi/g						
Cobalt–60	U	–0.0221	+/–0.028	0.0205	+/–0.028	0.041	pCi/g						
Europium–152	U	0.0215	+/–0.0721	0.0499	+/–0.0721	0.0997	pCi/g						
Europium–154	U	–0.00577	+/–0.0849	0.0706	+/–0.0849	0.141	pCi/g						
Europium–155	U	0.013	+/–0.046	0.0454	+/–0.046	0.0908	pCi/g						
Lead–212		0.515	+/–0.0721	0.0267	+/–0.0721	0.0534	pCi/g						
Lead–214		0.461	+/–0.0998	0.0358	+/–0.0998	0.0716	pCi/g						
Manganese–54	U	–0.00498	+/–0.0283	0.0242	+/–0.0283	0.0483	pCi/g						
Niobium–94	U	0.00882	+/–0.024	0.0208	+/–0.024	0.0416	pCi/g						
Potassium–40		9.81	+/–0.954	0.185	+/–0.954	0.370	pCi/g						
Radium–226		0.516	+/–0.112	0.039	+/–0.112	0.078	pCi/g						
Silver–108m	U	0.0147	+/–0.0227	0.0182	+/–0.0227	0.0364	pCi/g						
Thallium–208		0.187	+/–0.0473	0.0201	+/–0.0473	0.0402	pCi/g						
Rad Gas Flow Proportional Counting													
GFPC, Sr90, solid–ALL FSS													
Strontium–90	U	0.00952	+/–0.0174	0.0132	+/–0.0174	0.0309	pCi/g		KSD1	02/02/07	1826	606160	

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL–RAD–A–021	JMB1	01/30/07	1121	606002

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3
2	EPA 905.0 Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID: 9312–0008–013F Project: YANK01204
Sample ID: 179837014 Client ID: YANK001
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst Date	Time	Batch	M

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Strontium–90	GFPC, Sr90, solid–ALL FSS	76	(25%–125%)
Carrier/Tracer Recovery	GFPC, Sr90, solid–ALL FSS	76	(25%–125%)

Notes:

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- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy––Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/–RL. Concentrations are <5X the RL
- h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

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Certificate of Analysis

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Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 — Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID:	9312–0008–014F	Project:	YANK01204
Sample ID:	179837015	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	24–JAN–07		
Receive Date:	30–JAN–07		
Collector:	Client		
Moisture:	6.59%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	M
Rad Gamma Spec Analysis													
Gamma,Solid–FSS GAM & ALL FSS 226 Ingrowth Waived													
Actinium–228		0.487	+/–0.156	0.0601	+/–0.156	0.120	pCi/g		MJH1	02/05/07	0926	606830	
Americium–241	U	0.0405	+/–0.0918	0.0771	+/–0.0918	0.154	pCi/g						
Bismuth–212		0.481	+/–0.317	0.128	+/–0.317	0.255	pCi/g						
Bismuth–214		0.463	+/–0.0808	0.0308	+/–0.0808	0.0616	pCi/g						
Cesium–134	U	0.0331	+/–0.0249	0.0206	+/–0.0249	0.0411	pCi/g						
Cesium–137	U	0.014	+/–0.0222	0.0198	+/–0.0222	0.0397	pCi/g						
Cobalt–60	U	–0.014	+/–0.0306	0.0199	+/–0.0306	0.0399	pCi/g						
Europium–152	U	–0.0425	+/–0.0581	0.0444	+/–0.0581	0.0887	pCi/g						
Europium–154	U	–0.0101	+/–0.0716	0.0593	+/–0.0716	0.119	pCi/g						
Europium–155	U	0.0595	+/–0.0546	0.0525	+/–0.0546	0.105	pCi/g						
Lead–212		0.499	+/–0.0695	0.0256	+/–0.0695	0.0513	pCi/g						
Lead–214		0.458	+/–0.0956	0.0333	+/–0.0956	0.0666	pCi/g						
Manganese–54	U	0.0172	+/–0.0281	0.0194	+/–0.0281	0.0387	pCi/g						
Niobium–94	U	0.0143	+/–0.0191	0.0172	+/–0.0191	0.0343	pCi/g						
Potassium–40		9.78	+/–1.07	0.137	+/–1.07	0.273	pCi/g						
Radium–226		0.463	+/–0.0808	0.0308	+/–0.0808	0.0616	pCi/g						
Silver–108m	U	–0.00416	+/–0.0188	0.014	+/–0.0188	0.0279	pCi/g						
Thallium–208	UI	0.00	+/–0.046	0.0334	+/–0.046	0.0668	pCi/g						
Rad Gas Flow Proportional Counting													
GFPC, Sr90, solid–ALL FSS													
Strontium–90	U	0.00392	+/–0.0226	0.0184	+/–0.0226	0.0425	pCi/g		KSD1	02/02/07	1826	606160	

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL–RAD–A–021	JMB1	01/30/07	1121	606002

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3
2	EPA 905.0 Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID: 9312–0008–014F Project: YANK01204
Sample ID: 179837015 Client ID: YANK001
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst Date	Time	Batch	M

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Strontium–90	GFPC, Sr90, solid–ALL FSS	67	(25%–125%)
Carrier/Tracer Recovery	GFPC, Sr90, solid–ALL FSS	67	(25%–125%)

Notes:

The Qualifiers in this report are defined as follows :

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- ** Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol–condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy––Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/–RL. Concentrations are <5X the RL
- h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 — Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID:	9312-0008-015F	Project:	YANK01204
Sample ID:	179837016	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	24-JAN-07		
Receive Date:	30-JAN-07		
Collector:	Client		
Moisture:	10.5%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	M
Rad Gamma Spec Analysis													
Gamma,Solid-FSS GAM & ALL FSS 226 Ingrowth Waived													
Actinium-228		1.06	+/-0.204	0.0615	+/-0.204	0.123	pCi/g		MJH1	02/05/07	1109	606830	
Americium-241	U	0.192	+/-0.117	0.0998	+/-0.117	0.200	pCi/g						
Bismuth-212		0.719	+/-0.313	0.161	+/-0.313	0.321	pCi/g						
Bismuth-214		0.895	+/-0.131	0.0398	+/-0.131	0.0795	pCi/g						
Cesium-134	UI	0.00	+/-0.0465	0.0263	+/-0.0465	0.0526	pCi/g						
Cesium-137	U	0.022	+/-0.0276	0.0242	+/-0.0276	0.0484	pCi/g						
Cobalt-60	U	0.00334	+/-0.0263	0.0223	+/-0.0263	0.0445	pCi/g						
Europium-152	U	-0.00826	+/-0.0757	0.0576	+/-0.0757	0.115	pCi/g						
Europium-154	U	-0.0645	+/-0.0843	0.065	+/-0.0843	0.130	pCi/g						
Europium-155	U	-0.00643	+/-0.0742	0.0659	+/-0.0742	0.132	pCi/g						
Lead-212		0.899	+/-0.101	0.0332	+/-0.101	0.0664	pCi/g						
Lead-214		1.05	+/-0.145	0.0409	+/-0.145	0.0818	pCi/g						
Manganese-54	UI	0.00	+/-0.0341	0.0209	+/-0.0341	0.0418	pCi/g						
Niobium-94	U	0.0178	+/-0.0233	0.0206	+/-0.0233	0.0411	pCi/g						
Potassium-40		15.5	+/-1.38	0.187	+/-1.38	0.374	pCi/g						
Radium-226		0.895	+/-0.131	0.0398	+/-0.131	0.0795	pCi/g						
Silver-108m	U	-0.0183	+/-0.0221	0.0182	+/-0.0221	0.0363	pCi/g						
Thallium-208		0.276	+/-0.0606	0.0221	+/-0.0606	0.0443	pCi/g						
Rad Gas Flow Proportional Counting													
GFPC, Sr90, solid-ALL FSS													
Strontium-90		0.0441	+/-0.0256	0.0181	+/-0.0256	0.0395	pCi/g		KSD1	02/02/07	1826	606160	

