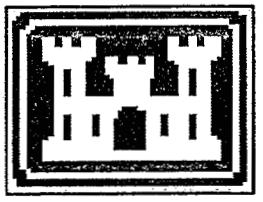

# DRAFT FINAL
# REMEDIAL ACTION REPORT
# FINAL INTERIM REMOVAL ACTION AT LAGARDE PARK, ANNISTON, ALABAMA

*August 2005*

Submitted to:
U.S. Army Corps of Engineers
Mobile District
109 St. Joseph Street, P.O. Box 2288
Mobile, AL 36628-0001

Prepared by:
STEP, Inc.
1006 Floyd Culler
Oak Ridge, TN 37830
Contract No. DACA01-01-D-0007
Delivery Order No. 0009

STEP Inc.
www.stepenv.com

# Draft Final
# Remedial Action Report
# Final Interim Removal Action at LaGarde Park, Anniston, Alabama

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| | |
|---|---|
| bgs | below ground surface |
| BRAC | Base Realignment and Closure Commission |
| CERCLA | Comprehensive Environmental Response Compensation and Liability Act |
| $Co^{60}$ | cobalt-60 |
| cpm | count per minute |
| CRDL | contract required detection limit |
| CRQL | contract required quantitation limit |
| $Cs^{137}$ | cesium-137 |
| DCGL | derived cleanup guideline level |
| DUP | duplicate sample |
| ESI | expanded site investigation |
| FUDS | Formerly Utilized Defense Site |
| G-M | Geiger-Mueller |
| IMPACT | Impact Services, Inc. |
| keV | kiloelectron volts |
| LLRW | low-level radioactive waste |
| MDC | minimum detectable concentration |
| mrem | milliroentgen equivalent man |
| NRC | Nuclear Regulatory Commission |
| pCi/g | picocuries per gram |
| RCT | radiological control technician |
| RI | remedial investigation |
| RSSSL | residential surface soil screening level |
| STEP | Solutions To Environmental Problems, Inc. |
| TCRA | Time Critical Removal Action |
| U | result validated as not detected |
| USACE | U.S. Army Corps of Engineers |
| UXO | unexploded ordnance |

## EXECUTIVE SUMMARY

Solutions To Environmental Problems, Inc. (STEP) was contracted by the U.S. Army Corps of Engineers, Mobile District, to perform a removal action at LaGarde Park in Anniston, Alabama. The removal action included the excavation and off-site disposal of low-level radioactive waste (LLRW), confirmation/closure sampling, transportation and disposal of radioactive wastes, and restoration of the site. This report describes the activities conducted during the removal action, the results of the laboratory analyses of samples collected from the excavations, and recommendations for future activities at the site.

### Initial Site Investigation

In February 2003, STEP performed a site investigation (characterization survey) that included a surficial site radiation survey, surface and subsurface soil sampling, and vegetation sampling of areas identified with radiological contamination. Based on the results of the site investigation, STEP proposed a Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Time Critical Removal Action (TCRA) to excavate and dispose of the soil and debris at the site contaminated with cesium-137 ($Cs^{137}$) and cobalt-60 ($Co^{60}$). For the removal action, contaminated areas exceeding the Nuclear Regulatory Commission residential surface soil screening levels and areas three times the background radiation count of 6,040 counts per minute (cpm) were planned for removal.

### Time Critical Removal Action

In September 2003, STEP mobilized to the site to conduct the CERCLA TCRA to excavate and dispose of the contaminated soil and debris located at the site. Based on the site investigation, the estimated volume of contaminated soil to be removed was approximately 30 cubic yards. As the removal action progressed, some of the areas had higher radiation levels below the ground than at the surface. Excavation continued until the available project funding for removal and disposal was expended. During this removal action, a total of 170 cubic yards of contaminated soil was removed and shipped off site for disposal. The presence of radioactive contamination beneath the ground surface and the unexpected lateral extent of contamination indicated that the conceptual model of discreet surface radiation sources was inaccurate. Therefore, based on the unexpected volume of contaminated material, the presence of radioactive contamination at depth, and the possibility that this site corresponded to the former "Rattlesnake Gulch" laboratory site, a CERCLA Expanded Site Investigation (ESI)/Remedial Investigation (RI) was recommended to fully define the lateral and vertical extent of the contamination.

The site conceptual model was revised to indicate that the residual radioactive material was left when the former "Rattlesnake Gulch" laboratory building was removed prior to 1971.

**Expanded Site Investigation/Remedial Investigation**

STEP personnel mobilized to the site on July 12, 2004, to conduct the CERCLA ESI/RI. The results of the ESI/RI were used to determine whether an additional interim removal action was necessary to move the site to "no-further-action" status required for closure of the site. The ESI/RI activities included conducting a surficial site radiation survey, establishing a regular grid array over the site, sampling surface and subsurface soil, and performing downhole (subsurface) radiation screening.

The surficial radiological survey identified an area roughly 65 feet by 95 feet in the western end of the fenced area that exceeded 9,900 cpm. Based on an examination of historical aerial photographs, this area corresponded to the location of the former "Rattlesnake Gulch" laboratory.

The material from the Rattlesnake Gulch laboratory was reportedly transported to the burial mound at Rideout Field, Pelham Range, Area 24C at Fort McClellan for disposal. Derived Cleanup Guideline Levels (DCGLs) were developed during the remediation and decommissioning process for the Pelham Range Burial Mound [*Burial Mound Decommissioning Plan, Appendix 6 – Development of Derived Cleanup Guidelines for the Pelham Range "Burial Mound"*, Allied Technology Group, (September 1999)]. The DCGL process evaluated receptor exposures for different land-use scenarios. The land use scenario that was judged to produce the greatest exposure potential was the residential scenario with backyard garden and cow. This scenario was used to evaluate the exposures from unrestricted release at the site. The soil concentrations that would not exceed the 25 millirem per year allowable exposure limit for $Co^{60}$ and $Cs^{137}$ were found to be:

- 2.3 picoCuries per gram (pCi/g) for $Co^{60}$ (Resulting Risk 6 X $10^{-5}$) and
- 9.2 pCi/g for $Cs^{137}$ (Resulting Risk 9 X $10^{-5}$).

Because the contaminants were identical and the same exposure scenario applied to both sites, the DCGLs developed for the Pelham Range Burial Mound, were selected for the purposes of evaluating the soil concentrations at the LaGarde Park site. The analytical results for the soil samples collected at the LaGarde Park site were compared to the DCGLs of 9.2 pCi/g for $Cs^{137}$ and 2.3 pCi/g for $Co^{60}$.

A regular grid array (grid nodes spaced at 25-foot intervals) was established at the site. Surface and subsurface soil samples were collected at selected grid nodes to determine the extent of surface and subsurface radiological contamination. Continuous soil cores were collected at each sampling location and scanned using a gamma scintillater probe. Soil samples for laboratory analyses were collected at the surface in each boring and a biased soil sample was collected at the corresponding depth in each boring where the highest gamma measurement was recorded in the downhole radiation scan. If the gamma measurements along the boring were uniform, then a soil sample was collected at the bottom of the hole. Laboratory analyses consisted of isotopic analyses for $Cs^{137}$ and $Co^{60}$. None of the soil samples collected during the ESI/RI had concentrations exceeding the corresponding DCGLs for $Cs^{137}$ or $Co^{60}$.

A downhole radiation scan was performed in each of the borings. A gamma spectrum was collected at the depth exhibiting the highest gross gamma count to provide a real time determination of the nature of any elevated measurements observed in the borehole. No discernible activity indicating the presence of $Cs^{137}$ could be identified in these spectra or in the raw data curves provided by the analytical laboratory. A comparison of the raw data curves to the incremental gamma log of the boreholes indicated that the elevated gamma readings tended to occur when radium-226 and/or radium-228 were above 1 pCi/g. Therefore, the elevated gamma measurements encountered downhole were attributable to naturally occurring radium isotopes.

Based on the results of the surface radiation scan and surface soil analytical data collected during the ESI/RI, the CERCLA TCRA had reduced the overall surface concentrations of $Co^{60}$ and $Cs^{137}$ below the corresponding DCGLs. No further action was proposed for the surface soils at the site.

Based on the results of the confirmatory samples collected during the CERCLA TCRA and the subsurface soil samples and downhole radiation scans conducted during the ESI/RI, only two areas of subsurface contamination remained. The ESI/RI proposed an additional interim removal action to address these two areas. The first area corresponded to the location of confirmatory soil sample LPRA18 (40.3 pCi/g $Cs^{137}$) from the initial removal action and measured roughly 10 feet by 10 feet to a maximum depth of 6 feet below ground surface (bgs). The second area corresponded to the location of confirmatory soil sample LPRA16 (113 pCi/g $Cs^{137}$) from the initial removal action and measured roughly 10 feet by 10 feet to a maximum depth of 12 to 15 feet bgs.

**Final Interim Removal Action**

STEP personnel mobilized to the site on March 28, 2005, to conduct the recommended final interim removal action. A radiological control technician (RCT) from Auxier & Associates, Inc. of Knoxville, Tennessee, was on site during all activities.

Excavation

An unexploded ordnance (UXO) technician from EOD Technologies, Inc. of Lenoir City, Tennessee, scanned the work areas with a magnetometer prior to any intrusive activities. No magnetic anomalies were identified that indicated the presence of UXO. The UXO technician remained on site throughout the field activities.

The first area excavated corresponded to the location of confirmatory soil sample LPRA18 from the CERCLA TCRA. As the area was excavated, each bucket of dirt removed was laid out in a thin layer adjacent to the excavation and scanned by the RCT using a portable survey instrument. The RCT slowly moved the gamma-ray scintillation probe over the excavated dirt as near as practical to the ground surface. When soil in the scanned area was at or above background count of 7,000 cpm, the suspected soil was removed by the excavator, placed in the bucket of a skid steer loader and deposited in a metal LLRW container (B-25 box) for off-site disposal. The area of the soil pile was then re-scanned for contamination. This process was repeated until excavation was completed. The final dimensions of the excavation for the first area were 18 feet (east to west) by 16 feet (north to south) by 7 feet deep. Radiation screening identified two skid steer buckets of contaminated soil that were removed from the excavated soil and placed in an LLRW container for off-site disposal.

The second excavation area corresponded to the location of confirmatory soil sample LPRA16 from the TCRA. During initial excavation, radiation screening was conducted using the scanning method described above for Area 1. Plastic sheeting (left in place to mark the excavation bottom from the previous removal action) was encountered at 8 feet bgs. As potentially contaminated soil and the surrounding backfill were removed, a radiation scan was conducted on the removed material while it was still in the excavator bucket. If no contamination was observed, the excavated material was spread and scanned as described above for Area 1. If elevated counts (i.e., equal to or greater than the background of 7,000 cpm) were observed in the bucket, the material was placed directly into the LLRW container. The first bucket of the material beneath the plastic had radiation counts as high as 60,000 cpm (approximately

8.5 times the background count of 7,000 cpm) and was deposited directly into the LLRW container. Successive buckets were scanned as they were removed from the excavation, and buckets of soil that had elevated gamma counts (i.e., equal to or greater than the background count of 7,000 cpm) were deposited directly into the LLRW container. Excavation continued until all previously disturbed material had been removed and undisturbed material was encountered in the base of the excavation and on the north, east, and west sidewalls. The south wall of the excavation showed disturbed material to a depth of 8 to 10 feet bgs indicating the actual total depth of the excavation from the CERCLA TCRA. The final dimensions of the second excavation were 13 feet (east to west) by 10 feet (north to south) by 10 feet deep. Radiation screening identified approximately 4 cubic yards of contaminated soil and material that was placed in the LLRW containers for off site disposal.

Radiation Scanning

When excavation was complete in each area, a radiological scan of the base and sidewalls of the excavation was conducted. To eliminate interference from background radiation and to focus the "viewing" area of the radiological scanning instrument, the RCT placed the instrument in a lead shield with a directional opening (orifice). The shielding reduced background radiation levels and allowed the scan to pinpoint the locations of measurements. The lead shielded instrument was placed in a sheet metal casing mounted with a hanging bracket on a swivel assembly. This allowed the viewing orifice to be directed downward (for scanning the base of the excavation) or to the side (for scanning the sidewalls of the excavation). The survey instrument was attached to the bucket of the excavator using a nylon rope.

To scan the base of the excavation, the instrument was placed in the "base scanning" configuration and lowered into the excavation to within 6 inches of the foundation floor. The instrument was then moved across the floor of the excavation so that the entire floor of the excavation was scanned by the instrument. If an area showed elevated gamma counts (i.e., at or above background), additional soil was removed, and the area was re-scanned until the entire floor of each excavation was below background.

To scan the sidewalls of the excavation, the instrument was rotated 90 degrees in the vertical plane to the "sidewall" configuration and secured in place by a nylon rope and duct tape. The excavator then moved the scanning instrument from top to bottom of the sidewalls until all of the vertical walls of the excavation had been scanned. If the sidewall scan showed readings at or above background counts on the excavation walls, additional soil was removed, and the area was re-scanned until all of the sidewalls of the excavation were below background.

Once the excavations were completed, all equipment and personnel were frisked by the RCT to check for radiological contamination before exiting the site. No contamination was found on any personnel or equipment.

Confirmatory Soil Sampling

Once the radiation scan indicated that all contaminated material had been removed, confirmatory soil samples were collected from each excavation. One sample was collected from the base of the excavation at each of the four corners, and one sample was collected from the center of the excavation. The soil for the samples was scanned in the excavator bucket by the field screening instrument, collected in the sample container, and placed in a plastic cooler for shipment to the analytical laboratory.

The RCT also screened the samples on site for radiological activity. Each sample was counted for a minimum of 30 minutes. The samples were scanned for the presence of cesium and/or cobalt with a multi-channel analyzer. None of the samples showed activity that exceeded background radiation levels.

A total of 11 soil samples were submitted for analyses. Five samples (LPSS01, LPSS02, LPSS03, LPSS04, and LPSS05) were collected from the first excavation and five samples and a duplicate (LPSS06, LPSS06DUP, LPSS07, LPSS08, LPSS09, and LPSS10) were collected from the second excavation. All of the samples were sent to General Engineering Laboratory, LLC of Charleston, South Carolina, and analyzed for cesium and cobalt. The resulting analytical data were then subjected to third party data validation.

The DCGLs for $Cs^{137}$ (9.2 pCi/g) and $Co^{60}$ (2.3 pCi/g) are based on radionuclide concentration of surface soils. These cleanup goals are highly conservative and protective of human health and the environment. The highest concentration for both $Cs^{137}$ (5.93 pCi/g) and $Co^{60}$ (0.228 pCi/g) detected in the soil samples were in soil sample LPSS07 collected at the base of the southeast corner of the second excavation. Therefore, the highest concentration of $Cs^{137}$ and $Co^{60}$ remaining at the site do not exceed the conservative DCGLs for surface soils and are well below ground surface.

**Shipping Waste Material and Soils**

As a result of field radiation screening, approximately 4 cubic yards (approximately 8 tons) of soil, and plastic sheeting were removed from the site and placed in two LLRW containers for off-site disposal. Prior to shipping the LLRW containers, the RCT performed a complete radiation survey of the LLRW containers that included dose rate measurements using a "MicroR" meter and removable contamination "smear" surveys. No radiological activity above background levels was observed in the survey of the LLRW containers. The LLRW containers were shipped via F.L.L. Trucking to Impact Services, Inc. (IMPACT) in Oak Ridge, Tennessee. At IMPACT, the LLRW containers were emptied and the material was rescanned for radioactivity. A total of 3.8 cubic yards (6,575 pounds) of soil was classified as non-hazardous LLRW material and shipped to Middle Point Sanitary Landfill in Murfreesboro, Tennessee, for disposal. A total of 0.2 cubic yards of material was classified as LLRW and shipped to Envirocare of Utah, LLC, Salt Lake City, Utah for disposal.

Site Restoration

After excavation and confirmatory sampling were completed, clean removed soil was used to backfill the excavations, and excavation equipment was used to compact the soil backfill. The surface of each disturbed area was then re-graded to improve surface drainage. A silt fence was installed on the downslope (i.e., northwest) side of the site to inhibit sediment run-off.

Conclusions and Recommendations

Based on the results of the ESI/RI and the STEP final interim removal action; all radioactive contaminated material has been removed from the site. The final interim removal action was conducted in a conservative manner to provide maximum protection to human health and the environment; therefore, no further remedial action is recommended for the LaGarde Park site. STEP also recommends removing the perimeter fence from around the site, performing final site restoration, and releasing the site for unrestricted use.

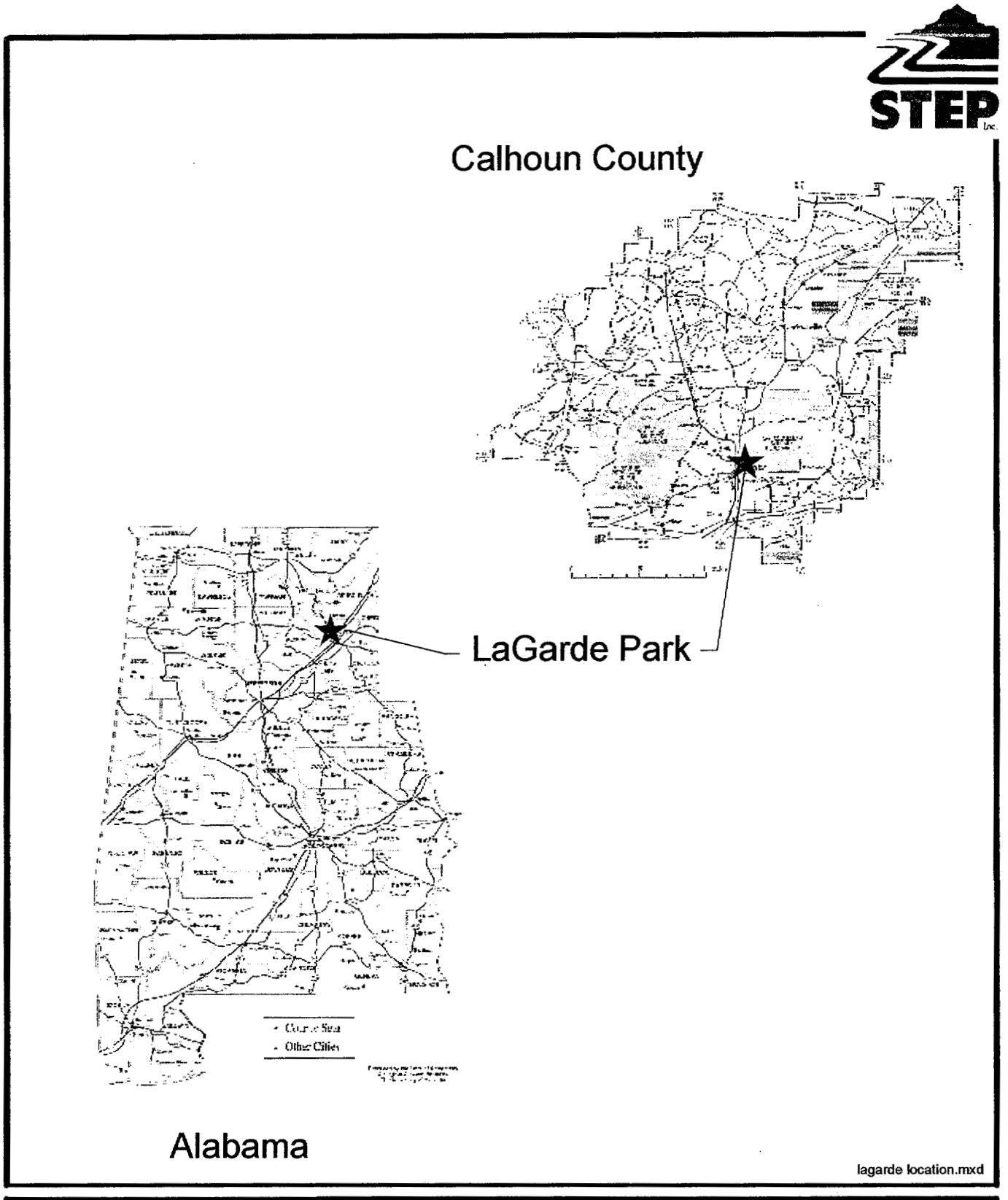
## 1. INTRODUCTION

Solutions To Environmental Problems, Inc. (STEP) was contracted by the U.S. Army Corps of Engineers (USACE), Mobile District, to perform a removal action at LaGarde Park in Anniston, Alabama (Contract No. DACA01-01-D-0007, Delivery Order No. 0009). The removal action included the excavation and off-site disposal of low-level radioactive waste (LLRW), confirmation/closure sampling, transportation and disposal of radioactive wastes, and restoration of the site. This report describes the activities conducted during the removal action, the results of the laboratory analyses of samples collected from the excavations, and recommendations for future activities at the site.

## 2. BACKGROUND

Fort McClellan is a former U.S. Army training base situated north of Interstate 20 in Anniston, Alabama, approximately halfway between Birmingham, Alabama, and Atlanta, Georgia. LaGarde Park is adjacent to the former Fort McClellan and lies within the city limits of Anniston. Figure 1 shows the location of LaGarde Park and Fort McClellan.

Interviews with personnel knowledgeable about operational and waste disposal activities at various sites at Fort McClellan indicated that radioactive wastes were deposited on Iron Mountain. It was reported that a laboratory building, consisting of cinder blocks and sand bags, was located on the "northwest side of Iron Mountain" in "Rattlesnake Gulch." This laboratory was reportedly used to prepare training sources of cobalt-60 ($Co^{60}$) and cesium-137 ($Cs^{137}$). The laboratory compound was reportedly 140-feet long by 80-feet wide and was enclosed in a barbed-wire fence with warning signs. Information gathered from previous reports on the area is unclear as to the exact location of the former laboratory site; however, historical aerial photographs show a rectangular area on the northwest side of Iron Mountain that roughly corresponds to the reported size of the laboratory compound. At some point in the late 1960s the laboratory building was demolished, the barbed wire fencing was removed, and the debris was deposited in a waste disposal area southeast of the laboratory site and higher up on Iron Mountain.




LEGEND

★ Site Location

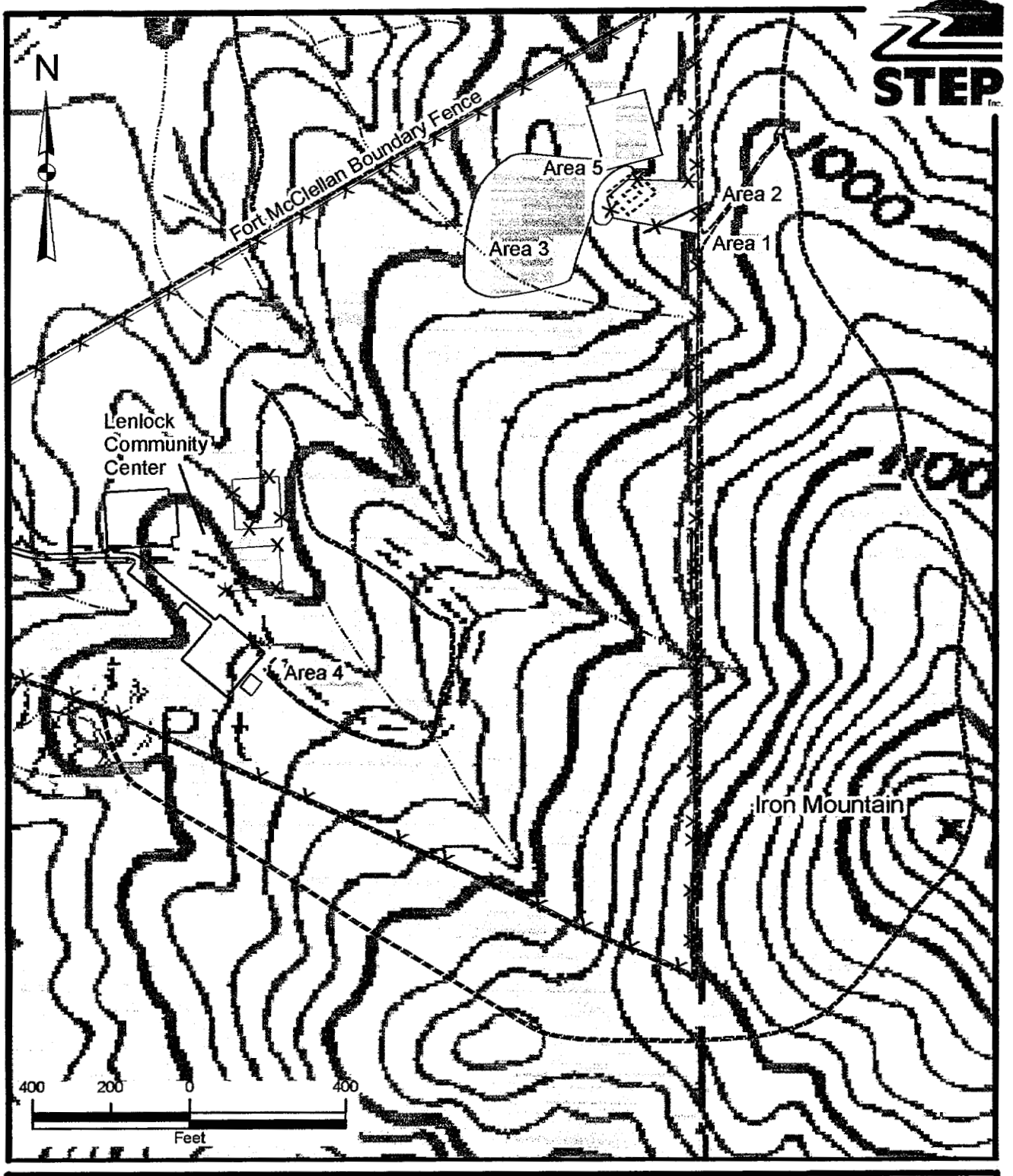
Source: University of Alabama
Job: Project Report Final Removal Action at LaGarde Park Anniston, Alabama

Figure 1 LaGarde Park Location Map

In 1971, a radiation survey was conducted on Iron Mountain, and 22 contaminated spots were identified on the ground surface. In the summer of 1971, five containers of radioactive $Co^{60}$ and $Cs^{137}$ waste and 18 55-gallon drums of contaminated soils were removed from an area approximately 400 feet southeast of the former laboratory site and were reportedly taken to Pelham Range for disposal. Anecdotal information indicates that building debris (i.e., concrete blocks and fencing) was included in the debris removed. The removal area was cleared for surface military use by the Fort McClellan Health Physics Office; however, no official closeout survey was found in the records. In 1974, approximately 185 acres (which included the former "Rattlesnake Gulch" laboratory site) were deeded as a public park to the City of Anniston. This acreage was subsequently named the John B. LaGarde Interpretive Park.

In 1995, the Base Realignment and Closure Commission (BRAC) voted to permanently close Fort McClellan. The Department of Defense closed the base in October 1999, making 45,000 acres, building facilities, and fully infrastructured property available for private sector reuse and redevelopment.

In order to terminate the Chemical School Radiation License as part of the BRAC proceedings, the Nuclear Regulatory Commission (NRC) required assurances that no radioactive material was left behind. The Army performed an aerial survey in October 2001 that indicated the presence of a radioactive "hot spot" about 100 feet outside Fort McClellan's fence line on property formerly occupied by the training site, but now within the boundaries of LaGarde Park. On February 5, 2002, a team consisting of the Chemical School's radiation protection officer, the NRC, the Alabama Department of Public Health Radiation Office, and the U.S. Environmental Protection Agency visited the "hot spot" identified by the aerial survey to measure the radiation and determine the area involved. The area of investigation measured approximately 100 feet by 100 feet. The Alabama Department of Public Health took soil samples and tree root samples for further analysis. This analysis showed the presence of $Co^{60}$ and $Cs^{137}$. The team reported that the dose rates did not present an external hazard, but that digging or removal of vegetation from the area should not be allowed. Because this property was transferred to the City in the mid-1970s, the Army classified the site as a Formerly Utilized Defense Site (FUDS). The USACE Mobile District took action in 2002 under the authority of the Defense Environmental Restoration Program/FUDS and installed fencing around the site to prevent access to the area. Figure 2 shows the location of LaGarde Park and the areas investigated.




LEGEND

Areas of Investigation

Former Laboratory Location

Source: Alabama GIS, Site Survey
Job Title: Remedial Action Report
Final Removal Action
At LaGarde Park
Anniston, Alabama

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Figure 2 Previously Investigated Areas at LaGarde Park

## 3. INITIAL SITE INVESTIGATION

In February 2003, STEP performed a site investigation (characterization survey) that included a surficial site radiation survey, surface and subsurface soil sampling, and vegetation sampling of areas identified with radiological contamination. The site investigation was performed in four areas:

- Area 1 – the fenced area at LaGarde Park,
- Area 2 – the area of disturbed soil outside the fence,
- Area 3 – the area along the drainage paths downgradient of the fenced area, and
- Area 4 – a small area near the Lenlock Community Center.

Analytical results reported in *Final Completion Report, Site Investigation at LaGarde Park, Anniston, Alabama* (STEP, June 2003) indicated the following:

- Cobalt and uranium were not detected at levels above screening values. Cesium and thorium, however, were detected above NRC residential surface soil screening levels (RSSSLs).
- The surficial survey identified areas where gamma radiation was elevated. At several locations inside the fenced area (Area 1), survey readings were greater than twice background. The data collected indicated that cesium contamination had not spread outside of the fenced area, and the majority of $Cs^{137}$ was surficial in nature. Cesium was not detected above the NRC RSSSL in any of the subsurface samples.
- Thorium was evaluated as naturally occurring and appeared to be unrelated to the cesium contamination at the site. Thorium was detected above the NRC RSSSL in the sample collected next to the Lenlock Community Center parking lot and in one location in Area 3 outside of the fence. Thorium was also detected above the NRC RSSSL in two of the three background samples.
- The toxicity characteristic leaching procedure analysis performed on the soil for disposal purposes indicated that none of the soil would be classified as Resource Conservation and Recovery Act hazardous waste.

Based on the results of the site investigation, STEP proposed a Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Time Critical Removal Action (TCRA) to excavate and dispose of the cesium contaminated soil and debris located at the site. For the removal action, contaminated areas exceeding the NRC RSSSL and areas three times the background radiation count of 6,040 counts per minute (cpm) were planned for removal.

## 4. TIME CRITICAL REMOVAL ACTION

In September 2003, STEP mobilized to the site to conduct the CERCLA TCRA to excavate and dispose of the $Cs^{137}$ contaminated soil and debris located at the site. The full details of the removal action are contained in *Final Report for Removal Action at LaGarde Park* (STEP, May 2004). Based on the site investigation, the estimated volume of contaminated soil to be removed was approximately 30 cubic yards. As the removal action progressed, some of the areas had higher radiation levels below the ground than at the surface. Excavation continued until the available project funding for removal and disposal was expended. During this removal action, a total of 170 cubic yards of contaminated soil was removed and shipped off site for disposal. The presence of radioactive contamination beneath the ground surface and the unexpected lateral extent of contamination indicated that the conceptual model of discreet surface radiation sources was inaccurate. Therefore, based on the unexpected volume of contaminated material, the presence of radioactive contamination at depth, and the possibility that this site corresponded to the former "Rattlesnake Gulch" laboratory site, a CERCLA Expanded Site Investigation (ESI)/Remedial Investigation (RI) was recommended to fully define the lateral and vertical extent of the contamination. The site conceptual model was revised to indicate that the residual radioactive material was left when the former "Rattlesnake Gulch" laboratory building was removed prior to 1971. Figure 3 shows the areas excavated during the CERCLA TCRA.

## 5. EXPANDED SITE INVESTIGATION/REMEDIAL INVESTIGATION

STEP personnel mobilized to the site on July 12, 2004, to conduct the ESI/RI. These activities included:

- conducting a surficial site radiation survey,
- establishing a regular grid array over the site,
- surface soil sampling,
- subsurface soil sampling, and
- downhole (subsurface) radiation screening.

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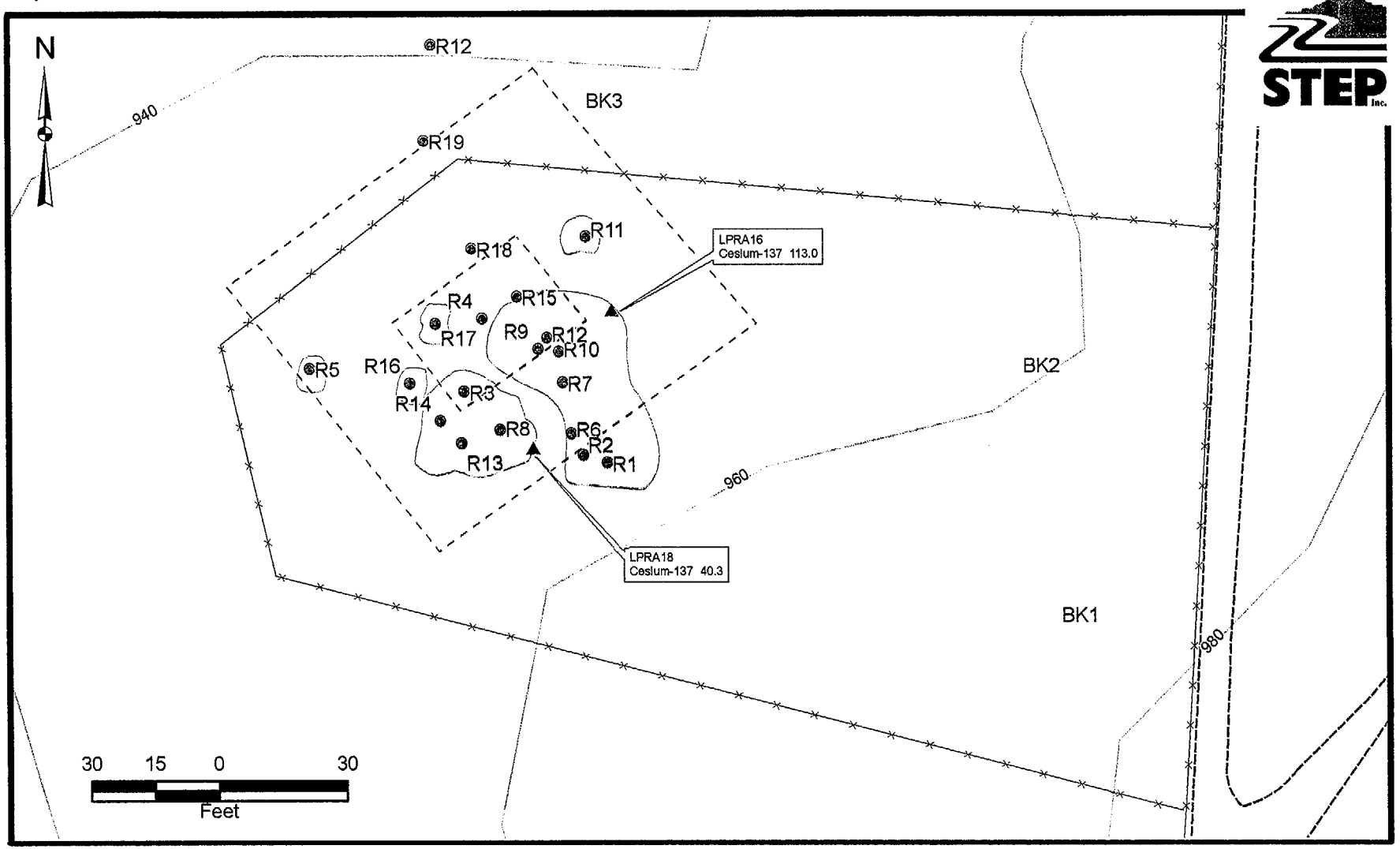



LEGEND

- Soil Sample Location
- Former "Rattlesnake Gulch" Lab Location
- Area Removed
- Elevaton Contour Line
- Confirmatory Sample

Notes:
1. Results = pCi/g (picocurie per gram)
2. Screening value for Cesium-137 = 11pCi/g

Source: Site Survey
Job Title:Remedial Action Report
Final Removal Action
at LaGarde Park
Anniston, Alabama

Figure 3 Areas Previously Excavated and Confirmatory Samples Exceeding Screening Values

5/5/2005

Activities and findings of the ESI/RI are presented in *Remedial Investigation Report, Expanded Site Investigation at LaGarde Park* (STEP, April 2005) and summarized in the following sections.

### 5.1 SURFICIAL RADIATION SURVEY

Since the isotopes of concern at the site (i.e., $Co^{60}$ and $Cs^{137}$) emit gamma radiation, a site surficial radiation survey was performed to detect gamma radiation within the fenced area (Area 1) and in an area outside of the fence (Area 5). The surficial radiological survey identified an area roughly 65 feet by 95 feet in the western end of the fenced area that exceeded 9,900 cpm. Based on an examination of historical aerial photographs, this area corresponds to the location of the former "Rattlesnake Gulch" laboratory.

### 5.2 SOIL SAMPLING

A regular grid array (grid nodes spaced at 25-foot intervals) was established over each area. The array for Area 1 consisted of 35 nodes. The array for Area 5 consisted of 42 nodes.

Surface and subsurface soil samples were collected at selected grid nodes to determine the extent of surface and subsurface radiological contamination. Soil borings were installed using a track mounted GeoProbe® drilling unit. Continuous soil core was collected at each sampling location. The core was retrieved in 4-foot intervals to GeoProbe® refusal or to a maximum total depth of 20 feet below ground surface (bgs). The soil cores were scanned using a gamma scintillater probe. No elevated readings were observed in any of the soil cores.

Soil samples for laboratory analyses were collected at the surface in each boring and a biased soil sample was collected at the corresponding depth in each boring where the highest gamma measurement was recorded in the downhole radiation scan. If the gamma measurements along the boring were uniform, then a soil sample was collected at the bottom of the hole. Laboratory analyses consisted of isotopic analyses for $Cs^{137}$ and $Co^{60}$.

### 5.3 DERIVED CONCENTRATION GUIDELINES LEVELS

The material removed from the Rattlesnake Gulch laboratory was reportedly transported to the burial mound at Rideout Field, Pelham Range, Area 24C at Fort McClellan for disposal. Derived Cleanup

Guideline Levels (DCGLs) were developed during the remediation and decommissioning process for the Pelham Range Burial Mound [*Burial Mound Decommissioning Plan, Appendix 6 – Development of Derived Cleanup Guidelines for the Pelham Range "Burial Mound,"* Allied Technology Group, (September 1999)]. The DCGL process evaluated receptor exposures for different land-use scenarios. The land use scenario that was judged to produce the greatest exposure potential was the residential scenario with backyard garden and cow. This scenario was used to evaluate the exposures from unrestricted release at the site.

The computer code RESRAD 5.82 (Argonne National Laboratory, 1993) was used to evaluate the potential dose and long term risk from the scenario activities to a resident adult and resident child. The soil concentrations that would not exceed the 25 millirem per year allowable exposure limit for $Co^{60}$ and $Cs^{137}$ were found to be:

- **Resident Adult –**
  - $Co^{60}$ 2.9 picoCuries per gram (pCi/g) (Resulting Risk 9 X $10^{-5}$)
  - $Cs^{137}$ 12 pCi/g (Resulting Risk 3 X $10^{-4}$)
- **Resident Child –**
  - $Co^{60}$ 2.3 pCi/g (Resulting Risk 6 X $10^{-5}$)
  - $Cs^{137}$ 9.2 pCi/g (Resulting Risk 9 X $10^{-5}$)

For the purposes of evaluating the soil concentrations at the LaGarde Park site, the more conservative values of 2.3 pCi/g for $Co^{60}$ and 9.2 pCi/g for $Cs^{137}$ developed for the Pelham Range Burial Mound, were selected as the DCGLs. None of the soil samples collected during the ESI had concentrations exceeding the corresponding DCGLs for $Cs^{137}$ or $Co^{60}$.

### 5.4 DOWNHOLE RADIATION SURVEY

Upon reaching total depth in each of the borings, a downhole radiation scan was performed in each borehole. Gamma radiation was measured in 1-foot intervals in each borehole from the ground surface to the maximum depth accessible with the probe assembly. The gamma emission rate varied at different depths in many of the holes. A gamma spectrum was collected at the depth exhibiting the highest gross gamma count to provide a real time determination of the nature of any elevated measurements observed in the borehole. "Elevated measurements" were defined as elevated count rates as compared to other depths in the same hole or when compared to nearby holes. Eleven spectra were collected from ten boreholes. Visual analysis of the spectra in the field did not reveal the presence of the characteristic 662 kiloelectron

volt (keV) peak for $Cs^{137}$, nor the 1,173 or 1,332 keV peaks that would identify $Co^{60}$. The spectra were subsequently analyzed mathematically by capturing the gross counts in a region of interest that corresponded to the 662 keV peak for $Cs^{137}$. The background was subtracted from the counts in the region of interest to calculate the net counts in the region. No discernible activity indicating the presence of $Cs^{137}$could be identified in these spectra.

The minimum detectable concentration (MDC) for $Cs^{137}$ during the subsurface scan was 2.7 pCi/g based on using the Ludlum Model 44-2 in fixed count mode. The maximum detected concentration of $Cs^{137}$ detected in laboratory analyses of the surface soil samples (0-1 foot) was 3.29 pCi/g (0-1 foot, boring SB-03 in Area 1). The maximum detected concentration of $Cs^{137}$ in the subsurface soil samples was 0.105 pCi/g (3-4 foot, boring 3G in Area 1). The maximum concentration of $Cs^{137}$ detected in the downhole soil samples was less than the MDC calculated for the downhole radiation scan; therefore, the elevated downhole gamma measurements were most likely attributable to naturally occurring sources.

Examination of the raw data curves provided by the laboratory and comparison of these data curves to the incremental gamma log of the boreholes indicated that the elevated gamma readings tended to occur when radium-226 and or radium-228 were above 1 pCi/g. Therefore, elevated gamma measurements were encountered downhole, but no concentrations of $Cs^{137}$exceeding 0.105 pCi/g were detected in the subsurface soil samples because the elevated gamma measurements were caused by naturally occurring radium isotopes not cesium.

## 5.5 EXPANDED SITE INVESTIGATION/REMEDIAL INVESTIGATION CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the surface radiation scan and surface soil analytical data collected during the ESI/RI, the CERCLA TCRA had reduced the overall surface concentrations of $Co^{60}$ and $Cs^{137}$ below the corresponding DCGLs and no further action was proposed for the surface soils at the site.

Based on the results of the confirmatory samples collected during the CERCLA TCRA and the subsurface soil samples and downhole radiation scans conducted during the ESI, only two areas of subsurface contamination remained. An additional interim removal action was proposed to address these two areas.

The first area, centered between grid nodes LPA1N3E and LPA1N3F, corresponded to the location of confirmatory soil sample LPRA18 (40.3 pCi/g $Cs^{137}$) from the initial removal action. This area encompassed roughly 10 feet by 10 feet to a maximum depth of 6 feet bgs.

The second area, centered on grid node LPA1N4E, corresponded to the location of confirmatory soil sample LPRA16 (113 pCi/g $Cs^{137}$) from the initial removal action. This area encompassed roughly 10 feet by 10 feet to a maximum depth of 12 to 15 feet bgs. Figure 4 presents the proposed locations for the additional interim removal action.

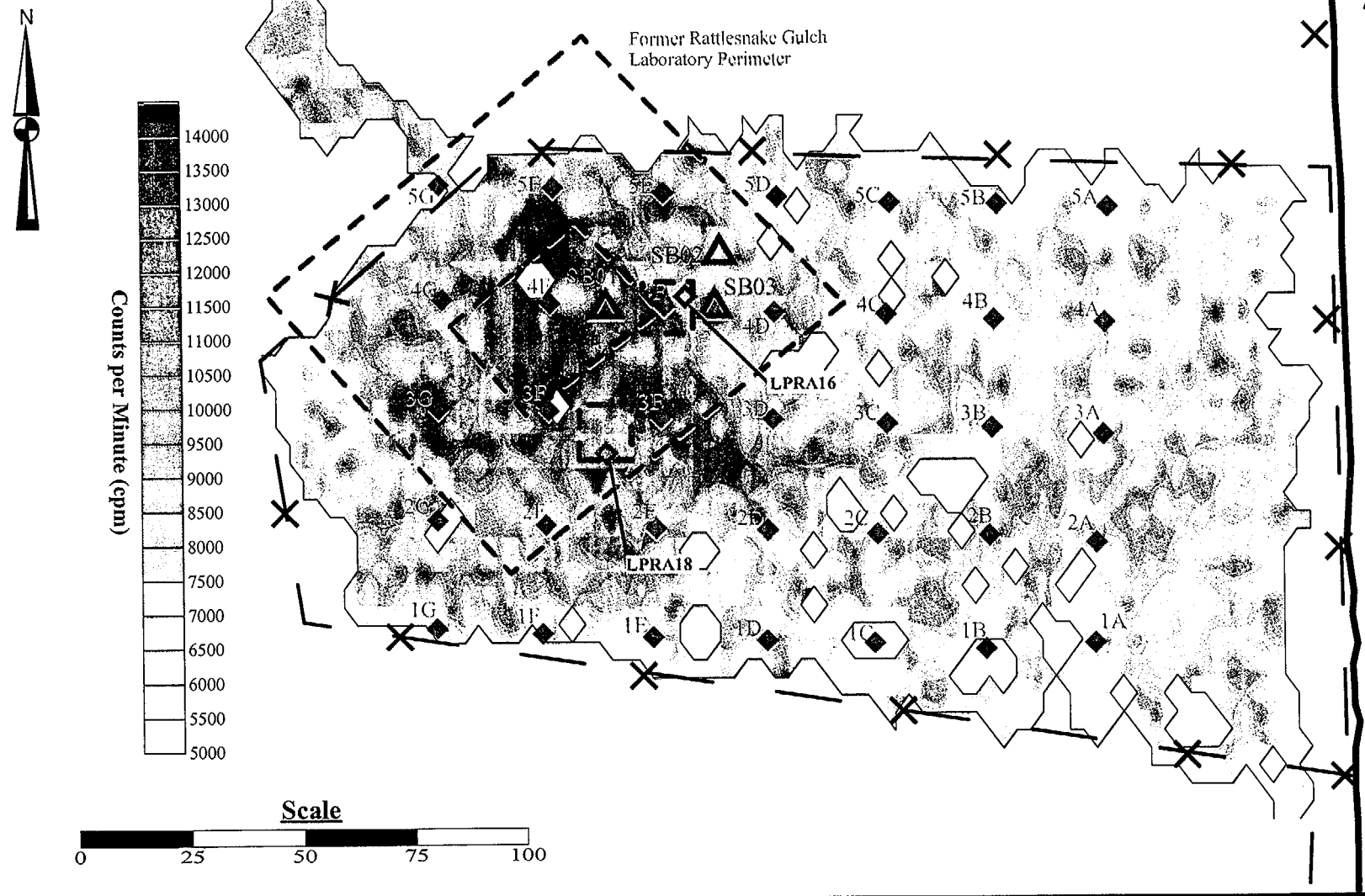
## 6. FINAL INTERIM REMOVAL ACTION

STEP personnel mobilized to the site on March 28, 2005, to conduct the recommended final interim removal action. Construction of the Anniston bypass road by the Alabama Department of Transportation had destroyed the access road to the LaGarde Park site, and two days (March 28 and 29) were spent re-establishing site access. Excavation activities began on Wednesday, March 30, 2005. A copy of the logbook of the field activities is contained in Appendix A and pictures of the field activities are presented in Appendix B.

### 6.1 RADIOLOGICAL INSTRUMENTATION

A radiological control technician (RCT) from Auxier & Associates, Inc. of Knoxville, Tennessee, was on site during all activities. The radiological survey instruments used during the final interim removal action included a gamma-ray scintillation probe (Ludlum Model 44-2, Serial Number 117650) attached to a count ratemeter/scaler (Ludlum Model 2221, Serial Number 012883). A Geiger-Mueller (G-M) (Ludlum Model 44-9, Serial Number 108883) survey instrument attached to a count ratemeter/scaler (Ludlum Model 12, Serial Number 117166) was used to survey personnel and equipment leaving the site.

All radiological instrumentation was calibrated within a six month period prior to use using National Institute of Standards and Technology traceable sources and pulser. The instrumentation was also function checked at a designated background location before and after use each day. Function check forms and calibration sheets are included in Appendix C.




## Legend

1A◆ Grid Node

SB01△ Soil Boring

—X— Fence

Proposed removal area

LPRA16 ◇ Confirmatory Sample Exceeding Screening Levels

Prepared By: STEP Inc. Oak Ridge, TN
Job Title: Final Removal Action
at La Garde Park
Anniston, Alabama

**Figure 4 Proposed Areas for Additional Removal Action**

## 6.2 EXCAVATION

An unexploded ordnance (UXO) technician from EOD Technologies, Inc. of Lenoir City, Tennessee, scanned the work areas with a magnetometer prior to any intrusive activities. No magnetic anomalies were identified that indicated the presence of UXO. The UXO technician remained on site throughout the field activities.

The removal action was conducted using an excavator. The first area excavated was centered between grid nodes LPA1N3E and LPA1N3F and corresponded to the location of confirmatory soil sample LPRA18 (40.3 pCi/g $Cs^{137}$) from the CERCLA TCRA. The planned excavation for this site was an area 10-feet wide by 10-feet long to a maximum depth of 6 feet bgs. As the area was excavated, each bucket of dirt removed was laid out in a thin layer (i.e., < 6-inch lifts) adjacent to the excavation and was scanned by the RCT. The RCT slowly moved the gamma-ray scintillation probe over the excavated dirt as near as practical to the ground surface. When soil in the scanned area was at or above background counts (i.e., ≥ 7,000 cpm), the suspected soil was removed by the excavator, placed in the bucket of a skid steer loader, and deposited in a metal LLRW container (B-25 box) for off-site disposal, and the area was re-scanned. This process was repeated until excavation was completed. The final dimensions of the excavation for the first area were 18 feet (east to west) by 16 feet (north to south) by 7-feet deep. The radiation scans conducted by the RCT during the excavation process identified 1 cubic yard of contaminated soil that was removed from the excavated soil and placed in an LLRW container for off-site disposal.

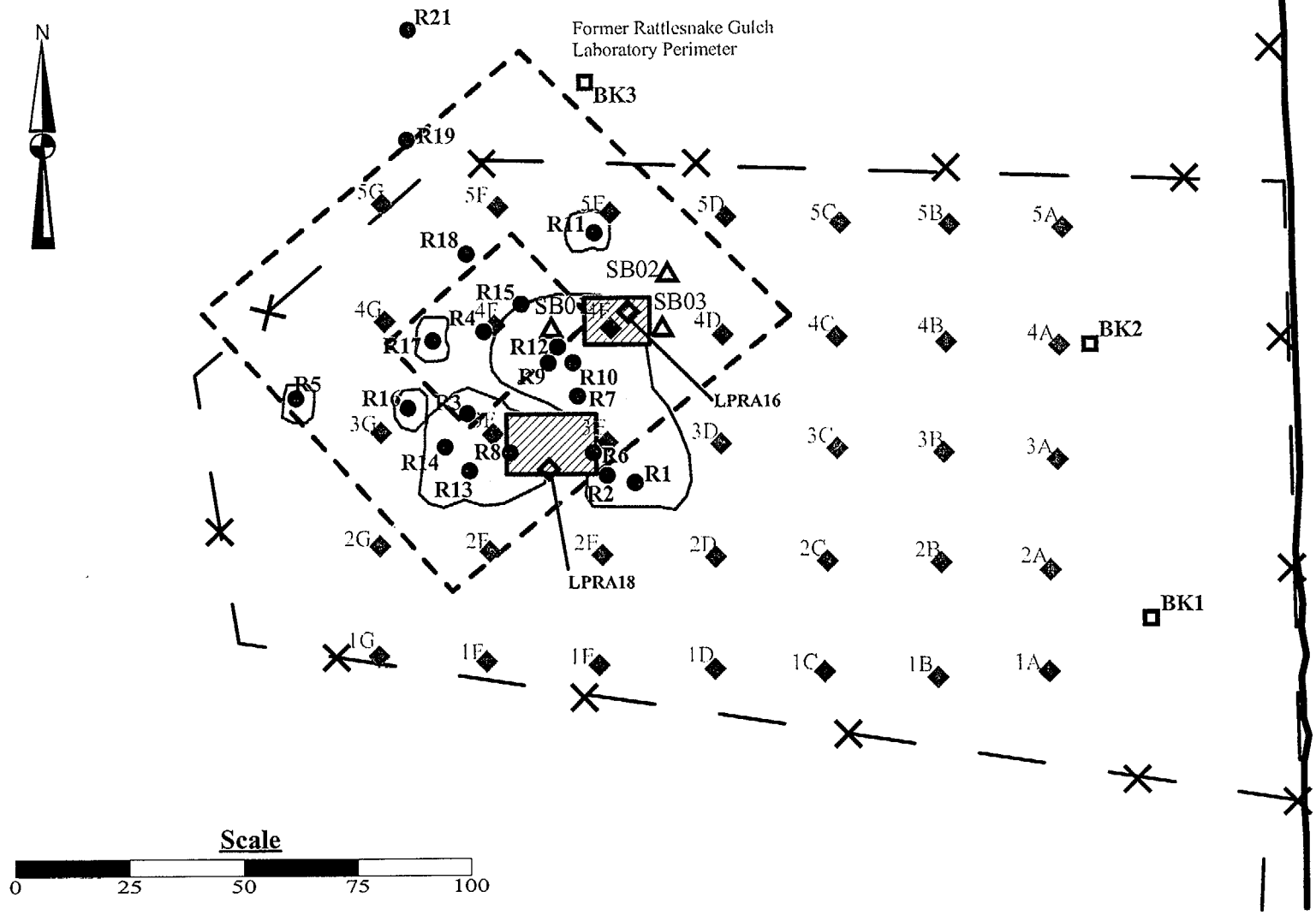
The second excavation area, centered on grid node LPA1N4E, corresponded to the location of confirmatory soil sample LPRA16 (113 pCi/g $Cs^{137}$) from the TCRA. The planned excavation area for this site was 10 feet by 10 feet to a maximum depth of 15 feet bgs. As excavation of the area began, removed soil was scanned using the method described above for Area 1. Plastic sheeting (left in place to mark the excavation bottom from the previous removal action) was encountered at 8 feet bgs. As potentially contaminated soil and the surrounding backfill were removed, a radiation scan was conducted on the removed material while it was still in the excavator bucket. If no contamination was observed, the material was spread and scanned as was done in Area 1. If elevated counts (i.e., equal to or greater than the background of 7,000 cpm) were observed in the bucket, the material was placed directly into the LLRW container. The first bucket of the material beneath the plastic had radiation counts as high as 60,000 cpm (approximately 8.5 times the background count of 7,000 cpm) and was deposited directly into

the LLRW container. Successive buckets were scanned as they were removed from the excavation, and buckets of soil that had elevated gamma counts were deposited directly into the LLRW container. All other buckets of soil were spread and scanned as in Area 1. Excavation continued until all the previously disturbed material had been removed and undisturbed material was encountered in the base of the excavation and on the north, east, and west sidewalls. The south wall of the excavation showed disturbed material to a depth of 8 to 10 feet bgs, indicating the actual total depth of the excavation from the CERCLA TCRA. The final dimensions of the second excavation were 13 feet (east to west) by 10 feet (north to south) by 10 feet deep. Radiation screening identified approximately 3 cubic yards of contaminated soil and material that was placed in the LLRW containers for off-site disposal. Figure 5 presents the location of the excavated areas and the relative position of the previous sample locations.

### 6.3 RADIATION SCANNING

When excavation was complete in each area, a radiological scan of the base and sidewalls of the excavation was conducted. To eliminate interference from background radiation and to focus the "viewing" area of the radiological scanning instrument, the RCT placed the instrument in a lead shield with a directional opening (orifice). The shielding reduced background radiation levels and allowed the scan to pinpoint the locations of measurements. Figure 6 presents a schematic view of the scan instrument configurations. The lead shielded instrument was placed in a sheet metal casing mounted with a hanging bracket on a swivel assembly. This allowed the viewing orifice to be directed downward (for scanning the base of the excavation) or to the side (for scanning the sidewalls of the excavation). The survey instrument was attached to the bucket of the excavator using a nylon rope.

To scan the base of an excavation, the instrument was placed in the "base scanning" configuration and lowered into the excavation to within 6 inches of the foundation floor. The instrument was then moved across the floor of the excavation so that the entire floor of the excavation was scanned by the instrument. If any areas showed elevated gamma counts (i.e., at or above the background), additional soil was removed and the area was re-scanned until the entire floor of each excavation was below the background count of 7,000 cpm. To scan the sidewalls of an excavation, the instrument was rotated 90 degrees in the vertical plane to the "sidewall" configuration and secured in place by a nylon rope and duct tape. The excavator then moved the scanning instrument from top to bottom of the sidewalls until all of the vertical walls of the excavation had been scanned. If the sidewall scan showed readings at or above background counts on the excavation walls, additional soil was removed and the area was re-scanned until all of the sidewalls of the excavation were below the background count of 7,000 cpm.




## Legend

1A◆ Grid Node

SB01△ Soil Boring

—X— Fence

Areas Excavated in Final Removal Action

Areas Excavated in Time Critical Removal Action

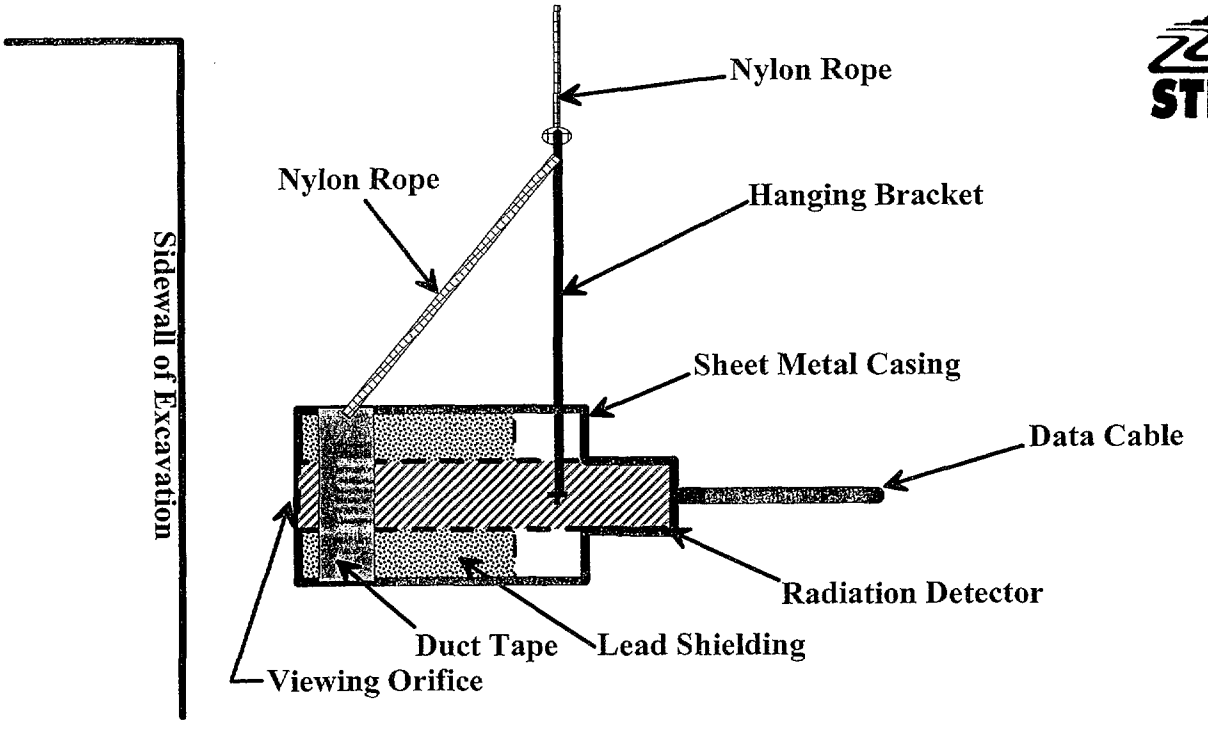
LPRA16◇ Previous Confirmatory Sample Location

R1● Locations Sampled in Initial Site Investigation

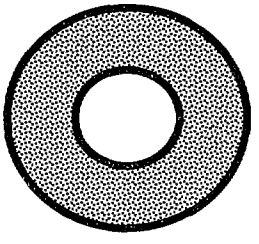
BK1□ Background Sample Location in Initial Site Investigation

Prepared By: STEP Inc. Oak Ridge, TN
Job Title: Remedial Action Report
La Garde Park
Anniston, Alabama

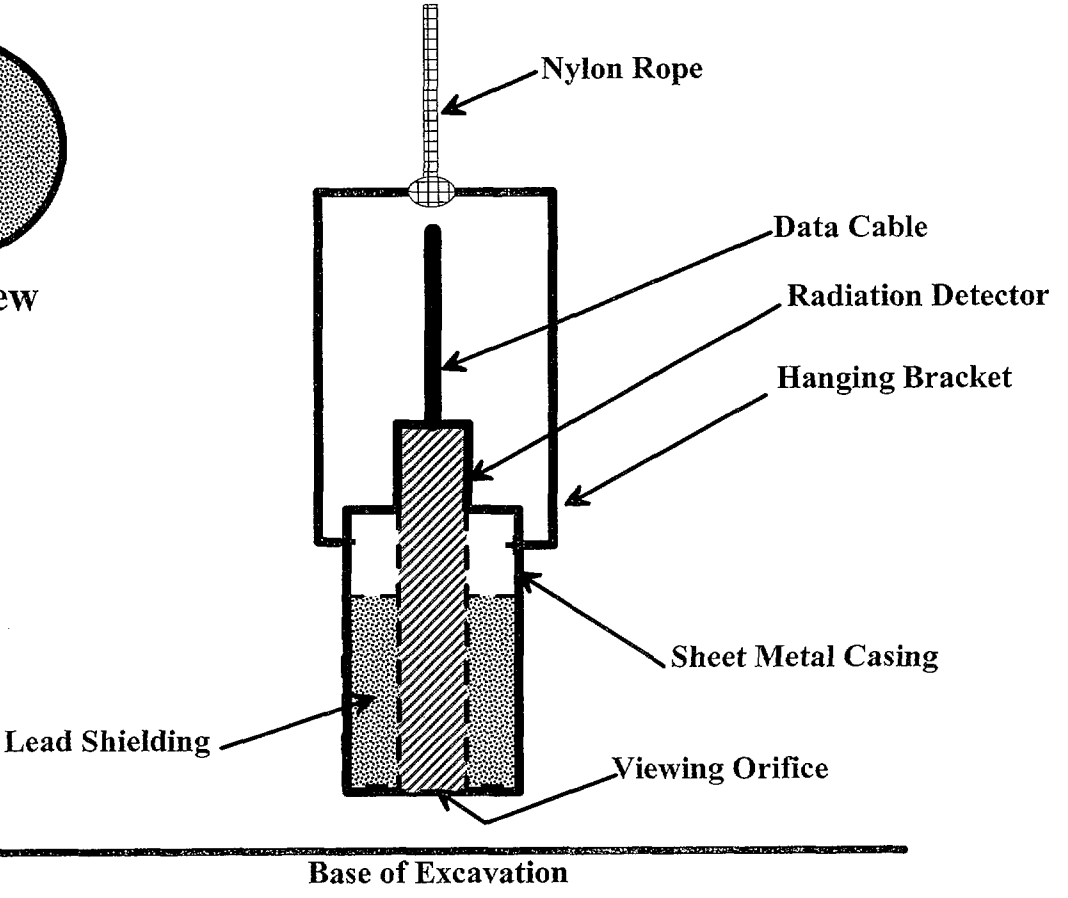
**Figure 5 Areas Excavated and Previous Sampling Locations Exceeding Screening Values**




## Sidewall Scanning Configuration



End View




## Base of Excavation Scanning Configuration

Figure 6 Scanning Configurations for Radiation Detector

Once the excavations were completed, the RCT used the G-M (Ludlum Model 44-9, SN # 108883) survey instrument connected to a count ratemeter/scaler (Ludlum Model 12, SN# 117166) to frisk all personnel and equipment for radiological contamination before they exited the site. No contamination was found on any personnel or equipment. Personal dosimeters were also distributed to all personnel before they entered the site and were collected as personnel left the site at the completion of field activities. The dosimeters were submitted to Landauer, Inc. for evaluation. None of the dosimeters showed exposure exceeding the minimal detectable dose equivalent of 1 mrem for gamma radiation.

### 6.4 CONFIRMATORY SOIL SAMPLING

Once the radiation scan indicated that all contaminated material had been removed from the excavation, confirmatory soil samples were collected in each excavation. One sample was collected from the base of the excavation at each of the four corners, and one sample was collected from the center of the excavation. The soil for the samples was scanned in the excavator bucket by the field screening instrument, collected in the sample container, and placed in a plastic cooler for shipment to the analytical laboratory.

The RCT also screened the samples on site for radiological activity. Each sample was counted for a minimum of 30 minutes. The samples were scanned for the presence of cesium and/or cobalt using a gamma-ray scintillation probe (Ludlum Model 44-10, Serial Number 132947) connected to a multi-channel analyzer (Rainbow 1, Model 7010, Serial Number 701118). None of the samples showed activity exceeding background radiation levels.

A total of eleven samples were submitted for laboratory analyses. Five samples (LPSS01, LPSS02, LPSS03, LPSS04, and LPSS05) were collected from the first excavation and five samples and a duplicate (LPSS06, LPSS06DUP, LPSS07, LPSS08, LPSS09, and LPSS10) were collected from the second excavation. All of the samples were sent to General Engineering Laboratory, LLC of Charleston, South Carolina and analyzed for cesium and cobalt. The resulting analytical data were then subjected to third party data validation. Table 1 presents the validated results of the sample analyses.

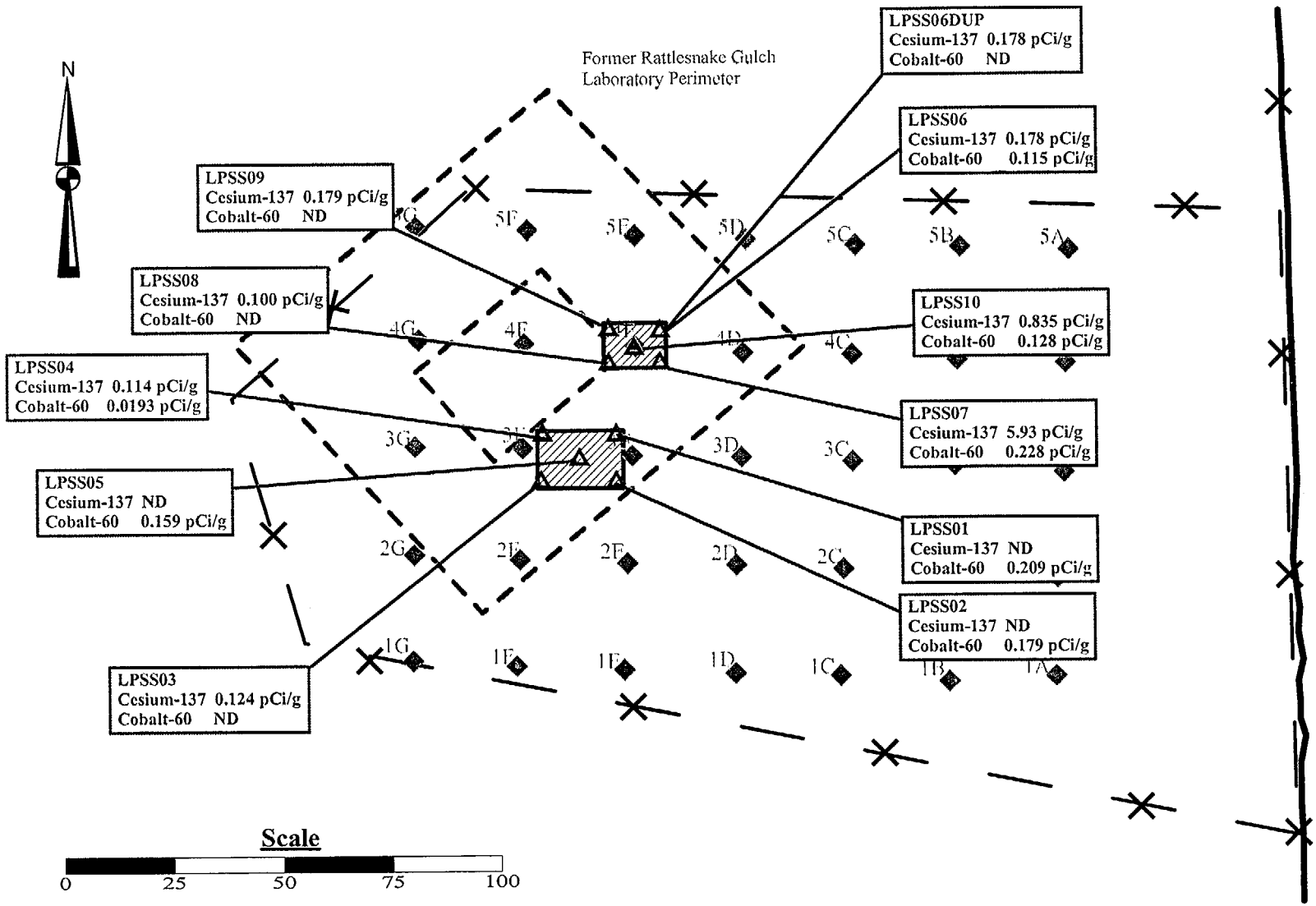
The DCGLs for $Cs^{137}$ (9.2 pCi/g) and $Co^{60}$ (2.3 pCi/g) are based on radionuclide concentration of surface soils. These cleanup goals are highly conservative and protective of human health and the environment. The highest concentration for both $Cs^{137}$ (5.93 pCi/g) and $Co^{60}$ (0.228 pCi/g) detected in the soil samples were in soil sample LPSS07 collected at the base of the southeast corner of the second excavation.

Therefore, the highest concentration of $Cs^{137}$ and $Co^{60}$ remaining at the site do not exceed the conservative DCGLs for surface soils and are well below ground surface. Figure 7 presents the relative location of the samples in the excavations and the concentrations of the radionuclides detected. Appendix D contains the Data Validation Report and the laboratory forms for the analyses.

**Table 1 Radionuclide Analytical Results**

| Sample No. | Parameter | Collection Date | Analysis Date | Validated Result (pCi/g) | Method Detection Limit (pCi/g) | CRDL/ CRQL (pCi/g) | Uncertainty |
|---|---|---|---|---|---|---|---|
| LPSS01 | Cesium-137 | 03/30/05 | 04/05/05 | 0.00161 U | 0.0202 | 0.100 | 0.0125 |
| LPSS01 | Cobalt-60 | 03/30/05 | 04/05/05 | 0.209 | 0.0184 | 0.100 | 0.0327 |
| LPSS02 | Cesium-137 | 03/30/05 | 04/05/05 | 0.0194 U | 0.0382 | 0.100 | 0.0442 |
| LPSS02 | Cobalt-60 | 03/30/05 | 04/05/05 | 0.179 | 0.037 | 0.100 | 0.039 |
| LPSS03 | Cesium-137 | 03/30/05 | 04/05/05 | 0.124 | 0.029 | 0.100 | 0.0326 |
| LPSS03 | Cobalt-60 | 03/30/05 | 04/05/05 | 0.00347 U | 0.0259 | 0.100 | 0.0289 |
| LPSS04 | Cesium-137 | 03/30/05 | 04/05/05 | 0.114 | 0.0201 | 0.100 | 0.0242 |
| LPSS04 | Cobalt-60 | 03/30/05 | 04/05/05 | 0.0193 | 0.016 | 0.100 | 0.015 |
| LPSS05 | Cesium-137 | 03/30/05 | 04/06/05 | 0.0509 U | 0.0671 | 0.100 | 0.0369 |
| LPSS05 | Cobalt-60 | 03/30/05 | 04/06/05 | 0.159 | 0.0498 | 0.100 | 0.0537 |
| LPSS06 | Cesium-137 | 03/30/05 | 04/06/05 | 0.178 | 0.0459 | 0.100 | 0.0441 |
| LPSS06 | Cobalt-60 | 03/30/05 | 04/06/05 | 0.115 | 0.0396 | 0.100 | 0.0407 |
| LPSS06DUP | Cesium-137 | 03/30/05 | 04/06/05 | 0.178 | 0.0588 | 0.100 | 0.0702 |
| LPSS06DUP | Cobalt-60 | 03/30/05 | 04/06/05 | 0.0801 U | 0.0862 | 0.100 | 0.0401 |
| LPSS07 | Cesium-137 | 03/30/05 | 04/07/05 | **5.93** | 0.0577 | 0.100 | 0.439 |
| LPSS07 | Cobalt-60 | 03/30/05 | 04/07/05 | **0.228** | 0.0507 | 0.100 | 0.0564 |
| LPSS08 | Cesium-137 | 03/30/05 | 04/07/05 | 0.100 | 0.0273 | 0.100 | 0.0291 |
| LPSS08 | Cobalt-60 | 03/30/05 | 04/07/05 | -0.0059 U | 0.0265 | 0.100 | 0.0156 |
| LPSS09 | Cesium-137 | 03/30/05 | 04/07/05 | 0.179 | 0.0352 | 0.100 | 0.0434 |
| LPSS09 | Cobalt-60 | 03/30/05 | 04/07/05 | 0.00725 U | 0.0362 | 0.100 | 0.0194 |
| LPSS10 | Cesium-137 | 03/30/05 | 04/07/05 | 0.835 | 0.0776 | 0.100 | 0.141 |
| LPSS10 | Cobalt-60 | 03/30/05 | 04/07/05 | 0.128 | 0.0649 | 0.100 | 0.0778 |

**Bold** value is the highest concentration detected for the parameter in any sample.
CRDL = contract required detection limit
CRQL = contract required quantitation limit
DUP = duplicate sample
pCi/g = picoCuries per gram
U = result validated as not detected




## Legend

1A◆ Grid Node

Areas Excavated in Final Removal Action

—X— Fence

LPSS01△ Confirmatory Sample Location

pCi/g = picoCuries per gram

ND = not detected

Prepared By: STEP Inc. Oak Ridge, TN
Job Title: Remedial Action Report
La Garde Park
Anniston, Alabama

**Figure 7 Confirmatory Sample Locations and Detected Concentrations of Radionuclides**

## 6.5 SHIPPING WASTE MATERIAL AND SOILS

As a result of field radiation screening, approximately 4 cubic yards (approximately 8 tons) of material were removed from the site during the final interim removal action and placed in two LLRW containers for off-site disposal. Before the LLRW was shipped, the RCT performed a complete radiation survey of the LLRW containers that included dose rate measurements using a "MicroR" meter (Ludlum Model 19, Serial Number 131294) and removable contamination "smear" surveys. No radiological activity above background levels was observed in the survey of the LLRW containers. The LLRW containers were shipped via F.L.L. Trucking to Impact Services, Inc. (IMPACT) in Oak Ridge, Tennessee. At IMPACT, the LLRW containers were emptied and the material was rescanned for radioactivity. A total of 3.8 cubic yards (6,575 lbs) of soil was classified as non-hazardous LLRW material and shipped to Middle Point Sanitary Landfill in Murfreesboro, Tennessee, for disposal. A total of 0.2 cubic yards of material was classified as LLRW and shipped to Envirocare of Utah, LLC., Salt Lake City, Utah for disposal. The bill of lading and waste manifests for the soil and material are contained in Appendix D.

## 6.6 SITE RESTORATION

At the completion of excavation and confirmatory sampling activities, each excavation was backfilled using the clean removed soil, and excavation equipment was used to compact the fill. The surface of each disturbed area was then re-graded to improve surface drainage. A silt fence was installed on the downslope (i.e., northwest) side of the site to inhibit sediment run-off.

## 6.7 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the ESI/RI and the STEP final interim removal action; all radioactive contaminated material has been removed from the site. The final interim removal action was conducted in a conservative manner to provide maximum protection to human health and the environment; therefore, no further remedial action is recommended for the LaGarde Park site. STEP also recommends removing the perimeter fence from around the site, performing final site restoration, and releasing the site for unrestricted use.

## 7. REFERENCES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Environmental Science and Engineering Inc., January 1998. *Final Environmental Baseline Survey, Fort McClellan, Alabama.*

NRC (U.S. Nuclear Regulatory Commission), March 2000. NRC Inspection Report No. 01-12861-05/99-01.

NRC, August 2000. *Multi-Agency Radiation Survey and Site Investigation Manual,* NUREG-1575, Revision 1.

NRC Office of Nuclear Material Safety and Safeguards (NMSS), September 2002. *Final Consolidated NMSS Decommissioning Guidance – Volume 1 Decommissioning Process* (NUREG 1757).

NRC, August 2003. NRC Inspection Report No. 01-02861-05/03-01.

STEP (Solutions To Environmental Problems, Inc.), June 2003. *Final Completion Report Site Investigation at LaGarde Park Anniston, Alabama.*

STEP, May 2004. *Final Report for Removal Action at LaGarde Park Anniston, Alabama.*

STEP, June 2004. *Final Project Plans, Expanded Site Investigation at LaGarde Park Anniston, Alabama.*

STEP, April 2005. *Final Remedial Investigation Report, Expanded Site Investigation at LaGarde Park Anniston, Alabama.*

USEPA (U.S. Environmental Protection Agency), January 2001. 10 *CFR* Part 20 Section 1402.

# Appendix A

# Copy of Field Logbook

LA GARDE PARK
ANNISTON, AL
CONTRACT NO.
DACA 01-03-D-0010
DO # 0003
STEP PROJ NO. 114-113/114-010
114-106/114-020
STEP, INC.
EXPANDED SITE INVES.
JULY 12 TO 21, 2004
3/28/05 TO 4/4/05
2ND REMOVAL ACTION

NATIONAL
408
MINING TRANSIT BOOK
BOOK 1 of 1

(82) MON 3/28/05 | 2ND REMOVAL ACTION LA GARDE PARK | 114-100 114-020

13:30 AT SOMMERALL GATE

FORK LIFT, BOBCAT, DOZER DELIVER

MET W STEP CREW JUSTIN MCKAMEY, BRIAN MCKAMEY; JARRET BRIGHT

NOTED GAS PIPELINE SIGNS @ EDGE OF DOT RIGHT OF WAY

CALLED ALABAMA LINE LOCATER SERVICE (1-800-292-8525)

GOT LOCATER #05087170

GUARANTEED TO HAVE LINES MARKED BY 1:30 WED (3/30)

AFTER LOOKING @ SITE DECIDED TO PROCEED W/CLEARING BRUSH & NOT DIG. USED DOZER TO CLEAR SMALL TREES & BRUSH AND KNOCK DOWN BERM OF ABANDONED ROAD.

ORDERED 18" CULVERT (10') LONG FROM WEBB CONCRETE

Jeff Catt 3/28/05

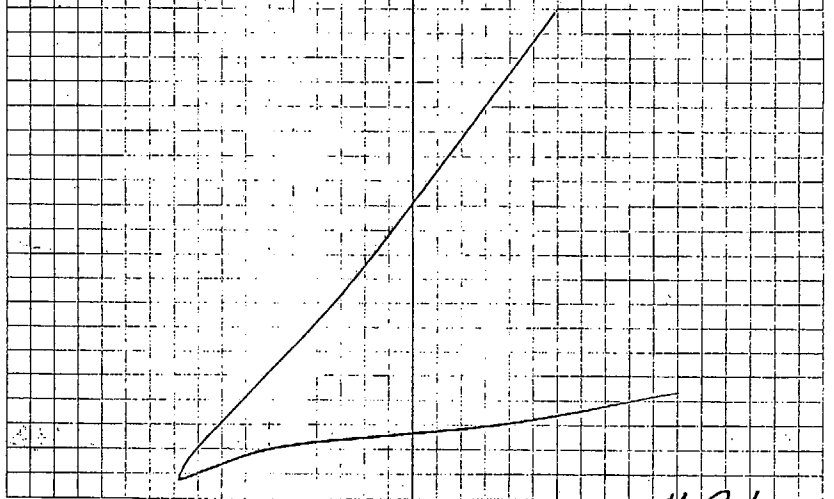
2ND REMOVAL ACTION MON (83)
LA GARDE PARK 3/28/05

DECIDED TO PLACE ROCK ON TOP OF SUSPECTED PIPE LINE TRACE (NO DIG)

WORKED ON ROAD TILL 16:30.

NEED MORE CULVERT & ROCK

17:00 LEAVE FOR DAY



3/28/05 Jeff Catt

(84) 3/29/05 TUE

LAGARDE PARK 114-006
2ND REMOVAL ACTION 114-020

0700 ON SITE SUNNY, 49°F
MET W/ JEFF YONAS (EOST)
AND STEP CREW (BRIAN & JUSTIN
MCKAMEY, JARRETTE BOATWRIGHT)
CONTINUE WORKING ON ACCESS ROAD

7:30 15 METAL BOXES DELIVERED
TO SITE BY FCC TRUCKING

08:00 MR. ODOLE FROM
ALABAMA GAS CAME BY.
HE SAID GAS LINE RAN ON
NORTH SIDE OF SOMMERVILLE GAP
ROAD BUT HAS BEEN TURNED OFF
AT VALVE @ HWY 21. THE NEW
GAS LINE PARRALLELS NEW HWY.
HE STATED AS LONG AS WE WERE
ONLY LAYING DOWN ROCK NOT
DIGGING NEAR GAS LINE WE SHOULD
BE FINE.

WORKING ON ROAD
10:45 2ND LOAD OF GRAVEL DELIVERED
(TRAILER)

Jeff Cook 3/29/05

LAGARDE PARK TUE
2ND REMOVAL ACTION 3/29/05 (85)

11:30 3RD LOAD OF GRAVEL DELIVERED
(TRI-AXEL TRUCK) WRONG
JOB SITE

ENDED UP TAKING 6 TOTAL
LOADS of ROCK
(2 TRAILER + 4 BY TRUCK)
FROM MILLER SAND

1600 ROAD EXTENDED HALFWAY
UP HILL (TO CONNECT W/OLD ROAD)

ALL PERSONNEL LEAVING SITE
ROAD GOOD ENOUGH TO GET EQUIPMENT
& PERSONNEL UP TO SITE.

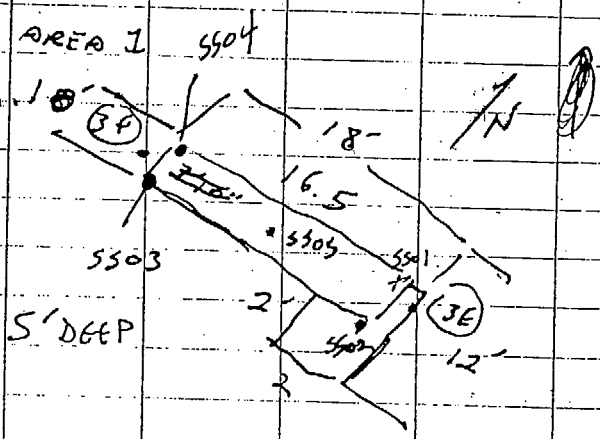
PLANS TO GET ONE MORE LOAD
OF #4 GRAVEL & 1 LOAD of
RIP RAP TO COMPLETE ROAD

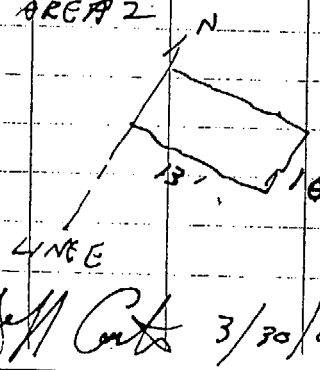
3/29/05 Jeff Cook

(86) WED 3/30/05 LAGARDE PARK 2ND REMOVAL

DOSIMETERS

05 JASON FADDIS (AUX)
03 JEFF YONAS (EODT)
01 JEFF CARTER (STEP)
02 JARRATTE BOATWRIGHT (STEP)
04 BRIAN MCKAMEY (STEP)
06 JUSTIN MCKAMEY (STEP)




Jeff Carter 3/30/05

114-106
114-020

LAGARDE 2ND REMOVAL ACTION WED 3/30/05 (87)

0630 ON POST [LIGHT CLOUDS 50°F]
JEFF YONAS (EODT)
JASON FADDIS (AUX)
JEFF CARTER, BRIAN & JUSTIN MCKAMEY
JARRETTE BOATWRIGHT (STEP)

0720 CONDUCTED SAFETY MEETING DISCUSSED OPERATIONS ALL CREW PRESENT. DISTRIBUTED DOSIMETERS

0725 ENTERED AREA SET UP
JASON CONDUCTED RAD SCAN OF AREA. JEFF Y. CONDUCT UXO SCAN.

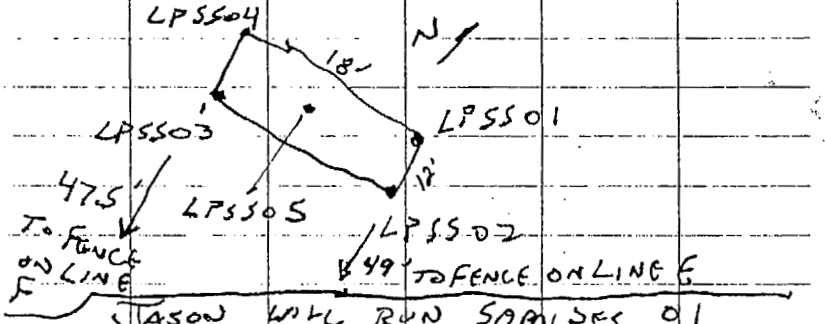
745 COMMENCE EXCAVATION BETWEEN FLAGS 3E & 3F SCRAPING 6" LIFTS & SPREAD SOIL FOR SCANNING

09:30 EXCATED AREA 1 TO 5'-4" AREA 18 BY 10 W/ 2' EXTENSION @ S.E. CORNER. CARRIED 2 SKIDSTEER LOADS TO ROLL OFF SCAN BASE & SIDEWALLS

3/30/05 Jeff Carter

(88) WED 3/30/05 LAGARDE PARK 2ND REMOVAL ACTION

10:25 COMPLETES SAMPLING AREA 1 COMMENCE BACKFILL. COLLECTED 5 SAMPLES FROM BASE of EXCAVATION




JASON WILL RUN SAMPLES 01 & 02 THROUGH FIELD ANALYZER

PLACES TWO SKID STEER LOADS of POTENTIALLY CONTAMINATED SOIL IN LLRW BOX #004

11:00 BEGIN EXCAVATION AREA 2 @ 8' BGS FOUND PLASTIC SHEETING FROM 1ST RA

12:00 BREAK FOR LUNCH

13:00 RESUME EXCAVATION/SCANNING

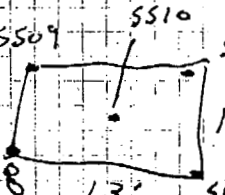
J M Cantu 3/30/05

(89) LAGARDE PARK 2ND RA 3/30/05 WED

13:40 DUG TO 10 F. BACKFILL FROM PREVIOUS EXCAVATION STOPPED @ APPROX 8 FT BGS APPEARS TO BE UNDISTURBED SOIL ON NORTH & EAST SIDE of EXCAVATION ALSO ON WEST SIDE

JASON SCANNING HOLE AREA @ CENTER of HOLE HAD 3,000 cpm SCRAPED MATERIAL & PUT IN B-X RESCAN BASE of HOLE. ALL 4 WALLS AND BASE SCAN CLEAN COLLECTING SAMPLES

14:00 COLLECT SAMPLES




~ 10' DEEP

LPSS06 & DUP NE CORNER @ BOTTOM (9')

LPSS07 SE CORNER @ BOTTOM (10')

LPSS08 SW CORNER @ BOTTOM (9')

LPSS09 NW CORNER @ BOTTOM (10')

LPSS10 CENTER @ BOTTOM (10')

J M Cantu 3/30/05

(90) WED 3/30/05 LA GARDE PARK 2ND RA

14:30 CALLED ROY HOEKSTRA (STEP) TO REPORT COMPLETION OF SAMPLING & GET APPROVAL TO BACKFILL HOLE & FINISH FIELD EFFORT.

15:40 HEARD FROM ROY OK TO BACKFILL EXCAVATION UXO TECH SWEPT ENTIRE AREA SO CAN REGRADE EXCAVATION AREA TO IMPROVE DRAINAGE. FILLED 1 AND ½ BOXES W/POTENTIALLY CONTAMINATED MATERIAL - WILL STAGE FULL BOXES INSIDE FENCE AND MOVE ALL EMPTIES BACK TO SOMMERALL ROAD.

16:20 COMPLETED BACKFILL & GRADING SITE. FULL BOXES STAGED IN FENCE AREA EMPTIES BOXES MOVED TO SOMMERALL GATE RD. RCT SCANNED OUT SKID STEER, TRACH HOE & BULLDOZER. RCT SCANNED BOXES ALL CLEAR

3/30/05

LA GARDE PARK 2ND RA WED 3/30/05 (91)

16:40 CALLED UNITED RENTAL RELEASED EXCAVATOR, SKID STEER & FORKLIFT (SMALL) PICKUP # 82224 12

KEEPING LARGE FORKLIFT (PARKED INSIDE FENCE @ SITE) & DOZER UNTIL BOXES ARE SHIPPED OUT.

SITE GATE SECURED RETRIEVED ALL DOSIMETERS AND MOVING DOWN TO SOMMERALL GATE ROAD

17:10 EQUIPMENT STAGED OUTSIDE SOMMERALL GATE. REFUELING EQUIPMENT FOR RELEASE

RELEASED JEFF YONAS (FOST UXO) & JASON FADDIS (AXIER, RCT)

1720 ALL PERSONNEL LEAVING SECURED SOMMERALL GATE

3/30/05

(92) MON 4/4/05 ZUBRA LA GARNE 14-106-020

12:00 ON SITE SUNNY, MID 70° F
MET W/ DWIGHT HIXSON (IMPACT)

BRIAN McKAMEY & JUSTIN McKAMEY (STEP) MOVING BOXES DOWN FROM SITE.

14:05 HIXSON CERTIFIED LOAD LOADED PROPERLY ON TRUCK LEAVING SITE.

14:30 INSTALLED 100' of SILT FENCE @ DOWNSLOPE SIDE of EXCAVATION AREA. LOCKED GATE LEAVING SITE

14:40 ALL EQUIPMENT STAGED OUTSIDE SUMMERALL GATE. CALLED RENTAL COMPANY TO PICKUP. LOCKED SUMMERALL GATE RETURN KEY TO GREG SCHANK (MATRIX)

15:20 LEAVE ANNISTON

J M Cato 4/4/05

# Appendix B

# Photographs of Removal Action

**LaGarde Park, Anniston, Alabama**
**Final Removal Action**

Photo 1 Site View Facing South (PreDig)

Photo 2 Site View Facing South (PreDig)

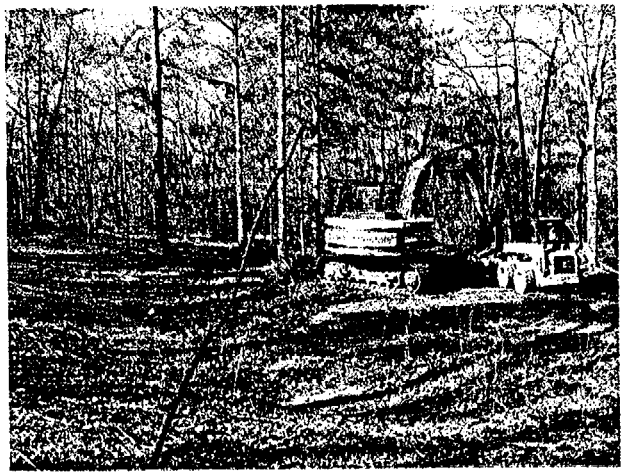


Photo 3 Excavation 1 View Facing Southwest

Photo 4 Excavation 1 View Facing Northeast

Photo 5 Excavation 1 View Facing East

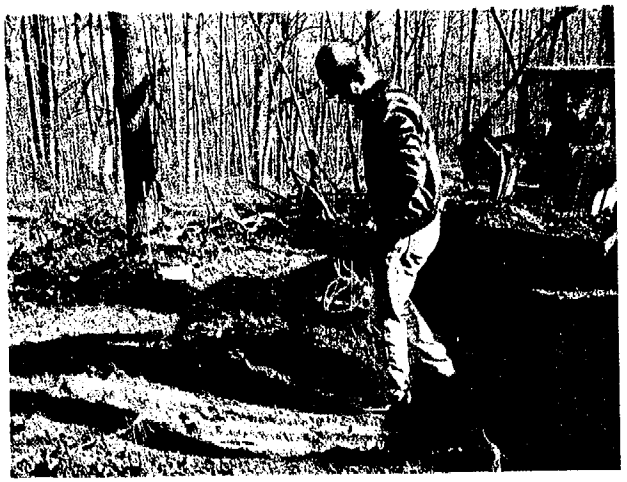


Photo 6 Scanning Soil Excavation 1
(View Facing North)

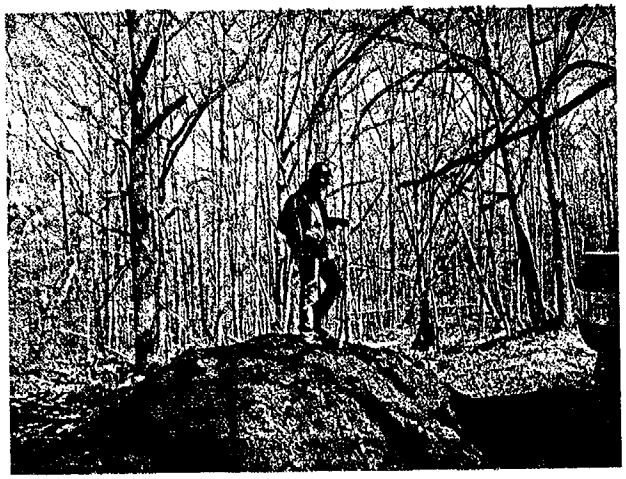


Photo 7 Scanning Soil Excavation 1
(View Facing North)

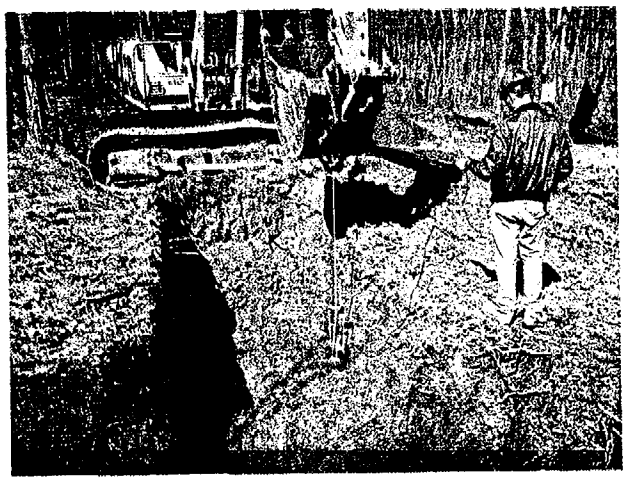


Photo 8 Scanning Base of Excavation 1
(View Facing West)

Photo 9 Scanning Base of Excavation 1
(View Facing West)

Photo 10 Assembly for Scanning Excavation Sidewall

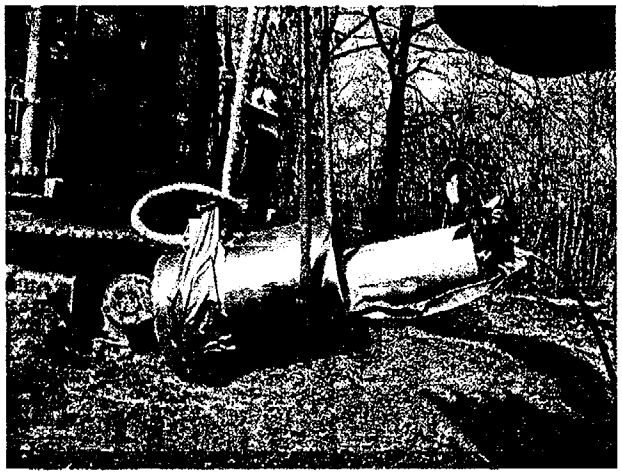


Photo 11 Assembly for Scanning Excavation Sidewall
(Closeup)

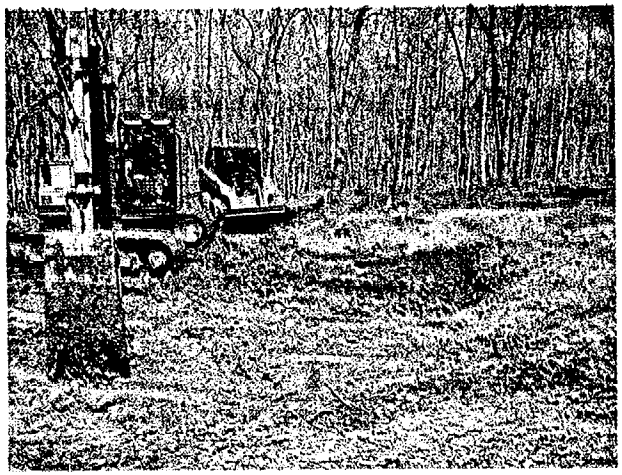


Photo 12 Begin Excavation 2
(View Facing North)

Photo 13 Scanning Soil from Excavation 2
(View Facing North)

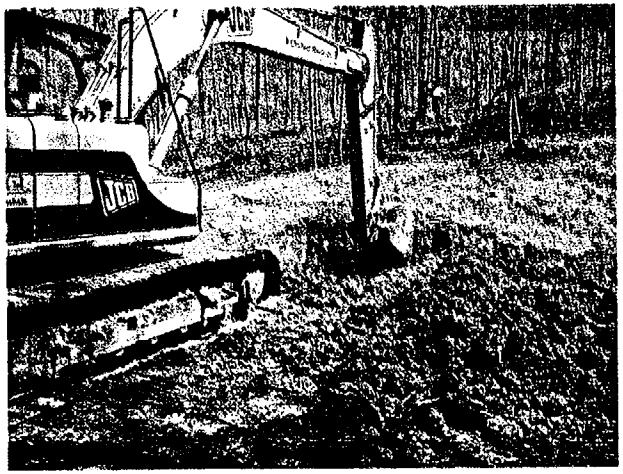



Photo 14 Excavation 2
(View Facing East)

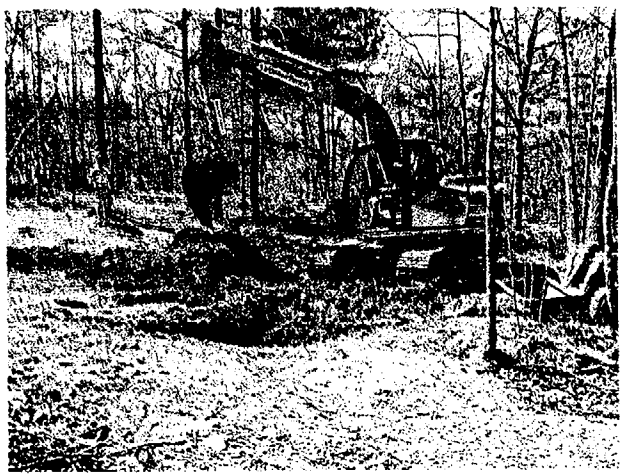


Photo 15 Excavation 2
(View Facing South)

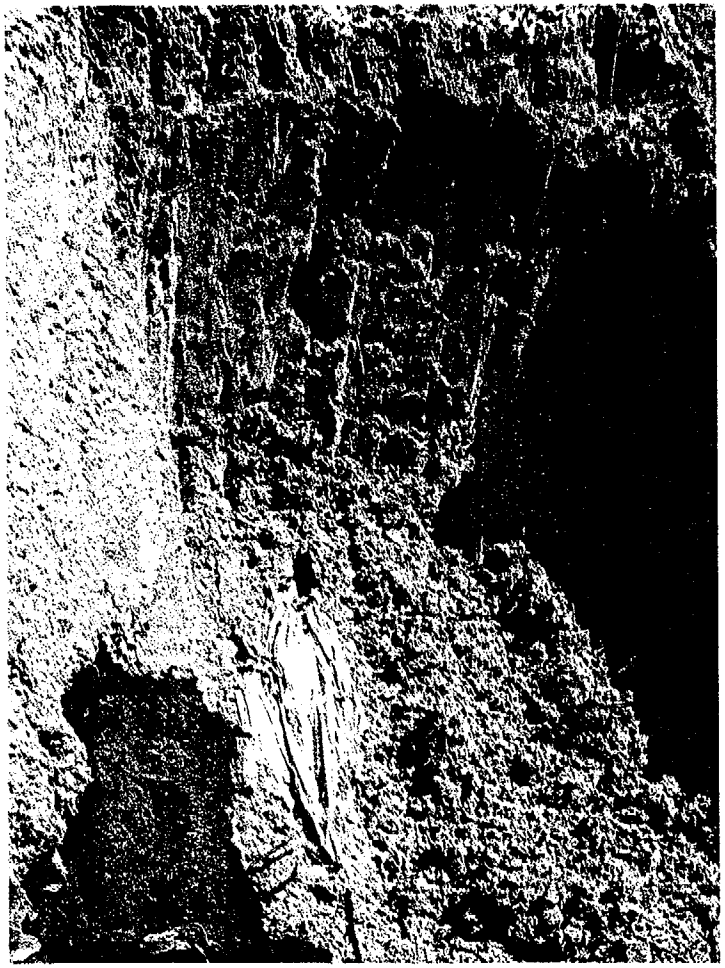


Photo 16 Plastic in Excavation 2
(View Facing East)

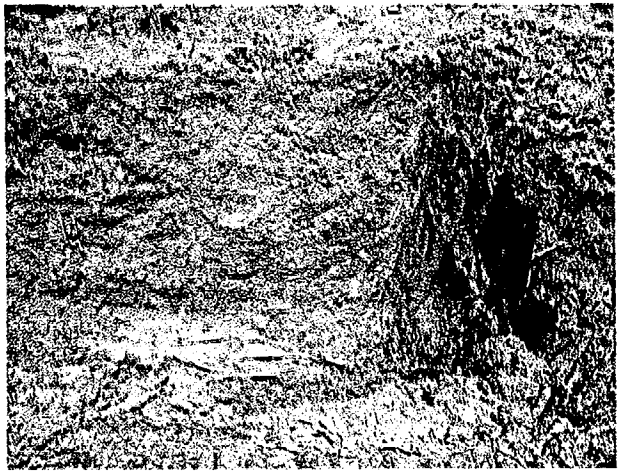


Photo 17 Plastic in Excavation 2
(View Facing North)

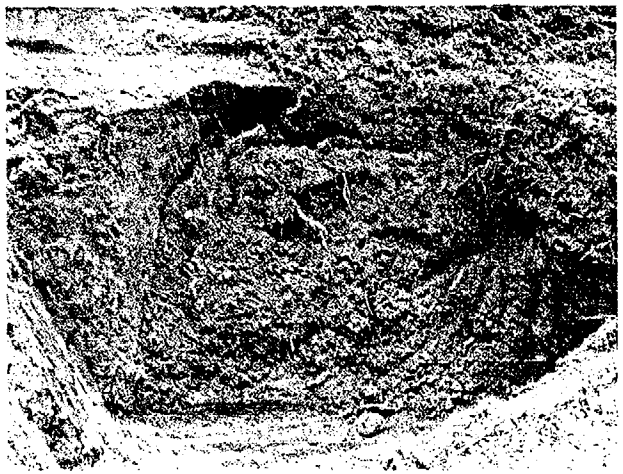


Photo 18 Sidewall of Excavation 2
(View Facing South)

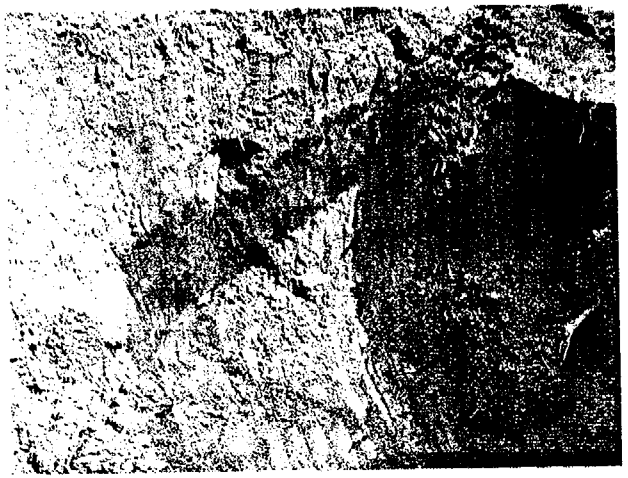


Photo 19 Front wall of Excavation 2
(View Facing East)

Photo 20 Back wall of Excavation 2
(View Facing West)

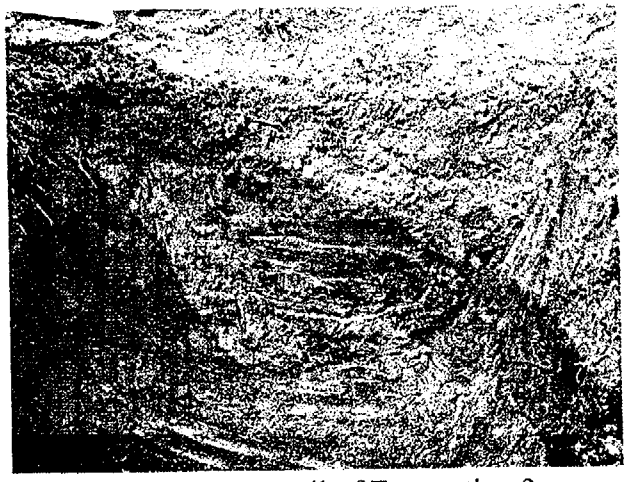


Photo 21 Side wall of Excavation 2
(View Facing North)

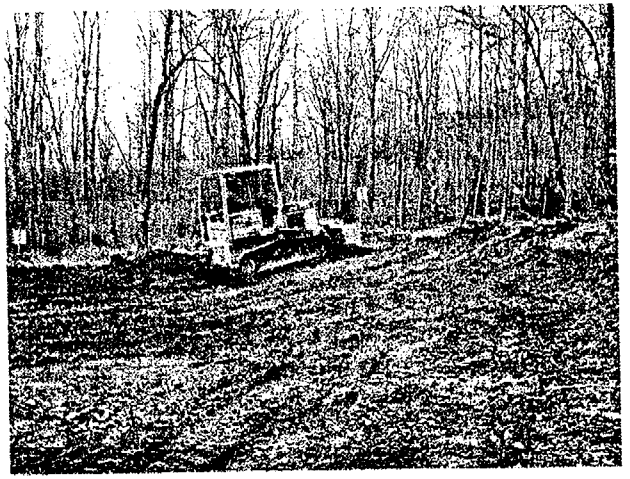


Photo 22 Re-grading Site
(View Facing Northeast)

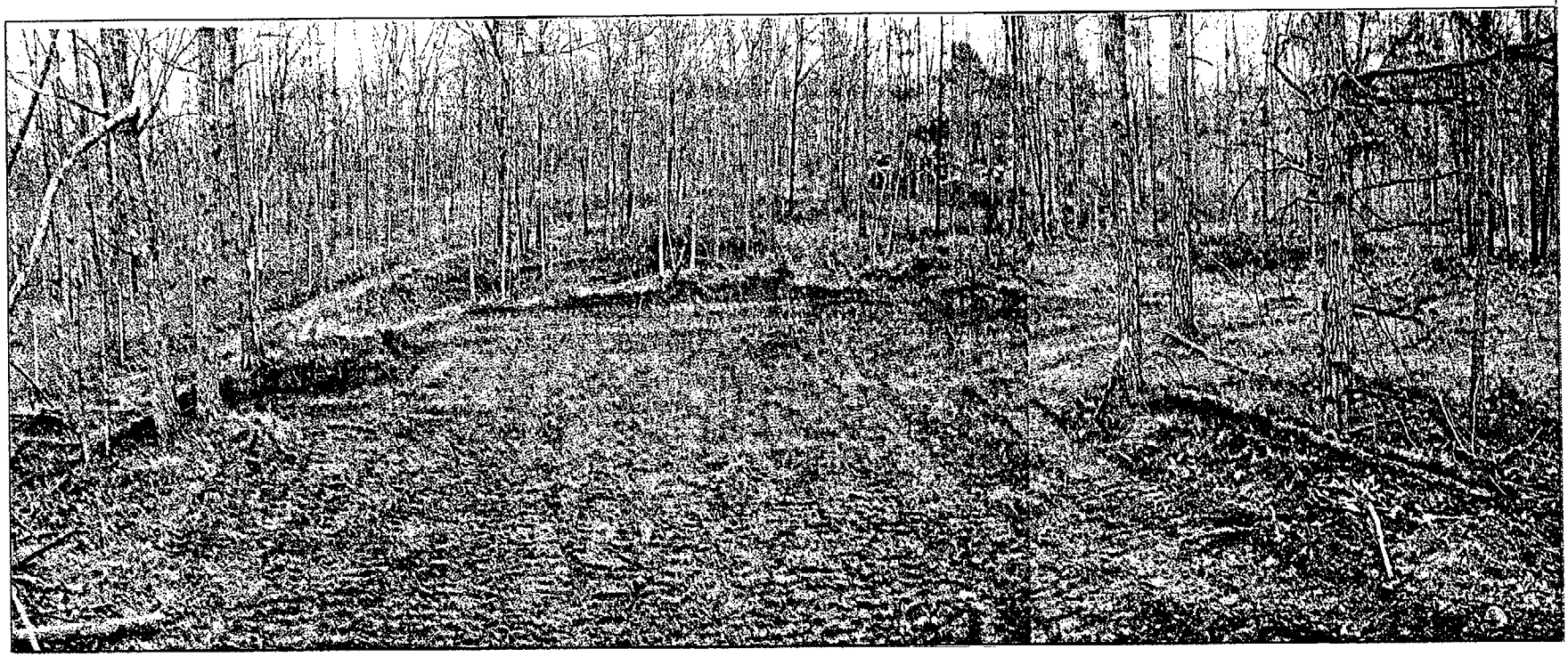


Photo 23, 24, and 25
Panoramic View of Re-graded Site
(View Facing East)

Photo 26 View of Re-graded Site
(View Facing Southeast)

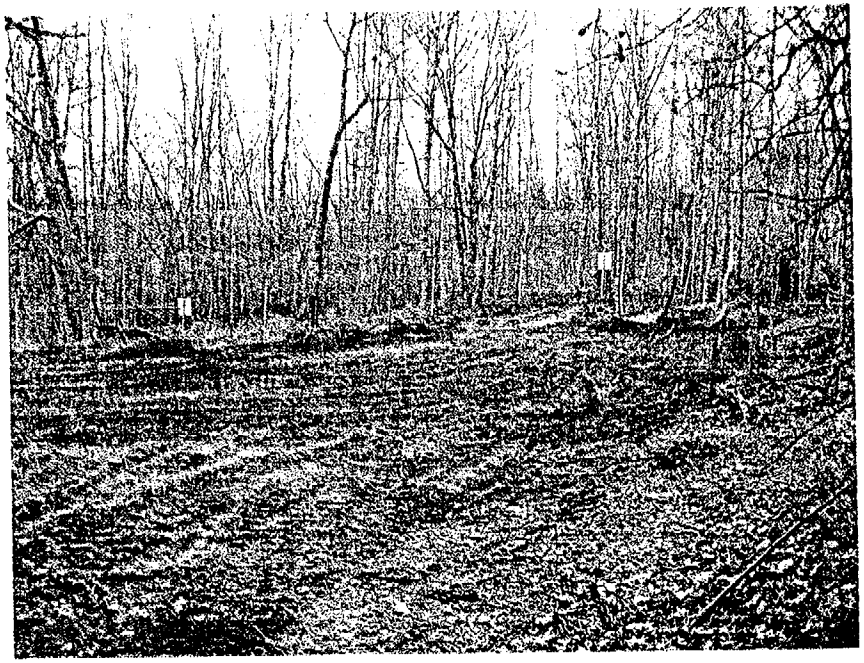


Photo 27 View of Re-graded Site
(View Facing Northeast)

# Appendix C

# Instrument Calibration Forms

# INSTRUMENT QUALITY CONTROL CHECK FORM

| | | |
|---|---|---|
| METER: (READOUT) | MODEL | 2221 |
| | S/N | 117650 |
| DETECTOR: | MODEL | 44-7 |
| | S/N | 012883 |
| | UNITS | cpm |
| | MODE | rate |
| | HEADPHONE CHECK | N/A |

| | |
|---|---|
| METER CALIBRATION DUE DATE | 19 Aug 05 |
| DETECTOR CALIBRATION DUE DATE | 2 Jan 06 |
| DATE COMBINATION BASELINE RESPONSE ESTABLISHED | N/A |

CHECK SOURCES

| | |
|---|---|
| RADIONUCLIDE | Cs 137 |
| ID | AA22 |

| | |
|---|---|
| RADIONUCLIDE | Co 60 |
| ID | AA23 |

| DATE/TIME OF CHECK | BATTERY RESPONSE | HIGH VOLTAGE | INPUT SENSITIVITY (THRESHOLD) | BACKGROUND READING | INSTRUMENT READING | | | | SURVEY. INITIALS | LOCATION/ COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | CHECK SOURCE #1 | | CHECK SOURCE #2 | | | |
| | | | | | GROSS | NET | GROSS | NET | | |
| 1600 3-29-05 | 6.0 | 1000 | 35.3 | 800 | 60,000 | 59200 | 46,000 | 45200 | RJF | 20' cable in shield @ hole |
| 0700 3-30-05 | 6.0 | 1000 | 35.3 | 800 | 60,000 | 59200 | 46,000 | 45200 | RJF | " " |
| 1670 3-30-05 | 6.0 | 990 | 35.3 | 800 | 60,000 | 59200 | 46,000 | 45200 | RJF | " " |
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Check Source #1: + or - 20% Net Source Response Limits are 47360 to 71040.

Check Source #2: + or - 20% Net Source Response Limits are 36160 to 54240.

IMP/LAG 19

Data Reviewed By: M Jacobs

Date Reviewed: 4/20/05

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# INSTRUMENT QUALITY CONTROL CHECK FORM

| | | |
|---|---|---|
| METER: (READOUT) | MODEL | 12 |
| | S/N | 117166 |
| DETECTOR: | MODEL | 44-9 |
| | S/N | 108383 |
| | UNITS | cpm |
| | MODE | rate |
| | HEADPHONE CHECK | N/A |

| | |
|---|---|
| METER CALIBRATION DUE DATE | 1/2/06 |
| DETECTOR CALIBRATION DUE DATE | 12/29/05 |
| DATE COMBINATION BASELINE RESPONSE ESTABLISHED | NA |

CHECK SOURCES

| | |
|---|---|
| RADIONUCLIDE | Cs 137 |
| ID | AA22 |

| | |
|---|---|
| RADIONUCLIDE | Co 60 |
| ID | AA23 |

| DATE/TIME OF CHECK | BATTERY RESPONSE | HIGH VOLTAGE | INPUT SENSITIVITY (THRESHOLD) | BACKGROUND READING | INSTRUMENT READING | | | | SURVEY. INITIALS | LOCATION/ COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | CHECK SOURCE #1 | | CHECK SOURCE #2 | | | |
| | | | | | GROSS | NET | GROSS | NET | | |
| 3-30-05 0700 | ok | 900 | N/A | 40 | 60,000 | 59960 | 8,000 | 7960 | RJF | Site Arrival AI |
| 3-30-05 1630 | ok | 900 | N/A | 40 | 60,000 | 59960 | 8,000 | 7960 | RJF | " " |
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Check Source #1: + or - 20% Net Source Response Limits are 47968 to 71952.

Check Source #2: + or - 20% Net Source Response Limits are 6368 to 9552.

Data Reviewed By: [signature]

Date Reviewed: 4/20/05

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# INSTRUMENT QUALITY CONTROL CHECK FORM

| | | |
|---|---|---|
| METER: (READOUT) | MODEL | 12 |
| | S/N | ~~12~~ 121284 |
| DETECTOR: | MODEL | 44-9 |
| | S/N | ~~94~~ 94 17284 |
| | UNITS | cpm |
| | MODE | rate |
| | HEADPHONE CHECK | N/A |

| | |
|---|---|
| METER CALIBRATION DUE DATE | 2 Jun 06 |
| DETECTOR CALIBRATION DUE DATE | 17 Aug 05 |
| DATE COMBINATION BASELINE RESPONSE ESTABLISHED | N/A |

CHECK SOURCES

| | |
|---|---|
| RADIONUCLIDE | Cs 137 |
| ID | AA22 |
| RADIONUCLIDE | Co 60 |
| ID | AA23 |

| DATE/TIME OF CHECK | BATTERY RESPONSE | HIGH VOLTAGE | INPUT SENSITIVITY (THRESHOLD) | BACKGROUND READING | INSTRUMENT READING | | | | SURVEY. INITIALS | LOCATION/ COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | CHECK SOURCE #1 | | CHECK SOURCE #2 | | | |
| | | | | | GROSS | NET | GROSS | NET | | |
| 1600 3-29-05 | OK | 900 | N/A | 40 | 60,000 | 59960 | 8,000 | 7960 | RJF | hotel room |
| 0700 3-30-05 | OK | 900 | N/A | 42 | 60000 | 59958 | 8,000 | 7958 | RJF | site Amistad AL |
| 1630 3-30-05 | OK | 900 | N/A | 44 | 60,000 | 59956 | 8,000 | 7956 | RJF | " " |
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Check Source #1: + or - 20% Net Source Response Limits are 47968 to 71952.

Check Source #2: + or - 20% Net Source Response Limits are 63368 to 9552.

Data Reviewed By: M Ware

Date Reviewed: 4/20/05

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# INSTRUMENT QUALITY CONTROL CHECK FORM

| | | |
|---|---|---|
| METER: (READOUT) | MODEL | 19 |
| | S/N | 131294 |
| DETECTOR: | MODEL | N/A |
| | S/N | N/A |
| | UNITS | mR/hr |
| | MODE | rate |
| | HEADPHONE CHECK | N/A |

| | |
|---|---|
| METER CALIBRATION DUE DATE | 2/23/06 |
| DETECTOR CALIBRATION DUE DATE | |
| DATE COMBINATION BASELINE RESPONSE ESTABLISHED | |

CHECK SOURCES

| | |
|---|---|
| RADIONUCLIDE | Cs 137 |
| ID | AA22. |

| | |
|---|---|
| RADIONUCLIDE | Co 60 |
| ID | AA23 |

| DATE/TIME OF CHECK | BATTERY RESPONSE | HIGH VOLTAGE | INPUT SENSITIVITY (THRESHOLD) | BACKGROUND READING | INSTRUMENT READING | | | | SURVEY. INITIALS | LOCATION/ COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | CHECK SOURCE #1 | | CHECK SOURCE #2 | | | |
| | | | | | GROSS | NET | GROSS | NET | | |
| 3-29-05 1600 | OK | N/A | N/A | 17 | 200 | 183 | 150 | 133 | RJF | hotel |
| 3-30-05 0900 | OK | N/A | N/A | 8 | 200 | 192 | 150 | 142 | RJF | Site BKG location |
| 3-30-05 1030 | OK | N/A | N/A | 8 | 200 | 192 | 150 | 142 | RJF | " " |
| | | | | | | | | | | |
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Check Source #1: + or - 20% Net Source Response Limits are 146 to 220.

Check Source #2: + or - 20% Net Source Response Limits are 106 to 160.

Data Reviewed By: M Cooper

Date Reviewed: 4/20/05

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Designer and Manufacturer of Scientific and Industrial Instruments

# CERTIFICATE OF CALIBRATION

**LUDLUM MEASUREMENTS, INC.**
POST OFFICE BOX 810 PH. 325-235-5494
501 OAK STREET FAX NO. 325-235-4672
SWEETWATER, TEXAS 79556, U.S.A.

CUSTOMER AUXIER & ASSOCIATES ORDER NO. 220960/284119

Mfg. Ludlum Measurements, Inc. Model 2221 Serial No. 117650

Mfg. _____ Model _____ Serial No. _____

Cal. Date 19-Aug-04 Cal Due Date 19-Aug-05 Cal. Interval 1 Year Meterface 202-159

Check mark ☑ applies to applicable instr. and/or detector IAW mfg. spec. T. 73 °F RH 55 % Alt 698.8 mm Hg

☐ New Instrument Instrument Received ☑ Within Toler. +-10% ☐ 10-20% ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See comments

☑ Mechanical ck. ☑ Meter Zeroed ☐ Background Subtract ☑ Input Sens. Linearity
☑ F/S Resp. ck ☑ Reset ck. ☑ Window Operation ☑ Geotropism
☑ Audio ck. ☐ Alarm Setting ck. ☑ Batt. ck. (Min. Volt) 4.4 VDC
☑ Calibrated in accordance with LMI SOP 14.8 rev 12/05/89. ☐ Calibrated in accordance with LMI SOP 14.9 rev 02/07/97.

Instrument Volt Set 900 V Input Sens. 35 mV Det. Oper. _____ V at _____ mV Threshold Dial Ratio 100 = 10 mV

☑ HV Readout (2 points) Ref./Inst. 500 / 494 V Ref./Inst. 2000 / 1983 V

**COMMENTS:**
Calibrated with 39 inch cable.
Firmware: 2G 10 72
Calibrated w/ window in "out" position.

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.

| RANGE/MULTIPLIER | REFERENCE CAL. POINT | INSTRUMENT REC'D "AS FOUND READING" | INSTRUMENT METER READING* |
|---|---|---|---|
| X 1K | 400 Kcpm | 400 | 400 |
| X 1K | 100 Kcpm | 100 | 100 |
| X 100 | 40 Kcpm | 400 | 400 |
| X 100 | 10 Kcpm | 100 | 100 |
| X 10 | 4 Kcpm | 400 | 400 |
| X 10 | 1 Kcpm | 100 | 100 |
| X 1 | 400 cpm | 400 | 400 |
| X 1 | 100 cpm | 100 | 100 |
| | | | |
| | | | |

*Uncertainty within ± 10% C.F. within ± 20%

Range(s) Calibrated Electronically

| | REFERENCE CAL. POINT | INSTRUMENT RECEIVED | INSTRUMENT METER READING* | | REFERENCE CAL. POINT | INSTRUMENT RECEIVED | INSTRUMENT METER READING* |
|---|---|---|---|---|---|---|---|
| Digital Readout | 400 Kcpm | N/A | 400(6)(6)(6) | Log Scale | 500 Kcpm | 500 K | 500 K |
| | 40 Kcpm | ↓ | 400(6) | | 50 Kcpm | 50 K | 50 K |
| | 4 Kcpm | | 400(6) | | 5 Kcpm | 5 K | 5 K |
| | 400 cpm | | 400 | | 500 cpm | 500 | 500 |
| | 40 cpm | | 40 | | 50 cpm | 50 | 50 |

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques. The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323-1978 State of Texas Calibration License No. LO-1963

**Reference Instruments and/or Sources:**

Cs-137 Gamma S/N ☐ 1162 ☐ G112 ☐ M565 ☐ 5105 ☐ T1008 ☐ T879 ☐ E562 ☐ E551 ☐ 720 ☐ 734 ☐ 1616 ☐ Neutron Am-241 Be S/N T-304

☐ Alpha S/N _____ ☐ Beta S/N _____ ☐ Other _____

☑ m 500 S/N 578881 ☐ Oscilloscope S/N _____ ☑ Multimeter S/N 80040300

Calibrated By: Michael J Thomas Date 19-Aug-04

Reviewed By: [signature] Date 20 Aug 04


FORM C22A 11/26/2003

AC Inst. Only ☐ Passed Dielectric (Hi-Pot) and Continuity Test ☐ Failed: _____

Designer and Manufacturer of Scientific and Industrial Instruments

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POST OFFICE BOX 810 PH. 325-235-5494
501 OAK STREET FAX NO. 325-235-4672
SWEETWATER, TEXAS 79556, U.S.A.

## *Bench Test Data For Detector*

Detector 44-2 Serial No RN012883

Customer AUXIER & ASSOCIATES Order #. 227999/287626

Counter 2221 Serial No. 117627 Counter Input Sensitivity 3.5 mV

Count Time 6 sec. Distance Source to Detector Surface

Other

| High Voltage | Background | Isotope Am-241 Size ≈0.74 uc | Isotope ____ Size ____ | Isotope ____ Size ____ | Isotope ____ Size ____ |
|---|---|---|---|---|---|
| 550 | 109 | 140 | | | |
| 600 | 179 | 4206 | | | |
| 650 | 161 | 5669 | | | |
| 700 | 177 | 6206 | | | |
| 750 | 193 | 6081 | | | |
| → 800 | 171 | 5868 | | | |
| 850 | 159 | 5951 | | | |
| 900 | 200 | 5886 | | | |
| 950 | 364 | 6505 | | | |

Signature Michael J Flomar Date 2-Jan-~~04~~ 05 MFT

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SWEETWATER, TEXAS 79556, U.S.A.

# CONVERSION CHART

Customer AUXIER & ASSOCIATES Date 2-Jan-05 Order #. 227999/287626

Model 2221 Serial No. 117627 Detector Model 44-2 Serial No. RN 012883

Source Cs-137 @ MTL 1.9 mCi; High Voltage 1000 V

Input Sensitivity 35 mV

| Reference Point | "As Found" Readings (CPM): Analog | Range/Scale | After Adjustment Readings (CPM): Analog | Range/Scale |
|---|---|---|---|---|
| 4000 uR/hr | 340 cpm | x 1k | 340 cpm | x 1k |
| 1000 | 180 | ↓ | 180 | ↓ |
| 400 | 70 | ↓ | 70 | ↓ |
| 200 | 340 | x100 | 340 | x100 |
| 100 ↓ | 180 ↓ | ↓ | 180 ↓ | ↓ |

| Reference Point | "As Found" Readings: Digital | Count Time | After Adjustment Readings: Digital | Count Time |
|---|---|---|---|---|
| 4000 uR/hr | 33749 | 6sec | 33749 | 6sec |
| 1000 | 17206 | ↓ | 17206 | ↓ |
| 400 | 6859 | ↓ | 6859 | ↓ |
| 200 | 3396 | ↓ | 3396 | ↓ |
| 100 ↓ | 1749 | ↓ | 1749 | ↓ |

Signature: Michael J Thomas Date 2-Jan-05

Designer and Manufacturer of Scientific and Industrial Instruments

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SWEETWATER, TEXAS 79556, U.S.A.

# CERTIFICATE OF CALIBRATION

CUSTOMER AUXIER & ASSOCIATES ORDER NO. 227999/287626

Mfg. Ludlum Measurements, Inc. Model 12 Serial No. 117166

Mfg. _____ Model _____ Serial No. _____

Cal. Date 2-Jan-05 Cal Due Date 2-Jan-06 Cal. Interval 1 Year Meterface 202-636

Check mark ☑ applies to applicable instr. and/or detector IAW mfg. spec. T. 76 °F RH 41 % Alt 700.8 mm Hg

☐ New Instrument Instrument Received ☐ Within Toler. +-10% ☐ 10-20% ☑ Out of Tol. ☐ Requiring Repair ☐ Other-See comments

☑ Mechanical ck. ☑ Meter Zeroed ☐ Background Subtract ☐ Input Sens. Linearity
☑ F/S Resp. ck ☑ Reset ck. ☐ Window Operation ☑ Geotropism
☑ Audio ck. ☐ Alarm Setting ck. ☑ Batt. ck. (Min. Volt) 2.2 VDC
☑ Calibrated in accordance with LMI SOP 14.8 rev 12/05/89. ☐ Calibrated in accordance with LMI SOP 14.9 rev 02/07/97.

Instrument Volt Set 750 V Input Sens. 35 mV Det. Oper. _____ V at _____ mV Threshold Dial Ratio _____ = _____ mV

☑ HV Readout (2 points) Ref./Inst. 500 / 480 V Ref./Inst. 2000 / 1987 V

**COMMENTS:** Calibrated with 39" cable.

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.

| RANGE/MULTIPLIER | REFERENCE CAL. POINT | INSTRUMENT REC'D "AS FOUND READING" | INSTRUMENT METER READING* |
|---|---|---|---|
| X 1000 | 400Kcpm | 320 | 400 |
| X 1000 | 100Kcpm | 90 | 90 |
| X 100 | 40Kcpm | 320 | 400 |
| X 100 | 10Kcpm | 90 | 100 |
| X 10 | 4Kcpm | 320 | 400 |
| X 10 | 1Kcpm | 90 | 100 |
| X 1 | 400cpm | 320 | 400 |
| X 1 | 100cpm | 90 | 100 |

*Uncertainty within ± 10% C.F. within ± 20% ALL Range(s) Calibrated Electronically

| | REFERENCE CAL. POINT | INSTRUMENT RECEIVED | INSTRUMENT METER READING* |
|---|---|---|---|
| Digital Readout | 40Kcpm | 4018(0) | 4018(0) |
| | 4Kcpm | 401(0) | 401(0) |
| | 400cpm | 40(0) | 40(0) |
| | 40cpm | 4(0) | 4(0) |

| | REFERENCE CAL. POINT | INSTRUMENT RECEIVED | INSTRUMENT METER READING* |
|---|---|---|---|
| Log Scale | | | |

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques. The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323-1978 State of Texas Calibration License No. LO-1963

**Reference Instruments and/or Sources:**

Cs-137 Gamma S/N ☐ 1162 ☐ G112 ☐ M665 ☐ 5106 ☐ T1008 ☐ T879 ☐ E552 ☐ E651 ☐ 720 ☐ 734 ☐ 1616 ☐ Neutron Am-241 Be S/N T-304

☐ Alpha S/N _____ ☐ Beta S/N _____ ☐ Other _____

☑ m 500 S/N 578881 ☐ Oscilloscope S/N _____ ☑ Multimeter S/N 80040300

Calibrated By: Michael J Thomas Date 2-Jan-05 MJT

Reviewed By: WO Date 5 Jan 05




AC Inst. Only ☐ Passed Dielectric (Hi-Pot) and Continuity Test ☐ Failed: _____

Designer and Manufacturer of Scientific and Industrial Instruments

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501 OAK STREET FAX NO. 325-235-4672
SWEETWATER, TEXAS 79556, U.S.A.

## CONVERSION CHART

Customer AUXIER & ASSOCIATES Date 29-Dec-04 Order #. 227999/287626

Model 2221 Serial No. 117627 Detector Model 44-9 Serial No. PR108883

Source Cs-137 194.6 High Voltage 900 V

Input Sensitivity 35 mV

| Reference Point | "As Found" Readings (CPM): Analog | Range/Scale | After Adjustment Readings (CPM): Analog | Range/Scale |
|---|---|---|---|---|
| 150 mR/hr | N/A | N/A | 320 | x 1K |
| 50 | | | 140 | |
| 15 | | | 60 | |
| 5 | | | 200 | x100 |
| 1.5 | | | 50 | |
| 1.0 | | | 30 | |

| Reference Point | "As Found" Readings: Digital | Count Time | After Adjustment Readings: Digital | Count Time |
|---|---|---|---|---|
| 150 mR/hr | N/A | N/A | 32659 | 6 sec |
| 50 | | | 14102 | |
| 15 | | | 6047 | |
| 5 | | | 2091 | |
| 1.5 | | | 556 | |
| 1.0 | | | 354 | |

Signature: Michael J Thomas Date 29-Dec-04

Designer and Manufacturer of Scientific and Industrial Instruments

# CERTIFICATE OF CALIBRATION COPY

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POST OFFICE BOX 810 PH. 325-235-5494
501 OAK STREET FAX NO. 325-235-4672
SWEETWATER, TEXAS 79556, U.S.A.

CUSTOMER AUXIER & ASSOCIATES ORDER NO. 227999/287626

Mfg. Ludlum Measurements, Inc. Model 12 Serial No. 121288

Mfg. _____ Model _____ Serial No. _____

Cal. Date 2-Jan-05 Cal Due Date 2-Jan-06 Cal. Interval 1 Year Meterface 202-635

Check mark ☑ applies to applicable instr. and/or detector IAW mfg. spec. T. 75 °F RH 41 % Alt 700.8 mm Hg

☐ New Instrument Instrument Received ☑ Within Toler. +-10% ☐ 10-20% ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See comments

| | | | |
|---|---|---|---|
| ☑ Mechanical ck. | ☑ Meter Zeroed | ☐ Background Subtract | ☐ Input Sens. Linearity |
| ☑ F/S Resp. ck | ☑ Reset ck. | ☐ Window Operation | ☑ Geotropism |
| ☑ Audio ck. | ☐ Alarm Setting ck. | ☑ Batt. ck. (Min. Volt) 2.2 VDC | |

☑ Calibrated in accordance with LMI SOP 14.8 rev 12/05/89. ☐ Calibrated in accordance with LMI SOP 14.9 rev 02/07/97.

Instrument Volt Set 800 V Input Sens. 35 mV Det. Oper. _____ V at _____ mV Threshold Dial Ratio _____ = _____ mV

☑ HV Readout (2 points) Ref./Inst. 500 / 510 V Ref./Inst. 2000 / 2022 V

**COMMENTS:** Calibrated w/ 39" Cable.

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.

| RANGE/MULTIPLIER | REFERENCE CAL. POINT | INSTRUMENT REC'D "AS FOUND READING" | INSTRUMENT METER READING* |
|---|---|---|---|
| X 1000 | 400Kcpm | 400 | 400 |
| X 1000 | 100Kcpm | 100 | 100 |
| X 100 | 40Kcpm | 400 | 400 |
| X 100 | 10Kcpm | 100 | 100 |
| X 10 | 4Kcpm | 400 | 400 |
| X 10 | 1Kcpm | 100 | 100 |
| X 1 | 400cpm | 400 | 400 |
| X 1 | 100cpm | 100 | 100 |

*Uncertainty within ± 10% C.F. within ± 20% ALL Range(s) Calibrated Electronically

| | REFERENCE CAL. POINT | INSTRUMENT RECEIVED | INSTRUMENT METER READING* |
|---|---|---|---|
| Digital Readout | 40Kcpm | 4014(0) | 4014(0) |
| | 4Kcpm | 401(0) | 401(0) |
| | 400cpm | 40(0) | 40(0) |
| | 40cpm | 4(0) | 4(0) |

| | REFERENCE CAL. POINT | INSTRUMENT RECEIVED | INSTRUMENT METER READING* |
|---|---|---|---|
| Log Scale | | | |

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques. The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323-1978 State of Texas Calibration License No. LO-1963

**Reference Instruments and/or Sources:**

Cs-137 Gamma S/N ☐ 1162 ☐ G112 ☐ M565 ☐ 5106 ☐ T1008 ☐ T879 ☐ E552 ☐ E551 ☐ 720 ☐ 734 ☐ 1616 ☐ Neutron Am-241 Be S/N T-304

☐ Alpha S/N _____ ☐ Beta S/N _____ ☐ Other _____

☑ m 500 S/N 578881 ☐ Oscilloscope S/N _____ ☑ Multimeter S/N 80040300

Calibrated By: Michael J Thomas Date 2-Jan-05

Reviewed By: [signature] Date 5 Jan 05


FORM C22A 11/26/2003

AC Inst. Only ☐ Passed Dielectric (Hi-Pot) and Continuity Test ☐ Failed

Designer and Manufacturer of Scientific and Industrial Instruments

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POST OFFICE BOX 810 PH. 325-235-5494
501 OAK STREET FAX NO. 325-235-4672
SWEETWATER, TEXAS 79556, U.S.A.



## Bench Test Data For Detector

Detector 44-9 Serial No. PR127166

Customer AUXIER & ASSOCIATES Order #. 220960/284119

Counter 2200 Serial No. 83012 Counter Input Sensitivity 35 mV

Count Time 1 minute B.G. / 2 minute Source Count Distance Source to Detector Surface

Other $\frac{10,466\text{cpm} - 40\text{cpm}}{22,600\text{dpm}} = \frac{10,426\text{cpm}}{22,600\text{dpm}}$

| High Voltage | Background | Isotope Tc-99 Size 14,100cpm | Isotope Size | Isotope Size | Isotope Size |
|---|---|---|---|---|---|
| 900 | 40 | 10,466 | | | |

Signature Michael J Thom Date 19-Aug-04

Designer and Manufacturer of Scientific and Industrial Instruments

# CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.
POST OFFICE BOX 810 PH. 325-235-5494
501 OAK STREET FAX NO. 325-235-46
SWEETWATER, TEXAS 79556, U.S.A.

CUSTOMER GRIFFIN INSTRUMENTS ORDER NO. 230493 / 288981

Mfg. Ludlum Measurements, Inc. Model 19 Serial No. 131294

Mfg. _____ Model _____ Serial No. _____

Cal. Date 23-Feb-05 Cal Due Date 23-Aug-05 Cal. Interval 6 Months Meterface 202-016

Check mark ☑ applies to applicable instr. and/or detector IAW mfg. spec. T. 75 °F RH 39 % Alt 698.8 mm H

☐ New Instrument Instrument Received ☐ Within Toler. +-10% ☐ 10-20% ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See comments

☑ Mechanical ck. ☑ Meter Zeroed ☐ Background Subtract ☐ Input Sens. Linearity
☑ F/S Resp. ck ☑ Reset ck. ☐ Window Operation ☑ Geotropism
☑ Audio ck. ☐ Alarm Setting ck. ☑ Batt. ck. (Min. Volt) 2.2 VDC

☐ Calibrated in accordance with LMI SOP 14.8 rev 12/05/89. ☐ Calibrated in accordance with LMI SOP 14.9 rev 02/07/97.

Instrument Volt Set 775 V Input Sens. 35 mV Det. Oper. _____ V at _____ mV Threshold Dial Ratio _____ = _____

☐ HV Readout (2 points) Ref./Inst. _____ / _____ V Ref./Inst. _____ / _____ V

COMMENTS:

COPY

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.

| RANGE/MULTIPLIER | REFERENCE CAL. POINT | INSTRUMENT REC'D "AS FOUND READING" | INSTRUMENT METER READING* |
|---|---|---|---|
| 5000 | 4000uR/hr | N/A | 4000 |
| 5000 | 1000uR/hr | | 1000 |
| 500 | 400uR/hr= 74800 cpm | | 400 |
| 500 | 100uR/hr | | 100 |
| 250 | 200uR/hr= 36200 cpm | | 200 |
| 250 | 100uR/hr | | 100 |
| 50 | 7480 cpm | | 40 |
| 50 | 1870 cpm | | 10 |
| 25 | 3620 cpm | | 20 |
| 25 | 905 cpm | ✓ | 5 |

*Uncertainty within ± 10% C.F. within ± 20% 50, 25 Range(s) Calibrated Electronically

| | REFERENCE CAL. POINT | INSTRUMENT RECEIVED | INSTRUMENT METER READING* | | REFERENCE CAL. POINT | INSTRUMENT RECEIVED | INSTRUMENT METER READING |
|---|---|---|---|---|---|---|---|
| Digital Readout | | | | Log Scale | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities o other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration technique The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323-1978 State of Texas Calibration License No. LO-19

Reference Instruments and/or Sources:

Cs-137 Gamma S/N ☐ 1162 ☐ G112 ☐ M565 ☐ 5105 ☐ T1008 ☑ T879 ☐ E552 ☐ E551 ☐ 720 ☐ 734 ☐ 1616 ☐ Neutron Am-241 Be S/N T-3

☐ Alpha S/N _____ ☐ Beta S/N _____ ☐ Other _____

☑ M500 S/N 125489 ☐ Oscilloscope S/N _____ ☑ Multimeter S/N 68260348

Calibrated By: V. Lee Alvarado Date 23 Feb 05

Reviewed By: [signature] 2-23-05 Date 23 FEB 05

# GRIFFIN INSTRUMENTS

## CALIBRATION CERTIFICATE FOR 44-10 PROBE # PR132947

Owner: IMPACT

DATE: 08/23/05 LOCATION: Griffin Inst
TECH: J. Glenn DATE LAST CAL EXPIRES: 02/03/05

REASON FOR CALIBRATION:
(•) Due For Calibration ( ) Repair (See Remarks) ( ) Other (See Remarks) ( ) Due and Repair

NIST TRACEABLE EQUIPMENT AND STANDARDS USED DURING CALIBRATION

| | | | | | |
|---|---|---|---|---|---|
| MODEL: | 2221 | SERIAL #: | 126523 | CAL. DUE: | 01/02/06 |
| MODEL: | | SERIAL #: | | CAL. DUE: | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SOURCE #: | Other | ISOTOPE: | | ACTIVITY: | | ASSAY DATE: | |
| SOURCE #: | 99-1816 | ISOTOPE: | Cs137 | ACTIVITY: | 1.23 uCi | ASSAY DATE: | 08/12/99 |

GEOMETRY: For G-5 Probe - Source placed in desk drawer, no planchet or jig, probe on top of desk. All Others: Jig upside down with source underneath, activity side up.

Physical Condition: (•) Sat ( ) Unsat

Efficiency From Last Calibration: 4.5% Previous HV Set Point: 900 V

| Counts (CPM) | Background (CPM) | Net CPM: | Decay (yrs): | 6.00 |
|---|---|---|---|---|
| 126501 | 8933 | 117568 | AF Efficiency: | 4.95% |

Is the AF efficiency within 20% of the efficiency from the last calibration? (•) Yes ( ) No

Reproducibility: 124990 124510 124170 Average: 124556.67

Are the individual counts within 10% of the average? (•) Yes ( ) No

| High Voltage: | Source Response (CPM): | Background (CPM): | Net CPM: |
|---|---|---|---|
| N/A | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

HV RESPONSE BACKGROUND NET CPM Decay (yrs): 6.00

V Efficiency:

Remarks:

Does Instrument Meet Final Acceptance Criteria?: (•) Yes ( ) No

Calibration Sticker Attached?: (•) Yes ( ) No

Date Instrument is Due For Next Calibration: 08/23/06

Performed/Reviewed by: Joanne Glenn Date: 8/23/2005 Entered by: ____ Initials



Calibrations performed to ANSI N323A-1997 standards

GRIFFIN INSTRUMENTS

# CALIBRATION CERTIFICATE FOR 44-10 PROBE # PR132947
IMPACT

## SECTION 1: GENERAL INFORMATION

DATE: 02/03/04
TECH: J. Glenn
LOCATION: Griffin Inst
DATE LAST CAL EXPIRES:

REASON FOR CALIBRATION:
(•) Due For Calibration ( ) Repair (See Remarks) ( ) Other (See Remarks) ( ) Due and Repair

EQUIPMENT USED DURING CALIBRATION

| | | | | | |
|---|---|---|---|---|---|
| MODEL: | 12 | SERIAL #: | 121356 | CAL. DUE: | 02/03/05 |
| MODEL: | | SERIAL #: | | CAL. DUE: | |

SOURCES

| | | | |
|---|---|---|---|
| SOURCE #: | Other | SOURCE #: | 99-1816 |
| ISOTOPE: | | ISOTOPE: | Cs137 |
| ACTIVITY: | | ACTIVITY: | 1.23 uCi |
| ASSAY DATE: | | ASSAY DATE: | 08/12/99 |

## SECTION 2: AS FOUND DATA

GEOMETRY: For G-5 Probe - Source placed in desk drawer, no planchet or jig, probe on top of desk. All Others: Jig upside down with source underneath, activity side up.

Physical Condition: (•) Sat ( ) Unsat

Efficiency From Last Calibration: Previous HV Set Point: V

| Counts (CPM) | Background (CPM) | Net CPM: |
|---|---|---|
| | | |

AF Efficiency:

Is the AF efficiency within 20% of the efficiency from the last calibration? ( ) Yes (•) No

| Reproducibility: | | | | Average: | |
|---|---|---|---|---|---|
| | 120000 | 120000 | 120000 | | 120000.00 |

Are the individual counts within 10% of the average? (•) Yes ( ) No



Calibrations performed to ANSI N323A-1997 standards

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GRIFFIN INSTRUMENTS

## SECTION 3: CALIBRATION DATA

### PLATEAU AND SET POINT DATA

Date: 02/03/04

| High Voltage: | Source Response (CPM): | Background (CPM): | Net CPM: |
|---|---|---|---|
| 650 | 100000 | 5000 | 95000 |
| 700 | 110000 | 7500 | 102500 |
| 750 | 115000 | 7500 | 107500 |
| 800 | 120000 | 8000 | 112000 |
| 850 | 122000 | 8000 | 114000 |
| 900 | 130000 | 8500 | 121500 |
| 950 | 130000 | 8500 | 121500 |
| | | | |
| | | | |

| HV | RESPONSE | BACKGROUND | NET CPM | |
|---|---|---|---|---|
| 900 V | 130000 | 8500 | 121500 | Efficiency: 4.45% |

## SECTION 4: FINAL ACCEPTANCE

Remarks: No previous cal data.

Does Instrument Meet Final Acceptance Criteria?: (•) Yes ( ) No

Calibration Sticker Attached?: (•) Yes ( ) No

Date Instrument is Due For Next Calibration: 02/03/05

Performed by: [signature] Reviewed by: [signature] Date: 2-3-04

Entered in Computer Inventory By: [signature] Date: 2/3/04



Calibrations performed to ANSI N323A-1997 standards

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# Appendix D

# Data Validation Report
# and
# Laboratory Forms

# DATA VALIDATION REPORT
for the
Final Removal Action at LaGarde Park
Anniston, Alabama

Prepared

By

Solutions To Environmental Problems, Inc

May 2005

# Table of Contents

Page



Tables

# La Garde Park

## 1.0 Introduction

The data validation of eleven soil samples from La Garde Park, that were analyzed for cesium-137 and Co-60 (EML HASL 300, 4.5.2.3), was completed in May, 2005. Level III data validation was performed on 100% of the environmental samples collected during the remedial investigation activities. General Engineering Labs, Charleston, SC, produced all the analytical data.

## 2.0 Procedures

The sample data were validated following the logic identified in the STEP Data Validation Procedures for "Radiological Analysis" and "Gross Alpha/Beta" (1995). The data validation qualifiers applied by the reviewer were recorded in a column adjacent and to the right of the laboratory results. A data validation reason code was also added to each of the reviewer's qualifiers to provide the user with a means to identify which results were qualified and the reason for the qualifiers (Table 1, Page 5).

## 3.0 Summary of Data Validation Findings

This data validation report reflects the data validation findings for samples associated with La Garde Park. Overall the data was of excellent quality and all measurements required to satisfy the project QC objectives, PARCC were met. Each of these measures and specific data qualifications are discussed below.

*Accuracy*: Accuracy is measured by the results from the recovery of known amounts of compounds or elements from laboratory control samples (LCS), matrix spikes (MS) and surrogate recoveries. The overall measure of accuracy for the site was calculated by comparing the number of spike recoveries that exceeded the laboratory limits by the total number of LCS, MS and surrogate spikes. For the cesium and cobalt results accuracy was measured at 100%.

*Precision*: Precision is a measure of the agreement between duplicate sample measurements of the same quantity and is reflected in the RPD between spikes and the RPD for the field duplicate analysis. The overall project QC objective for precision is 90% or greater, and the measurement for La Garde Park is 100%.

*Representativeness*: The measures of representativeness -- sample handling, analytical blank analysis, field blanks – were met for all sites. Designated analytical protocols were followed. Holding times were met. Overall, no major problems were identified resulting from analytical failure.

*Comparability*: All data were analyzed using appropriate approved methods of analysis. All data results were reported correctly and in standard units

*Completeness*: Completeness is the amount of valid data compared to the planned amount and is expressed as a percent of the usable data points divided by the total number of analytes for each parameter analyzed. Out of a total of 22 data points, no data were rejected, resulting in a completeness of 100%.

Data validation summaries, which function as worksheets for the validation task, are included for each parameter in each data package. The following section highlights the key findings of the data validation for each analysis.

## 4.0 Analysis-Specific Data Validation Summaries

### Cesium-137 and Co-60 by EML HASL 300, 4.5.2.3

Eleven soil samples were analyzed and validated for radiological constituents. Overall, the data are of good quality and are usable as qualified. Data were reviewed for the following:

***Holding Times/Sample Condition.*** No qualifiers were required. All holding times were met.

***Initial and Continuing Calibration.*** All standards were calibrated as required. The CCVS efficiencies were checked and calibration frequencies were met.

***Blanks.*** No elements were noted in the blanks. No qualifiers were required.

***Matrix Spike/Matrix Spike Duplicate(MS/MSD)/Duplicate.*** No MS/MSD results were analyzed.

***Laboratory Control Sample (LCS).*** LCS analyses were performed for the project samples and all QC criteria were met.

***Field Duplicates.*** Field duplicates were evaluated and the results were within the QC limit.

***Quantitation.*** All results were acceptable as reported by the laboratory.

## 5.0 Data Qualifier Definitions

**Qualifier**

**U** The analyte was analyzed for, but was not detected above the reported sample quantitation limit or the reported analyte value was not detected above 5x or 10x the level reported in laboratory or field blanks.

**J** The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

**UJ** The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

**R** The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.

## *Table 1: Data Validation Reason Codes*

| Reason Code | Definition |
|---|---|
| 01 | Sample received outside of 4+/-2 degrees Celsius |
| 01A | Improper sample preservation |
| 02 | Holding time exceeded |
| 02A | Extraction |
| 02B | Analysis |
| 03 | Instrument performance – outside criteria |
| 03A | BFB |
| 03B | DFTPP |
| 03C | DDT and/or Endrin % breakdown exceeds criteria |
| 03D | Retention time windows |
| 03E | Resolution |
| 04 | Initial calibration results outside specified criteria |
| 04A | Compound mean RRF QC criteria not met |
| 04B | Individual % RSD criteria not met |
| 04C | Correlation coefficient >0.995 |
| 05 | Continuing calibration results outside specified criteria |
| 05A | Compound mean RRF QC criteria not met |
| 05B | Compound % D QC criteria not met |
| 06 | Result qualified as a result of the 5x/10x blank correction |
| 06A | Method or preparation blank |
| 06B | ICB or CCB |
| 06C | ER |
| 06D | TB |
| 06E | FB |
| 07 | Surrogate recoveries outside control limits |
| 07A | Sample |
| 07B | Associated method blank or LCS |
| 08 | MS/MSD/Duplicate results outside criteria |
| 08A | MS and/or MSD recovery not within control limits (accuracy) |
| 08B | % RPD outside acceptance criteria (precision) |
| 09 | Post digestion spike outside criteria (GFAA) |
| 10 | Internal standards outside specified control limits |
| 10A | Recovery |
| 10B | Retention time |
| 11 | Laboratory control sample recoveries outside specified limits |
| 11A | Recovery |
| 11B | % RPD (if run in duplicate) |
| 12 | Interference check standard |
| 13 | Serial dilution |
| 14 | Tentatively identified compounds |
| 15 | Quantitation |
| 16 | Multiple results available; alternate analysis preferred |
| 17 | Field duplicate RPD criteria is exceeded |
| 18 | Percent difference between original and second column exceeds QC criteria |
| 19 | Professional judgment was used to qualify the data |
| 20 | Pesticide clean-up checks |
| 21 | Target compound identification |
| 22 | Radiological calibration |
| 23 | Radiological quantitation |
| 24 | Reported result and/or lab qualifier revised to reflect validation findings |

SDG: 133576 Project: LaGarde Park

Method: Radiological Matrix/No. of Samples: Soil - 11

Validation Samples: LPSS010305, LPSS020305, LPSS030305, LPSS040305, LPSS050305, LPSS060305, LPSS06030505VP, LPSS070305, LPSS080305, LPSS090305, LPSS100305

Data Validation Report Summary

| | | Status Code | Comments |
|---|---|---|---|
| 1. | Sample Preservation, Handling, and Transport | A | |
| 2. | Chain of Custody | A | see comment #1 |
| 3. | Holding Times | A | |
| 4. | Calibrations | A | |
| 5. | Blanks | A | |
| 6. | ICP/ICS | N/A | |
| 7. | Blank Spike/LCS | A | |
| 8. | Duplicates | A | |
| 9. | Matrix Spike | N/A | |
| 10. | Furnace Atomic Absorption QC | N/A | |
| 11. | ICP Serial Dilution | N/A | |
| 12. | Sample Result Verification | A | |
| 13. | Field QC Samples | A | |
| 14. | Overall Assessment | A | |

Status Codes:
A = Acceptable
R = Data Rejected
X = Data acceptable but qualified due to problems

Qualifications:

Significant Findings/Recommendations:

#1 • The analyst did not scan samples into the batch prior to analysis, however the samples did remain in their custody at all times. Error was corrected and analyst instructed in the proper procedure.

Overall Data Quality:

Acceptable as reported

Date: 4/29/2005

Validator's Signature: J. Thomas Kubchis

Peer Reviewer:

Page: 1 of 2
Project #: 114-106/114-020
GEL Quote #:
COC Number [11]:
PO Number:

# GEL Chain of Custody and Analytical Request

General Engineering Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 766-1178

Client Name: STEP INC Phone #: (865) 481-7837

Project/Site Name: LAGARDE PARK Fax #:

Address: 1006 FLOYD CULLER CT OAK RIDGE TN

Collected by: J. CARTER Send Results To: D. HAWN

Sample Analysis Requested [15] (Fill in the number of containers for each test)

| Sample ID 133576 | Date Collected (mm-dd-yy) | Time Collected (Military) (hhmm) | QC Code [3] | Field Filtered [3] | Sample Matrix [4] | Should this sample be considered: Radioactive | Should this sample be considered: TSCA Regulated | Total number of containers | GAMMA (CESIUM) | <-- Preservative Type (6) | Comments Note: extra sample is required for sample specific QC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 LP5501 0305 | 3/30/05 | 10:05 | N | | SO | | | 1 | 1 | | |
| 002 LP5502 0305 | 3/30/05 | 10:10 | N | | SO | | | 1 | 1 | | |
| 003 LP5503 0305 | 3/30/05 | 10:22 | N | | SO | | | 1 | 1 | | |
| 004 LP5504 0305 | 3/30/05 | 10:20 | N | | SO | | | 1 | 1 | | |
| 005 LP5505 0305 | 3/30/05 | 10:15 | N | | SO | | | 1 | 1 | | |
| 006 LP5506 0305 | 3/30/05 | 14:00 | N | | SO | | | 1 | 1 | | |
| 007 LP5506 0305 DUP | 3/30/05 | 14:00 | FD | | SO | | | 1 | 1 | | |
| 008 LP5507 0305 | 3/30/05 | 14:15 | N | | SO | | | 1 | 1 | | |
| 009 LP5508 0305 | 3/30/05 | 14:22 | N | | SO | | | 1 | 1 | | |
| 010 LP5509 0305 | 3/30/05 | 14:20 | N | | SO | | | 1 | 1 | | |

TAT Requested: Normal: X Rush: Specify: (Subject to Surcharge) Fax Results: Yes / No

Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / (Level 3) / Level 4

*Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards*

## Chain of Custody Signatures

| | Relinquished By (Signed) | Date | Time | Received by (signed) | Date | Time |
|---|---|---|---|---|---|---|
| 1 | [signature] | 3/31/05 | 16:30 | [signature] | 4.1.05 | 915 |
| 2 | [signature] | | | | | |
| 3 | | | | | | |

## Sample Shipping and Delivery Details

GEL PM:

Method of Shipment: Date Shipped:

Airbill #:

Airbill #:

1.) Chain of Custody Number = Client Determined

2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite

3.) Field Filtered: For liquid matrices, indicate with a "Y" for yes the sample was field filtered or "N" for sample was not field filtered.

4.) Matrix Codes: DW = Drinking Water, GW = Groundwater, SW = Surface Water, WW = Waste Water, W = Water, SO = Soil, SD = Sediment, SL = Sludge, SS = Solid Waste, O = Oil, F = Filter, P = Wipe, U = Urine, F = Fecal, N = Nasal

5.) Sample Analysis Requested: Analytical method requested (i.e. 8260B, 6010B/7470A) and number of containers provided for each (i.e. 8260B - 3, 6010B/7470A - 1).

6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SU = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate. If no preservative is added = leave field blank

*For Lab Receiving Use Only*

*Custody Seal Intact?* YES NO

Cooler Temp: 4°C

Page: 2 of 2
Project #: 114-106/114-028
GEL Quote #:
COC Number [1]:
PO Number:

# GEL Chain of Custody and Analytical Request

General Engineering Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 766-1178

Client Name: STEP INC  Phone #: 865 481-7837
Project/Site Name: LA GARDE PARK  Fax #:
Address: 1006 FLOYD CULLER CT, OAK RIDGE, TN
Collected by: J. CARTER  Send Results To: D. HAWN

Sample Analysis Requested [5] (Fill in the number of containers for each test)

| Sample ID | Date Collected (mm-dd-yy) | Time Collected (Military) (hhmm) | QC Code [2] | Field Filtered [3] | Sample Matrix [4] | Should this sample be considered: Radioactive | Should this sample be considered: TSCA Regulated | Total number of containers | GAMMA (CESIUM) | <-- Preservative Type (6) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1335761 | | | | | | | | | | | |
| LP5510 0306 | 3/30/05 | 14:17 | N | | SO | | | 1 | 1 | | Note: extra sample is required for sample specific QC |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
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| | | | | | | | | | | | |
| | | | | | | | | | | | |

TAT Requested: Normal: X Rush: ____ Specify: ____ (Subject to Surcharge)  Fax Results: Yes / No
Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / (Level 3) / Level 4

*Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards*

## Chain of Custody Signatures

| | Relinquished By (Signed) | Date | Time | Received by (signed) | Date | Time |
|---|---|---|---|---|---|---|
| 1 | [signature] | 3/31/05 | 16:30 | [signature] | 4.1.05 | 9:15 |
| 2 | [signature] | | | | | |
| 3 | | | | | | |

## Sample Shipping and Delivery Details

GEL PM:
Method of Shipment:  Date Shipped:
Airbill #:
Airbill #:

1.) Chain of Custody Number = Client Determined
2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
3.) Field Filtered: For liquid matrices, indicate with a "Y" for yes the sample was field filtered or "N" for sample was not field filtered.
4.) Matrix Codes: DW = Drinking Water, GW = Groundwater, SW = Surface Water, WW = Waste Water, W = Water, SO = Soil, SD = Sediment, SL = Sludge, SS = Solid Waste, O = Oil, F = Filter, P = Wipe, U = Urine, F = Fecal, N = Nasal
5.) Sample Analysis Requested: Analytical method requested (i.e. 8260B, 6010B/7470A) and number of containers provided for each (i.e. 8260B = 3, 6010B/7470A = 1).
6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only
Custody Seal Intact? YES NO
Cooler Temp: 1.0 °C

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 – (843) 556-8171 – www.gel.com

# Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: April 27, 2005

Contact: Mr. Doug Hawn
Project: La Garde Park ESI

Client Sample ID: LPSS010305
Sample ID: 133576001
Matrix: Soil
Collect Date: 30-MAR-05 10:05
Receive Date: 01-APR-05
Collector: Client

Project: STEP00402
Client ID: STEP001

| Parameter | Qualifier | Result | Uncertainty | DL | RL | Units | Qual | DF | Analyst | Date | Time | Batch | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Rad Gamma Spec Analysis** | | | | | | | | | | | | | |
| *Gammaspec, Gamma, Solid (Standard List)* | | | | | | | | | | | | | |
| Cesium-137 | U | 0.00161 | +/-0.0125 | 0.0202 | 0.100 | pCi/g | U | | AKB | 04/05/05 | 2206 | 413891 | 1 |
| Cobalt-60 | | 0.209 | +/-0.0327 | 0.0184 | 0.100 | pCi/g | | | | | | | |

**The following Prep Methods were performed**

| Method | Description | Analyst | Date | Time | Prep Batch |
|---|---|---|---|---|---|
| Dry Soil Prep | Dry Soil Prep GL-RAD-A-021 | TC1 | 04/04/05 | 1133 | 413761 |

**The following Analytical Methods were performed**

| Method | Description | Analyst Comments |
|---|---|---|
| 1 | EML HASL 300, 4.5.2.3 | |

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# Certificate of Analysis

Company: Step, Inc.
Address: 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: April 27, 2005

Contact: Mr. Doug Hawn
Project: La Garde Park ESI

Client Sample ID: LPSS020305
Sample ID: 133576002
Matrix: Soil
Collect Date: 30-MAR-05 10:10
Receive Date: 01-APR-05
Collector: Client

Project: STEP00402
Client ID: STEP001

Rev

| Parameter | Qualifier | Result | Uncertainty | DL | RL | Units | Qual | DF | Analyst | Date | Time | Batch | Metho |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rad Gamma Spec Analysis | | | | | | | | | | | | | |
| *Gammaspec, Gamma, Solid (Standard List)* | | | | | | | | | | | | | |
| Cesium-137 | U | 0.0194 | +/-0.0442 | 0.0382 | 0.100 | pCi/g | U | | AKB | 04/05/05 | 2207 | 413891 | 1 |
| Cobalt-60 | | 0.179 | +/-0.039 | 0.037 | 0.100 | pCi/g | | | | | | | |

The following Prep Methods were performed

| Method | Description | Analyst | Date | Time | Prep Batch |
|---|---|---|---|---|---|
| Dry Soil Prep | Dry Soil Prep GL-RAD-A-021 | TCI | 04/04/05 | 1133 | 413761 |

The following Analytical Methods were performed

| Method | Description | Analyst Comments |
|---|---|---|
| 1 | EML HASL 300, 4.5.2.3 | |

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# Certificate of Analysis

Company: Step, Inc.
Address: 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: April 27, 2005

Contact: Mr. Doug Hawn
Project: La Garde Park ESI

Client Sample ID: LPSS030305
Sample ID: 133576003
Matrix: Soil
Collect Date: 30–MAR–05 10:22
Receive Date: 01–APR–05
Collector: Client

Project: STEP00402
Client ID: STEP001

| Parameter | Qualifier | Result | Uncertainty | DL | RL | Units | Dwf | DF | Analyst | Date | Time | Batch | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Rad Gamma Spec Analysis** | | | | | | | | | | | | | |
| *Gammaspec, Gamma, Solid (Standard List)* | | | | | | | | | | | | | |
| Cesium–137 | | 0.124 | +/–0.0326 | 0.029 | 0.100 | pCi/g | | | AKB | 04/05/05 | 2231 | 413891 | 1 |
| Cobalt–60 | U | 0.00347 | +/–0.0289 | 0.0259 | 0.100 | pCi/g | | | | | | | |

The following Prep Methods were performed

| Method | Description | Analyst | Date | Time | Prep Batch |
|---|---|---|---|---|---|
| Dry Soil Prep | Dry Soil Prep GL–RAD–A–021 | TCI | 04/04/05 | 1133 | 413761 |

The following Analytical Methods were performed

| Method | Description | Analyst Comments |
|---|---|---|
| 1 | EML HASL 300, 4.5.2.3 | |

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

# Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: April 27, 2005

Contact: Mr. Doug Hawn
Project: La Gurde Park ESI

Client Sample ID: LPSS040305
Sample ID: 133576004
Matrix: Soil
Collect Date: 30-MAR-05 10:20
Receive Date: 01-APR-05
Collector: Client

Project: STEP00402
Client ID: STEP001

Rev

| Parameter | Qualifier | Result | Uncertainty | DL | RL | Units | Qual | DF | Analyst | Date | Time | Batch | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Rad Gamma Spec Analysis** | | | | | | | | | | | | | |
| *Gammaspec, Gamma, Solid (Standard List)* | | | | | | | | | | | | | |
| Cesium-137 | | 0.114 | +/-0.0242 | 0.0201 | 0.100 | pCi/g | | | AKB | 04/05/05 | 2232 | 413891 | 1 |
| Cobalt-60 | | 0.0193 | +/-0.015 | 0.016 | 0.100 | pCi/g | | | | | | | |

The following Prep Methods were performed

| Method | Description | Analyst | Date | Time | Prep Batch |
|---|---|---|---|---|---|
| Dry Soil Prep | Dry Soil Prep GL-RAD-A-021 | TCI | 04/04/05 | 1133 | 413761 |

The following Analytical Methods were performed

| Method | Description | Analyst Comments |
|---|---|---|
| 1 | EML HASL 300, 4.5.2.3 | |

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# Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: April 27, 2005

Contact: Mr. Doug Hawn
Project: La Garde Park ESI

Client Sample ID: LPSS050305
Sample ID: 133576005
Matrix: Soil
Collect Date: 30-MAR-05 10:15
Receive Date: 01-APR-05
Collector: Client

Project: STEP00402
Client ID: STEP001

Rev

| Parameter | Qualifier | Result | Uncertainty | DL | RL | Units | DF | Analyst | Date | Time | Batch | Metho |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rad Gamma Spec Analysis | | | | | | | | | | | | |
| *Gammaspec, Gamma, Solid (Standard List)* | | | | | | | | | | | | |
| Cesium-137 | U | 0.0509 | +/-0.0369 | 0.0671 | 0.100 | pCi/g | 1 | AKB | 04/06/05 | 0752 | 413891 | 1 |
| Cobalt-60 | | 0.159 | +/-0.0537 | 0.0498 | 0.100 | pCi/g | | | | | | |

The following Prep Methods were performed

| Method | Description | Analyst | Date | Time | Prep Batch |
|---|---|---|---|---|---|
| Dry Soil Prep | Dry Soil Prep GL-RAD-A-021 | TC1 | 04/04/05 | 1133 | 413761 |

The following Analytical Methods were performed

| Method | Description | Analyst Comments |
|---|---|---|
| 1 | EML HASL 300, 4.5.2.3 | |

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

# Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: April 27, 2005

Contact: Mr. Doug Hown
Project: La Grande Park ESI

Client Sample ID: LPSS060305
Sample ID: 133576006
Matrix: Soil
Collect Date: 30–MAR–05 14:00
Receive Date: 01–APR–05
Collector: Client

Project: STEP00402
Client ID: STEP001

Rev

| Parameter | Qualifier | Result | Uncertainty | DL | RL | Units | Qual | DF | Analyst | Date | Time | Batch | Metho |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rad Gamma Spec Analysis | | | | | | | | | | | | | |
| *Gammaspec, Gamma, Solid (Standard List)* | | | | | | | | | | | | | |
| Cesium–137 | | 0.178 | +/–0.0441 | 0.0459 | 0.100 | pCi/g | | | AKB | 04/06/05 | 0752 | 413891 | 1 |
| Cobalt–60 | | 0.115 | +/–0.0407 | 0.0396 | 0.100 | pCi/g | | | | | | | |

The following Prep Methods were performed

| Method | Description | Analyst | Date | Time | Prep Batch |
|---|---|---|---|---|---|
| Dry Soil Prep | Dry Soil Prep GL–RAD–A–021 | TC1 | 04/04/05 | 1133 | 413761 |

The following Analytical Methods were performed

| Method | Description | Analyst Comments |
|---|---|---|
| 1 | EML HASL 300, 4.5.2.3 | |

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

# Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: April 27, 2005

Contact: Mr. Doug Huwa
Project: La Garde Park ESI

Client Sample ID: LPSS060305 DUP
Sample ID: 133576007
Matrix: Soil
Collect Date: 30–MAR–05 14:00
Receive Date: 01–APR–05
Collector: Client

Project: STEP00402
Client ID: STEP001

Rev

| Parameter | Qualifier | Result | Uncertainty | DL | RL | Units | Qual | DF | Analyst | Date | Time | Batch | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rad Gamma Spec Analysis | | | | | | | | | | | | | |
| *Gammaspec, Gamma, Solid (Standard List)* | | | | | | | | | | | | | |
| Cesium–137 | | 0.178 | +/–0.0702 | 0.0588 | 0.100 | pCi/g | | | AKB | 04/06/05 | 0831 | 413891 | 1 |
| Cobalt–60 | U | 0.0801 | +/–0.0401 | 0.0862 | 0.100 | pCi/g | U | | | | | | |

The following Prep Methods were performed

| Method | Description | Analyst | Date | Time | Prep Batch |
|---|---|---|---|---|---|
| Dry Soil Prep | Dry Soil Prep GL–RAD–A–021 | TC1 | 04/04/05 | 1133 | 413761 |

The following Analytical Methods were performed

| Method | Description | Analyst Comments |
|---|---|---|
| 1 | EML HASL 300, 4.5.2.3 | |

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 – (843) 556-8171 – www.gel.com

# Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: April 27, 2005

Contact: Mr. Doug Hawn
Project: La Garde Park ESI

Client Sample ID: LPSS070305
Sample ID: 133576008
Matrix: Soil
Collect Date: 30-MAR-05 14:15
Receive Date: 01-APR-05
Collector: Client

Project: STEP00402
Client ID: STEP001

Rev

| Parameter | Qualifier | Result | Uncertainty | DL | RL | Units | Qual | DF | AnalystDate | Time | Batch | Metho |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Rad Gamma Spec Analysis** | | | | | | | | | | | | |
| *Gammaspec, Gamma, Solid (Standard List)* | | | | | | | | | | | | |
| Cesium-137 | | 5.93 | +/-0.439 | 0.0577 | 0.100 | pCi/g | | | AKB 04/07/05 | 0753 | 413891 | 1 |
| Cobalt-60 | | 0.228 | +/-0.0564 | 0.0507 | 0.100 | pCi/g | | | | | | |

The following Prep Methods were performed

| Method | Description | Analyst | Date | Time | Prep Batch |
|---|---|---|---|---|---|
| Dry Soil Prep | Dry Soil Prep GL-RAD-A-021 | TC1 | 04/04/05 | 1133 | 413761 |

The following Analytical Methods were performed

| Method | Description | Analyst Comments |
|---|---|---|
| 1 | EML HASL 300, 4.5.2.3 | |

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 – (843) 556-8171 – www.gel.com

# Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: April 27, 2005

Contact: Mr. Doug Hawn
Project: La Garde Park ESI

| | | | |
|---|---|---|---|
| Client Sample ID: | LPSS080305 | Project: | STEP00402 |
| Sample ID: | 133576009 | Client ID: | STEP001 |
| Matrix: | Soil | | |
| Collect Date: | 30-MAR-05 14:22 | | |
| