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January 4, 2000

Steve W. Shaffer
Health Physicist
Decommissioning and Laboratory Branch
United States Nuclear Regulatory Commission
Region 1, Mail Control No. 124941
475 Allendale Road
King of Prussia, PA 19406

Re: Prometcor, Inc.: Final Status Survey Report for Buildings 1 through 5 and Area E Soils (NRC License Number STB-1451)

Dear Mr. Shaffer:

Enclosed please find two copies for your review and approval of the Final Status Survey Report for the soil areas formerly occupied by Buildings 1 through 5 and Area E.

If you have any questions or comments, please do not hesitate to contact me at (440) 684-8300.

Sincerely,

Jack Buddenbaum, CHP
Supervising Health Scientist

Enclosure

cc: Daryl Holcomb (Ronson Corporation)
Dr. Edward David
Talaat Ijaz (McLaren/Hart, Inc.)

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Report of the Final Status Survey for Buildings 1-5 and Area E Soils at the Prometcor Site, Newark, NJ

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January, 2000

SCIENCE : STRATEGY : TECHNOLOGY : SOLUTIONS

McLaren/Hart, Inc.

REPORT OF THE FINAL STATUS SURVEY FOR BUILDINGS 1–5 AND AREA E SOILS AT THE PROMETCOR SITE NEWARK, NEW JERSEY

January, 2000

1.0 INTRODUCTION

On behalf of Prometcor, Inc. formerly Ronson Metals, McLaren/Hart, Inc. (McLaren/Hart) has prepared this Final Status Survey Report at the request of Ronson Corporation to summarize the remediation and final radiological survey activities performed at the facility located at 55 Manufacturer's Place in Newark, New Jersey. This report focuses on that portion of the site formerly occupied by Buildings 1 through 5 and Area E.

The soil remediation and the Final Status Survey were performed in a manner consistent with the sampling and analytical guidelines outlined in the "Site Decommissioning Plan for Soil Cover and Underlying Soils" prepared by McLaren/Hart, Inc. This plan was submitted to the USNRC in August of 1998 and approved by the USNRC in October of 1998. The plan is also consistent will all applicable federal, state, and local requirements and/or regulations.

Soil remediation and the Final Status Survey were performed in accordance with the procedures and guidelines outlined in the NRC's Manual for Conducting Radiological Surveys in Support of License Termination (NUREG/CR-5849).

1.1 PURPOSE AND OBJECTIVE

This report presents the results of the contaminated soil removal and Final Status Survey performed on the underlying soils formerly occupied by Buildings 1-5 and Area E at the Prometcor facility. All above ground structures including walls, roof, and concrete slabs/floors have been removed. The results of the characterization and final status surveys of the walls and roof have already been submitted and approved by the NRC. The Final Status Survey report for the concrete slabs was submitted to the USNRC on December 7, 1999 and is currently under the agency's review. As described in the "Site Decommissioning Plan for Soil Cover and Underlying Soils", the objectives of the final site decommissioning activities is to remediate those soils and soil-cover materials that contain thorium concentrations in excess of 10 pCi/g . Final soil remediation is also conducted to ensure that external exposure rates meet the NRC limit of 10 μR/hr above background at one meter from soil surface. Radium-226 present at the site was also addressed during the final site decommissioning. A Final Status Survey Report for radium was also completed and is under review by the New Jersey Department of Environmental Protection – Bureau of Environmental Radiation (NJDEP-BER).

Once the soils that exceeded the release criteria were removed, a Final Status Survey of the site was performed. This survey was performed in accordance with the procedures and guidelines outlined in the NRC's Manual for Conducting Radiological Surveys in Support of License Termination (NUREG/CR-5849). The survey design, procedures, and results are presented in this report.

2.0 SITE BACKGROUND

A description of the site, the site history, the radioactive materials of concern, site characterization, and relevant guidelines are provided within the following section.

2.1 SITE HISTORY

The Prometcor facility (formerly Ronson Metals), located at 55 Manufacturer's Place, Newark, NJ, is comprised of 7 buildings and a parking lot. Buildings 1 through 5 shared a common roof and external walls but were separated by internal walls and connected by open hallways. Buildings 6 and 7 are separate facilities. An asphalt-paved parking lot approximately 26,000 ft^2 is located in the northeast corner of the property just north of the Building 6 area. Building 7 was released earlier by the USNRC for unrestricted use.

The general property use in the immediate vicinity of the Prometcor facility is a mix of industrial and residential to the north, residential to the west and industrial to the south and east.

The Prometcor facility was licensed by the Nuclear Regulatory Commission to possess and use thorium powder for the manufacture of getters for electron tubes. The thorium processing, which included crushing thorium pellets and spraying the thorium-binder mixture onto nickel strips, was limited to building 5 (Site Characterization Report, February 1997). Processes that occurred earlier in the facility's history included refining of rare earth metals for use as lighter flints. Prometcor procured these rare earth metals from vendors of rare earth chlorides from which the natural thorium had been extracted. These processes were not regulated.

2.2 RADIOACTIVE MATERIALS OF INTEREST

The radionuclides of interest at the site include thorium-228, thorium-230, thorium-232, radium-226, radium-228, and uranium-238. Natural thorium exists as a mixture of radioactive isotopes including thorium-232 (Th-232). Th-232 decays with a half-life of 1.4×10^{10} years through a series of ten radioactive daughters to lead-208 which is stable and non-radioactive. These daughters are in secular equilibrium with the parent (Th-232) in thorium bearing ore; the condition of secular equilibrium means that the activity of the daughters will be determined by their half-lives. Once the thorium metal had been chemically extracted, the daughters may have remained within the material that was sent to the Prometcor facility. Thorium-228 is a daughter product of Th-232, and would also be chemically removed from the ore. The remaining nine daughters will continue to decay to stable lead 208. The first progeny of Th-232 is radium-228 (5.8 years half-life) which will decay to Th-228 (1.9 year's half-life), thus additional Th-228 will be present at the site.

Previous site surveys note the presence of above background concentrations of radium-226 and thorium 228 in soil at the site. Radium-226 (Ra-226) is not part of the Th-232decay series; Ra-226 occurs from the decay of uranium-238, however there is no history of the use of uranium-238 at the site. Radium-226 is not known to have been associated with historical operations at the site. The site history indicates that the site was used for several purposes from 1908 to the present. Early maps

indicate that a scrap metal yard and freight station were located on what is now the parking lot. Building 1-4 was used for "rare metal refining". Building 5 was primarily used for extrusion, metallurgical testing, and storage.

2.3 RELEASE CRITERIA

As indicated above from the site history and preliminary investigations, the main source of radioactive contamination is thorium-228 and radium-226. Historical and characterization data have indicated that natural thorium had been extracted from rare earth chlorides resulting in a non-equilibrium condition between thorium-232 and it's daughter isotopes.

Soil remediation and radiological surveys of remediated areas provide the required data to support the assertion that the residual contamination has been removed to below appropriate cleanup levels. In general, the approach used provides removal of radioactive materials to "as low as reasonably achievable" (ALARA) criteria. Therefore, the most appropriate cleanup protocol for this project has been to remove all radioactive materials to below release levels. Since all surfaces have been removed from the site during previous remediation activities, the only applicable guidelines are for concentrations in soils and exposure rates.

2.3.1 Soil Concentration Guidelines

Release criteria will be considered to have been met for each 10 m x 10 m grid section if average concentrations of thorium in four samples collected at locations equidistant from the center and each corner of the grid are less than 10 pCi/g . The limit for thorium soil activity at any location is three times the average guideline value, or 30 pCi/g. If the residual activity exceeds this level, this area will be remediated and resurveyed. Release levels for Ra-226 will be addressed with the NJDEP.

Thorium	10 pCi/g (Th-232 and Th-228) – Surface (Option 1 – NRC)
Uranium	35 pCi/g

2.3.2 Exposure Rate Guideline

The exposure rate guideline (gamma/x-ray) is less than 10 microroentgens per hour (μR/hr) above background measured 1-m from soil surface.

3.0 REMEDIATION ACTIVITIES

All remediation activities conducted at the Prometcor site were performed in accordance to the procedures described in the "Site Decommissioning Plan for Soil Cover and Underlying Soils" submitted August, 1998.

Remediation of soils at the Prometcor site consisted mainly of identifying areas of elevated exposure rates and soil concentrations and quantifying lateral and vertical extent of the contamination. After the concrete slab and all concrete footers were removed, an initial scan of the surface soils was

conducted. Levels of exposure above background periodic soil samples were used to initially identify areas requiring further characterization. The results of these radiological surveys are presented in Attachment 1.

Elevated soils that were excavated, scans of excavated areas and areas of background microR/hr were then conducted to ensure that contaminated soils were removed. Excavation was achieved using standard earth moving equipment such as backhoes and excavators. During the excavation, the impacted areas were scanned to ensure that all impacted soils were being removed. Areas of higher exposure rates were addressed first so as to reduce the "shine" which affected areas of lower exposure rates. Once all soils had been removed from a given area, the area was again scanned for elevated exposure rates and confirmatory soil samples were sent to the laboratory for analysis.

Contaminated soil exceeding the USNRC release criteria was stored in roll-off containers until a sufficient volume had been accumulated for the material to be moved to the on-site soil storage area. Handling of contaminated soil was performed and monitored in accordance with procedures outlined in the Site Decommissioning Plan. All equipment used for the excavation was monitored for radioactive contaminants, and were decontaminated as necessary. All equipment was decontaminated and surveyed prior to release from the site.

4.0 FINAL STATUS SURVEY PLAN AND SAMPLING ACTIVITIES

The Final Status Survey presented in this report has been designed, and survey activities have been performed, in accordance with the applicable guidance provided in Draft NUREG/CR-5849, Manual for Conducting Radiological Surveys in Support of License Termination *(USNRC, June 1992)*.

The following activities are required in performing final release surveys:

(1) Perform Scanning
(2) Develop Grid System (Required For Affected Areas)
(3) Decontaminate (If appropriate)
(4) Exposure Rate Measurements
(5) Soil Sampling Results

The final survey activities were performed in accordance with the following Project Field Procedures:

(1) FP-03 Preparing a Reference Grid System
(2) FP-05 Baseline Sampling and Background Determinations
(3) FP-15 Air Sampling
(4) FP-14 Low-Level Radiation (Exposure Rate) Surveys
(5) FP-25 Beta-Gamma Counting Procedure

4.1 CHARACTERIZATION SCANNING: EXPOSURE RATE MEASUREMENTS

An initial 100% scan of the surface soils was performed in order to identify impacted soils and hence direct the remediation efforts for the Prometcor site. Exposure measurements were performed for Buildings 1-5 and Area E and these scans were used to identify the impacted areas in each building area. Maps of these readings are included as Attachment 1. The exposure rate guideline for the Final Status Survey is 10 μR/hr above background. Offsite background measurements were typically 5-6 μR/hr, therefore a measurement above 15 μR/hr would indicate an impacted area. For this characterization a conservative threshold value of 10 μR/hr was used. This conservative value provides a significant margin of error in identifying impacted areas. Building 5 and Area E are not shown on these maps since they did not exhibit exposure rates above 10 μR/hr. The ranges of exposure rates measured throughout are shown in Table 1.

TABLE 1
Pre-Remediation Characterization Surveys Exposure Rates Building (μR/hr)

Building	Range of μR/hr Readings
1	<10 – 250
2	<10 – 600
3	<10 – 60
2A/3A	<10 – 80
4	<10 – 40
5	<10
Area E	<10

NOTE: The exposure rate guideline for this Final Status Survey is 10 μR/hr above background.

4.2 DEVELOPING GRID SYSTEM

Exposure rate measurements as well as previous underlying soil samples indicate that Building 5 is an unaffected area. However, due to the small size of the area, and the fact that Buildings 1-4 were classified as affected, the entire site (including Area E) was gridded per designs specified in NUREG-CR/5849. The entire area formerly occupied by Buildings 1 through 5 and area E was considered as one survey unit for the Final Status Survey. A 10m x 10m grid was used for the entire site and a standard sampling pattern for soil sample locations was superimposed. Grids were labeled with numbers (1,2,3....9) along the north-south axis of each building, and with letters along the east-west axis (A,B,C,D,E). The soil sample locations are equidistant between the center and each of the four grid corners. The grid system for this portion of the Prometcor site is presented in Figure 1.

There are a total of 30 grids that encompass Buildings 1-5 and Area E. Due to the irregular shape of the site, not all grids are 10m x 10m. From this grid system, a total of 89 sampling/scanning locations were marked. The total number of soil samples collected was reduced to 85 due to the basement in Building 5. The grid locations within each grid are numbered 1 through 4. Sample identifications are based on *Area-Grid-Sample_Number*. Therefore, the sample taken from the north-

east corner of Grid 2A will be designated **B15-2A-3**. B15 is used to designate Buildings 1-5. The location for each sample is presented in Figure 1.

During the demolition phase of the project, the exposed basement was backfilled with released concrete debris. A Final Status Survey was performed on the basement walls and floor, and has been submitted and approved by the USNRC. The basement area encompasses all of grid 5A, and since there is no soil in this area, no samples were taken from grid 5A. Exposure rate measurements taken in this area are included in the data tables that accompany this report.

Note that sample location B15-C2-1 was moved 1 meter northwest to avoid uncontaminated stone backfill that was used to support an existing wall. Exposure rate measurements demonstrates that this area exhibits background levels. Grids 1E and 2E are extremely small, and hence only one sample was collected in grid 2E.

Accounting for these specific points, there are a total of 28 grids that were sampled; and a total of 85 soil samples were taken and analyzed for Ac-228/Th-228 and Ra-226.

4.3 SOIL SAMPLING

As shown in Figure 1, there are a total of 85 sampling locations throughout Buildings 1-5 and Area E. Four surface (0 to 15 cm) soil samples (approximately 500 grams each) were systematically collected from each grid sector (10 m x 10 m) at locations equidistant from the center and each of the four corners. These samples were analyzed for Actinium-228 (Ac-228) and Ra-226 via gamma spectroscopy. Actinium-228 is the gamma emitting radionuclide that is used to determine the thorium-228 (Th-228) concentrations (pCi/g). At each surface sample location, contact beta-gamma levels were measured prior to sampling to determine whether surface contamination is present.

Gamma spectrometry analysis for soils and debris were performed by Severn Trent Laboratories (STL) of Whippany New Jersey in accordance with documented and approved procedures and the laboratories' approved QA plans. Field and laboratory chain-of-custody procedures were observed for all samples.

5.0 FINAL SURVEY RESULTS COMPARED TO THE RELEASE CRITERIA

The release criteria is considered to have been met for each 10 m x 10 m grid section if average concentrations of thorium in four samples collected at locations equidistant from the center and each corner of the grid are less than 10 pCi/g . The limit for thorium soil activity at any location is three times the average guideline value, or 30 pCi/g. If the residual activity exceeds this level, this area will be remediated and resurveyed. In addition, as noted in the sampling plan submitted to the NRC on October 27, 1999 (included as Attachment 2) soil samples will be analyzed for Ra-226 and Th-228. If Th-228 results are greater than 8 pCi/g, then the soil samples will be analyzed for Th-232 and Th-230. If soil results exceed release guideline/criteria, additional soil samples at depth will be collected and analyzed for purpose of bounding extent of the exceedance. Release levels for Ra-226 will be addressed with the NJDEP. The exposure rate guideline (gamma/X-ray) is less than 10 microroentgens per hour (μR/hr) above background measured 1meter from soil surface.

Soil concentrations and exposure rates measured for this Final Status Survey are presented for each of the 89 sampling locations. Included with these data are the averaged values for each of the 28 grids. Soil concentrations and exposure rates for each of the 89 sampling locations are presented in Table 2. Soil concentrations and exposures were also averaged across the sampling points within each grid; the results from this approach are presented in Table 3.

5.1 Results By Survey Unit Sampling Locations

The survey unit for this report includes Buildings 1 through 5 and Area E and is made up of the aforementioned 89 sampling locations. Table 2 presents the Th-228 soil concentration and exposure rate measured for each sampling location.

5.1.1 Soil Concentrations

Soil results presented in Table 2 are in units of pCi/g and include the reported concentration, the uncertainty associated with the reported concentration and the Minimal Detectable Activity (MDA) reported by the laboratory for each sample. The complete radiological report submitted by the laboratory is included as Attachment 3. Soil concentrations of Th-228 range from 0.07 pCi/g to a maximum value of 2.64 pCi/g (including background). The average Th-228 soil concentration (including background) was 1.23 pCi/g, with a standard deviation of 0.52 pCi/g.

The average Th-228 soil concentration of 1.23 pCi/g is below the soil concentration guideline of 10 pCi/g as described in section 2.3.1. Since all Th-228 concentrations are below 8 pCi/g, the soils were not further analyzed for Th-230 and Th-232 as noted in the submitted sampling plan (Attachment 2).

The 95% confidence level of the mean soil concentration was also computed and compared to the guideline concentration. The 95% confidence level of the mean was calculated using the formula shown in NUREG/CR-5849:

$$\mu_{0.95} = \bar{x} + t_{0.95} \frac{s_x}{\sqrt{n}}$$

where:

$\mu_{0.95}$ =the mean soil concentration at a 95% confidence level
$\bar{x}$ = calculated mean
s_x = standard deviation of the calculated mean
n = number of individual sampling locations
$t_{0.95}$ = 95% confidence level value of t obtained from Appendix B, Table B-1 of NUREG/CR-5849

The calculated 95% confidence level of the mean soil concentration was 1.32 pCi/g. This calculated soil concentration level for Th-228 is below the soil guideline value of 10 pCi/g and hence meets the guideline at a 95% confidence level for unrestricted release.

5.1.2 Exposure Rates

Exposure rates measured at 1 meter above each sampling location (i.e., ground level) are presented in Table 2. The survey record log for these measurements is provided as Attachment 4. The measured background exposure rate (taken at an unaffected off-site location) was 6 μR/hr. This value is subtracted from each measurement so as to provide an exposure rate above background. The maximum exposure rate ***above background*** measured within the survey unit was 8 μR/hr. The average exposure rate above background was 1 μR/hr (average measured exposure rate of 7 μR/hr) with a standard deviation of 2.3 μR/hr. Using the same approach as was used for the soil concentrations, the 95% confidence level of the mean was calculated to be 1.1 μR/hr above background (7.1 μR/hr measured).

The exposure rate guideline (section 2.3.2) is 10 μR/hr ***above background*** measured at 1 meter from the soil surface. All measurements, as well as the survey unit average, and the 95% confidence level are below the exposure rate guideline.

5.2 Survey Results By Sampling Grid

As described in section 4.2, a total of 30 grids were used to encompass the survey unit (Building 1 through 5 and Area E). Due to the irregular shape of the site not all grids are 10m x 10m and hence the number of samples taken from these smaller grids has been reduced accordingly. Table 3 presents the Th-228 soil concentrations and exposure rates measured for each of the sampling grids. Note that Grid 5A includes the basement that was filled as part of the demolition phase of the remediation. No soil samples were taken from this grid, however, exposure rate measurements were taken. The walls and floor of the basement were released prior to being filled with uncontaminated concrete debris.

5.2.1 Soil Concentrations by Grid

Soil concentrations from each of the sampling points within each grid were averaged to obtain a grid average Th-228 concentration in pCi/g. The grid average concentrations are presented in Table 3. Grid average concentrations range from 0.66 pCi/g (Grid 6B) to 1.87 pCi/g (Grid 4A). All grid averaged soil concentrations for Th-228 are below the soil guideline value of 10 pCi/g. Since all Thorium-228 concentrations are below 8 pCi/g, the soils were not further analyzed for Th-230 and Th-232 as noted in the submitted sampling (Attachment 2).

5.2.2 Exposure Rates by Grid

Exposure rates measured at each of the sampling points within each grid were averaged to obtain a grid average exposure rate in μR/hr. Average exposure rates were determined for both measured values and for exposure rates above background (Grid Ave – Bkgd). Exposure rates range from background to 6 μR/hr above background. All grid averaged exposure rates are below the exposure rate guideline of 10 μR/hr ***above background*** measured at 1 meter from the soil surface.

6.0 CONCLUSIONS

The objectives of the final site decommissioning plan were to remediate those soil and cover material that contain thorium concentrations in excess of 10 pCi/g and to ensure that external exposure rates meet the NRC limit of 10 μR/hr above background at one meter from soil surface. Based on the results presented in this report and the data analysis performed on the reported values, the release criteria for both thorium and external exposure rates have been met for the survey unit consisting of Buildings 1 through 5 and Area E.

The Final Status Survey was performed in accordance with the procedures and guidelines outlined in the NRC's Manual for Conducting Radiological Surveys in Support of License Termination (NUREG/CR-5849).

7.0 REFERENCES

McLaren/Hart 1998. Final Status Survey and Surficial Decontamination Plan for Buildings 1 through 6, Projector Site, Newark, New Jersey. June 1998.

NRC, 1992. Draft May 1992. NUREG/CR-5849 Manual for Conducting Radiological Surveys in Support of License Termination. June 1992.

NRC 1981. USNRC Branch Technical Position for the Disposal or Onsite Storage of Thorium or Uranium Wastes From Past Operations (SECY-81-576), USNRC, October 1981.

NRC 1987. Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for By-Product, Source or Special Nuclear Material.

NRC 1993. Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material, U.S. Nuclear Regulatory Commission, 1993.

TABLE 2

SOIL CONCENTRATIONS AND EXPOSURE RATES FOR EACH SAMPLING LOCATION
FINAL STATUS SURVEY RESULTS - PROMETCOR SITE

	THORIUM-228 (pCi/g)			EXPOSURE RATES (μR/hr)	
SAMPLE	RESULT	UNCERTAINTY	MDA	MEASURED[1]	MEASURED - BKGD
B15-1A-1	2.44	0.56	0.56	10	4
B15-1A-2	1.92	0.63	1.10	11	5
B15-1A-3	0.93	0.45	0.86	6	background
B15-1A-4	1.72	0.54	0.93	8	2
B15-1B-1	0.88	0.63	1.11	11	5
B15-1B-2	1.20	0.36	0.69	9	3
B15-1B-3	1.45	0.57	0.99	9	3
B15-1B-4	2.07	0.45	0.57	10	4
B15-1C-1	1.21	0.39	0.80	6	background
B15-1C-2	1.13	0.54	0.84	8	2
B15-1D-1	0.84	0.40	0.93	6	background
B15-1D-2	1.10	0.28	0.40	6	background
B15-2A-1	1.67	0.61	0.98	13	7
B15-2A-2	2.27	0.67	1.14	14	8
B15-2A-3	1.97	0.66	1.08	11	5
B15-2A-4	0.99	0.47	0.79	10	4
B15-2B-1	0.93	0.30	0.57	6	background
B15-2B-2	1.19	0.51	0.83	7	1
B15-2B-3	2.44	0.85	1.24	14	8
B15-2B-4	0.83	0.45	0.80	10	4
B15-2C-1	0.94	0.41	0.76	6	background
B15-2C-2	0.64	0.33	0.62	8	2
B15-2D-1	1.01	0.46	0.82	5	background
B15-2D-2	0.73	0.31	0.65	5	background
B15-2E-1	0.87	0.35	0.68	4	background
B15-3A-1	1.26	0.52	0.89	7	1
B15-3A-2	1.36	0.52	0.84	9	3
B15-3A-3	0.95	0.56	0.89	10	4

SAMPLE	THORIUM-228 (pCi/g)			EXPOSURE RATES (μR/hr)	
	RESULT	UNCERTAINTY	MDA	MEASURED[1]	MEASURED - BKGD
B15-3A-4	1.08	0.42	0.76	9	3
B15-3B-1	1.60	0.58	1.00	8	2
B15-3B-2	1.58	0.45	0.89	8	2
B15-3B-3	2.02	0.40	0.50	9	3
B15-3B-4	1.42	0.51	0.87	10	4
B15-4A-1	1.33	0.49	0.84	6	background
B15-4A-2	2.64	0.70	1.15	6	background
B15-4A-3	1.45	0.42	0.54	8	2
B15-4A-4	2.07	0.66	1.06	8	2
B15-4B-1	1.28	0.58	0.88	7	1
B15-4B-2	2.46	0.95	1.19	9	3
B15-4B-3	1.53	0.51	0.90	9	3
B15-4B-4	1.27	0.45	0.85	7	1
B15-5A-1		*Basement Fill*		6	background
B15-5A-2		*Basement Fill*		5	background
B15-5A-3		*Basement Fill*		6	background
B15-5A-4		*Basement Fill*		5	background
B15-5B-1	1.61	0.48	0.98	6	background
B15-5B-2	1.62	0.55	0.98	8	2
B15-5B-3	1.40	0.47	0.97	7	1
B15-5B-4	0.20	0.51	0.81	6	background
B15-6A-1	1.05	0.39	0.78	4	background
B15-6A-2	0.07	0.31	0.64	4	background
B15-6A-3	1.29	0.40	0.80	4	background
B15-6A-4	1.10	0.43	0.80	4	background
B15-6B-1	1.03	0.45	0.80	4	background
B15-6B-2	0.07	0.37	0.84	4	background
B15-6B-3	0.77	0.44	0.78	5	background
B15-6B-4	0.75	0.36	0.67	5	background
AE-6C-1	1.94	0.66	1.17	5	background
AE-6C-2-2	0.95	0.36	0.71	6	background
AE-6D-1	1.16	0.36	0.78	5	background

	THORIUM-228 (pCi/g)			EXPOSURE RATES (μR/hr)	
SAMPLE	RESULT	UNCERTAINTY	MDA	MEASURED[1]	MEASURED - BKGD
AE-6D-2	1.14	0.52	0.95	5	background
AE-6E-1	0.96	0.54	1.14	5	background
B15-7A-1	0.98	0.34	0.71	5	background
B15-7A-2	0.75	0.30	0.63	4	background
B15-7A-3	1.18	0.45	0.78	6	background
B15-7A-4	0.83	0.44	0.78	5	background
B15-7B-1	1.05	0.42	0.76	4	background
B15-7B-2	0.90	0.33	0.68	4	background
B15-7B-3	1.08	0.42	0.81	4	background
B15-7B-4	0.81	0.38	0.77	5	background
AE-7C-1	1.51	0.32	0.32	6	background
AE-7C-2	0.74	0.38	0.76	6	background
AE-7C-3	1.25	0.50	0.90	5	background
AE-7C-4	2.56	0.73	1.34	6	background
AE-7D-1	1.04	0.28	0.44	6	background
AE-7D-2	1.23	0.52	1.01	6	background
AE-7D-3	0.82	0.36	0.77	6	background
AE-7D-4	0.83	0.48	0.98	5	background
AE-7E-1	1.05	0.43	0.77	6	background
B15-8A-1	0.64	0.29	0.63	6	background
B15-8A-2	1.09	0.37	0.78	5	background
B15-8A-3	1.10	0.34	0.72	5	background
B15-8A-4	0.95	0.34	0.69	5	background
B15-8B-1	0.75	0.46	0.75	5	background
B15-8B-2	1.56	0.59	1.04	6	background
B15-8B-3	0.88	0.39	0.90	5	background
B15-8B-4	0.95	0.35	0.72	5	background
B15-9A-1	1.15	0.40	0.81	6	background
B15-9B-1	1.05	0.38	0.76	6	background

[1] See Micro_R/hr Measurements Record Log (Attachment 4)

	THORIUM-228 (pCi/g)			EXPOSURE RATES (μR/hr)	
SAMPLE	RESULT	UNCERTAINTY	MDA	MEASURED[1]	MEASURED - BKGD

TABLE 3
SOIL CONCENTRATIONS AND EXPOSURE RATES AVERAGED FOR EACH GRID
FINAL STATUS SURVEY RESULTS - PROMETCOR SITE

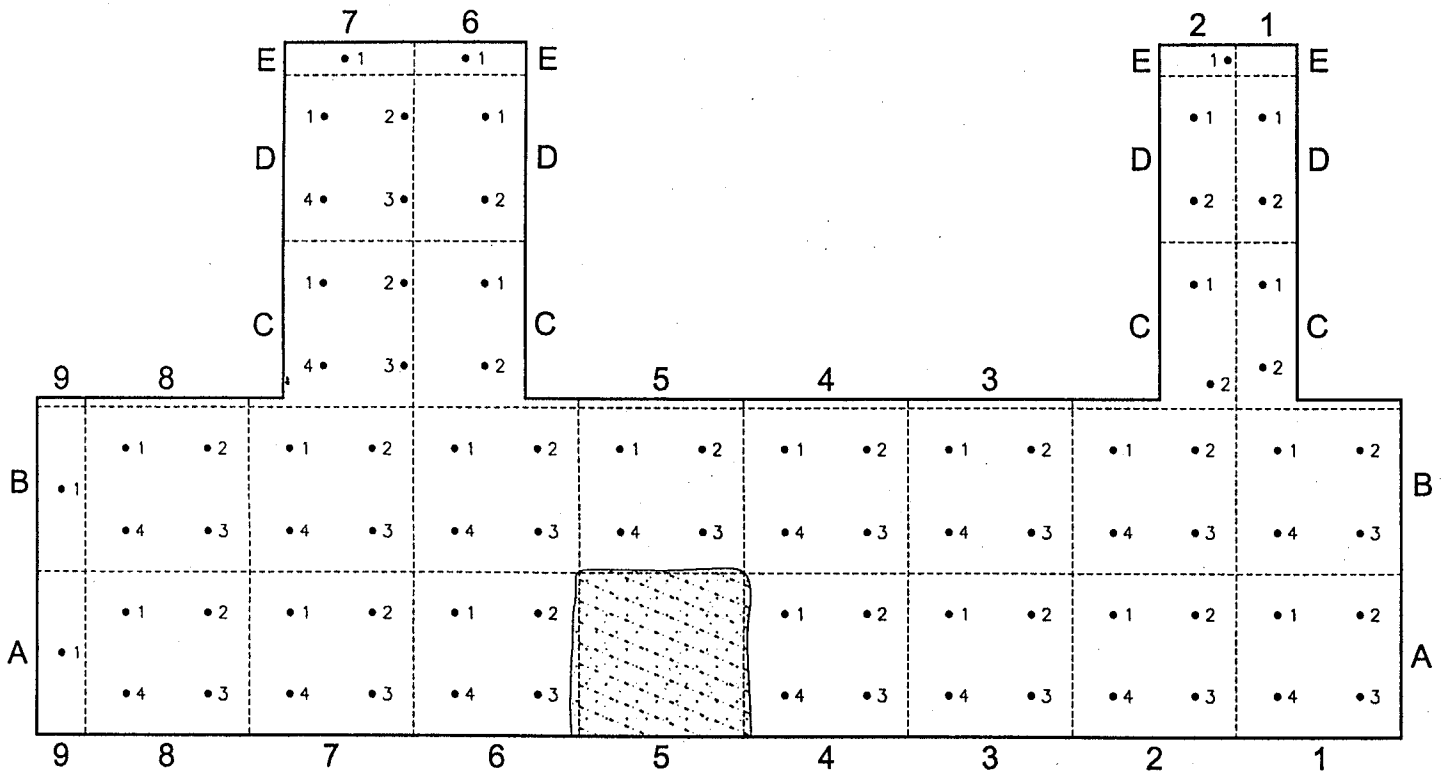
		THORIUM-228 (pCi/g)		EXPOSURE RATES (µR/hr)		
GRID	SAMPLE I.D.	RESULT	GRID AVERAGE	RESULT	GRID AVERAGE	GRID AVE - BKGD[1]
1A	B15-1A-1	2.44		10		
	B15-1A-2	1.92		11		
	B15-1A-3	0.93		6		
	B15-1A-4	1.72	1.75	8	9	3
1B	B15-1B-1	0.88		11		
	B15-1B-2	1.2		9		
	B15-1B-3	1.45		9		
	B15-1B-4	2.07	1.40	10	10	4
1C	B15-1C-1	1.21		6		
	B15-1C-2	1.13	1.17	8	7	1
1D	B15-1D-1	0.84		6		
	B15-1D-2	1.1	0.97	6	6	0
2A	B15-2A-1	1.67		13		
	B15-2A-2	2.27		14		
	B15-2A-3	1.97		11		
	B15-2A-4	0.99	1.73	10	12	6
2B	B15-2B-1	0.93		6		
	B15-2B-2	1.19		7		
	B15-2B-3	2.44		14		
	B15-2B-4	0.83	1.35	10	9	3
2C	B15-2C-1	0.94		6		
	B15-2C-2	0.64	0.79	8	7	1

		THORIUM-228 (pCi/g)		EXPOSURE RATES (μR/hr)		
GRID	SAMPLE I.D.	RESULT	GRID AVERAGE	RESULT	GRID AVERAGE	GRID AVE - BKGD[1]
2D	B15-2D-1	1.01		5		
	B15-2D-2	0.73	0.87	5	5	Background
2E	B15-2E-1	0.87	0.87	4	4	Background
3A	B15-3A-1	1.26		7		
	B15-3A-2	1.36		9		
	B15-3A-3	0.95		10		
	B15-3A-4	1.08	1.16	9	9	3
3B	B15-3B-1	1.6		8		
	B15-3B-2	1.58		8		
	B15-3B-3	2.02		9		
	B15-3B-4	1.42	1.66	10	9	3
4A	B15-4A-1	1.33		6		
	B15-4A-2	2.64		6		
	B15-4A-3	1.45		8		
	B15-4A-4	2.07	1.87	8	7	1
4B	B15-4B-1	1.28		7		
	B15-4B-2	2.46		9		
	B15-4B-3	1.53		9		
	B15-4B-4	1.27	1.64	7	8	2
5A	B15-5A-1		*Basement Fill*	6		
	B15-5A-2		*Basement Fill*	5		
	B15-5A-3		*Basement Fill*	6		
	B15-5A-4		*Basement Fill*	5	6	Background

GRID	SAMPLE I.D.	THORIUM-228 (pCi/g) RESULT	THORIUM-228 (pCi/g) GRID AVERAGE	EXPOSURE RATES (µR/hr) RESULT	EXPOSURE RATES (µR/hr) GRID AVERAGE	EXPOSURE RATES (µR/hr) GRID AVE - BKGD[1]
5B	B15-5B-1	1.61		6		
	B15-5B-2	1.62		8		
	B15-5B-3	1.4		7		
	B15-5B-4	0.2	1.21	6	7	1
6A	B15-6A-1	1.05		4		
	B15-6A-2	0.07		4		
	B15-6A-3	1.29		4		
	B15-6A-4	1.1	0.88	4	4	Background
6B	B15-6B-1	1.03		4		
	B15-6B-2	0.07		4		
	B15-6B-3	0.77		5		
	B15-6B-4	0.75	0.66	5	5	Background
6C	AE-6C-1	1.94		5		
	AE-6C-2-2	0.95	1.45	6	6	Background
6D	AE-6D-1	1.16		5		
	AE-6D-2	1.14	1.15	5	5	Background
6E	AE-6E-1	0.96	0.96	5	5	Background
7A	B15-7A-1	0.98		5		
	B15-7A-2	0.75		4		
	B15-7A-3	1.18		6		
	B15-7A-4	0.83	0.94	5	5	Background
7B	B15-7B-1	1.05		4		
	B15-7B-2	0.9		4		
	B15-7B-3	1.08		4		
	B15-7B-4	0.81	0.96	5	4	Background

GRID	SAMPLE I.D.	THORIUM-228 (pCi/g) RESULT	THORIUM-228 (pCi/g) GRID AVERAGE	EXPOSURE RATES (μR/hr) RESULT	EXPOSURE RATES (μR/hr) GRID AVERAGE	EXPOSURE RATES (μR/hr) GRID AVE - BKGD[1]
7C	AE-7C-1	1.51		6		
	AE-7C-2	0.74		6		
	AE-7C-3	1.25		5		
	AE-7C-4	2.56	1.52	6	6	Background
7D	AE-7D-1	1.04		6		
	AE-7D-2	1.23		6		
	AE-7D-3	0.82		6		
	AE-7D-4	0.83	0.98	5	6	Background
7E	AE-7E-1	1.05	1.05	6	6	0
8A	B15-8A-1	0.64		6		
	B15-8A-2	1.09		5		
	B15-8A-3	1.1		5		
	B15-8A-4	0.95	0.95	5	5	Background
8B	B15-8B-1	0.75		5		
	B15-8B-2	1.56		6		
	B15-8B-3	0.88		5		
	B15-8B-4	0.95	1.04	5	5	Background
9A	B15-9A-1	1.15	1.15	6	6	0
9B	B15-9B-1	1.05	1.05	6	6	0

[1] Background of 6 μR/hr measured off-site prior to sampling. See micro_R/hr measurement log (Attachment 4).



NOTES:

1. DURING THE DEMOLITION PHASE, THE BASEMENT WAS BACKFILLED WITH UNCONTAMINATED CONCRETE DEBRIS IN AREA A5. AS A RESULT, NO SAMPLES WERE COLLECTED IN THIS AREA.
2. SAMPLE LOCATION B15-C2-1 WAS MOVED 1 METER NORTHEAST TO AVOID UNCONTAMINATED STONE BACKFILL.

LEGEND:

LOCATION OF CONCRETE FILL FOR BASEMENT

SCALE

40 20 0 40 FEET

FIGURE 1

FINAL STATUS SURVEY;
SOIL SAMPLE LOCATIONS
(BUILDINGS 1-5 AND AREA E)

PROMETCOR
NEWARK, NEW JERSEY

McLaren Hart INC.

DRWN: T.J.G.	CHK'D: J.E.B.
SCALE: AS SHOWN	DATE: 11/29/99

DWG: 56000220 11/29/99

ATTACHMENT 1

CHARACTERIZATION SURVEYS OF BUILDINGS 1 THROUGH 5

SOILS AT THE PROMETCOR SITE

Radiological Surveys of Buildings 1 through 5 and Area E Soils at the Prometcor Site

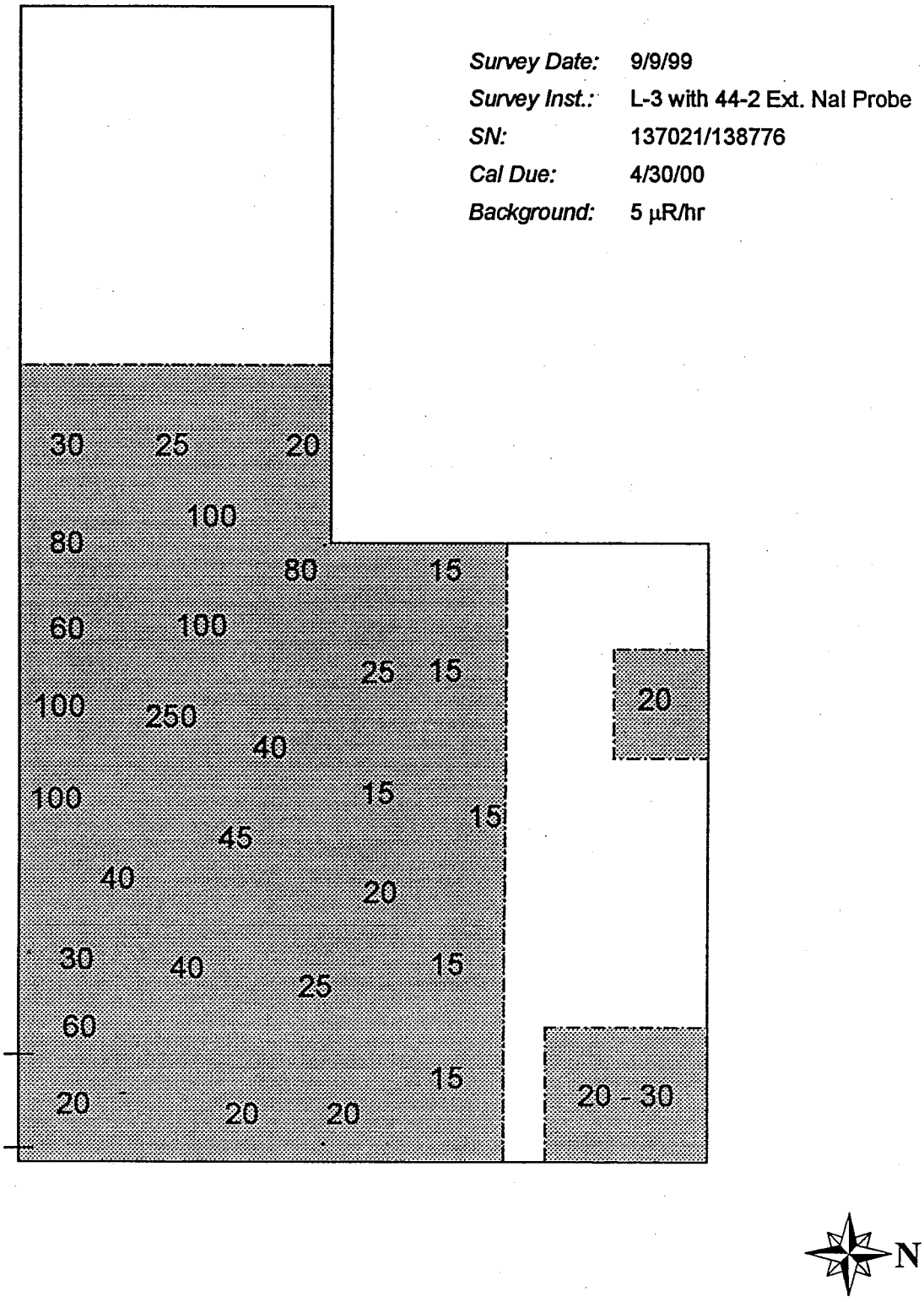
All Exposure Readings in μR/hr

NOTE:

The exposure rate guideline for the Final Status Survey is 10 μR/hr above background. Offsite background measurements were typically 5-6 μR/hr, therefore a lower limit of 15 μR/hr would indicate an impacted area. For this characterization survey a conservative threshold value of 10 μR/hr was used. This conservative value provides a significant margin of error in identifying impacted areas. Building 5 and Area E are not shown on these maps as no elevated exposure rates (>10 μR/hr) were noted with a 100% scan.

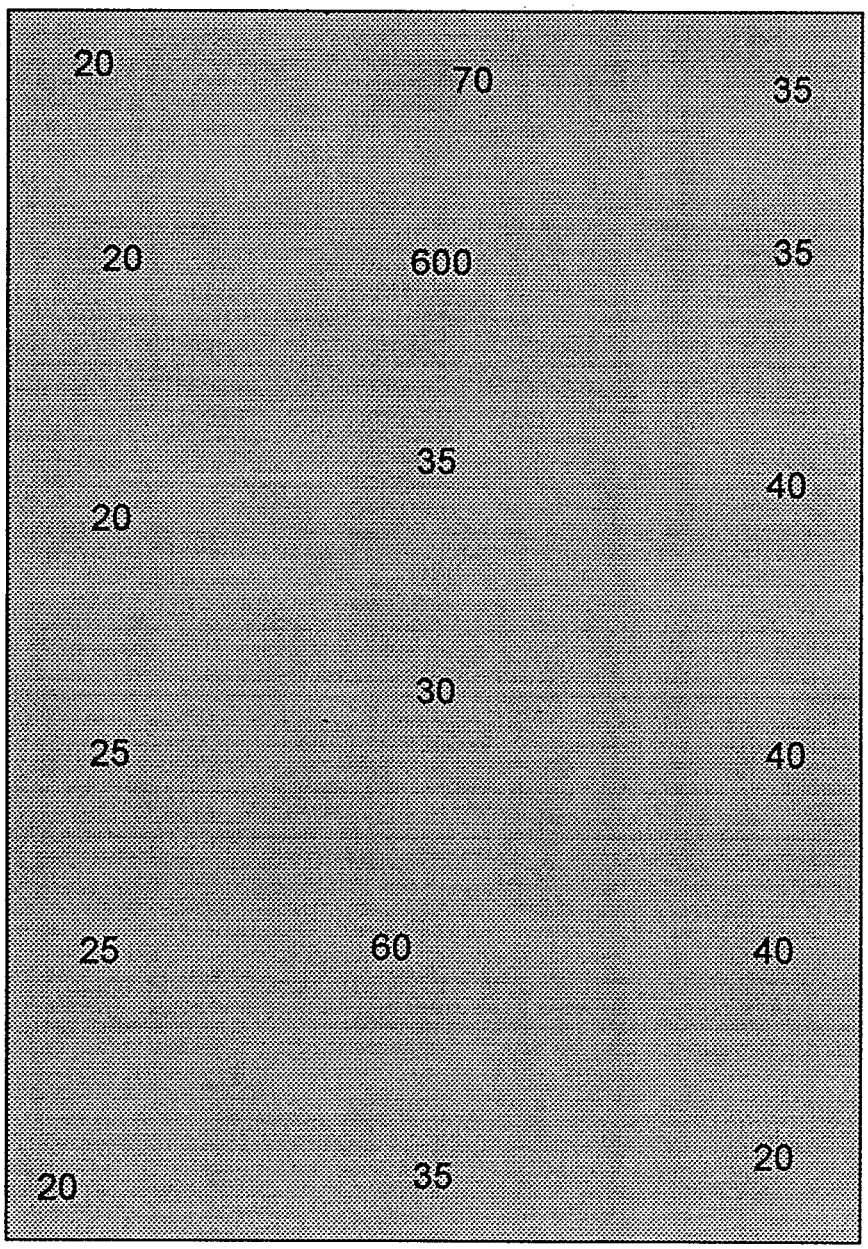
LOCATION OF IMPACTED SOILS: BUILDING 1

ALL READINGS IN μR/hr



LOCATION OF IMPACTED SOILS: BUILDING 2

ALL READINGS IN µR/hr

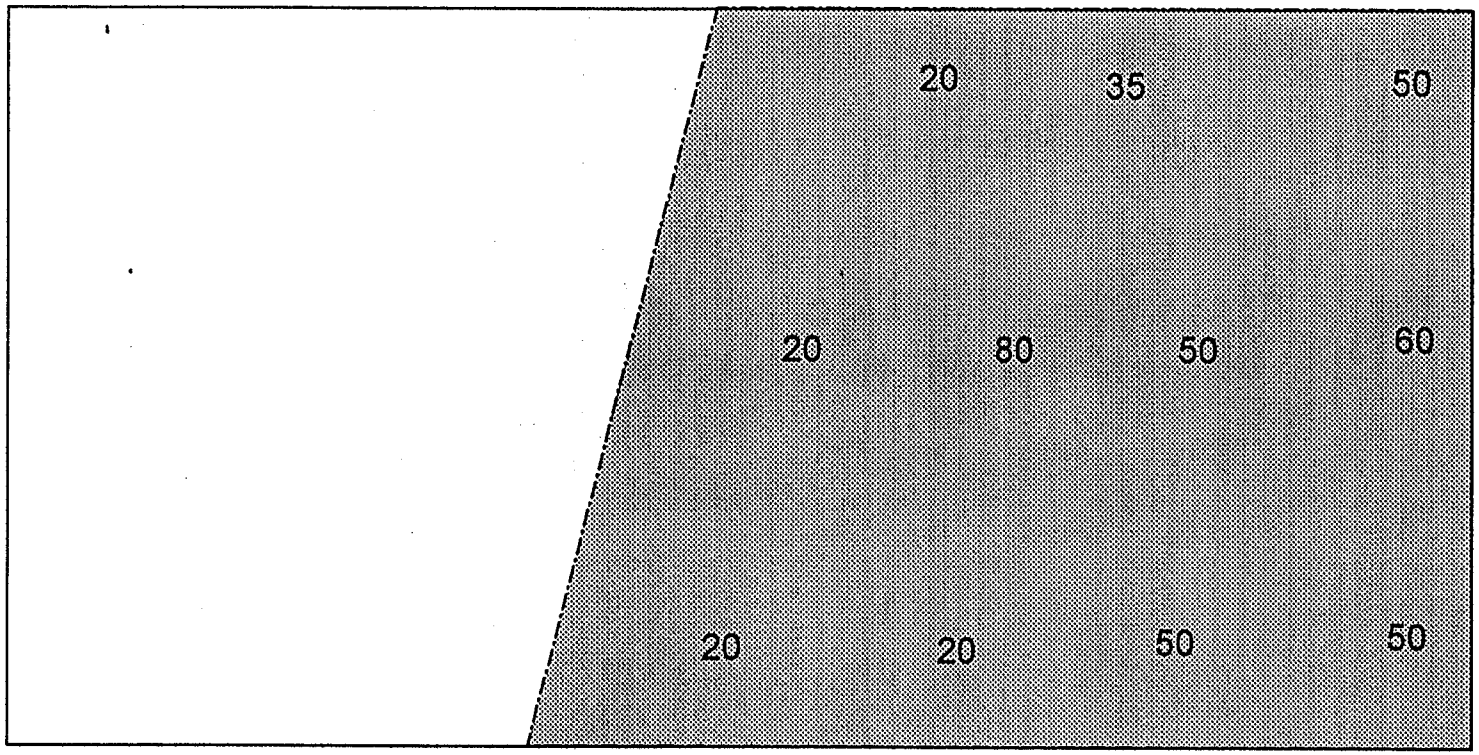


Survey Date:	9/10/99
Survey Inst.:	L-3 with 44-2 Ext. NaI Probe
SN:	137021/138776
Cal Due:	4/30/00
Background:	6 µR/hr

N

LOCATION OF IMPACTED SOILS: BUILDING 2A/3A

ALL READINGS IN μR/hr



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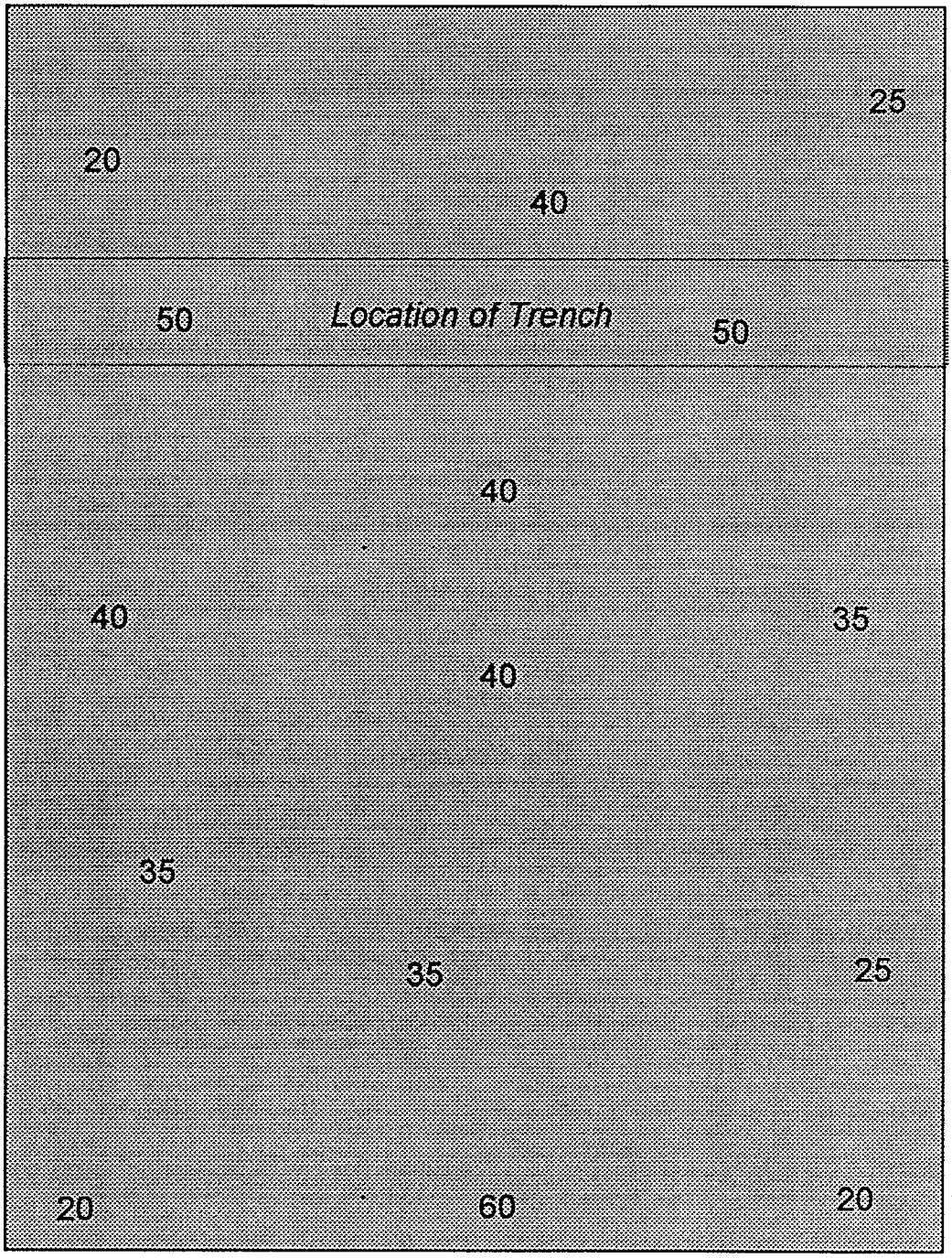
Survey Date: 9/10/99
Survey Inst.: L-3 with 44-2 Ext. NaI Probe
SN: 137021/138776
Cal Due: 4/30/00
Background: 6 μR/hr

LOCATION OF IMPACTED SOILS: BUILDING 3

ALL READINGS IN µR/hr

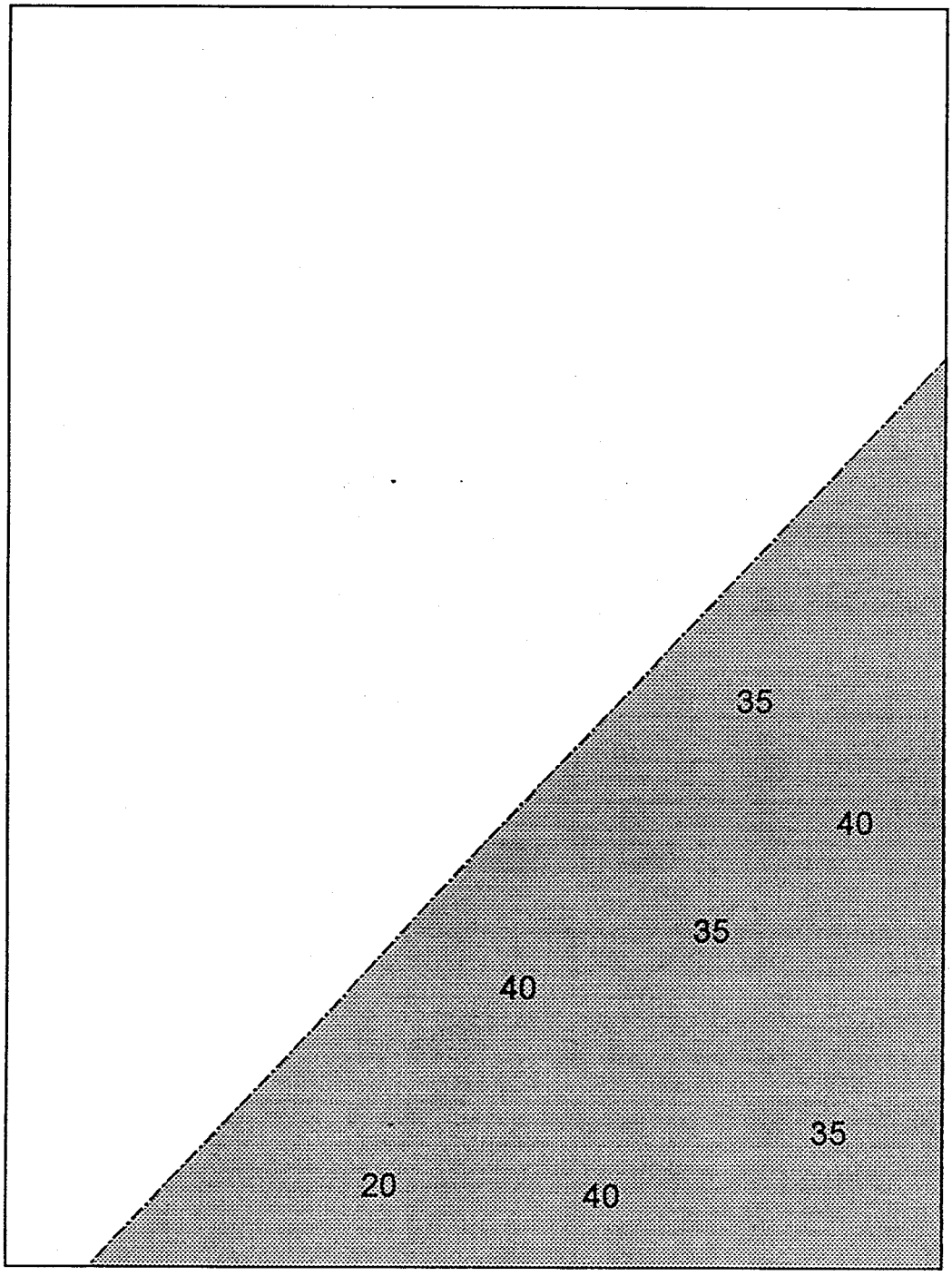


Survey Date:	9/10/99
Survey Inst.:	L-3 with 44-2 Ext. NaI Probe
SN:	137021/138776
Cal Due:	4/30/00
Background:	6 µR/hr

N

LOCATION OF IMPACTED SOILS: BUILDING 4

ALL READINGS IN µR/hr



Survey Date: 9/10/99

Survey Inst.: L-3 with 44-2 Ext. NaI Probe

SN: 137021/138776

Cal Due: 4/30/00

Background: 6 µR/hr

N

ATTACHMENT 2

FINAL STATUS SURVEY GRID AND PROCEDURES SUBMITTED

TO THE USNRC OCTOBER 27, 1999

McLaren Hart, Inc.

October 27, 1999

****Via Facsimile and Federal Express****

Steve W. Shaffer
Health Physicist
Decommissioning and Laboratory Branch
United States Nuclear Regulatory Commission
Region 1, Mail Control No. 124941
475 Allendale Road
King of Prussia, PA 19406

Re: Final Status Survey Grid Map for Buildings 1 through 5 and Area E at the Prometcor Site (NRC License No. STB-1451)

Dear Mr. Shaffer:

Per our recent conversations, enclosed please find the final status survey grid map for Buildings 1 through 5 and Area E at the Prometcor site. The final status survey will be conducted in accordance with NUREG-5849 and methodologies described in the approved Decommissioning Plan for Soil Covers and Underlying Soils at the Prometcor Facility. Surface soil samples will be collected at each grid, as depicted on the attached Figure 1. Each soil sample will be analyzed for radium-226 and thorium-228. A gamma reading will be taken at each grid point at one meter above surface.

We look forward to your review and approval of this sampling approach described in the attached figure. The original copy of this letter and attached figure and sampling summary is being forwarded to you Federal Express. We appreciate your expedience in this matter so we may begin the Final Status Survey on November 8, 1999. If you have any questions, please contact me at 440-684-8300 or Marc Cicalese 908-647-8111.

Sincerely,

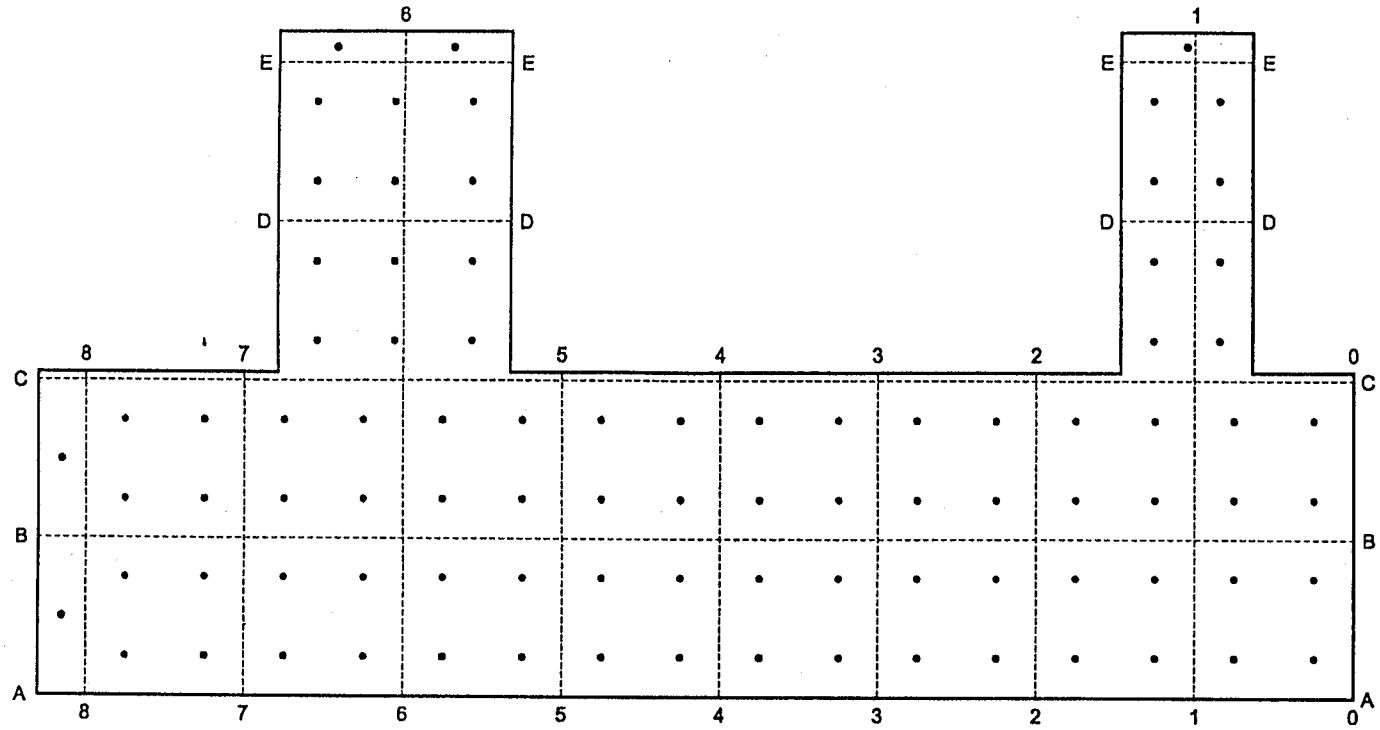
Jack Buddenbaum, CHP
Supervising Health Scientist

Marc Cicalese
Principal Engineer

enclosure

cc: Daryl Holcomb
Dr. Edward David

25 Independence Boulevard, Warren, New Jersey 07059
908.647.8111 • 908.647.8162 fax • www.mclaren-hart.com



NOTES:

1. THIS IS THE GRID PATTERN USED FOR COLLECTING SURFACE SOIL SAMPLES IN BUILDINGS 1-5 AND AREA E. A TOTAL OF 89 SAMPLES WILL BE COLLECTED.
2. THIS ENTIRE GRIDDED AREA REPRESENTS ONE SURVEY UNIT FOR THE FINAL STATUS SURVEY.
3. SAMPLES WILL BE COLLECTED AT THE SURFACE.
4. GIVEN THE DIMENSIONS OF THE PROPERTY, ALL AREAS IN THIS FIGURE ARE TREATED AS AFFECTED.
5. SOIL SAMPLES WILL BE ANALYZED FOR Ra-226 AND Th-228. IF Th-228 RESULTS ARE GREATER THAN 8 pCi/gram, THEN THE SAMPLES WILL BE ANALYZED FOR Th-232 AND Th-230.
6. IF SOIL RESULTS EXCEED ACCEPTANCE GUIDELINE, ADDITIONAL SOIL SAMPLES AT DEPTH WILL BE COLLECTED AND ANALYZED FOR PURPOSE OF BOUNDING THE EXTENT OF THE EXCEEDANCE.
7. ALL SOIL RESULTS WILL BE REPORTED AS pCi/gram.
8. Micro-R/hour READINGS WILL BE COLLECTED AT EACH GRID POINT AT ONE METER ABOVE SURFACE.

SCALE

40 20 0 40 FEET

FIGURE 1

FINAL STATUS SURVEY;
SOIL SAMPLE LOCATIONS
(BUILDINGS 1-5 AND AREA E)

PROMETCOR
NEWARK, NEW JERSEY

McLaren Hart INC.

DRWN: T.J.G.	CHK'D: J.E.B.
SCALE: AS SHOWN	DATE: 10/27/99

DWG: 56000219 10/27/99

ATTACHMENT 3

FINAL STATUS SURVEY RADIOLOGICAL REPORT AND SOIL SAMPLING

RESULTS SUBMITTED BY

SEVERN TRENT LABORATORIES (STL)

Committed To *Your* Success

Severn Trent Laboratories
628 Route 10
Whippany, NJ 07981

Tel: (973) 428-8181
Fax: (973) 428-5222

December 30, 1999

McLaren Hart, Inc.
Attn: Jack Buddenbaum
5900 Landerbrook Drive
Suite 100
Cleveland, OH 44124

Dear Mr. Buddenbaum:

Please find enclosed the radiological results of eighty-six (86) solid samples. This report contains sections addressing the following information at a minimum:

* Case Narrative
* Sample Summary
* Analytical Results (Forms I through VII)
* Analytical Methodology and Chain-of-Custody
* Raw Data (Level III Only)

STL Project #	RONSON-2/ RONSON-3
STL Work Order #	00-94-487/ 00-94-548
Client Project ID	RONSON

Copies of this radiological report and supporting data are maintained in our files for a minimum of three years unless special arrangements have been made. Except where specifically indicated, all radiological testing was performed at this laboratory location and no portion of the testing was subcontracted.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact Barbra Trulick at (973) 581-6460 for any additional information. Thank you for utilizing our services. We hope you will consider us for your future analytical needs.

Sincerely,

Erik Nielsen
Radiochemical Group Leader
STL-Whippany

EN/bjt

Committed To *Your* Success

Severn Trent Laboratories
628 Route 10
Whippany, NJ 07981

Tel: (973) 428-8181
Fax: (973) 428-5222

REPORT TRANSMITTAL

DECEMBER 30, 1999

MCLAREN HART

PROJECT: RONSON

PREPARED BY:

SEVERN TRENT LABORATORIES, INC. (STL)

(NJ CERTIFICATION NUMBER 14530)

STL JOB NO: 20990-94548

VOLUME I OF I

Environmental Survey

Cover Page

Radiological Data Analysis Package

12/30/1999

628 Route 10
Whippany, NJ 07981
Phone (973) 428-8181
Fax (973) 428-5222

Project Number: RONSON-3

Client Sample ID	Lab ID
B15-1A-3	0094548-01
B15-1A-4	0094548-02
B15-2A-1	0094548-03
B15-2A-2	0094548-04
B15-2A-3	0094548-05
B15-2A-4	0094548-06
B15-3A-1	0094548-07
B15-3A-2	0094548-08
B15-3A-3	0094548-09
B15-3A-4	0094548-10
B15-4A-1	0094548-11
B15-4A-2	0094548-12
B15-4A-3	0094548-13
B15-4A-4	0094548-14
B15-4B-3	0094548-15
B15-4B-2	0094548-16
B15-4B-1	0094548-17
B15-3B-3	0094548-18
B15-3B-1	0094548-19
B15-2B-1	0094548-20
B15-2B-2	0094548-21
B15-2B-4	0094548-22
B15-1B-1	0094548-23
B15-1B-2	0094548-24
B15-1B-3	0094548-25
B15-1B-4	0094548-26
B15-1A-1	0094548-27
B15-1A-2	0094548-28
B15-1C-1	0094548-29
B15-1C-2	0094548-30
B15-2C-1	0094548-31
B15-2C-2	0094548-32
B15-1D-1	0094548-33
B15-1D-2	0094548-34
B15-2D-1	0094548-35
B15-2D-2	0094548-36
B15-2E-1	0094548-37
B15-2B-3	0094548-38
B15-3B-2	0094548-39
AE-6C-2-2	0094548-40
B15-B4-4	0094548-41
B15-3B-4	0094548-42
B15-6A-1	0094548-43
B15-6A-2	0094548-44
B15-6A-3	0094548-45
B15-6A-4	0094548-46
B15-7A-1	0094548-47
B15-7A-2	0094548-48
B15-7A-3	0094548-49
B15-7A-4	0094548-50
B15-9A-1	0094548-51
B15-8A-1	0094548-52
B15-8A-2	0094548-53
B15-8A-3	0094548-54
B15-8A-4	0094548-55

Comments: _____

Release of the data contained in this package has been authorized by the laboratory manager or the manager's designee, as verified by the following signature.

_____ 12/30/99
Manager, Radiological Laboratory — Date

CASE NARRATIVE
STL-NJ Project Number: RONSON-3
STL-NJ Work Order Number: 00-94-548

Samples were received without any discrepancies noted between chain of custody and cooler contents. Excessive sample quantities submitted slowed processing. Samples were sealed in salmon cans and gamma counted. After a 7 day ingrowth period the samples were recounted and the ingrowth of the Rn-222 calculated to determine a final equilibrium value for the Ra-226. The average of the Bi-214 and Pb-214 concentrations equals the Ra-226 concentration per gram (dry weight corrected)

One method blank was analyzed for each parameter. The activities of the method blanks were within the acceptance criteria of less than three times the MDL for all parameters.

One blank spike analysis was performed for each parameter. The resulsts were within the 80-120% QC limits.

A matrix spike is not performed for gamma spectroscopy.

One duplicate sample was analyzed for each parameter. The duplicate analyses all analysis met the acceptance criteria for a Duplicate Error Ratio (DER) of less than 1.5 when the activity is greater than 5 times the MDC. The DER is defined as follows:

$$DER = \frac{|S-D|}{(2\sigma_s + 2\sigma_d)}$$

Where: S = Original Sample Value
D = Duplicate Value
$2\sigma_s$ = Original Sample Uncertainty
$2\sigma_d$ = Duplicate Sample Uncertainty

Erik C. Nielsen.
Radiochemistry Group Leader
12/30/99

C:\NET2\WP\00-94-548

Radiological Analysis Results

12/ 1999

Form I

Client Sample ID	Lab ID	Sample Type	Batch Number	Matrix	Radionuclide	Result	Uncertainty	Q	Units	Analysis Date	Sample Size	MDA
B15-1A-3	0094548-01	Reg	99120001	Soil	AC-228	0.93	0.45		pCi/g	12/07/19	270.6000	0.86
B15-1A-3	0094548-01	Reg	99120001	Soil	RA-226	1.47	0.26		pCi/g	12/07/19	270.6000	0.46
B15-1A-4	0094548-02	Reg	99120001	Soil	AC-228	1.72	0.54		pCi/g	12/07/19	301.7000	0.93
B15-1A-4	0094548-02	Reg	99120001	Soil	RA-226	5.87	0.81		pCi/g	12/07/19	301.7000	0.30
B15-2A-1	0094548-03	Reg	99120001	Soil	AC-228	1.67	0.61		pCi/g	12/07/19	338.3000	0.98
B15-2A-1	0094548-03	Reg	99120001	Soil	RA-226	8.00	1.06		pCi/g	12/07/19	338.3000	0.47
B15-2A-2	0094548-04	Reg	99120001	Soil	AC-228	2.27	0.67		pCi/g	12/07/19	292.4000	1.14
B15-2A-2	0094548-04	Reg	99120001	Soil	RA-226	14.06	1.77		pCi/g	12/07/19	292.4000	0.46
B15-2A-3	0094548-05	Reg	99120001	Soil	AC-228	1.97	0.66		pCi/g	12/07/19	318.7000	1.08
B15-2A-3	0094548-05	Reg	99120001	Soil	RA-226	7.37	1.05		pCi/g	12/07/19	318.7000	0.55
B15-2A-4	0094548-06	Reg	99120001	Soil	AC-228	0.99	0.47		pCi/g	12/07/19	327.0000	0.79
B15-2A-4	0094548-06	Reg	99120001	Soil	RA-226	4.22	0.61		pCi/g	12/07/19	327.0000	0.26
B15-3A-1	0094548-07	Reg	99120001	Soil	AC-228	1.26	0.52		pCi/g	12/07/19	315.9000	0.89
B15-3A-1	0094548-07	Reg	99120001	Soil	RA-226	2.31	0.47		pCi/g	12/07/19	315.9000	0.74
B15-3A-2	0094548-08	Reg	99120001	Soil	AC-228	1.36	0.52		pCi/g	12/07/19	312.0000	0.84
B15-3A-2	0094548-08	Reg	99120001	Soil	RA-226	4.81	0.68		pCi/g	12/07/19	312.0000	0.40
B15-3A-3	0094548-09	Reg	99120001	Soil	AC-228	0.95	0.56		pCi/g	12/07/19	307.1000	0.89
B15-3A-3	0094548-09	Reg	99120001	Soil	RA-226	7.04	0.92		pCi/g	12/07/19	307.1000	0.38
B15-3A-4	0094548-10	Reg	99120001	Soil	AC-228	1.08	0.42		pCi/g	12/07/19	299.3000	0.76
B15-3A-4	0094548-10	Reg	99120001	Soil	RA-226	3.05	0.45		pCi/g	12/07/19	299.3000	0.20

Key shall be attached
Comments:

Form I

Client Sample ID	Lab ID	Sample Type	Batch Number	Matrix	Radionuclide	Result	Uncertainty	Q	Units	Analysis Date	Sample Size	MDA
B15-4A-1	0094548-11	Reg	99120001	Soil	AC-228	1.33	0.49		pCi/g	12/07/19	312.4000	0.84
B15-4A-1	0094548-11	Reg	99120001	Soil	RA-226	3.50	0.54		pCi/g	12/07/19	312.4000	0.46
B15-4A-2	0094548-12	Reg	99120001	Soil	AC-228	2.64	0.70		pCi/g	12/07/19	296.9000	1.15
B15-4A-2	0094548-12	Reg	99120001	Soil	RA-226	9.28	1.17		pCi/g	12/07/19	296.9000	0.33
B15-4A-3	0094548-13	Reg	99120001	Soil	AC-228	1.45	0.42		pCi/g	12/07/19	302.6000	0.54
B15-4A-3	0094548-13	Reg	99120001	Soil	RA-226	9.98	1.28		pCi/g	12/07/19	302.6000	0.55
B15-4A-4	0094548-14	Reg	99120001	Soil	AC-228	2.07	0.66		pCi/g	12/07/19	321.3000	1.06
B15-4A-4	0094548-14	Reg	99120001	Soil	RA-226	16.70	2.07		pCi/g	12/07/19	321.3000	0.47
B15-4B-3	0094548-15	Reg	99120001	Soil	AC-228	1.53	0.51		pCi/g	12/07/19	320.4000	0.90
B15-4B-3	0094548-15	Reg	99120001	Soil	RA-226	7.45	1.05		pCi/g	12/07/19	320.4000	0.50
B15-4B-2	0094548-16	Reg	99120001	Soil	AC-228	2.46	0.95		pCi/g	12/07/19	284.5000	1.19
B15-4B-2	0094548-16	Reg	99120001	Soil	RA-226	11.97	1.50		pCi/g	12/07/19	284.5000	0.52
B15-4B-1	0094548-17	Reg	99120001	Soil	AC-228	1.28	0.58		pCi/g	12/07/19	312.0000	0.88
B15-4B-1	0094548-17	Reg	99120001	Soil	RA-226	2.40	0.46		pCi/g	12/07/19	312.0000	0.36
B15-3B-3	0094548-18	Reg	99120001	Soil	AC-228	2.02	0.40		pCi/g	12/07/19	297.8000	0.50
B15-3B-3	0094548-18	Reg	99120001	Soil	RA-226	4.72	0.69		pCi/g	12/07/19	297.8000	0.27
B15-3B-1	0094548-19	Reg	99120002	Soil	AC-228	1.60	0.58		pCi/g	12/08/19	261.7000	1.00
B15-3B-1	0094548-19	Reg	99120002	Soil	RA-226	2.95	0.57		pCi/g	12/08/19	261.7000	1.00
B15-2B-1	0094548-20	Reg	99120002	Soil	AC-228	0.93	0.30		pCi/g	12/08/19	422.8000	0.57
B15-2B-1	0094548-20	Reg	99120002	Soil	RA-226	1.34	0.27		pCi/g	12/08/19	422.8000	0.26

Key shall be attached

Comments: _____

Form I

Client Sample ID	Lab ID	Sample Type	Batch Number	Matrix	Radionuclide	Result	Uncertainty	Q	Units	Analysis Date	Sample Size	MDA
B15-2B-2	0094548-21	Reg	99120002	Soil	AC-228	1.19	0.51		pCi/g	12/08/19	315.1000	0.83
B15-2B-2	0094548-21	Reg	99120002	Soil	RA-226	4.75	0.69		pCi/g	12/08/19	315.1000	0.40
B15-2B-4	0094548-22	Reg	99120002	Soil	AC-228	0.83	0.45		pCi/g	12/08/19	299.7000	0.80
B15-2B-4	0094548-22	Reg	99120002	Soil	RA-226	3.86	0.60		pCi/g	12/08/19	299.7000	0.40
B15-1B-1	0094548-23	Reg	99120002	Soil	AC-228	0.88	0.63		pCi/g	12/08/19	282.9000	1.11
B15-1B-1	0094548-23	Reg	99120002	Soil	RA-226	7.32	0.97		pCi/g	12/08/19	282.9000	0.44
B15-1B-2	0094548-24	Reg	99120002	Soil	AC-228	1.20	0.36		pCi/g	12/08/19	297.7000	0.69
B15-1B-2	0094548-24	Reg	99120002	Soil	RA-226	2.94	0.43		pCi/g	12/08/19	297.7000	0.05
B15-1B-3	0094548-25	Reg	99120002	Soil	AC-228	1.45	0.57		pCi/g	12/08/19	264.3000	0.99
B15-1B-3	0094548-25	Reg	99120002	Soil	RA-226	5.23	0.79		pCi/g	12/08/19	264.3000	0.44
B15-1B-4	0094548-26	Reg	99120002	Soil	AC-228	2.07	0.45		pCi/g	12/08/19	281.9000	0.57
B15-1B-4	0094548-26	Reg	99120002	Soil	RA-226	9.55	1.25		pCi/g	12/08/19	281.9000	0.55
B15-1A-1	0094548-27	Reg	99120002	Soil	AC-228	2.44	0.56		pCi/g	12/08/19	269.4000	0.56
B15-1A-1	0094548-27	Reg	99120002	Soil	RA-226	7.77	1.02		pCi/g	12/08/19	269.4000	0.48
B15-1A-2	0094548-28	Reg	99120002	Soil	AC-228	1.92	0.63		pCi/g	12/08/19	267.0000	1.10
B15-1A-2	0094548-28	Reg	99120002	Soil	RA-226	9.02	1.26		pCi/g	12/08/19	267.0000	0.50
B15-1C-1	0094548-29	Reg	99120002	Soil	AC-228	1.21	0.39		pCi/g	12/08/19	312.3000	0.80
B15-1C-1	0094548-29	Reg	99120002	Soil	RA-226	1.01	0.30		pCi/g	12/08/19	312.3000	0.46
B15-1C-2	0094548-30	Reg	99120002	Soil	AC-228	1.13	0.54		pCi/g	12/08/19	301.9000	0.84
B15-1C-2	0094548-30	Reg	99120002	Soil	RA-226	5.70	0.78		pCi/g	12/08/19	301.9000	0.31

Key shall be attached

Comments: _____

MDA mode

Form I

Client Sample ID	Lab ID	Sample Type	Batch Number	Matrix	Radionuclide	Result	Uncertainty	Q	Units	Analysis Date	Sample Size	MDA
B15-2C-1	0094548-31	Reg	99120002	Soil	AC-228	0.94	0.41		pCi/g	12/08/19	311.0000	0.76
B15-2C-1	0094548-31	Reg	99120002	Soil	RA-226	3.34	0.49		pCi/g	12/08/19	311.0000	0.28
B15-2C-2	0094548-32	Reg	99120002	Soil	AC-228	0.64	0.33		pCi/g	12/08/19	333.0000	0.62
B15-2C-2	0094548-32	Reg	99120002	Soil	RA-226	2.49	0.46		pCi/g	12/08/19	333.0000	0.74
B15-1D-1	0094548-33	Reg	99120002	Soil	AC-228	0.84	0.40		pCi/g	12/08/19	284.2000	0.93
B15-1D-1	0094548-33	Reg	99120002	Soil	RA-226	2.45	0.36		pCi/g	12/08/19	284.2000	-0.01
B15-1D-2	0094548-34	Reg	99120002	Soil	AC-228	1.10	0.28		pCi/g	12/08/19	306.9000	0.40
B15-1D-2	0094548-34	Reg	99120002	Soil	RA-226	1.85	0.32		pCi/g	12/08/19	306.9000	0.25
B15-2D-1	0094548-35	Reg	99120002	Soil	AC-228	1.01	0.46		pCi/g	12/08/19	285.5000	0.82
B15-2D-1	0094548-35	Reg	99120002	Soil	RA-226	1.69	0.31		pCi/g	12/08/19	285.5000	0.12
B15-2D-2	0094548-36	Reg	99120002	Soil	AC-228	0.73	0.31		pCi/g	12/08/19	284.9000	0.65
B15-2D-2	0094548-36	Reg	99120002	Soil	RA-226	1.06	0.25		pCi/g	12/08/19	284.9000	0.29
B15-2E-1	0094548-37	Reg	99120002	Soil	AC-228	0.87	0.35		pCi/g	12/08/19	302.9000	0.68
B15-2E-1	0094548-37	Reg	99120002	Soil	RA-226	0.66	0.19		pCi/g	12/08/19	302.9000	0.31
B15-2B-3	0094548-38	Reg	99120002	Soil	AC-228	2.44	0.85		pCi/g	12/08/19	278.5000	1.24
B15-2B-3	0094548-38	Reg	99120002	Soil	RA-226	14.77	1.84		pCi/g	12/08/19	278.5000	0.63
B15-3B-2	0094548-39	Reg	99120003	Soil	AC-228	1.58	0.45		pCi/g	12/14/19	295.8000	0.89
B15-3B-2	0094548-39	Reg	99120003	Soil	RA-226	5.05	0.70		pCi/g	12/14/19	295.8000	0.38
AE-6C-2-2	0094548-40	Reg	99120003	Soil	AC-228	0.95	0.36		pCi/g	12/14/19	268.9000	0.71
AE-6C-2-2	0094548-40	Reg	99120003	Soil	RA-226	1.48	0.30		pCi/g	12/14/19	268.9000	0.29

Key shall be attached

Comments:

Form I

Client Sample ID	Lab ID	Sample Type	Batch Number	Matrix	Radionuclide	Result	Uncertainty	Q	Units	Analysis Date	Sample Size	MDA
B15-B4-4	0094548-41	Reg	99120003	Soil	AC-228	1.27	0.45		pCi/g	12/14/19	297.0000	0.85
B15-B4-4	0094548-41	Reg	99120003	Soil	RA-226	4.02	0.59		pCi/g	12/14/19	297.0000	0.39
B15-3B-4	0094548-42	Reg	99120003	Soil	AC-228	1.42	0.51		pCi/g	12/14/19	292.4000	0.87
B15-3B-4	0094548-42	Reg	99120003	Soil	RA-226	4.04	0.61		pCi/g	12/14/19	292.4000	0.34
B15-6A-1	0094548-43	Reg	99120003	Soil	AC-228	1.05	0.39		pCi/g	12/14/19	280.5000	0.78
B15-6A-1	0094548-43	Reg	99120003	Soil	RA-226	0.89	0.22		pCi/g	12/14/19	280.5000	0.40
B15-6A-2	0094548-44	Reg	99120003	Soil	AC-228	0.07	0.31		pCi/g	12/20/19	319.9000	0.64
B15-6A-2	0094548-44	Reg	99120003	Soil	RA-226	1.13	0.29		pCi/g	12/20/19	319.9000	0.43
B15-6A-3	0094548-45	Reg	99120003	Soil	AC-228	1.29	0.40		pCi/g	12/14/19	288.8000	0.80
B15-6A-3	0094548-45	Reg	99120003	Soil	RA-226	1.60	0.32		pCi/g	12/14/19	288.8000	0.50
B15-6A-4	0094548-46	Reg	99120003	Soil	AC-228	1.10	0.43		pCi/g	12/14/19	291.1000	0.80
B15-6A-4	0094548-46	Reg	99120003	Soil	RA-226	1.02	0.25		pCi/g	12/14/19	291.1000	0.49
B15-7A-1	0094548-47	Reg	99120003	Soil	AC-228	0.98	0.34		pCi/g	12/14/19	310.2000	0.71
B15-7A-1	0094548-47	Reg	99120003	Soil	RA-226	0.37	0.19		pCi/g	12/14/19	310.2000	0.44
B15-7A-2	0094548-48	Reg	99120003	Soil	AC-228	0.75	0.30		pCi/g	12/14/19	291.5000	0.63
B15-7A-2	0094548-48	Reg	99120003	Soil	RA-226	0.87	0.22		pCi/g	12/14/19	291.5000	0.33
B15-7A-3	0094548-49	Reg	99120003	Soil	AC-228	1.18	0.45		pCi/g	12/14/19	303.5000	0.78
B15-7A-3	0094548-49	Reg	99120003	Soil	RA-226	4.67	0.64		pCi/g	12/14/19	303.5000	0.32
B15-7A-4	0094548-50	Reg	99120003	Soil	AC-228	0.83	0.44		pCi/g	12/14/19	267.7000	0.78
B15-7A-4	0094548-50	Reg	99120003	Soil	RA-226	0.81	0.21		pCi/g	12/14/19	267.7000	0.43

Key shall be attached

Comments: _____

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Form I

Client Sample ID	Lab ID	Sample Type	Batch Number	Matrix	Radionuclide	Result	Uncertainty	Q	Units	Analysis Date	Sample Size	MDA
B15-9A-1	0094548-51	Reg	99120003	Soil	AC-228	1.15	0.40		pCi/g	12/14/19	260.2000	0.81
B15-9A-1	0094548-51	Reg	99120003	Soil	RA-226	1.00	0.18		pCi/g	12/14/19	260.2000	0.25
B15-8A-1	0094548-52	Reg	99120003	Soil	AC-228	0.64	0.29		pCi/g	12/14/19	293.0000	0.63
B15-8A-1	0094548-52	Reg	99120003	Soil	RA-226	0.73	0.17		pCi/g	12/14/19	293.0000	0.43
B15-8A-2	0094548-53	Reg	99120003	Soil	AC-228	1.09	0.37		pCi/g	12/14/19	277.4000	0.78
B15-8A-2	0094548-53	Reg	99120003	Soil	RA-226	0.80	0.17		pCi/g	12/14/19	277.4000	0.30
B15-8A-3	0094548-54	Reg	99120003	Soil	AC-228	1.10	0.34		pCi/g	12/14/19	283.4000	0.72
B15-8A-3	0094548-54	Reg	99120003	Soil	RA-226	0.66	0.21		pCi/g	12/14/19	283.4000	0.49
B15-8A-4	0094548-55	Reg	99120003	Soil	AC-228	0.95	0.34		pCi/g	12/14/19	280.7000	0.69
B15-8A-4	0094548-55	Reg	99120003	Soil	RA-226	0.73	0.19		pCi/g	12/14/19	280.7000	0.32

Key shall be attached

Comments: _____

Project Number: RONSON-3

QA/QC Results Summary

12/[illegible]1999

Form II

Client Sample ID	Lab ID	Sample Type	Batch Number	Matrix	Radionuclide	Result	Uncertainty	Units	Analysis Date	Sample Size	MDA	Inst ID
Blank Spike	N/A	BS	99120001	Soil	CS-137	1.68	0.29	pCi/g	12/07/19	350.0000	0.06	2
Blank Spike	N/A	BS	99120002	Soil	CS-137	1.61	0.28	pCi/g	12/08/19	350.0000	0.06	2
Blank Spike	N/A	BS	99120003	Soil	CS-137	1.76	0.29	pCi/g	12/14/19	350.0000	0.05	2
B15-4A-1	0094548-11	Dup	99120001	Soil	AC-228	0.97	0.50	pCi/g	12/07/19	312.4000	0.80	2
B15-4A-1	0094548-11	Dup	99120001	Soil	RA-226	4.21	0.62	pCi/g	12/07/19	312.4000	0.27	2
B15-1D-1	0094548-33	Dup	99120002	Soil	AC-228	0.70	0.34	pCi/g	12/09/19	284.2000	0.71	2
B15-1D-1	0094548-33	Dup	99120002	Soil	RA-226	2.54	0.49	pCi/g	12/09/19	284.2000	0.55	2
B15-7A-1	0094548-47	Dup	99120003	Soil	AC-228	0.77	0.20	pCi/g	12/14/19	310.2000	0.32	2
B15-7A-1	0094548-47	Dup	99120003	Soil	RA-226	0.81	0.17	pCi/g	12/14/19	310.2000	0.31	2
Method Blank	N/A	MB	99120001	Soil	AC-228	-0.09	0.12	pCi/g	12/08/19	270.6000	0.21	2
Method Blank	N/A	MB	99120002	Soil	AC-228	0.06	0.12	pCi/g	12/08/19	261.7000	0.30	2
Method Blank	N/A	MB	99120003	Soil	AC-228	0.07	0.14	pCi/g	12/14/19	260.2000	0.33	2
Method Blank	N/A	MB	99120001	Soil	RA-226	-0.13	0.10	pCi/g	12/08/19	270.6000	0.16	2
Method Blank	N/A	MB	99120002	Soil	RA-226	-0.14	0.12	pCi/g	12/08/19	261.7000	0.19	2
Method Blank	N/A	MB	99120003	Soil	RA-226	-0.08	0.10	pCi/g	12/14/19	260.2000	0.18	2

Key shall be attached

Comments: _____

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Method Blank Summary

Form III

Client Sample ID	Batch Number	Matrix	Radionuclide	Result	Uncertainty	Q	Units	Analysis Date	Sample Size	Method Number	Inst ID
Method Blank	99120001	Soil	AC-228	-0.09	0.12		pCi/g	12/08/199	270.6000	RAS02500	2
Method Blank	99120002	Soil	AC-228	0.06	0.12		pCi/g	12/08/199	261.7000	RAS02500	2
Method Blank	99120003	Soil	AC-228	0.07	0.14		pCi/g	12/14/199	260.2000	RAS02500	2
Method Blank	99120001	Soil	RA-226	-0.13	0.10		pCi/g	12/08/199	270.6000	RAS02500	2
Method Blank	99120002	Soil	RA-226	-0.14	0.12		pCi/g	12/08/199	261.7000	RAS02500	2
Method Blank	99120003	Soil	RA-226	-0.08	0.10		pCi/g	12/14/199	260.2000	RAS02500	2

Key shall be attached

Comments: _____

Project Number: RONSON-3

Blank Spike Results Summary

12/. .1999

Form V

Client Sample ID	Batch Number	Matrix	Radionuclide	Spike	Result	Spike Value	Percent Recovery	Q	Units	Analysis Date	Method Number
Blank Spike	99120001	Soil	CS-137	Cs-137	1.68	1.84	91.30%		pCi/g	12/07/1999	RAS02500
Blank Spike	99120002	Soil	CS-137	Cs-137	1.61	1.84	87.50%		pCi/g	12/08/1999	RAS02500
Blank Spike	99120003	Soil	CS-137	Cs-137	1.76	1.84	95.65%		pCi/g	12/14/1999	RAS02500

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Comments: _____

Duplicate Results

Form VII

Client Sample ID	Lab ID	Batch Number	Radionuclide	Sample Result	Uncertainty	Dup. Result	Dup. Uncertainty	DER	Q	Units
B15-1D-1	0094548-33	99120002	AC-228	0.84	0.40	0.70	0.34	0.19		pCi/g
B15-1D-1	0094548-33	99120002	RA-226	2.45	0.36	2.54	0.49	0.11		pCi/g
B15-4A-1	0094548-11	99120001	AC-228	1.33	0.49	0.97	0.50	0.36		pCi/g
B15-4A-1	0094548-11	99120001	RA-226	3.50	0.54	4.21	0.62	0.61		pCi/g
B15-7A-1	0094548-47	99120003	AC-228	0.98	0.34	0.77	0.20	0.39		pCi/g
B15-7A-1	0094548-47	99120003	RA-226	0.37	0.19	0.81	0.17	1.22		pCi/g

Key shall be attached

Comments: _____

MDA made

Committed To *Your* Success

REPORT FORM KEY

Severn Trent Laboratories
628 Route 10
Whippany NJ 07981

Tel: (973) 428-8181
Fax: (973) 428-5222

Instrument ID:

#1 - Gas Proportional Counter
#2 - High Purity Germanium Detectors (HPGe)
#3 - Alpha Spectrometry Counter
#4 - Liquid Scintillation Counter
#5 - Lucas Cell Counter
#6 - Sodium Iodide Detector

Sample Type:

REG - Regular Sample
DUP - Duplicate Sample
MS - Matrix Spike
BS - Blank Spike
MB - Method Blank

Units:

pCi/L - Picocuries per Liter
pCi/g - Picocuries per Gram
pCi/ml - Picocuries per Milliliter
pCi/mg - Picocuries per Milligram
pCi/F - Picocuries per Air Filter

Radionuclides:

H-3	Tritium	C-14	Carbon-14
Cl-36	Chlorine-36	K-40	Potassium-40
Co-60	Cobalt-60	Sr-89	Strontium-89
Sr-90	Strontium-90	Tc-99	Technetium-99
Cs-137	Cesium-137	Tl-208	Thallium-208
Pb-210	Lead-210	Pb-212	Lead-212
Pb-214	Lead-214	Bi-214	Bismuth-214
Ra-226	Radium-226	Ac-228	Actinium-228
Ra-228	Radium-228	Th-234	Thorium-234
Th-227	Thorium-227	Th-232/230/228	Isotopic Thorium
U-234/235/238	Isotopic Uranium	Pu-238	Plutonium-238
Pu-239/240	Plutonium-239&240	Am-241	Americium-241
Np-237	Neptunium-237		

Committed To *Your* Success

Severn Trent Laboratories
628 Route 10
Whippany, NJ 07981

Tel: (973) 428-8181
Fax: (973) 428-5222

STL - WHIPPANY LAB CERTIFICATIONS

STL - NJ possesses the following regulatory certification and is currently certified to perform analysis in accordance with regulations pertaining to these certifications. Certificates are on file at the laboratory.

State/Agency Certification	Lab ID Number
CLP Organics Contract	68D50011
Connecticut	PH0722
Maryland	195
New Jersey	14530
New York	10997
North Carolina	339
Pennsylvania	68-355
Rhode Island	178
USDA Permit	S-3295 Revised
Delaware	NJ323

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Last Updated: 8/18/99

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Whippany NJ 07981
Tel: (973) 428-8181
Fax: (973) 428-5222

No. 59667

CHAIN OF CUSTODY

FIELD BOOK: _____ Pg 2 of 2

(1) Client: McLaren/Hart

(2) Project Name/no.: Ronson

(3) Client Contact: Jack Boddenbaum

(4) STL Contact:

(5) TAT: 1wk 2wk 3wk OTHER

(6) Proj. Type: NJPDES, NPDES, ISRA, CLP, CERCLA, RCRA, UST, ACO, MOA, OTHER NRC

(7) Protocol: CLP, SW846, EPA 600, DW, OTHER

(8) Reporting Type: NJ Reg Format, NJ Reduced Format, CLP Level II, Level I (Data Sum), Other

(14) Bill To: M. Cicalese, McLaren/Hart, 25 Independence Blvd, Warren, NJ 07059, 12080-5560-003-0015

PO#:

(15) ANALYSIS REQUIRED

(9) Client ID (10 CHAR)	(10) Date	(11) Time	(12) Mtx
B15-1A-3	11/23/99	1100	SO
B15-1A-4			
B15-2A-1		1130	
B15-2A-2			
B15-2A-3			
B15-2A-4			
B15-3A-1		1200	
B15-3A-2		1200	
B15-3A-3			
B15-3A-4			
B15-4A-1		1230	
B15-4A-2			
B15-4A-3			
B15-4A-4			

(16) COMMENTS: (Please include hazards on site.)

For Lab Use Only
Job No: 94598
Cooler No:
# of Coolers:
Cooler Temp. (s):
Custody Seal # (s):
Date Due:
PM NON-CONFORMANCE
Preserved: Temp:
Container: Volume:
Broken: Initials:
Holding Time:
Other:
Logged By:
DESCRIPTION

(17)

	Print Name and Company	Signature	Custody Seal # (s)	Date/Time
Sampled By:	Hazlegrave			11-23-99 1200
Received By:	E. Diaz			11/24/99 1000
Relinquished By:				/
Received By:				/
Relinquished By:				/
Received By:				/

Mtx = Matrix of Sample: (AI=Air, AQ=Aqueous, LE=Leachate, ML=Misc Liquid, MS=Misc Solids, OIL, SE=Sediment, SL=Sludge, SO=Soil)

(Copies: White and yellow copies should accompany samples to STL. The pink copy should be retained by the client.)

0000015

Severn Trent Laboratories
628 Route 10
Whippany NJ 07981

Tel: (973) 428-8181
Fax: (973) 428-5222

No. 596

CHAIN OF CUSTODY

FIELD BOOK: ______ Pg 1 of 2

(1) Client: McLAREN / HART

(2) Project Name/no.: RONSON

(3) Client Contact: J. BUDDENBAUM

(4) STL Contact: ERIK NIELSON

(5) TAT: (1wk), 2wk, 3wk, OTHER

(6) Proj. Type: NJPDES, NPDES, ISRA, CLP, CERCLA, RCRA, UST, ACO, MOA, OTHER NRC

(7) Protocol: CLP, SW846, EPA 600, DW, OTHER

(8) Reporting Type: NJ-Reg Format, NJ Reduced Format, CLP, Level II, Level I (Data Sum), Other

(14) Bill To: M. CICALESE, McLAREN / HART, 25 INDEPENDENCE BLVD, WARREN, NJ 07059

PO#: 12080-55-60-003-001

For Lab Use Only
Job No. 94548
Quote No.
# of Coolers
Cooler Temp (s)
Custody Seal # (s)
Date Due

PM NON-CONFORMANCE
Preserved ___ Temp
Container ___ Volume
Broken ___ Initials
Holding Time
Other

Logged By

(9) Client ID (10 CHAR)	(10) Date	(11) Time	(12) Mtx	(13) # of Containers	(15) Analysis Required: Th-228/Ac-228	Ra-226										Lab No.	Description
B15-4B-3	11-22	0900	SO	1	✓	✓										015	
B15-4B-2	↓	↓	↓	1	✓	✓										016	
B15-4B-1		↓		1	✓	✓										017	
B15-3B-3		0930		1	✓	✓										018	
B15-3B-1		↓		1	✓	✓										019	
B15-2B-1		1000		1	✓	✓										020	
B15-2B-2		↓		1	✓	✓										021	
B15-2B-4		↓		1	✓	✓										022	
B15-1B-1		1030		1	✓	✓										023	
B15-1B-2		↓		1	✓	✓										024	
B15-1B-3		↓		1	✓	✓										025	
B15-1B-4		↓		1	✓	✓										026	
B15-1A-1		11:00		1	✓	✓										027	
B15-1A-2	↓	↓	↓	1	✓	✓										028	

(16) COMMENTS: (Please include hazards on site.)

(17)	Print Name and Company	Signature	Custody Seal # (s)	Date/Time
Sampled By:	IJAZ / GRBIC	[signature]		11-23-99 / 1200
Received By:	E. DIMOZ	[signature]		11/24/99 / 1000
Relinquished By:				/
Received By:				/
Relinquished By:				/
Received By:				/

Mtx = Matrix of Sample. (AI=Air, AQ=Aqueous, LE=Leachate, ML=Misc Liquid, MS=Misc Solids, OIL, SE=Sediment, SL=Sludge, SO=Soil)

(Copies: White and yellow copies should accompany samples to STL. The pink copy should be retained by the client.)

000016

Severn Trent Laboratories
628 Route 10
Whippany NJ 07981
Tel: (973) 428-8181
Fax: (973) 428-5222

STL Committed To Your Success

No. 596[illegible]

CHAIN OF CUSTODY

FIELD BOOK: ______ Pg ____ of ____

(1) Client: McLaren / Hart

(2) Project Name/no.: Ronson

(3) Client Contact: Jack Buddenbaum

(4) STL Contact: Erik Nielson

(5) TAT: 1wk, 2wk, 3wk, OTHER (1wk circled)

(6) Proj. Type: NJPDES, NPDES, ISRA, CLP, CERCLA, RCRA, UST, ACO, MOA, OTHER NRC

(7) Protocol: CLP, SW846, EPA 600, DW, OTHER

(8) Reporting Type: NJ Reg Format, NJ Reduced Format, CLP, Level II, Level I (Data Sum), Other

(14) Bill To: M. Cicalese, McLaren / Hart, 25 Independence Blvd, Warren NJ 07059

PO#: 12080-5560-003-001

(15) ANALYSIS REQUIRED: The 228 / Aoc 228 / Rx-2260

For Lab Use Only
Job No.: 94548
Quote No.:
# of Coolers:
Cooler Temp(s):
Custody Seal # (s):
Date Due:

PM NON-CONFORMANCE
Preserved: Temp:
Container: Volume:
Broken: Initials:
Holding Time:
Other:
Logged By:

(9) Client ID (10 CHAR)	(10) Date	(11) Time	(12) Mtx	(13) #	Analysis	DESCRIPTION
B15-1C-1	[illegible]-23	0900	[illegible]		✓	[illegible]
B15-1C-2					✓	[illegible]
B15-2C-1					✓	[illegible]
B15-2C-2					✓	[illegible]
B15-1D-1					✓	[illegible]
B15-1D-2					✓	[illegible]
B15-2D-1					✓	[illegible]
B15-2D-2					✓	[illegible]
B15-2E-1					✓	[illegible]

(16) COMMENTS: (Please include hazards on site.)

(17)

	Print Name and Company	Signature	Custody Seal # (s)	Date/Time
Sampled By:	Kaz / Gebic	[signature]		11-23-99 1200
Received By:	G. Diaz	[signature]		11/24/99 1200
Relinquished By:				/
Received By:				/
Relinquished By:				/
Received By:				/

Mtx = Matrix of Sample (AI=Air, AQ=Aqueous, LE=Leachate, ML=Misc Liquid, MS=Misc Solids, OIL, SE=Sediment, SL=Sludge, SO=Soil)

(Copies: White and yellow copies should accompany samples to STL. The pink copy should be retained by the client.) See reverse for instructions

Severn Trent Laboratories
628 Route 10
Whippany NJ 07981
Tel: (973) 428-8181
Fax: (973) 428-5222

Committed To Your Success

CHAIN OF CUSTODY

No. 596[illegible]

FIELD BOOK: ______ Pg ____ of ____

(1) Client: McLAREN / HART

(2) Project Name/no.: RONSON

(3) Client Contact: J. BODDENBAUM

(4) STL Contact: ERIK NIELSON

(5) TAT: (1wk) 2wk, 3wk, OTHER

(6) Proj. Type: NJPDES, NPDES, ISRA, CLP, CERCLA, RCRA, UST, ACO, MOA, OTHER NRC

(7) Protocol: CLP, SW846, EPA 600, DW, OTHER

(8) Reporting Type: NJ-Reg Format, NJ Reduced Format, CLP, Level II, Level I (Data Sum), Other

(14) Bill To: M. CICALESE
McLAREN / HART
25 INDEPENDENCE BLVD
WARREN NJ 07059
PO#: 12080-5560-003-001

For Lab Use Only
Job No.: 94578
Quote No.:
# of Coolers:
Cooler Temp(s):
Custody Seal #(s):
Date Due:

PM NON CONFORMANCE
Preserved / Temp
Container / Volume
Broken / Initials
Holding Time
Other
Logged By:

(15) ANALYSIS REQUIRED

(9) Client ID (10 CHAR)	(10) Date	(11) Time	(12) Mtx	(13) # OF CONTAINERS	Th-228 / Ac-228	Ra-226	DESCRIPTION
B15-2B-3	11-16	1100	SO	1	✓	✓	
B15-3B-2	11-16	1100	SO	1	✓	✓	
AE-6C-2-2	11-16	1100	SO	1	✓	✓	
B15-B4-4	11-16	1100	SO	1	✓	✓	
B15-3B-4	11-16	1100	SO	1	✓	✓	
B15-6A-1	11-17	1000	SO	1	✓	✓	
B15-6A-2	11-17	1000	SO	1	✓	✓	
B15-6A-3	11-17	1000	SO	1	✓	✓	
B15-6A-4	11-17	1000	SO	1	✓	✓	
B15-7A-1	11-17	1100	SO	1	✓	✓	
B15-7A-2	11-17	1100	SO	1	✓	✓	
B15-7A-3	11-17	1100	SO	1	✓	✓	
B15-7A-4	11-17	1101	SO	1	✓	✓	
B15-9A-1	11-17	1300	SO	1	✓	✓	

(16) COMMENTS (Please include hazards on site.)

(17)	Print Name and Company	Signature	Custody Seal # (s)	Date/Time
Sampled By:	JAZ / GEBIC	[signature]		11-22-99 / 1300
Received By:	E. DROZ	[signature]		11/24/99 / 1000
Relinquished By:				/
Received By:				/
Relinquished By:				/
Received By:				/

Mtx = Matrix of Sample (AI=Air, AQ=Aqueous, LE=Leachate, ML=Misc Liquid, MS=Misc Solids, OIL, SE=Sediment, SL=Sludge, SO=Soil)

(Copies White and yellow copies should accompany samples to STL. The pink copy should be retained by the client.) See reverse for directions

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628 Route 10
Whippany NJ 07981
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No. 596

CHAIN OF CUSTODY

FIELD BOOK: ______ Pg ___ of ___

1. Client: McLaren / Hart
2. Project Name/no.: Ronson
3. Client Contact: J. Buddenbaum
4. STL Contact: Erik Nelson
5. TAT: 1wk (circled), 2wk, 3wk, OTHER
6. Proj. Type: NJPDES, NPDES, ISRA, CLP, CERCLA, RCRA, UST, ACO, MOA, OTHER: NRC
7. Protocol: CLP, SW846, EPA 600, DW, OTHER
8. Reporting Type: NJ-Reg Format, NJ Reduced Format, CLP, Level II, Level I (Data Sum), Other:

14. Bill To: M. Cicalese
McLaren / Hart
25 Independence Blvd
Warren NJ 07059
PO#: 12080-5560-003-001

For Lab Use Only
Job No.: 945498
Quote No.:
# of Coolers:
Cooler Temp(s):
Custody Seal #(s):
Date Due:

PM NON-CONFORMANCE
Preserved: Temp:
Container: Volume:
Broken: Initials:
Holding Time:
Other:
Logged By:

9. Client ID (10 CHAR)	10. Date	11. Time	12. Mtx	13. #	15. Analysis Required: TL-228m / AC-228	DESCRIPTION
B15-8A-1	[illegible]	1130	SO	1	✓	
B15-8A-2	[illegible]	1130	SO	1	✓	
B15-8A-3	[illegible]	1130	SO	1	✓	
B15-8A-4	[illegible]	1130	SO	1	✓	

16. COMMENTS: (Please include hazards on site.)

17.	Print Name and Company	Signature	Custody Seal # (s)	Date/Time
Sampled By:	JAZ / GRBIC	[signature]		11-22-99 1300
Received By:	G. DiLoz	[signature]		
Relinquished By:				11/24/99 1000
Received By:				/
Relinquished By:				/
Received By:				/

Mtx = Matrix of Sample: (AI=Air, AQ=Aqueous, LE=Leachate, ML=Misc Liquid, MS=Misc Solids, OIL, SE=Sediment, SL=Sludge, SO=Soil)

(Copies: White and yellow copies should accompany samples to STL ...)

STL

WORK ORDER

Lab

12/4/99

Work Order #	00-94-548 ✓	# of Samples	55	Recieved Date	11/24/1999 ✓	McLaren Hart	
Client #	56	# of Tests	58	Load Date	12/01/1999	25 Independence Boulevard	
Project	RONSON-3	Report Level	3	Due Date	12/10/1999	Warren, NJ 07059	
Count	70.00	Quote #		Export Date	/ /		

Comment

~~Brigit Doyle~~ BD Tal Ijaz

Lab ID	Sample #	Status	Matrix	Test	Cust ID	Collected
0094548-01	01A	Open	Soil	Gamma Spectroscopy	B15-1A-3 ✓	11/22/1999 ✓
0094548-02	02A	Open	Soil	Gamma Spectroscopy	B15-1A-4 ✓	11/22/1999
0094548-03	03A	Open	Soil	Gamma Spectroscopy	B15-2A-1 ✓	11/22/1999
0094548-04	04A	Open	Soil	Gamma Spectroscopy	B15-2A-2 ✓	11/22/1999
0094548-05	05A	Open	Soil	Gamma Spectroscopy	B15-2A-3 ✓	11/22/1999
0094548-06	06A	Open	Soil	Gamma Spectroscopy	B15-2A-4 ✓	11/22/1999
0094548-07	07A	Open	Soil	Gamma Spectroscopy	B15-3A-1 ✓	11/22/1999
0094548-08	08A	Open	Soil	Gamma Spectroscopy	B15-3A-2 ✓	11/22/1999
0094548-09	09A	Open	Soil	Gamma Spectroscopy	B15-3A-3 ✓	11/22/1999
0094548-10	10A	Open	Soil	Gamma Spectroscopy	B15-3A-4 ✓	11/22/1999
0094548-11	11A	Open	Soil	Gamma Spectroscopy	B15-4A-1 ✓	11/22/1999
0094548-12	12A	Open	Soil	Gamma Spectroscopy	B15-4A-2 ✓	11/22/1999
0094548-13	13A	Open	Soil	Gamma Spectroscopy	B15-4A-3 ✓	11/22/1999
0094548-14	14A	Open	Soil	Gamma Spectroscopy	B15-4A-4 ✓	11/22/1999
0094548-15	15A	Open	Soil	Gamma Spectroscopy	B15-4B-3 ✓	11/22/1999
0094548-16	16A	Open	Soil	Gamma Spectroscopy	B15-4B-2 ✓	11/22/1999
0094548-17	17A	Open	Soil	Gamma Spectroscopy	B15-4B-1 ✓	11/22/1999
0094548-18	18A	Open	Soil	Gamma Spectroscopy	B15-3B-3 ✓	11/22/1999
0094548-19	19A	Open	Soil	Gamma Spectroscopy	B15-3B-1 ✓	11/22/1999
0094548-20	20A	Open	Soil	Gamma Spectroscopy	B15-2B-1 ✓	11/22/1999
0094548-21	21A	Open	Soil	Gamma Spectroscopy	B15-2B-2 ✓	11/22/1999
0094548-22	22A	Open	Soil	Gamma Spectroscopy	B15-2B-4 ✓	11/22/1999
0094548-23	23A	Open	Soil	Gamma Spectroscopy	B15-1B-1 ✓	11/22/1999
0094548-24	24A	Open	Soil	Gamma Spectroscopy	B15-1B-2 ✓	11/22/1999
0094548-25	25A	Open	Soil	Gamma Spectroscopy	B15-1B-3 ✓	11/22/1999
0094548-26	26A	Open	Soil	Gamma Spectroscopy	B15-1B-4 ✓	11/22/1999
0094548-27	27A	Open	Soil	Gamma Spectroscopy	B15-1A-1 ✓	11/22/1999
0094548-28	28A	Open	Soil	Gamma Spectroscopy	B15-1A-2 ✓	11/22/1999
0094548-29	29A	Open	Soil	Gamma Spectroscopy	B15-1C-1 ✓	11/23/1999 ✓
0094548-30	30A	Open	Soil	Gamma Spectroscopy	B15-1C-2 ✓	11/23/1999
0094548-31	31A	Open	Soil	Gamma Spectroscopy	B15-2C-1 ✓	11/23/1999
0094548-32	32A	Open	Soil	Gamma Spectroscopy	B15-2C-2 ✓	11/23/1999
0094548-33	33A	Open	Soil	Gamma Spectroscopy	B15-1D-1 ✓	11/23/1999
0094548-34	34A	Open	Soil	Gamma Spectroscopy	B15-1D-2 ✓	11/23/1999
0094548-35	35A	Open	Soil	Gamma Spectroscopy	B15-2D-1 ✓	11/23/1999
0094548-36	36A	Open	Soil	Gamma Spectroscopy	B15-2D-2 ✓	11/23/1999

Lab ID	Sample #	Status	Matrix	Test	Cust ID	Collected
0094548-37	37A	Open	Soil	Gamma Spectroscopy	B15-2E-1	11/23/1999
0094548-38	38A	Open	Soil	Gamma Spectroscopy	B15-2B-3	11/16/1999
0094548-39	39A	Open	Soil	Gamma Spectroscopy	B15-3B-2	11/16/1999
0094548-40	40A	Open	Soil	Gamma Spectroscopy	AE-6C-2-2	11/16/1999
0094548-41	41A	Open	Soil	Gamma Spectroscopy	B15-B4-4	11/16/1999
0094548-42	42A	Open	Soil	Gamma Spectroscopy	B15-3B-4	11/16/1999
0094548-43	43A	Open	Soil	Gamma Spectroscopy	B15-6A-1	11/17/1999
0094548-44	44A	Open	Soil	Gamma Spectroscopy	B15-6A-2	11/17/1999
0094548-45	45A	Open	Soil	Gamma Spectroscopy	B15-6A-3	11/17/1999
0094548-46	46A	Open	Soil	Gamma Spectroscopy	B15-6A-4	11/17/1999
0094548-47	47A	Open	Soil	Gamma Spectroscopy	B15-7A-1	11/17/1999
0094548-48	48A	Open	Soil	Gamma Spectroscopy	B15-7A-2	11/17/1999
0094548-49	49A	Open	Soil	Gamma Spectroscopy	B15-7A-3	11/17/1999
0094548-50	50A	Open	Soil	Gamma Spectroscopy	B15-7A-4	11/17/1999
0094548-51	51A	Open	Soil	Gamma Spectroscopy	B15-9A-1	11/17/1999
0094548-52	52A	Open	Soil	Gamma Spectroscopy	B15-8A-1	11/17/1999
0094548-53	53A	Open	Soil	Gamma Spectroscopy	B15-8A-2	11/17/1999
0094548-54	54A	Open	Soil	Gamma Spectroscopy	B15-8A-3	11/17/1999
0094548-55	55A	Open	Soil	Gamma Spectroscopy	B15-8A-4	11/17/1999
0094548-11	11ADUP	Open	Soil	Gamma Spectroscopy	B15-4A-1	11/22/1999
0094548-33	33ADUP	Open	Soil	Gamma Spectroscopy	B15-1D-1	11/23/1999
0094548-47	47ADUP	Open	Soil	Gamma Spectroscopy	B15-7A-1	11/17/1999

Committed To *Your* Success

Severn Trent Laboratories
628 Route 10
Whippany, New Jersey 07981

Tel: (973) 428-8181
Fax: (973) 428-5222

Severn Trent Laboratories

INTERNAL CHAIN OF CUSTODY CHRONICLE

RADIOCHEMISTRY

Job/Case # 94598 Sample Ids: 1-55

Relinquished By: _____ Date/Time: 11/24/98

Received By: _____ Date/Time: 11/24/98

SEVERN TRENT LABORATORIES, Inc. - NEW JERSEY
SAMPLE RECEIPT VERIFICATION FORM

JOB NUMBER: 94598 CLIENT NH DATE RECEIVED: 11/24/99

OF SAMPLES 55 # OF COOLERS 4
CUSTODY SEALS: PRESENT/ ABSENT INTACT/ BROKEN TEMPERATURE BLANK PRESENT: _YES NO

COOLER TEMPS • C 2.4 2.4 2.4 COOLER OUTSIDE 2-6 • C ___ PRESERVED: ICE/BLUE ICE/ NONE
IF OUTSIDE TEMP RANGE - WERE SAMPLES RECEIVED LESS THAN 4 HOURS FROM COLLECTION ? ___YES ___NO

CHAIN OF CUSTODY: PRESENT/ ABSENT PROPERLY SIGNED, DATED, TIME: _YES _NO
SAMPLE TAGS: PRESENT / ABSENT RECEIVED BY: DRIVER ___ IF SHIPPED AIRBILL PRESENT ___ #_____

COOLER RADIOACT. SCREEN BELOW 0.50 uR/hr YES ___ NO ___ (INFORM SAFETY OFFICER IMMED.)
YES __NO SAMPLE BOTTLES INTACT
YES __NO PROPER CONTAINERS PER ANALYSIS USED
YES __NO SAMPLE LABELS INTACT
YES __NO LABELS COMPLETE AND LEGIBLE (ID, DATE,TIME,SIGNATURE,PRESERVATIVE)
YES __NO SAMPLES RECEIVED WITHIN HOLDING TIME
YES __NO SAMPLES PROPERLY PRESERVED
__YES __NO NO BUBBLES PRESENT VOA WATER MATRIX NA
YES __NO SUFFICIENT SAMPLE VOLUME RECEIVED
__YES __NO DRINKING H20/TREATED H20 – CHECKED FOR RESIDUAL CHLORINE NA
(DOCUMENT ON pH VERIFICATION LOG FORM

INITIAL 11/24 DATE - RUSH REPORT ISSUED BY __NA
_____INITIAL _____DATE - pH ANALYSIS PERFORMED BY NA
_____INITIAL _____DATE - % MOISTURE PERFORMED BY NA
_____INITIAL _____DATE - SAMPLE COMPOSITE PERFORMED BY NA

NOTE AND ITEMIZE BY SAMPLE AFFECTED, DISCREPANCIES AND NONCONFORMANCES FOUND: _____

PROJECT MANAGER INFORMED OF DISCREPANCIES: _____INITIALS _____ DATE NA

SUBCONTRACTING OF ANALYSIS REQUIRED __YES __NO SUB COC COMPLETED __YES __NO NA
SUBCONTRACTED SAMPLES SHIPPED __YES __NO CARRIER USED _____

SAMPLE RECEIPT, LABELING AND STORAGE PROCEDURES PERFORMED BY: JDoHayes

FINAL INSPECTION

BOTTLES CORRECTLY LABELED YES __NO REVIEWED BY [signature] DATE 11/24/99
INTERNAL CHAIN OF CUSTODY INITIATED YES __NO
ALL SIGNATURES AND DATES COMPLETE YES __NO

CLIENT INFORMED OF DISCREPANCIES/NONCONFORMANCES BY PM _____ DATE ____ TIME ____

NAME CLIENT REPRESENTATIVE INFORMED _____ METHOD: PHONE ___ FAX ___

CORRECTIVE ACTION REQUESTED BY CLIENT: _____

CORRECTIVE ACTION TAKEN: _____

PROJECT MANAGER APPROVED VERIFICATION FORM COMPLETE: [signature] DATE 12/4/99
Print name B. Tomlinson

Severn Trent Laboratories
628 Route 10
Whippany, NJ 07981

Tel: (973) 428-8181
Fax: (973) 428-5222

REPORT TRANSMITTAL

DECEMBER 29, 1999

MCLAREN HART

PROJECT: RONSON

PREPARED BY:

SEVERN TRENT LABORATORIES, INC. (STL)

(NJ CERTIFICATION NUMBER 14530)

STL JOB NO: 20990-94487

VOLUME I OF I

STL

Environmental Survey

Cover Page

Radiological Data Analysis Package

12/21/1999

628 Route 10
Whippany, NJ 07981

Phone (973) 428-8181
Fax (973) 428-5222

Project Number: RONSON-2

Client Sample ID	Lab ID
AE-6C-1	0094487-01
AE-6C-2	0094487-02
AE-6D-1	0094487-03
AE-6D-2	0094487-04
AE-6E-1	0094487-05
AE-7C-1	0094487-06
AE-7C-2	0094487-07
AE-7C-3	0094487-08
AE-7C-4	0094487-09
AE-7D-1	0094487-10
AE-7D-2	0094487-11
AE-7D-3	0094487-12
AE-7D-4	0094487-13
AE-7E-1	0094487-14
B15-5B-1	0094487-15
B15-5B-2	0094487-16
B15-5B-3	0094487-17
B15-5B-4	0094487-18
B15-6B-1	0094487-19
B15-6B-2	0094487-20
B15-6B-3	0094487-21
B15-6B-4	0094487-22
B15-7B-1	0094487-23
B15-7B-2	0094487-24
B15-7B-3	0094487-25
B15-7B-4	0094487-26
B15-8B-1	0094487-27
B15-8B-2	0094487-28
B15-8B-3	0094487-29
B15-8B-4	0094487-30
B15-9B-1	0094487-31

Comments: _____

Release of the data contained in this package has been authorized by the laboratory manager or the manager's designee, as verified by the following signature.

Manager, Radiological Laboratory

12/21/99
Date

CASE NARRATIVE
STL-NJ Project Number: RONSON-2
STL-NJ Work Order Number: 00-94-487

Samples were received without any discrepancies noted between chain of custody and cooler contents. Excessive sample quantities submitted slowed processing. Samples were sealed in salmon cans and gamma counted after a 21-day Rn-222 ingrowth period. The average of the Bi-214 and Pb-214 concentrations equals the Ra-226 concentration per gram (dry weight corrected)

One method blank was analyzed for each parameter. The activities of the method blanks were within the acceptance criteria of less than three times the MDL for all parameters.

One blank spike analysis was performed for each parameter. The resulsts were within the 80-120% QC limits.

A matrix spike is not performed for gamma spectroscopy.

One duplicate sample was analyzed for each parameter. The duplicate analyses all analysis met the acceptance criteria for a Duplicate Error Ratio (DER) of less than 1.5 when the activity is greater than 5 times the MDC. The DER is defined as follows:

$$DER = \frac{|S-D|}{(2\sigma_s + 2\sigma_d)}$$

Where: S = Original Sample Value
D = Duplicate Value
$2\sigma_s$ = Original Sample Uncertainty
$2\sigma_d$ = Duplicate Sample Uncertainty

Erik C. Nielsen.
Radiochemistry Group Leader
12/21/99

Project Number: RONSON-2

Radiological An ,is Results

12, 1999

Form I

Client Sample ID	Lab ID	Sample Type	Batch Number	Matrix	Radionuclide	Result	Uncertainty	Q	Units	Analysis Date	Sample Size	MDA
AE-6C-1	0094487-01	Reg	99110067	Soil	AC-228	1.94	0.66		pCi/g	12/11/19	198.8000	1.17
AE-6C-1	0094487-01	Reg	99110067	Soil	BI-214	2.23	0.50		pCi/g	12/11/19	198.8000	0.85
AE-6C-1	0094487-01	Reg	99110067	Soil	PB-214	2.30	0.39		pCi/g	12/11/19	198.8000	0.47
AE-6C-2	0094487-02	Reg	99110067	Soil	AC-228	2.05	0.50		pCi/g	12/11/19	210.1000	0.51
AE-6C-2	0094487-02	Reg	99110067	Soil	BI-214	2.11	0.41		pCi/g	12/11/19	210.1000	0.26
AE-6C-2	0094487-02	Reg	99110067	Soil	PB-214	2.52	0.41		pCi/g	12/11/19	210.1000	0.43
AE-6D-1	0094487-03	Reg	99110067	Soil	AC-228	1.16	0.36		pCi/g	12/11/19	263.4000	0.78
AE-6D-1	0094487-03	Reg	99110067	Soil	BI-214	0.94	0.29		pCi/g	12/11/19	263.4000	0.50
AE-6D-1	0094487-03	Reg	99110067	Soil	Pb-214	0.98	0.20		pCi/g	12/11/19	263.4000	0.33
AE-6D-2	0094487-04	Reg	99110067	Soil	AC-228	1.14	0.52		pCi/g	12/11/19	238.8000	0.95
AE-6D-2	0094487-04	Reg	99110067	Soil	BI-214	1.66	0.40		pCi/g	12/11/19	238.8000	0.65
AE-6D-2	0094487-04	Reg	99110067	Soil	PB-214	1.61	0.30		pCi/g	12/11/19	238.8000	0.40
AE-6E-1	0094487-05	Reg	99110067	Soil	AC-228	0.96	0.54		pCi/g	12/11/19	195.7000	1.14
AE-6E-1	0094487-05	Reg	99110067	Soil	BI-214	1.50	0.40		pCi/g	12/11/19	195.7000	0.72
AE-6E-1	0094487-05	Reg	99110067	Soil	Pb-214	1.47	0.32		pCi/g	12/11/19	195.7000	0.55
AE-7C-1	0094487-06	Reg	99110067	Soil	AC-228	1.51	0.32		pCi/g	12/11/19	371.3000	0.32
AE-7C-1	0094487-06	Reg	99110067	Soil	BI-214	0.70	0.22		pCi/g	12/11/19	371.3000	0.37
AE-7C-1	0094487-06	Reg	99110067	Soil	PB-214	0.68	0.24		pCi/g	12/11/19	371.3000	0.44
AE-7C-2	0094487-07	Reg	99110067	Soil	AC-228	0.74	0.38		pCi/g	12/11/19	281.4000	0.76
AE-7C-2	0094487-07	Reg	99110067	Soil	BI-214	0.65	0.21		pCi/g	12/11/19	281.4000	0.42

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Comments: _____

Form I

Client Sample ID	Lab ID	Sample Type	Batch Number	Matrix	Radionuclide	Result	Uncertainty	Q	Units	Analysis Date	Sample Size	MDA
AE-7C-2	0094487-07	Reg	99110067	Soil	PB-214	0.84	0.21		pCi/g	12/11/19	281.4000	0.36
AE-7C-3	0094487-08	Reg	99110067	Soil	AC-228	1.25	0.50		pCi/g	12/11/19	243.5000	0.90
AE-7C-3	0094487-08	Reg	99110067	Soil	BI-214	0.80	0.29		pCi/g	12/11/19	243.5000	0.48
AE-7C-3	0094487-08	Reg	99110067	Soil	PB-214	1.30	0.25		pCi/g	12/11/19	243.5000	0.39
AE-7C-4	0094487-09	Reg	99110067	Soil	AC-228	2.56	0.73		pCi/g	12/13/19	229.1000	1.34
AE-7C-4	0094487-09	Reg	99110067	Soil	BI-214	4.79	0.74		pCi/g	12/13/19	229.1000	0.34
AE-7C-4	0094487-09	Reg	99110067	Soil	PB-214	5.59	0.76		pCi/g	12/13/19	229.1000	0.61
AE-7D-1	0094487-10	Reg	99110067	Soil	AC-228	1.04	0.28		pCi/g	12/13/19	228.6000	0.44
AE-7D-1	0094487-10	Reg	99110067	Soil	BI-214	1.09	0.35		pCi/g	12/13/19	228.6000	0.58
AE-7D-1	0094487-10	Reg	99110067	Soil	PB-214	1.36	0.26		pCi/g	12/13/19	228.6000	0.45
AE-7D-2	0094487-11	Reg	99110067	Soil	AC-228	1.23	0.52		pCi/g	12/13/19	213.9000	1.01
AE-7D-2	0094487-11	Reg	99110067	Soil	BI-214	1.61	0.38		pCi/g	12/13/19	213.9000	0.69
AE-7D-2	0094487-11	Reg	99110067	Soil	PB-214	1.55	0.35		pCi/g	12/13/19	213.9000	0.47
AE-7D-3	0094487-12	Reg	99110067	Soil	AC-228	0.82	0.36		pCi/g	12/13/19	249.1000	0.77
AE-7D-3	0094487-12	Reg	99110067	Soil	BI-214	0.85	0.25		pCi/g	12/13/19	249.1000	0.46
AE-7D-3	0094487-12	Reg	99110067	Soil	PB-214	0.88	0.20		pCi/g	12/13/19	249.1000	0.40
AE-7D-4	0094487-13	Reg	99110067	Soil	AC-228	0.83	0.48		pCi/g	12/13/19	246.1000	0.98
AE-7D-4	0094487-13	Reg	99110067	Soil	BI-214	1.63	0.41		pCi/g	12/13/19	246.1000	0.68
AE-7D-4	0094487-13	Reg	99110067	Soil	PB-214	1.90	0.34		pCi/g	12/13/19	246.1000	0.44
AE-7E-1	0094487-14	Reg	99110067	Soil	AC-228	1.05	0.43		pCi/g	12/13/19	257.8000	0.77

Key shall be attached

Comments:

Form I

Client Sample ID	Lab ID	Sample Type	Batch Number	Matrix	Radionuclide	Result	Uncertainty	Q	Units	Analysis Date	Sample Size	MDA
AE-7E-1	0094487-14	Reg	99110067	Soil	Bi-214	1.56	0.36		pCi/g	12/13/19	257.8000	0.25
AE-7E-1	0094487-14	Reg	99110067	Soil	Pb-214	1.75	0.33		pCi/g	12/13/19	257.8000	0.36
B15-5B-1	0094487-15	Reg	99110067	Soil	AC-228	1.61	0.48		pCi/g	12/13/19	254.0000	0.98
B15-5B-1	0094487-15	Reg	99110067	Soil	BI-214	2.76	0.48		pCi/g	12/13/19	254.0000	0.21
B15-5B-1	0094487-15	Reg	99110067	Soil	PB-214	2.58	0.41		pCi/g	12/13/19	254.0000	0.43
B15-5B-2	0094487-16	Reg	99110067	Soil	AC-228	1.62	0.55		pCi/g	12/13/19	256.0000	0.98
B15-5B-2	0094487-16	Reg	99110067	Soil	BI-214	3.65	0.58		pCi/g	12/13/19	256.0000	0.23
B15-5B-2	0094487-16	Reg	99110067	Soil	PB-214	4.07	0.58		pCi/g	12/13/19	256.0000	0.46
B15-5B-3	0094487-17	Reg	99110067	Soil	AC-228	1.40	0.47		pCi/g	12/13/19	249.6000	0.97
B15-5B-3	0094487-17	Reg	99110067	Soil	BI-214	3.94	0.64		pCi/g	12/13/19	249.6000	0.27
B15-5B-3	0094487-17	Reg	99110067	Soil	PB-214	4.03	0.58		pCi/g	12/13/19	249.6000	0.50
B15-5B-4	0094487-18	Reg	99110068	Soil	AC-228	0.20	0.51		pCi/g	12/13/19	300.1000	0.81
B15-5B-4	0094487-18	Reg	99110068	Soil	BI-214	2.63	0.43		pCi/g	12/13/19	300.1000	0.21
B15-5B-4	0094487-18	Reg	99110068	Soil	PB-214	2.55	0.42		pCi/g	12/13/19	300.1000	0.36
B15-6B-1	0094487-19	Reg	99110068	Soil	AC-228	1.03	0.45		pCi/g	12/13/19	277.1000	0.80
B15-6B-1	0094487-19	Reg	99110068	Soil	BI-214	0.91	0.26		pCi/g	12/13/19	277.1000	0.48
B15-6B-1	0094487-19	Reg	99110068	Soil	PB-214	1.05	0.22		pCi/g	12/13/19	277.1000	0.32
B15-6B-2	0094487-20	Reg	99110068	Soil	AC-228	0.07	0.37		pCi/g	12/13/19	263.7000	0.84
B15-6B-2	0094487-20	Reg	99110068	Soil	BI-214	0.29	0.18		pCi/g	12/13/19	263.7000	0.46
B15-6B-2	0094487-20	Reg	99110068	Soil	PB-214	1.30	0.25		pCi/g	12/13/19	263.7000	0.34

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Comments:

MDA made

Form I

Client Sample ID	Lab ID	Sample Type	Batch Number	Matrix	Radionuclide	Result	Uncertainty	Q	Units	Analysis Date	Sample Size	MDA
B15-6B-3	0094487-21	Reg	99110068	Soil	AC-228	0.77	0.44		pCi/g	12/13/19	238.5000	0.78
B15-6B-3	0094487-21	Reg	99110068	Soil	BI-214	1.20	0.37		pCi/g	12/13/19	238.5000	0.62
B15-6B-3	0094487-21	Reg	99110068	Soil	PB-214	1.55	0.31		pCi/g	12/13/19	238.5000	0.45
B15-6B-4	0094487-22	Reg	99110068	Soil	AC-228	0.75	0.36		pCi/g	12/13/19	289.9000	0.67
B15-6B-4	0094487-22	Reg	99110068	Soil	BI-214	0.85	0.22		pCi/g	12/13/19	289.9000	0.42
B15-6B-4	0094487-22	Reg	99110068	Soil	PB-214	0.84	0.19		pCi/g	12/13/19	289.9000	0.30
B15-7B-1	0094487-23	Reg	99110068	Soil	AC-228	1.05	0.42		pCi/g	12/13/19	287.7000	0.76
B15-7B-1	0094487-23	Reg	99110068	Soil	BI-214	0.60	0.22		pCi/g	12/13/19	287.7000	0.42
B15-7B-1	0094487-23	Reg	99110068	Soil	PB-214	0.93	0.19		pCi/g	12/13/19	287.7000	0.31
B15-7B-2	0094487-24	Reg	99110068	Soil	AC-228	0.90	0.33		pCi/g	12/13/19	274.2000	0.68
B15-7B-2	0094487-24	Reg	99110068	Soil	BI-214	0.66	0.22		pCi/g	12/13/19	274.2000	0.42
B15-7B-2	0094487-24	Reg	99110068	Soil	PB-214	0.69	0.18		pCi/g	12/13/19	274.2000	0.29
B15-7B-3	0094487-25	Reg	99110068	Soil	AC-228	1.08	0.42		pCi/g	12/13/19	284.5000	0.81
B15-7B-3	0094487-25	Reg	99110068	Soil	BI-214	0.87	0.24		pCi/g	12/13/19	284.5000	0.45
B15-7B-3	0094487-25	Reg	99110068	Soil	PB-214	0.77	0.20		pCi/g	12/13/19	284.5000	0.33
B15-7B-4	0094487-26	Reg	99110068	Soil	AC-228	0.81	0.38		pCi/g	12/13/19	259.0000	0.77
B15-7B-4	0094487-26	Reg	99110068	Soil	BI-214	0.86	0.23		pCi/g	12/13/19	259.0000	0.44
B15-7B-4	0094487-26	Reg	99110068	Soil	PB-214	1.03	0.21		pCi/g	12/13/19	259.0000	0.27
B15-8B-1	0094487-27	Reg	99110068	Soil	AC-228	0.75	0.46		pCi/g	12/13/19	252.9000	0.75
B15-8B-1	0094487-27	Reg	99110068	Soil	BI-214	0.70	0.23		pCi/g	12/13/19	252.9000	0.46

Key shall be attached

Comments:

Form I

Client Sample ID	Lab ID	Sample Type	Batch Number	Matrix	Radionuclide	Result	Uncertainty	Q	Units	Analysis Date	Sample Size	MDA
B15-8B-1	0094487-27	Reg	99110068	Soil	PB-214	0.85	0.18		pCi/g	12/13/19	252.9000	0.35
B15-8B-2	0094487-28	Reg	99110068	Soil	AC-228	1.56	0.59		pCi/g	12/13/19	214.7000	1.04
B15-8B-2	0094487-28	Reg	99110068	Soil	BI-214	1.45	0.33		pCi/g	12/13/19	214.7000	0.23
B15-8B-2	0094487-28	Reg	99110068	Soil	PB-214	1.62	0.31		pCi/g	12/13/19	214.7000	0.38
B15-8B-3	0094487-29	Reg	99110068	Soil	AC-228	0.88	0.39		pCi/g	12/13/19	263.6000	0.90
B15-8B-3	0094487-29	Reg	99110068	Soil	BI-214	1.14	0.29		pCi/g	12/13/19	263.6000	0.54
B15-8B-3	0094487-29	Reg	99110068	Soil	PB-214	1.17	0.23		pCi/g	12/13/19	263.6000	0.40
B15-8B-4	0094487-30	Reg	99110068	Soil	AC-228	0.95	0.35		pCi/g	12/13/19	276.1000	0.72
B15-8B-4	0094487-30	Reg	99110068	Soil	BI-214	0.86	0.25		pCi/g	12/13/19	276.1000	0.45
B15-8B-4	0094487-30	Reg	99110068	Soil	PB-214	0.89	0.20		pCi/g	12/13/19	276.1000	0.32
B15-9B-1	0094487-31	Reg	99110068	Soil	AC-228	1.05	0.38		pCi/g	12/13/19	248.5000	0.76
B15-9B-1	0094487-31	Reg	99110068	Soil	BI-214	0.73	0.24		pCi/g	12/13/19	248.5000	0.44
B15-9B-1	0094487-31	Reg	99110068	Soil	PB-214	0.84	0.20		pCi/g	12/13/19	248.5000	0.27

Key shall be attached

Comments: _____

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MDA made

Form II

Client Sample ID	Lab ID	Sample Type	Batch Number	Matrix	Radionuclide	Result	Uncertainty	Units	Analysis Date	Sample Size	MDA	Inst ID
Blank Spike	N/A	BS	99110067	Soil	Cs-137	1.81	0.31	pCi/g	12/03/19	1.0000	0.07	2
Blank Spike	N/A	BS	99110068	Soil	Cs-137	1.84	0.30	pCi/g	12/13/19	350.0000	0.05	2
AE-7C-2	0094487-07	Dup	99110067	Soil	AC-228	0.68	0.44	pCi/g	12/11/19	281.4000	0.72	2
AE-7C-2	0094487-07	Dup	99110067	Soil	BI-214	0.75	0.22	pCi/g	12/11/19	281.4000	0.40	2
AE-7C-2	0094487-07	Dup	99110067	Soil	PB-214	0.86	0.18	pCi/g	12/11/19	281.4000	0.03	2
B15-6B-4	0094487-22	Dup	99110068	Soil	AC-228	0.94	0.32	pCi/g	12/13/19	289.9000	0.72	2
B15-6B-4	0094487-22	Dup	99110068	Soil	BI-214	0.82	0.26	pCi/g	12/13/19	289.9000	0.45	2
B15-6B-4	0094487-22	Dup	99110068	Soil	Pb-214	0.84	0.19	pCi/g	12/13/19	289.9000	0.30	2
Method Blank	N/A	MB	99110067	Soil	AC-228	0.06	0.11	pCi/g	12/03/19	332.4000	0.24	2
Method Blank	N/A	MB	99110068	Soil	AC-228	0.00	0.13	pCi/g	12/13/19	214.8000	0.30	2
Method Blank	N/A	MB	99110067	Soil	BI-214	0.10	0.11	pCi/g	12/03/19	332.4000	0.27	2
Method Blank	N/A	MB	99110068	Soil	BI-214	-0.03	0.09	pCi/g	12/13/19	214.8000	0.19	2
Method Blank	N/A	MB	99110067	Soil	PB-214	0.02	0.09	pCi/g	12/03/19	332.4000	0.19	2
Method Blank	N/A	MB	99110068	Soil	PB-214	-0.04	0.15	pCi/g	12/13/19	214.8000	0.28	2

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Comments: _____

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MDA mode

Method Blank Summary

12/ 1999

Form III

Client Sample ID	Batch Number	Matrix	Radionuclide	Result	Uncertainty	Q	Units	Analysis Date	Sample Size	Method Number	Inst ID
Method Blank	99110067	Soil	AC-228	0.06	0.11		pCi/g	12/03/199	332.4000	RAS02500	2
Method Blank	99110068	Soil	AC-228	0.00	0.13		pCi/g	12/13/199	214.8000	RAS02500	2
Method Blank	99110067	Soil	BI-214	0.10	0.11		pCi/g	12/03/199	332.4000	RAS02500	2
Method Blank	99110068	Soil	BI-214	-0.03	0.09		pCi/g	12/13/199	214.8000	RAS02500	2
Method Blank	99110067	Soil	PB-214	0.02	0.09		pCi/g	12/03/199	332.4000	RAS02500	2
Method Blank	99110068	Soil	PB-214	-0.04	0.15		pCi/g	12/13/199	214.8000	RAS02500	2

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Comments: _____

MDA grade

Project Number: RONSON-2

Blank Spike Results Summary

Form V

Client Sample ID	Batch Number	Matrix	Radionuclide	Spike	Result	Spike Value	Percent Recovery	Q	Units	Analysis Date	Method Number
Blank Spike	99110067	Soil	Cs-137	Cs-137	1.81	1.84	98.37%		pCi/g	12/03/1999	RAS02500
Blank Spike	99110068	Soil	Cs-137	Cs-137	1.84	1.84	100.00%		pCi/g	12/13/1999	RAS02500

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MDA made

Duplicate Results

Form VII

Client Sample ID	Lab ID	Batch Number	Radionuclide	Sample Result	Uncertainty	Dup. Result	Dup. Uncertainty	DER	Q	Units
AE-7C-2	0094487-07	99110067	AC-228	0.74	0.38	0.68	0.44	0.07		pCi/g
AE-7C-2	0094487-07	99110067	BI-214	0.65	0.21	0.75	0.22	0.23		pCi/g
AE-7C-2	0094487-07	99110067	PB-214	0.84	0.21	0.86	0.18	0.05		pCi/g
B15-6B-4	0094487-22	99110068	AC-228	0.75	0.36	0.94	0.32	0.28		pCi/g
B15-6B-4	0094487-22	99110068	BI-214	0.85	0.22	0.82	0.26	0.06		pCi/g

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mments:

Committed To *Your* Success

REPORT FORM KEY

Severn Trent Laboratories
628 Route 10
Whippany NJ 07981

Tel: (973) 428-8181
Fax: (973) 428-5222

Instrument ID:

#1 - Gas Proportional Counter
#2 - High Purity Germanium Detectors (HPGe)
#3 - Alpha Spectrometry Counter
#4 - Liquid Scintillation Counter
#5 - Lucas Cell Counter
#6 - Sodium Iodide Detector

Sample Type:

REG - Regular Sample
DUP - Duplicate Sample
MS - Matrix Spike
BS - Blank Spike
MB - Method Blank

Units:

pCi/L - Picocuries per Liter
pCi/g - Picocuries per Gram
pCi/ml - Picocuries per Milliliter
pCi/mg - Picocuries per Milligram
pCi/F - Picocuries per Air Filter

Radionuclides:

H-3	Tritium	C-14	Carbon-14
Cl-36	Chlorine-36	K-40	Potassium-40
Co-60	Cobalt-60	Sr-89	Strontium-89
Sr-90	Strontium-90	Tc-99	Technetium-99
Cs-137	Cesium-137	Tl-208	Thallium-208
Pb-210	Lead-210	Pb-212	Lead-212
Pb-214	Lead-214	Bi-214	Bismuth-214
Ra-226	Radium-226	Ac-228	Actinium-228
Ra-228	Radium-228	Th-234	Thorium-234
Th-227	Thorium-227	Th-232/230/228	Isotopic Thorium
U-234/235/238	Isotopic Uranium	Pu-238	Plutonium-238
Pu-239/240	Plutonium-239&240	Am-241	Americium-241
Np-237	Neptunium-237		

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Severn Trent Laboratories
628 Route 10
Whippany, NJ 07981

Tel: (973) 428-8181
Fax: (973) 428-5222

STL - WHIPPANY LAB CERTIFICATIONS

STL - NJ possesses the following regulatory certification and is currently certified to perform analysis in accordance with regulations pertaining to these certifications. Certificates are on file at the laboratory.

State/Agency Certification	Lab ID Number
CLP Organics Contract	68D50011
Connecticut	PH0722
Maryland	195
New Jersey	14530
New York	10997
North Carolina	339
Pennsylvania	68-355
Rhode Island	178
USDA Permit	S-3295 Revised
Delaware	NJ323

rpdata\stlcert.for

Last Updated: 8/18/99

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Fax: (973) 428-5222

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No. 59679

CHAIN OF CUSTODY

FIELD BOOK: _____ Pg _____ of _____

1. Client: McLAREN | HART
2. Project Name/no.: RONSON
3. Client Contact: J. BUDDENBAUM
4. STL Contact: ERIK NIELSON
5. TAT: 1wk, 2wk, (3wk) OTHER _____
6. Proj. Type: NJPDES, NPDES, ISRA, CLP, CERCLA, RCRA, UST, ACO, MOA, OTHER NRC
7. Protocol: CLP, SW846, EPA 600, DW, OTHER _____
8. Reporting Type: NJ Reg Format, NJ Reduced Format, CLP, Level II, Level I (Data Sum), Other _____

14. Bill To: M. CICALESE, 25 INDEPENDENCE BLVD, WARREN, NJ 07059
PO#: 12080-55-60-003-001

15. ANALYSIS REQUIRED

9. Client ID (10 CHAR)	10. Date	11. Time	12. Mtx	13. # OF CONTAINERS	Th-228 / Ac-228	Ra-226
AE-6C-1	11-12	1200	SO	1	✓	✓
AE-6C-2				1	✓	✓
AE-6D-1				1	✓	✓
AE-6D-2				1	✓	✓
AE-6E-1				1	✓	✓
AE-7C-1				1	✓	✓
AE-7C-2				1	✓	✓
AE-7C-3				1	✓	✓
AE-7C-4				1	✓	✓
AE-7D-1				1	✓	✓
AE-7D-2				1	✓	✓
AE-7D-3				1	✓	✓
AE-7D-4				1	✓	✓
AE-7E-1	✓	↓	✓	1	✓	✓

For Lab Use Only

Job No.: 94487
Quote No.: _____
# of Coolers: _____
Cooler Temp.(s): _____
Custody Seal #(s): _____
Date Due: _____

PM NON-CONFORMANCE
Preserved: ____ Temp: ____
Container: ____ Volume: ____
Broken: ____ Initials: ____
Holding Time: ____
Other: ____

Logged By: _____

DESCRIPTION

16. COMMENTS: (Please include hazards on site.)

17.	Print Name and Company	Signature	Custody Seal # (s)	Date/Time
Sampled By:	JAZ | GRBIC			11-12-99 / 1500.
Received By:	ED REYNOLDS STL	Ed Reynolds		11/13/99 1140
Relinquished By:	ED REYNOLDS STL	Ed Reynolds		11/13/99 1300
Received By:	JOSEPHINGER STL			11/13/99 1700
Relinquished By:				/
Received By:				/

Mtx = Matrix of Sample. (AI=Air, AQ=Aqueous, LE=Leachate, ML=Misc Liquid, MS=Misc Solids, OIL, SE=Sediment, SL=Sludge, SO=Soil)

(Copies: White and yellow copies should accompany samples to STL. The pink copy should be retained by the client.) See reverse for directions

000014

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628 Route 10
Whippany NJ 07981
Tel: (973) 428-8181
Fax: (973) 428-5222

Committed To Your Success

No. 59607

CHAIN OF CUSTODY

FIELD BOOK: _____ Pg _____ of _____

(1) Client: McLaren | Hart

(2) Project Name/no.: Ronson

(3) Client Contact: J. Buddenbuam.

(4) STL Contact: Erik Nielson

(5) TAT: 1wk, 2wk, (3wk), OTHER _____

(6) Proj. Type: NJPDES, NPDES, ISRA, CLP, CERCLA, RCRA, UST, ACO, MOA, OTHER NRC

(7) Protocol: CLP, SW846, EPA 600 DW, OTHER _____

(8) Reporting Type: NJ Reg Format, NJ Reduced Format, CLP, Level II, Level I (Data Sum), Other _____

(14) Bill To: M. Cicalese
25 Independence Blvd
Warren NJ 07059

PO#: 12080-5560-003-001

(15) ANALYSIS REQUIRED

(9) Client ID (10 CHAR)	(10) Date	(11) Time	(12) Mtx	(13) # OF CONTAINERS	Th-228 Ac-228	Ra-226	LAB ID
B15-5B-1	11/1/99	1300	SO	1	✓	✓	015
B15-5B-2				1	✓	✓	016
B15-5B-3				1	✓	✓	017
B15-5B-4				1	✓	✓	018
B15-6B-1				1	✓	✓	019
B15-6B-2				1	✓	✓	020
B15-6B-3				1	✓	✓	021
B15-6B-4				1	✓	✓	022
B15-7B-1				1	✓	✓	023
B15-7B-2				1	✓	✓	024
B15-7B-3				1	✓	✓	025
B15-7B-4				1	✓	✓	026
B15-8B-1				1	✓	✓	027
B15-8B-2				1	✓	✓	028

For Lab Use Only

Job No.: 9448
Quote No.:
# of Coolers:
Cooler Temp.(s):
Custody Seal #(s):
Date Due:

PM NON-CONFORMANCE

Preserved: ____ Temp: ____
Container: ____ Volume: ____
Broken: ____ Initials: ____
Holding Time: ____
Other: ____

Logged By: ____

DESCRIPTION

(16) COMMENTS: (Please include hazards on site.)

(17)	Print Name and Company	Signature	Custody Seal # (s)	Date/Time
Sampled By:	KAZ | GRBIC			11-1-99 / 1500
Received By:	ED REYNOLDS STL			11/4/99 / 1190
Relinquished By:	ED REYNOLDS STL			11/4/99 / 1300
Received By:	[illegible] STL			11/9/55 / 1400
Relinquished By:				/
Received By:				/

Mtx = Matrix of Sample. (AI=Air, AQ=Aqueous, LE=Leachate, ML=Misc Liquid, MS=Misc Solids, OIL, SE=Sediment, SL=Sludge, SO=Soil)

(Copies: White and yellow copies should accompany samples to STL. The pink copy should be retained by the client.)

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Fax: (973) 428-5222

No. 59673

CHAIN OF CUSTODY

FIELD BOOK: _____ Pg ____ of ____

(1) Client: McLaren | Hart

(2) Project Name/no.: Rowson

(3) Client Contact: J. Buddenbuam

(4) STL Contact: Erik Nielson

(5) TAT: 1wk, 2wk, 3wk) OTHER _____

(6) Proj. Type: NJPDES, NPDES, ISRA, CLP, CERCLA, RCRA, UST, ACO, MOA, OTHER NRC

(7) Protocol: CLP, SW846, EPA 600 DW, OTHER _____

(8) Reporting Type: NJ Reg Format, NJ Reduced Format, CLP, Level II, Level I (Data Sum), Other _____

(14) Bill To: M. Cicalese
25 Independence Blvd
Warren, NJ 07059

PO#: 12080-5560-003-001

(15) ANALYSIS REQUIRED

(9) Client ID (10 CHAR)	(10) Date	(11) Time	(12) Mtx	(13) # OF CONTAINERS	Th-229 | Ac-228	Ra-226	LAB ID
B15-8B-3	11-1-99	1300	SO				029
B15-8B-4							030
B15-9B-1							031

For Lab Use Only

Job No. 94487
Quote No. _____
# of Coolers: _____
Cooler Temp.(s) _____
Custody Seal #(s) _____
Date Due: _____

PM NON-CONFORMANCE

Preserved: ____ Temp: ____
Container: ____ Volume: ____
Broken: ____ Initials: ____
Holding Time: _____
Other: _____

Logged By: _____

DESCRIPTION

(16) COMMENTS: (Please include hazards on site.)

(17)

	Print Name and Company	Signature	Custody Seal # (s)	Date/Time
Sampled By:	Jaz | Grbic			11-1-99 | 15 00
Received By:	Ed Reynolds STL			11/1/99 | 1140
Relinquished By:	Ed Reynolds STL			11/1/99 | 1300
Received By:	Tom Higgins STL			11/1/99 | 1700
Relinquished By:				/
Received By:				/

Mtx = Matrix of Sample. (AI=Air, AQ=Aqueous, LE=Leachate, ML=Misc Liquid, MS=Misc Solids, OIL, SE=Sediment, SL=Sludge, SO=Soil)

(Copies: White and yellow copies should accompany samples to STL. The pink copy should be retained by the client.) See reverse for directions

000016

STL

WORK ORDER

Lab

Work Order #	00-94-487	# of Samples	31	Recieved Date	11/17/1999	McLaren Hart	
Client #	56	# of Tests	33	Load Date	11/19/1999	25 Independence Boulevard	
Project	RONSON-2	Report Level	2 (BR)	Due Date	12/09/1999	Warren, NJ 07059	
Ar :	70.00	Quote #		Export Date	/ /	(BR) ~~Brigit Doyle~~ Tal Tjaz	11/20/99
Comment							

Lab ID	Sample #	Status	Matrix	Test	Cust ID	Collected
0094487-07	07ADUP	Open	Soil	Gamma Spectroscopy	AE-7C-2	11/12/1999
0094487-22	22ADUP	Open	Soil	Gamma Spectroscopy	B15-6B-4	11/11/1999
0094487-01	01A	Open	Soil	Gamma Spectroscopy	AE-6C-1	11/12/1999
0094487-02	02A	Open	Soil	Gamma Spectroscopy	AE-6C-2	11/12/1999
0094487-03	03A	Open	Soil	Gamma Spectroscopy	AE-6D-1	11/12/1999
0094487-04	04A	Open	Soil	Gamma Spectroscopy	AE-6D-2	11/12/1999
0094487-05	05A	Open	Soil	Gamma Spectroscopy	AE-6E-1	11/12/1999
0094487-06	06A	Open	Soil	Gamma Spectroscopy	AE-7C-1	11/12/1999
0094487-07	07A	Open	Soil	Gamma Spectroscopy	AE-7C-2	11/12/1999
0094487-08	08A	Open	Soil	Gamma Spectroscopy	AE-7C-3	11/12/1999
0094487-09	09A	Open	Soil	Gamma Spectroscopy	AE-7C-4	11/12/1999
0094487-10	10A	Open	Soil	Gamma Spectroscopy	AE-7D-1	11/12/1999
0094487-11	11A	Open	Soil	Gamma Spectroscopy	AE-7D-2	11/12/1999
0094487-12	12A	Open	Soil	Gamma Spectroscopy	AE-7D-3	11/12/1999
0094487-13	13A	Open	Soil	Gamma Spectroscopy	AE-7D-4	11/12/1999
0094487-14	14A	Open	Soil	Gamma Spectroscopy	AE-7E-1	11/12/1999
0094487-15	15A	Open	Soil	Gamma Spectroscopy	B15-5B-1	11/11/1999
0094487-16	16A	Open	Soil	Gamma Spectroscopy	B15-5B-2	11/11/1999
0094487-17	17A	Open	Soil	Gamma Spectroscopy	B15-5B-3	11/11/1999
0094487-18	18A	Open	Soil	Gamma Spectroscopy	B15-5B-4	11/11/1999
0094487-19	19A	Open	Soil	Gamma Spectroscopy	B15-6B-1	11/11/1999
0094487-20	20A	Open	Soil	Gamma Spectroscopy	B15-6B-2	11/11/1999
0094487-21	21A	Open	Soil	Gamma Spectroscopy	B15-6B-3	11/11/1999
0094487-22	22A	Open	Soil	Gamma Spectroscopy	B15-6B-4	11/11/1999
0094487-23	23A	Open	Soil	Gamma Spectroscopy	B15-7B-1	11/11/1999
0094487-24	24A	Open	Soil	Gamma Spectroscopy	B15-7B-2	11/11/1999
0094487-25	25A	Open	Soil	Gamma Spectroscopy	B15-7B-3	11/11/1999
0094487-26	26A	Open	Soil	Gamma Spectroscopy	B15-7B-4	11/11/1999
0094487-27	27A	Open	Soil	Gamma Spectroscopy	B15-8B-1	11/11/1999
0094487-28	28A	Open	Soil	Gamma Spectroscopy	B15-8B-2	11/11/1999
0094487-29	29A	Open	Soil	Gamma Spectroscopy	B15-8B-3	11/11/1999
0094487-30	30A	Open	Soil	Gamma Spectroscopy	B15-8B-4	11/11/1999
0094487-31	31A	Open	Soil	Gamma Spectroscopy	B15-9B-1	11/11/1999

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Severn Trent Laboratories

INTERNAL CHAIN OF CUSTODY CHRONICLE

RADIOCHEMISTRY

Job/Case # 94487 Sample Ids: 1-31

Relinquished By: _____ Date/Time: 11/18/99

Received By: _____ Date/Time: 11/18/99

SEVERN TRENT LABORATORIES, Inc. - NEW JERSEY
SAMPLE RECEIPT VERIFICATION FORM

JOB NUMBER: 94487 CLIENT M/H DATE RECEIVED: 11/17/99

OF SAMPLES 31 # OF COOLERS 2
CUSTODY SEALS: PRESENT/ ABSENT INTACT/ BROKEN TEMPERATURE BLANK PRESENT: _YES _NO

COOLER TEMP/S ° C 4 4 COOLER OUTSIDE 2-6 ° C ___ PRESERVED: ICE/BLUE ICE/NONE
IF OUTSIDE TEMP RANGE - WERE SAMPLES RECEIVED LESS THAN 4 HOURS FROM COLLECTION ? __YES __NO

CHAIN OF CUSTODY: ~~PRESENT~~/ABSENT PROPERLY SIGNED, DATED/TIME: _YES _NO
SAMPLE TAGS: PRESENT/ABSENT RECEIVED BY: DRIVER/ __IF SHIPPED AIRBILL PRESENT ___#_____

COOLER RADIOACT. SCREEN BELOW 0.50 uR/hr YES__ NO ___(INFORM SAFETY OFFICER IMMED.)
YES __NO SAMPLE BOTTLES INTACT
YES __NO PROPER CONTAINERS PER ANALYSIS USED
YES __NO SAMPLE LABELS INTACT
YES __NO LABELS COMPLETE AND LEGIBLE (ID, DATE,TIME,SIGNATURE,PRESERVATIVE)
YES __NO SAMPLES RECEIVED WITHIN HOLDING TIME
YES __NO SAMPLES PROPERLY PRESERVED
YES __NO NO BUBBLES PRESENT VOA WATER MATRIX __NA
YES __NO SUFFICIENT SAMPLE VOLUME RECEIVED
YES __NO DRINKING H20/TREATED H20 – CHECKED FOR RESIDUAL CHLORINE __NA
(DOCUMENT ON pH VERIFICATION LOG FORM

_____ INITIAL _____ DATE - RUSH REPORT ISSUED BY NA
_____ INITIAL _____ DATE - pH ANALYSIS PERFORMED BY NA
_____ INITIAL _____ DATE - % MOISTURE PERFORMED BY NA
_____ INITIAL _____ DATE - SAMPLE COMPOSITE PERFORMED BY NA

NOTE AND ITEMIZE BY SAMPLE AFFECTED, DISCREPANCIES AND NONCONFORMANCES FOUND: _____

PROJECT MANAGER INFORMED OF DISCREPANCIES: _____ INITIALS _____ DATE NA

SUBCONTRACTING OF ANALYSIS REQUIRED __YES __NO SUB COC COMPLETED __YES __NO __NA
SUBCONTRACTED SAMPLES SHIPPED __YES __NO CARRIER USED _____

SAMPLE RECEIPT, LABELING AND STORAGE PROCEDURES PERFORMED BY: J Doherty

FINAL INSPECTION

BOTTLES CORRECTLY LABELED YES __NO REVIEWED BY R Malanga DATE: 11/17/99
INTERNAL CHAIN OF CUSTODY INITIATED YES __NO
ALL SIGNATURES AND DATES COMPLETE YES __NO

CLIENT INFORMED OF DISCREPANCIES/NONCONFORMANCES BY PM _____ DATE ____ TIME ____

NAME CLIENT REPRESENTATIVE INFORMED _____ METHOD: PHONE ___ FAX ___

CORRECTIVE ACTION REQUESTED BY CLIENT: _____

CORRECTIVE ACTION TAKEN: _____

PROJECT MANAGER APPROVED VERIFICATION FORM COMPLETE: B. Tulick DATE 12/3/99
Print name B. Tulick

ATTACHMENT 4

FINAL STATUS SURVEY – Micro_R/hr MEASUREMENTS SURVEY LOG

PROMETCOR SITE, BUILDINGS 1-5 and AREA E

FINAL STATUS SURVEY - micro_R/hr MEASUREMENTS
PROMETCOR SITE, BUILDINGS 1-5 and AREA E

SURVEY DATE	11/23/99
SURVEY TIME	1030
INSTRUMENT	L-3 with 44-2 External Probe
SERIAL No.	137021 (L-3) 138776 (Probe)
CAL DUE	4/30/00
BACKGROUND	6 micro_R/hr
SOURCE CHECK	500 micro_R/hr
SURVEYED BY	Ijaz / Grbic

BUILDING AREA	GRID ID	SAMPLING LOCATION	READING (μR/hr)
B15	1A	1	10
B15		2	11
B15		3	6
B15		4	8
B15	1B	1	11
B15		2	9
B15		3	9
B15		4	10
B15	1C	1	6
B15		2	8
B15	1D	1	6
B15		2	6
B15	2A	1	13
B15		2	14
B15		3	11
B15		4	10
B15	2B	1	6
B15		2	7
B15		3	14
B15		4	10
B15	2C	1	6
B15		2	8
B15	2D	1	5
B15		2	5
B15	2E	1	4
B15	3A	1	7
B15		2	9
B15		3	10
B15		4	9
B15	3B	1	8
B15		2	8
B15		3	9
B15		4	10

FINAL STATUS SURVEY - micro_R/hr MEASUREMENTS
PROMETCOR SITE, BUILDINGS 1-5 and AREA E

BUILDING AREA	GRID ID	SAMPLING LOCATION	READING (μR/hr)
B15	4A	1	6
B15		2	6
B15		3	8
B15		4	8
B15	4B	1	7
B15		2	9
B15		3	9
B15		4	7
B15	5A	1	6
B15		2	5
B15		3	6
B15		4	5
B15	5B	1	6
B15		2	8
B15		3	7
B15		4	6
B15	6A	1	4
B15		2	4
B15		3	4
B15		4	4
B15	6B	1	4
B15		2	4
B15		3	5
B15		4	5
AE	6C	1	5
AE		2	6
AE	6D	1	5
AE		2	5
AE	6E	1	5
B15	7A	1	5
B15		2	4
B15		3	6
B15		4	5
B15	7B	1	4
B15		2	4
B15		3	4
B15		4	5
AE	7C	1	6
AE		2	6
AE		3	5
AE		4	6
AE	7D	1	6
AE		2	6
AE		3	6
AE		4	5

FINAL STATUS SURVEY - micro_R/hr MEASUREMENTS
PROMETCOR SITE, BUILDINGS 1-5 and AREA E

BUILDING AREA	GRID ID	SAMPLING LOCATION	READING (μR/hr)
AE	7E	1	6
B15	8A	1	6
B15		2	5
B15		3	5
B15		4	5
B15	8B	1	5
B15		2	6
B15		3	5
B15		4	5
B15	9A	1	6
B15	9B	1	6

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