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	01/30/07	1121	606002

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3
2	EPA 905.0 Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
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East Hampton, Connecticut 06424 Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID: 9312-0008-015F Project: YANK01204
Sample ID: 179837016 Client ID: YANK001
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	N

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Strontium-90	GFPC, Sr90, solid-ALL FSS	77	(25%-125%)
Carrier/Tracer Recovery	GFPC, Sr90, solid-ALL FSS	77	(25%-125%)

Notes:

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- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
- h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

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East Hampton, Connecticut 06424 — Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID:	9312–0008–016–I	Project:	YANK01204
Sample ID:	179837017	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	24–JAN–07		
Receive Date:	30–JAN–07		
Collector:	Client		
Moisture:	10.2%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	N
Rad Gamma Spec Analysis													
Gamma,Solid–FSS GAM & ALL FSS 226 Ingrowth Waived													
Actinium–228		1.25	+/–0.223	0.0656	+/–0.223	0.131	pCi/g		MJH1	02/05/07	1109	606830	
Americium–241	U	0.0454	+/–0.109	0.0905	+/–0.109	0.181	pCi/g						
Bismuth–212		0.869	+/–0.268	0.131	+/–0.268	0.261	pCi/g						
Bismuth–214		1.24	+/–0.150	0.0319	+/–0.150	0.0637	pCi/g						
Cesium–134	UI	0.00	+/–0.0387	0.0252	+/–0.0387	0.0503	pCi/g						
Cesium–137		0.0491	+/–0.0343	0.018	+/–0.0343	0.0361	pCi/g						
Cobalt–60		0.0791	+/–0.0449	0.0177	+/–0.0449	0.0355	pCi/g						
Europium–152	U	0.056	+/–0.0598	0.0483	+/–0.0598	0.0966	pCi/g						
Europium–154	U	0.0675	+/–0.0743	0.0583	+/–0.0743	0.117	pCi/g						
Europium–155	U	0.0671	+/–0.0755	0.0563	+/–0.0755	0.112	pCi/g						
Lead–212		1.14	+/–0.104	0.0275	+/–0.104	0.0549	pCi/g						
Lead–214		1.35	+/–0.139	0.0321	+/–0.139	0.0641	pCi/g						
Manganese–54	U	0.0252	+/–0.0244	0.0189	+/–0.0244	0.0377	pCi/g						
Niobium–94	U	–0.00185	+/–0.0205	0.0172	+/–0.0205	0.0344	pCi/g						
Potassium–40		19.4	+/–1.53	0.170	+/–1.53	0.340	pCi/g						
Radium–226		1.24	+/–0.150	0.0319	+/–0.150	0.0637	pCi/g						
Silver–108m	U	–0.0167	+/–0.0212	0.0153	+/–0.0212	0.0306	pCi/g						
Thallium–208		0.409	+/–0.0587	0.0163	+/–0.0587	0.0327	pCi/g						
Rad Gas Flow Proportional Counting													
GFPC, Sr90, solid–ALL FSS													
Strontium–90		0.0499	+/–0.0246	0.0167	+/–0.0246	0.0366	pCi/g		KSD1	02/02/07	1826	606160	

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL–RAD–A–021	JMB1	01/30/07	1121	606002

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3
2	EPA 905.0 Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID: 9312–0008–016–I Project: YANK01204
Sample ID: 179837017 Client ID: YANK001
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	N

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Strontium–90	GFPC, Sr90, solid–ALL FSS	76	(25%–125%)
Carrier/Tracer Recovery	GFPC, Sr90, solid–ALL FSS	76	(25%–125%)

Notes:

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- > Result is greater than value reported
- A The TIC is a suspected aldol–condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy––Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/–RL. Concentrations are <5X the RL
- h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 — Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID:	9312–0008–017–I	Project:	YANK01204
Sample ID:	179837018	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	24–JAN–07		
Receive Date:	30–JAN–07		
Collector:	Client		
Moisture:	11.4%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	M
Rad Gamma Spec Analysis													
Gamma,Solid–FSS GAM & ALL FSS 226 Ingrowth Waived													
Actinium–228		1.27	+/–0.220	0.0624	+/–0.220	0.125	pCi/g		MJH1	02/05/07	1110	606830	
Americium–241	U	0.0346	+/–0.112	0.0924	+/–0.112	0.185	pCi/g						
Bismuth–212		0.664	+/–0.251	0.139	+/–0.251	0.278	pCi/g						
Bismuth–214		1.20	+/–0.148	0.0326	+/–0.148	0.0652	pCi/g						
Cesium–134	U	0.0358	+/–0.0343	0.0228	+/–0.0343	0.0456	pCi/g						
Cesium–137		0.0421	+/–0.0307	0.0205	+/–0.0307	0.041	pCi/g						
Cobalt–60	U	–0.00817	+/–0.0243	0.0198	+/–0.0243	0.0395	pCi/g						
Europium–152	U	–0.0174	+/–0.0698	0.0502	+/–0.0698	0.100	pCi/g						
Europium–154	U	–0.0316	+/–0.0771	0.0628	+/–0.0771	0.126	pCi/g						
Europium–155	U	0.0497	+/–0.0681	0.0625	+/–0.0681	0.125	pCi/g						
Lead–212		1.23	+/–0.112	0.0299	+/–0.112	0.0598	pCi/g						
Lead–214		1.41	+/–0.148	0.037	+/–0.148	0.0739	pCi/g						
Manganese–54	U	0.014	+/–0.023	0.0188	+/–0.023	0.0376	pCi/g						
Niobium–94	U	0.017	+/–0.0205	0.0181	+/–0.0205	0.0362	pCi/g						
Potassium–40		19.3	+/–1.59	0.152	+/–1.59	0.303	pCi/g						
Radium–226		1.20	+/–0.148	0.0326	+/–0.148	0.0652	pCi/g						
Silver–108m	U	0.000814	+/–0.0188	0.0165	+/–0.0188	0.0329	pCi/g						
Thallium–208		0.395	+/–0.0595	0.0175	+/–0.0595	0.035	pCi/g						
Rad Gas Flow Proportional Counting													
GFPC, Sr90, solid–ALL FSS													
Strontium–90	U	0.0189	+/–0.0239	0.0178	+/–0.0239	0.0405	pCi/g		KSD1	02/02/07	1826	606160	

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL–RAD–A–021	JMB1	01/30/07	1121	606002

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3
2	EPA 905.0 Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID: 9312–0008–017–I Project: YANK01204
Sample ID: 179837018 Client ID: YANK001
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	M

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Strontium–90	GFPC, Sr90, solid–ALL FSS	75	(25%–125%)
Carrier/Tracer Recovery	GFPC, Sr90, solid–ALL FSS	75	(25%–125%)

Notes:

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- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy––Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/–RL. Concentrations are <5X the RL
- h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 — Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID:	9312-0008-018-I	Project:	YANK01204
Sample ID:	179837019	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	24-JAN-07		
Receive Date:	30-JAN-07		
Collector:	Client		
Moisture:	12.8%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	M
Rad Gamma Spec Analysis													
Gamma,Solid-FSS GAM & ALL FSS 226 Ingrowth Waived													
Actinium-228		1.02	+/-0.267	0.0975	+/-0.267	0.195	pCi/g		MJH1	02/05/07	1110	606830	
Americium-241	U	0.0887	+/-0.058	0.0495	+/-0.058	0.099	pCi/g						
Bismuth-212		0.993	+/-0.446	0.214	+/-0.446	0.427	pCi/g						
Bismuth-214		1.26	+/-0.190	0.0559	+/-0.190	0.112	pCi/g						
Cesium-134	UI	0.00	+/-0.0662	0.0379	+/-0.0662	0.0757	pCi/g						
Cesium-137	U	0.0386	+/-0.046	0.031	+/-0.046	0.0619	pCi/g						
Cobalt-60	U	-0.0115	+/-0.0347	0.0265	+/-0.0347	0.053	pCi/g						
Europium-152	U	-0.0297	+/-0.094	0.0714	+/-0.094	0.143	pCi/g						
Europium-154	U	0.00484	+/-0.114	0.0958	+/-0.114	0.191	pCi/g						
Europium-155	U	0.139	+/-0.107	0.0712	+/-0.107	0.142	pCi/g						
Lead-212		1.24	+/-0.139	0.0405	+/-0.139	0.0809	pCi/g						
Lead-214		1.35	+/-0.170	0.0555	+/-0.170	0.111	pCi/g						
Manganese-54	U	-0.000934	+/-0.0344	0.030	+/-0.0344	0.0599	pCi/g						
Niobium-94	U	0.0147	+/-0.031	0.0269	+/-0.031	0.0538	pCi/g						
Potassium-40		18.4	+/-1.58	0.224	+/-1.58	0.448	pCi/g						
Radium-226		1.26	+/-0.190	0.0559	+/-0.190	0.112	pCi/g						
Silver-108m	U	-0.000654	+/-0.0283	0.0248	+/-0.0283	0.0496	pCi/g						
Thallium-208		0.414	+/-0.075	0.0271	+/-0.075	0.0541	pCi/g						
Rad Gas Flow Proportional Counting													
GFPC, Sr90, solid-ALL FSS													
Strontium-90	U	0.00454	+/-0.0211	0.017	+/-0.0211	0.0397	pCi/g		KSD1	02/02/07	1826	606160	

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	01/30/07	1121	606002

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3
2	EPA 905.0 Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424 Report Date: February 6, 2007
Contact: Mr. Jack McCarthy
Project: Soils PO# 002332

Client Sample ID: 9312–0008–018–I Project: YANK01204
Sample ID: 179837019 Client ID: YANK001
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst Date	Time	Batch	N

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Strontium–90	GFPC, Sr90, solid–ALL FSS	62	(25%–125%)
Carrier/Tracer Recovery	GFPC, Sr90, solid–ALL FSS	62	(25%–125%)

Notes:

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- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol–condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy––Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/–RL. Concentrations are <5X the RL
- h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

QUALITY CONTROL DATA

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: February 6, 2007

:lient : Connecticut Yankee Atomic Power
362 Injun Hollow Rd

East Hampton, Connecticut

:ontact: Mr. Jack McCarthy

Vorkorder: 179837

armname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
ad Alpha Spec										
atch 606029										
QC1201269931 179836001 DUP										
ımericium-241	U	0.0303	U	-0.0117	pCi/g	452		(0% - 100%)	DXH2	02/01/07 07:43
	Uncert:	+/-0.158		+/-0.0702						
	TPU:	+/-0.158		+/-0.0702						
:urium-242	U	-0.0361	U	0.00126	pCi/g	214		(0% - 100%)		
	Uncert:	+/-0.0751		+/-0.0685						
	TPU:	+/-0.0752		+/-0.0685						
:urium-243/244	U	-0.0502	U	0.125	pCi/g	468		(0% - 100%)		
	Uncert:	+/-0.164		+/-0.165						
	TPU:	+/-0.164		+/-0.165						
QC1201269933 LCS										
ımericium-241	13.0			12.7	pCi/g		98	(75%-125%)		
	Uncert:			+/-1.17						
	TPU:			+/-2.02						
:urium-242			U	-0.0203	pCi/g					
	Uncert:			+/-0.023						
	TPU:			+/-0.0231						
:urium-243/244	15.6			14.8	pCi/g		95	(75%-125%)		
	Uncert:			+/-1.26						
	TPU:			+/-2.30						
QC1201269930 MB										
ımericium-241			U	0.0301	pCi/g					
	Uncert:			+/-0.058						
	TPU:			+/-0.0582						
:urium-242			U	-0.00707	pCi/g					
	Uncert:			+/-0.0594						
	TPU:			+/-0.0594						
:urium-243/244			U	0.103	pCi/g					
	Uncert:			+/-0.116						
	TPU:			+/-0.117						
QC1201269932 179836001 MS										
ımericium-241	14.0 U	0.0303		13.0	pCi/g		93	(75%-125%)		
	Uncert:	+/-0.158		+/-1.35						
	TPU:	+/-0.158		+/-2.22						
:urium-242	U	-0.0361	U	0.0316	pCi/g					
	Uncert:	+/-0.0751		+/-0.138						
	TPU:	+/-0.0752		+/-0.138						
:urium-243/244	16.8 U	-0.0502		17.9	pCi/g		107	(75%-125%)		
	Uncert:	+/-0.164		+/-1.59						
	TPU:	+/-0.164		+/-2.90						
atch 606031										
QC1201269936 179836001 DUP										
lutonium-238	U	0.0727	U	0.130	pCi/g	57		(0% - 100%)	DXH2	01/31/07 15:54

QC Summary

Vorkorder: 179837

armname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
ad Alpha Spec										
atch 606031										
	Uncert:	+/-0.0998		+/-0.196						
	TPU:	+/-0.100		+/-0.197						
lutonium-239/240	U	0.00	U	-0.0516	pCi/g	200		(0% - 100%)		
	Uncert:	+/-0.0566		+/-0.0413						
	TPU:	+/-0.0566		+/-0.0418						
QC1201269938 LCS										
lutonium-238			U	0.0519	pCi/g			(75%-125%)		
	Uncert:			+/-0.226						
	TPU:			+/-0.226						
lutonium-239/240	12.9			12.7	pCi/g		98	(75%-125%)		
	Uncert:			+/-1.25						
	TPU:			+/-1.95						
QC1201269935 MB										
lutonium-238			U	0.0132	pCi/g					
	Uncert:			+/-0.143						
	TPU:			+/-0.143						
lutonium-239/240			U	-0.0224	pCi/g					
	Uncert:			+/-0.0767						
	TPU:			+/-0.0767						
QC1201269937 179836001 MS										
lutonium-238	U	0.0727	U	-0.014	pCi/g			(75%-125%)		
	Uncert:	+/-0.0998		+/-0.0723						
	TPU:	+/-0.100		+/-0.0723						
lutonium-239/240	13.9 U	0.00		13.5	pCi/g		97	(75%-125%)		
	Uncert:	+/-0.0566		+/-1.29						
	TPU:	+/-0.0566		+/-2.03						
atch 606032										
QC1201269940 179836001 DUP										
lutonium-241	U	-3.0	U	-3.33	pCi/g	0		(0% - 100%)	DXH2	02/02/07 08:14
	Uncert:	+/-6.37		+/-7.09						
	TPU:	+/-6.37		+/-7.09						
QC1201269942 LCS										
lutonium-241	140			108	pCi/g		77	(75%-125%)		02/01/07 11:12
	Uncert:			+/-11.6						
	TPU:			+/-15.7						
QC1201269939 MB										
lutonium-241			U	-3.23	pCi/g					02/01/07 10:24
	Uncert:			+/-6.45						
	TPU:			+/-6.45						
QC1201269941 179836001 MS										
lutonium-241	142 U	-3.0		138	pCi/g		97	(75%-125%)		02/01/07 10:56
	Uncert:	+/-6.37		+/-13.9						
	TPU:	+/-6.37		+/-19.8						
ad Gamma Spec										
atch 606830										
QC1201271731 179837001 DUP										
actinium-228		0.587		0.511	pCi/g	14		(0% - 100%)	MJH1	02/05/07 14:54
	Uncert:	+/-0.146		+/-0.176						
				+/-0.176						

QC Summary

Vorkorder: 179837

armname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
ad Gamma Spec											
atch 606830											
	TPU:	+/-0.146									
,mericium-241	U	0.0353	U	-0.0187	pCi/g	654		(0% - 100%)			
	Uncert:	+/-0.0842		+/-0.0861							
	TPU:	+/-0.0842		+/-0.0861							
;ismuth-212		0.283		0.439	pCi/g	43		(0% - 100%)			
	Uncert:	+/-0.205		+/-0.247							
	TPU:	+/-0.205		+/-0.247							
;ismuth-214		0.564		0.365	pCi/g	43		(0% - 100%)			
	Uncert:	+/-0.0926		+/-0.0778							
	TPU:	+/-0.0926		+/-0.0778							
'esium-134	UI	0.00	U	0.0186	pCi/g	91		(0% - 100%)			
	Uncert:	+/-0.0223		+/-0.0403							
	TPU:	+/-0.0223		+/-0.0403							
'esium-137	U	0.00537	U	0.0121	pCi/g	77		(0% - 100%)			
	Uncert:	+/-0.0187		+/-0.0188							
	TPU:	+/-0.0187		+/-0.0188							
'obalt-60	U	-0.013	U	-0.00172	pCi/g	153		(0% - 100%)			
	Uncert:	+/-0.0185		+/-0.019							
	TPU:	+/-0.0185		+/-0.019							
,uropium-152	U	0.0071	U	-0.0197	pCi/g	425		(0% - 100%)			
	Uncert:	+/-0.0593		+/-0.0561							
	TPU:	+/-0.0593		+/-0.0561							
,uropium-154	U	0.0232	U	0.0364	pCi/g	45		(0% - 100%)			
	Uncert:	+/-0.0607		+/-0.0609							
	TPU:	+/-0.0607		+/-0.0609							
,uropium-155	U	-0.0124	U	0.0483	pCi/g	338		(0% - 100%)			
	Uncert:	+/-0.0549		+/-0.0526							
	TPU:	+/-0.0549		+/-0.0526							
,ead-212		0.564		0.483	pCi/g	16		(0%-20%)			
	Uncert:	+/-0.0677		+/-0.0634							
	TPU:	+/-0.0677		+/-0.0634							
,ead-214		0.503		0.447	pCi/g	12		(0%-20%)			
	Uncert:	+/-0.080		+/-0.0782							
	TPU:	+/-0.080		+/-0.0782							
'anganese-54	U	-0.00293	U	-0.00155	pCi/g	62		(0% - 100%)			
	Uncert:	+/-0.0178		+/-0.0163							
	TPU:	+/-0.0178		+/-0.0163							
'iobium-94	U	0.00658	U	0.00792	pCi/g	19		(0% - 100%)			
	Uncert:	+/-0.0164		+/-0.0162							
	TPU:	+/-0.0164		+/-0.0162							
otassium-40		8.96		9.47	pCi/g	6		(0% - 20%)			
	Uncert:	+/-0.985		+/-0.923							
	TPU:	+/-0.985		+/-0.923							
,adium-226		0.564		0.365	pCi/g	43		(0% - 100%)			
	Uncert:	+/-0.0926		+/-0.0778							
	TPU:	+/-0.0926		+/-0.0778							
ilver-108m	U	0.00437	U	-0.0064	pCi/g	1060		(0% - 100%)			
	Uncert:	+/-0.0169		+/-0.0163							

QC Summary

Vorkorder: 179837

armname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
ad Gamma Spec										
atch 606830										
	TPU:	+/-0.0169		+/-0.0163						
'hallium-208		0.159		0.185	pCi/g	16		(0% - 100%)		
	Uncert:	+/-0.0453		+/-0.0404						
	TPU:	+/-0.0453		+/-0.0404						
QC1201271732 LCS										
,ctinium-228			U	0.00856	pCi/g					02/05/07 14:54
	Uncert:			+/-0.651						
	TPU:			+/-0.651						
,mericium-241	23.4			25.8	pCi/g		111	(75%-125%)		
	Uncert:			+/-2.96						
	TPU:			+/-2.96						
;ismuth-212			U	0.394	pCi/g					
	Uncert:			+/-0.992						
	TPU:			+/-0.992						
;ismuth-214			U	0.186	pCi/g					
	Uncert:			+/-0.229						
	TPU:			+/-0.229						
'esium-134			U	0.031	pCi/g					
	Uncert:			+/-0.142						
	TPU:			+/-0.142						
'esium-137	9.48			9.92	pCi/g		105	(75%-125%)		
	Uncert:			+/-0.882						
	TPU:			+/-0.882						
'obalt-60	13.7			14.4	pCi/g		105	(75%-125%)		
	Uncert:			+/-1.13						
	TPU:			+/-1.13						
,uropium-152			U	-0.195	pCi/g					
	Uncert:			+/-0.314						
	TPU:			+/-0.314						
,uropium-154			U	0.294	pCi/g					
	Uncert:			+/-0.268						
	TPU:			+/-0.268						
,uropium-155			U	-0.158	pCi/g					
	Uncert:			+/-0.310						
	TPU:			+/-0.310						
,ead-212			U	-0.0813	pCi/g					
	Uncert:			+/-0.165						
	TPU:			+/-0.165						
,ead-214			U	-0.0832	pCi/g					
	Uncert:			+/-0.217						
	TPU:			+/-0.217						
'anganese-54			U	0.103	pCi/g					
	Uncert:			+/-0.138						
	TPU:			+/-0.138						
'iobium-94			U	0.0763	pCi/g					
	Uncert:			+/-0.118						
	TPU:			+/-0.118						
otassium-40			U	0.346	pCi/g					

QC Summary

Vorkorder: 179837

armname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
ad Gamma Spec										
atch 606830										
	Uncert:			+/-0.815						
	TPU:			+/-0.815						
adium-226			U	0.186	pCi/g			(75%-125%)		
	Uncert:			+/-0.229						
	TPU:			+/-0.229						
ilver-108m			U	0.0349	pCi/g					
	Uncert:			+/-0.135						
	TPU:			+/-0.135						
hallium-208			U	0.0328	pCi/g					
	Uncert:			+/-0.118						
	TPU:			+/-0.118						
QC1201271730 MB										
ctinium-228			U	0.0204	pCi/g					02/05/07 14:53
	Uncert:			+/-0.0498						
	TPU:			+/-0.0498						
mericium-241			U	0.00915	pCi/g					
	Uncert:			+/-0.0438						
	TPU:			+/-0.0438						
ismuth-212			U	-0.0217	pCi/g					
	Uncert:			+/-0.103						
	TPU:			+/-0.103						
ismuth-214			U	-0.0281	pCi/g					
	Uncert:			+/-0.0308						
	TPU:			+/-0.0308						
esium-134			U	0.00327	pCi/g					
	Uncert:			+/-0.0128						
	TPU:			+/-0.0128						
esium-137			U	0.000285	pCi/g					
	Uncert:			+/-0.0118						
	TPU:			+/-0.0118						
obalt-60			U	-0.00754	pCi/g					
	Uncert:			+/-0.0175						
	TPU:			+/-0.0175						
uropium-152			U	0.00973	pCi/g					
	Uncert:			+/-0.0321						
	TPU:			+/-0.0321						
uropium-154			U	0.0125	pCi/g					
	Uncert:			+/-0.0317						
	TPU:			+/-0.0317						
uropium-155			U	-0.0186	pCi/g					
	Uncert:			+/-0.0305						
	TPU:			+/-0.0305						
ead-212			U	0.035	pCi/g					
	Uncert:			+/-0.031						
	TPU:			+/-0.031						
ead-214			U	0.00104	pCi/g					
	Uncert:			+/-0.0285						
	TPU:			+/-0.0285						

QC Summary

Vorkorder: 179837

armname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
ad Gamma Spec										
atch 606830										
Manganese-54			U	-0.0023	pCi/g					
	Uncert:			+/-0.0124						
	TPU:			+/-0.0124						
Niobium-94			U	0.0152	pCi/g					
	Uncert:			+/-0.0123						
	TPU:			+/-0.0123						
otassium-40			UI	0.00	pCi/g					
	Uncert:			+/-0.193						
	TPU:			+/-0.193						
adium-226			U	-0.0281	pCi/g					
	Uncert:			+/-0.0308						
	TPU:			+/-0.0308						
ilver-108m			U	0.000938	pCi/g					
	Uncert:			+/-0.0105						
	TPU:			+/-0.0105						
hallium-208			U	-0.0101	pCi/g					
	Uncert:			+/-0.0144						
	TPU:			+/-0.0144						
ad Gas Flow										
atch 606160										
QC1201270176 179837001 DUP										
trontium-90	U	0.00356	U	0.00805	pCi/g	0		(0% - 100%)	KSD1	02/02/07 18:24
	Uncert:	+/-0.0207		+/-0.0206						
	TPU:	+/-0.0207		+/-0.0206						
QC1201270178 LCS										
trontium-90	1.50			1.51	pCi/g		101	(75%-125%)		02/02/07 18:24
	Uncert:			+/-0.112						
	TPU:			+/-0.121						
QC1201270175 MB										
trontium-90			U	-0.00234	pCi/g					02/02/07 18:24
	Uncert:			+/-0.0156						
	TPU:			+/-0.0156						
QC1201270177 179837001 MS										
trontium-90	2.74 U	0.00356		2.77	pCi/g		101	(75%-125%)		02/02/07 18:24
	Uncert:	+/-0.0207		+/-0.199						
	TPU:	+/-0.0207		+/-0.216						
ad Liquid Scintillation										
atch 606162										
QC1201270180 179836001 DUP										
echnetium-99	U	-0.157	U	-0.0277	pCi/g	0		(0% - 100%)	KXR1	02/04/07 23:28
	Uncert:	+/-0.168		+/-0.173						
	TPU:	+/-0.168		+/-0.173						
QC1201270182 LCS										
echnetium-99	13.1			13.0	pCi/g		99	(75%-125%)		02/05/07 00:03
	Uncert:			+/-0.533						
	TPU:			+/-0.622						
QC1201270179 MB										
echnetium-99			U	0.158	pCi/g					02/04/07 23:11

QC Summary

Vorkorder: 179837

armname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
ad Liquid Scintillation										
atch 606162										
	Uncert:			+/-0.165						
	TPU:			+/-0.165						
QC1201270181 179836001 MS										
'echnetium-99	12.5 U	-0.157		11.0	pCi/g		88	(75%-125%)		02/04/07 23:46
	Uncert:	+/-0.168		+/-0.498						
	TPU:	+/-0.168		+/-0.568						
atch 606163										
QC1201270184 179836001 DUP										
lickel-63	U	-9.21	U	5.27	pCi/g	0		(0% - 100%)	MXP1	02/01/07 16:26
	Uncert:	+/-11.8		+/-10.9						
	TPU:	+/-11.8		+/-10.9						
QC1201270186 LCS										
lickel-63	563			508	pCi/g		90	(75%-125%)		02/01/07 16:59
	Uncert:			+/-21.7						
	TPU:			+/-28.4						
QC1201270183 MB										
lickel-63			U	-3.09	pCi/g					02/01/07 16:10
	Uncert:			+/-10.3						
	TPU:			+/-10.3						
QC1201270185 179836001 MS										
lickel-63	567 U	-9.21		554	pCi/g		98	(75%-125%)		02/01/07 16:43
	Uncert:	+/-11.8		+/-29.4						
	TPU:	+/-11.8		+/-35.6						
atch 606165										
QC1201270188 179836001 DUP										
'on-55	U	19.0	U	18.9	pCi/g	0		(0% - 100%)	MXP1	02/03/07 11:33
	Uncert:	+/-62.6		+/-69.3						
	TPU:	+/-62.6		+/-69.3						
QC1201270190 LCS										
'on-55	1190			1150	pCi/g		96	(75%-125%)		02/03/07 11:50
	Uncert:			+/-92.4						
	TPU:			+/-113						
QC1201270187 MB										
'on-55			U	18.3	pCi/g					02/03/07 11:01
	Uncert:			+/-53.3						
	TPU:			+/-53.3						
QC1201270189 179836001 MS										
'on-55	1200 U	19.0		1160	pCi/g		96	(75%-125%)		02/03/07 11:17
	Uncert:	+/-62.6		+/-90.9						
	TPU:	+/-62.6		+/-111						
atch 606166										
QC1201270192 179836001 DUP										
'arbon-14	U	-0.0109	U	-0.0517	pCi/g	0		(0% - 100%)	AXD2	01/31/07 21:13
	Uncert:	+/-0.0671		+/-0.0701						
	TPU:	+/-0.0671		+/-0.0701						
QC1201270194 LCS										
'arbon-14	6.65			6.54	pCi/g		98	(75%-125%)		01/31/07 22:33
	Uncert:			+/-0.434						
	TPU:			+/-0.446						

QC Summary

Vorkorder: 179837

armname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
ad Liquid Scintillation											
atch 606166											
QC1201270191 MB											
'arbon-14				U	-0.0597	pCi/g					01/31/07 20:10
	Uncert:				+/-0.0694						
	TPU:				+/-0.0694						
QC1201270193 179836001 MS											
'arbon-14	7.19	U	-0.0109		6.92	pCi/g		96	(75%-125%)		01/31/07 22:15
	Uncert:		+/-0.0671		+/-0.479						
	TPU:		+/-0.0671		+/-0.491						
atch 606167											
QC1201270196 179837001 DUP											
'ritium		U	0.452	U	0.369	pCi/g	0		(0% - 100%)	AXD2	02/01/07 04:13
	Uncert:		+/-0.306		+/-0.341						
	TPU:		+/-0.306		+/-0.341						
QC1201270198 LCS											
'ritium	6.39				6.14	pCi/g		96	(75%-125%)		02/01/07 05:03
	Uncert:				+/-0.510						
	TPU:				+/-0.513						
QC1201270195 MB											
'ritium				U	0.0228	pCi/g					02/01/07 03:40
	Uncert:				+/-0.133						
	TPU:				+/-0.133						
QC1201270197 179837001 MS											
'ritium	6.48	U	0.452		5.16	pCi/g		80	(75%-125%)		02/01/07 04:46
	Uncert:		+/-0.306		+/-0.813						
	TPU:		+/-0.306		+/-0.814						

Notes:
The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

QC Summary

Vorkorder: 179837

armname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

X

Y QC Samples were not spiked with this compound

^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL

h Preparation or preservation holding time was exceeded

I/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.
* Indicates analyte is a surrogate compound.
The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptence criteria when the ample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is ess than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
'or PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Vhere the analytical method has been performed under NELAP certification, the analysis has met all of the equirements of the NELAC standard unless qualified on the QC Summary.

ATTACHMENT 4 (DQA RESULTS)

ATTACHMENT 4A
(PRELIMINARY DATA REVIEW)

RELEASE RECORD
Attachment 4

Survey Unit:	9312-0008
Area Description	115kV West Side GW Treatment Facility
Classification	1
Survey Media	Surface Soils
Type of Survey	Final Status Survey
Number of Measurements	15 Static, 3 Investigative

STATISTICS on TOTAL POPULATION

	Cs-137	Co-60	Sr-90
$DCGL_{op}$ (pCi/g):	4.75E+00	2.29E+00	9.30E-01
Minimum Value:	-3.17E-03	-2.21E-02	-5.00E-03
Maximum Value:	8.38E-02	7.91E-02	2.96E-01
Mean:	2.30E-02	-1.01E-03	2.76E-02
Median:	2.08E-02	-4.40E-03	8.30E-03
Standard Deviation:	2.09E-02	2.09E-02	6.67E-02

STATISTICS on NON-PARAMETRIC POPULATION

	Cs-137	Co-60	Sr-90
$DCGL_{op}$ (pCi/g):	4.75E+00	2.29E+00	9.30E-01
Minimum Value:	-3.17E-03	-2.21E-02	-5.00E-03
Maximum Value:	8.38E-02	6.56E-03	2.96E-01
Mean:	1.91E-02	-4.45E-03	2.95E-02
Median:	1.70E-02	-3.88E-03	5.33E-03
Standard Deviation:	2.13E-02	8.32E-03	7.50E-02

Sample ID	GPS Coordinates		Cs-137				Co-60				Sr-90				Fraction of DCGL
	North	East	Result (pCi/g)	2σ	MDA (pCi/g)	Identified	Result (pCi/g)	2σ	MDA (pCi/g)	Identified	Result (pCi/g)	2σ	MDA (pCi/g)	Identified	
9312-0008-001F	236475.90	668844.00	1.88E-02	0.024	2.37E-02		-7.00E-03	0.022	3.49E-02		2.35E-02	0.024	3.97E-02		0.026
9312-0008-002F	236475.90	668877.34	1.70E-02	0.017	3.05E-02	+	-3.64E-03	0.016	2.58E-02		2.96E-01	0.050	4.05E-02	+	0.320
9312-0008-003F	236447.02	668827.33	1.27E-02	0.030	5.30E-02		4.05E-03	0.036	5.09E-02		3.08E-02	0.025	3.96E-02	+	0.038
9312-0008-004F	236447.02	668860.67	0.00E+00	0.032	3.20E-02		1.04E-03	0.019	3.14E-02		-4.36E-03	0.017	3.40E-02		-0.004
9312-0008-005F	236447.02	668894.01	2.10E-03	0.015	2.59E-02		-6.92E-03	0.017	2.28E-02		5.33E-03	0.024	4.31E-02		0.003
9312-0008-006F	236447.02	668927.35	5.37E-03	0.019	3.28E-02		-1.30E-02	0.019	2.81E-02		3.56E-03	0.021	3.91E-02		-0.001
9312-0008-007F	236418.15	668810.66	2.14E-02	0.020	3.67E-02	+	-1.30E-02	0.018	2.73E-02		3.95E-03	0.023	4.27E-02		0.003
9312-0008-008F	236418.15	668844.00	2.10E-02	0.027	2.67E-02		1.09E-03	0.021	3.61E-02		1.44E-02	0.021	3.63E-02		0.020
9312-0008-009F	236418.15	668877.34	8.38E-02	0.015	2.67E-02	+	5.17E-03	0.014	2.40E-02		-1.70E-03	0.022	4.25E-02		0.018
9312-0008-010F	236418.15	668910.68	3.41E-02	0.024	3.31E-02	+	-3.88E-03	0.021	3.38E-02		-5.00E-03	0.019	3.76E-02		0.000

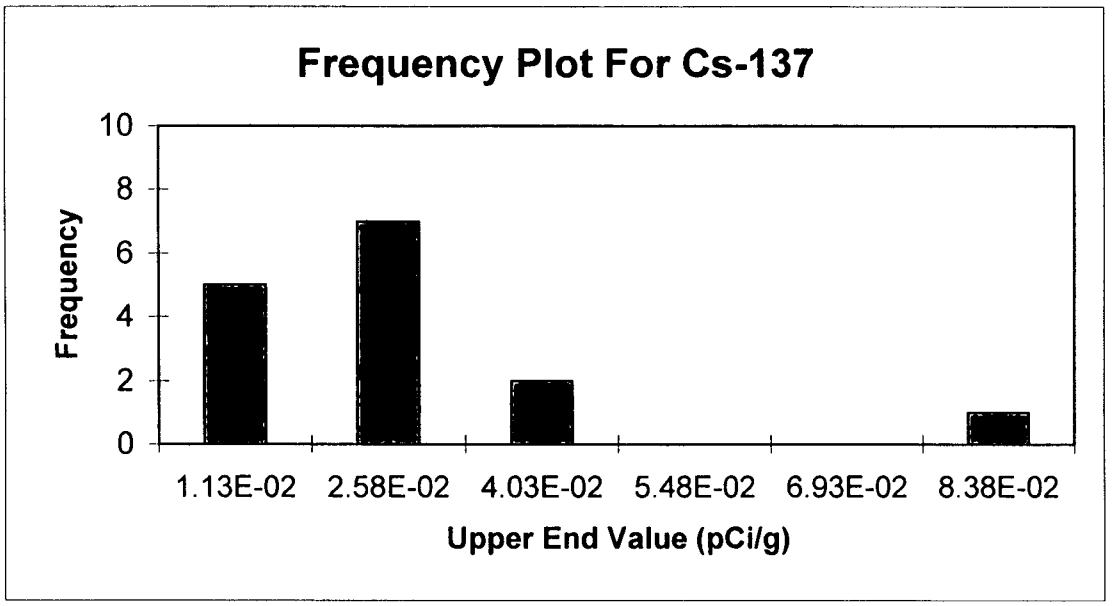
RELEASE RECORD
Attachment 4

Sample ID	GPS Coordinates		Cs-137				Co-60				Sr-90				Fraction of DCGL
	North	East	Result (pCi/g)	2σ	MDA (pCi/g)	Identified	Result (pCi/g)	2σ	MDA (pCi/g)	Identified	Result (pCi/g)	2σ	MDA (pCi/g)	Identified	
9312-0008-011F	236389.28	668827.33	3.45E-02	0.031	3.43E-02	+	-4.40E-03	0.022	2.21E-02		4.26E-03	0.018	3.38E-02		0.010
9312-0008-012F	236389.28	668860.67	-3.17E-03	0.021	3.57E-02		6.56E-03	0.019	3.26E-02		1.38E-02	0.023	3.98E-02		0.017
9312-0008-013F	236389.28	668894.01	2.20E-02	0.027	5.04E-02		-2.21E-02	0.028	4.10E-02		9.52E-03	0.017	3.09E-02		0.005
9312-0008-014F	236360.40	668844.00	1.40E-02	0.022	3.97E-02		-1.40E-02	0.031	3.99E-02		3.92E-03	0.023	4.25E-02		0.001
9312-0008-015F	236360.40	668877.34	3.34E-03	0.026	4.45E-02		3.34E-03	0.026	4.45E-02		4.41E-02	0.026	3.95E-02	+	0.050
9312-0008-003FS	236447.02	668827.33	2.08E-02	0.018	3.06E-02	+	-1.19E-02	0.019	2.87E-02		8.30E-03	0.023	4.22E-02		0.008
9312-0008-016-I	236358.70	668868.21	4.91E-02	0.034	3.61E-02	+	7.91E-02	0.045	3.55E-02	+	4.99E-02	0.025	3.66E-02	+	0.099
9312-0008-017-I	236354.14	668865.13	4.21E-02	0.031	4.10E-02	+	-8.17E-03	0.024	3.95E-02		1.89E-02	0.024	4.05E-02		0.026
9312-0008-018-I	236430.44	668940.73	3.86E-02	0.046	6.19E-02		-1.15E-02	0.035	5.30E-02		4.54E-03	0.021	3.97E-02		0.008

ATTACHMENT 4B (GRAPHICAL REPRESENTATION OF DATA)

FREQUENCY PLOT FOR CESIUM-137

Survey Unit: 9312-0008
Survey Unit Name: 115kV West Side GW Treatment Facility
Mean: 1.91E-02 pCi/g



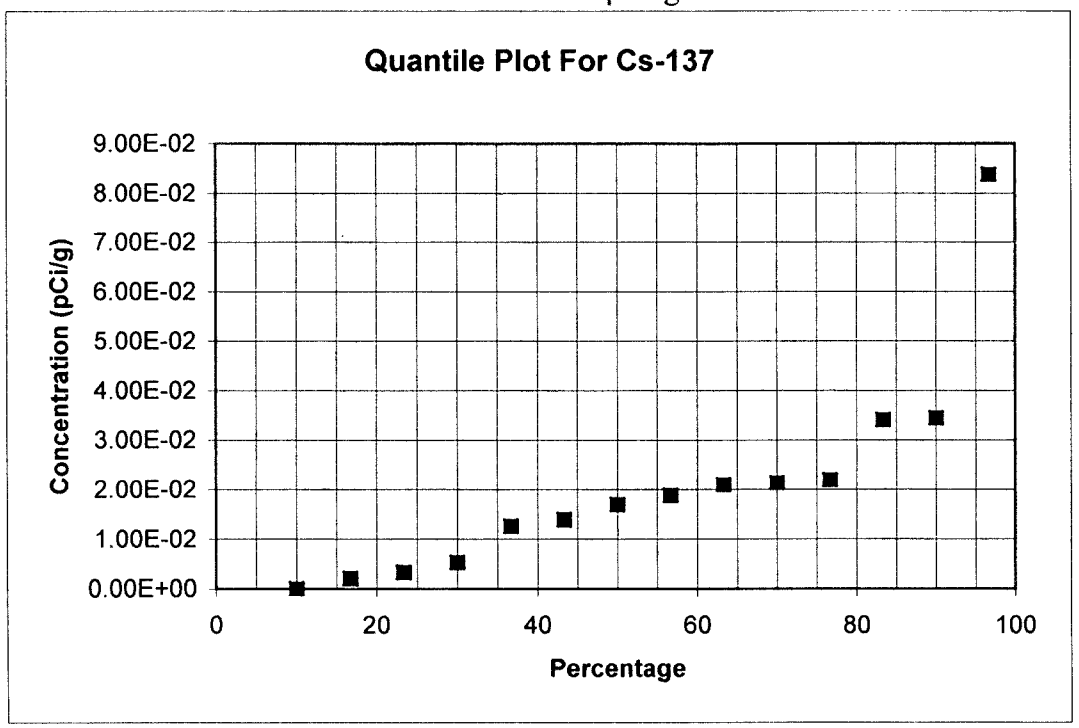
Upper End Value	Observation Frequency	Observation Frequency
1.13E-02	5	33%
2.58E-02	7	47%
4.03E-02	2	13%
5.48E-02	0	0%
6.93E-02	0	0%
8.38E-02	1	7%
Total:	15	100%

D. WOJTKOWIAK, 2/27/07
Submitted by/Date

P. MASSEGILL / 2-27-07
Reviewed by/Date

QUANTILE PLOT FOR CESIUM-137

Survey Unit: 9312-0008
Survey Unit Name: 115kV West Side GW Treatment Facility
Mean: 1.91E-02 pCi/g



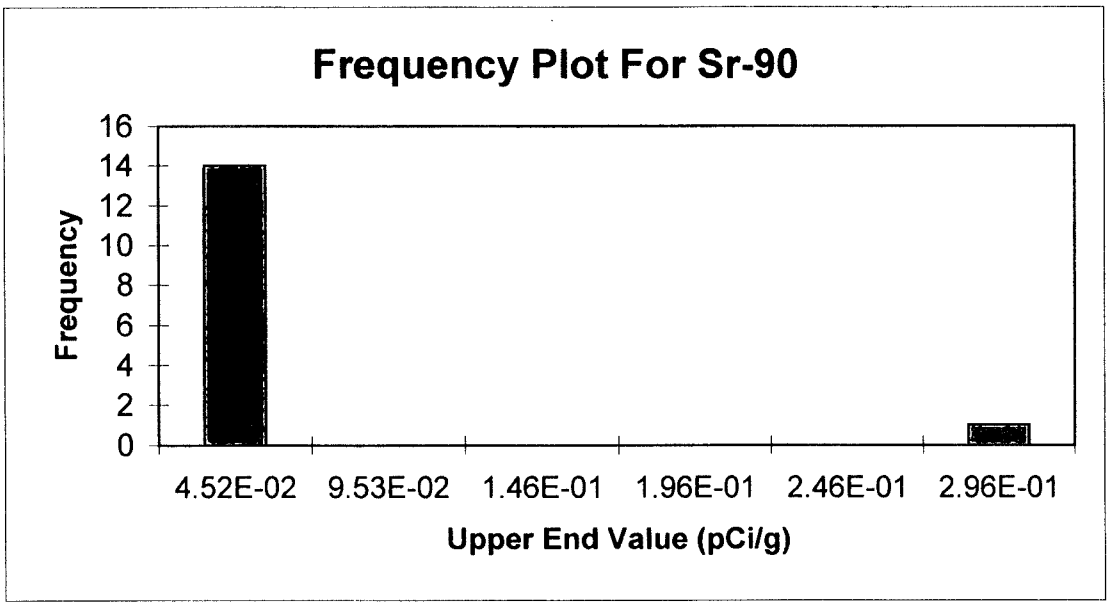
Cs-137	Rank	Percentage
-3.17E-03	1	3.3%
0.00E+00	2	10.0%
2.10E-03	3	16.7%
3.34E-03	4	23.3%
5.37E-03	5	30.0%
1.27E-02	6	36.7%
1.40E-02	7	43.3%
1.70E-02	8	50.0%
1.88E-02	9	56.7%
2.10E-02	10	63.3%
2.14E-02	11	70.0%
2.20E-02	12	76.7%
3.41E-02	13	83.3%
3.45E-02	14	90.0%
8.38E-02	15	96.7%

D. WOJTKOWIAK 2/27/07
Submitted by/Date

R. MASSEY 2-27-07
Reviewed by/Date

FREQUENCY PLOT FOR STRONTIUM-90

Survey Unit: 9312-0008
Survey Unit Name: 115kV West Side GW Treatment Facility
Mean: 2.95E-02 pCi/g



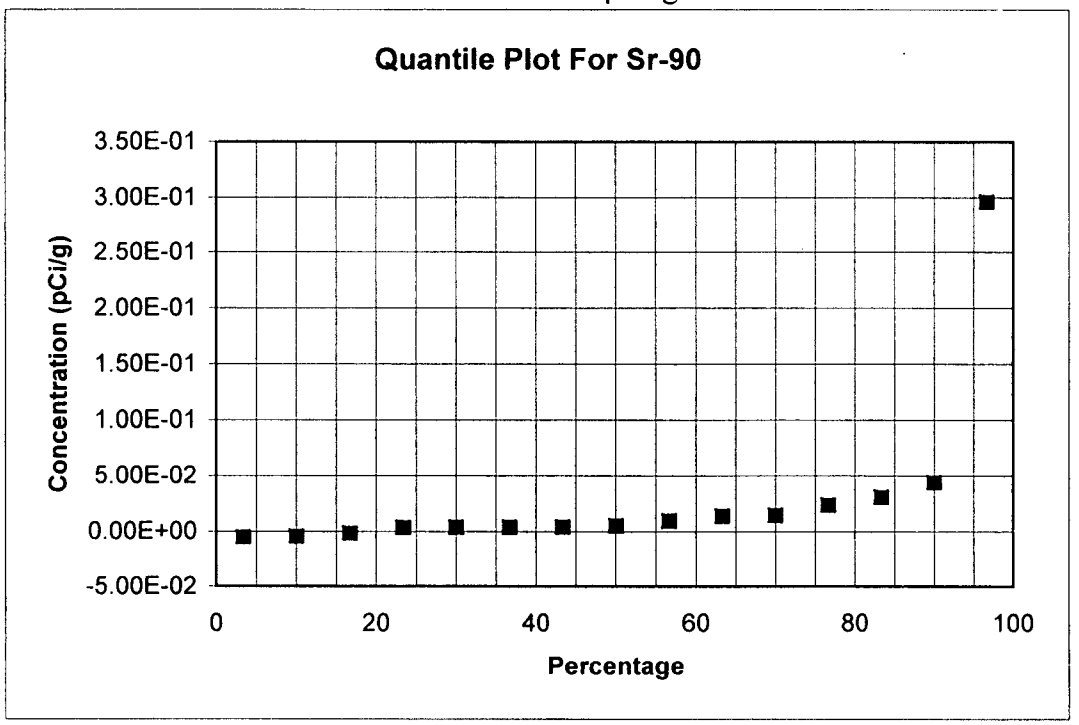
Upper End Value	Observation Frequency	Observation Frequency
4.52E-02	14	93%
9.53E-02	0	0%
1.46E-01	0	0%
1.96E-01	0	0%
2.46E-01	0	0%
2.96E-01	1	7%
Total:	15	100%

D. WASTKOWIAK 2/27/07
Submitted by/Date

R. MASSEY 2-27-07
Reviewed by/Date

QUANTILE PLOT FOR STRONTIUM-90

Survey Unit: 9312-0008
Survey Unit Name: 115kV West Side GW Treatment Facility
Mean: 2.95E-02 pCi/g



Sr-90	Rank	Percentage
-5.00E-03	1	3.3%
-4.36E-03	2	10.0%
-1.70E-03	3	16.7%
3.56E-03	4	23.3%
3.92E-03	5	30.0%
3.95E-03	6	36.7%
4.26E-03	7	43.3%
5.33E-03	8	50.0%
9.52E-03	9	56.7%
1.38E-02	10	63.3%
1.44E-02	11	70.0%
2.35E-02	12	76.7%
3.08E-02	13	83.3%
4.41E-02	14	90.0%
2.96E-01	15	96.7%

D. WOJTKOWIAK 2/27/07
Submitted by/Date

R. MASSERSITH / 2-27-07
Reviewed by/Date

ATTACHMENT 4C (SIGN TEST)

Sign Test Calculation Sheet for Multiple Radionuclides

Survey Area Number:	9312		Survey Unit Number:	0008	WPIR #:	N/A
Survey Area Name:	115kV West Side GW Treatment Facility		Classification:	1	TYPE I (α error): 0.05	N: 16
Radionuclides:	1st Radionuclide Cs-137	2nd Radionuclide Co-60	3rd Radionuclide Sr-90	4th Radionuclide		
DCGL:	4.75E+00	2.29E+00	9.30E-01			

Results 1st Radionuclide (ρCi/g)	Results 2nd Radionuclide (ρCi/g)	Results 3rd Radionuclide (ρCi/g)	Results 4th Radionuclide (ρCi/g)	Weighted Sum (W_s)	$1-W_s$	Sign
1.88E-02	-7.00E-03	2.35E-02		0.03	0.97	+1
1.70E-02	-3.64E-03	2.96E-01		0.32	0.68	+1
1.27E-02	4.05E-03	3.08E-02		0.04	0.96	+1
0.00E+00	1.04E-03	-4.36E-03		0.00	1.00	+1
2.10E-03	-6.92E-03	5.33E-03		0.00	1.00	+1
5.37E-03	-1.30E-02	3.56E-03		0.00	1.00	+1
2.14E-02	-1.30E-02	3.95E-03		0.00	1.00	+1
2.10E-02	1.09E-03	1.44E-02		0.02	0.98	+1
8.38E-02	5.17E-03	-1.70E-03		0.02	0.98	+1
3.41E-02	-3.88E-03	-5.00E-03		0.00	1.00	+1
3.45E-02	-4.40E-03	4.26E-03		0.01	0.99	+1
-3.17E-03	6.56E-03	1.38E-02		0.02	0.98	+1
2.20E-02	-2.21E-02	9.52E-03		0.01	0.99	+1
1.40E-02	-1.40E-02	3.92E-03		0.00	1.00	+1
3.34E-03	3.34E-03	4.41E-02		0.05	0.95	+1
					Number of positive differences (S+)	15

Critical Value 11 Survey Unit Meets the Acceptance Criteria

Performed by: David Wojtkowiak Date: 2/23/2007

Independent Review by: R. Massengill Date: 2/27/2007

ATTACHMENT 4D (QC SPLIT RESULTS)

Split Sample Assessment Form

Survey Area #: 9312	Survey Unit # 0008	Survey Unit Name: 115kV West Side GW Treatment Facility

Sample Plan or WPIR#: N/A	SML#: 9312-0008-003

Sample Description: Comparison of split samples collected from sample measurement location #3 and analyzed using gamma spectroscopy by off-site Vendor Laboratory. The standard sample was 9312-0008-003F, the comparison sample was 9312-0008-003FS.

STANDARD					COMPARISON			
Radionuclide	Activity Value	Standard Error	Resolution	Agreement Range	Activity Value	Standard Error	Comparison Ratio	Acceptable (Y/N)
K-40	9.77E+00	0.525	19	0.75 - 1.33	9.67E+00	0.453	0.99	Y

Comments/Corrective Actions: Cs-137 was not detected in sufficient quantities in the field split results at location 9312-0008-003F to evaluate in accordance with procedure. Evaluation using the reported results for K-40 resulted in acceptable agreement between the field-split results at these locations.. Since K-40 was found to be present at an acceptable level of agreement, no further action is warranted.

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: D. Wojtkowiak	Date: 2/15/2007	Reveiwed by: R. Massey	Date: 2-27-07

ATTACHMENT 4E
(COMPASS POWER CURVE)

DQA Surface Soil Report

Assessment Summary

Site:	9312		
Planner(s):	Wojo		
Survey Unit Name:	9312-0008		
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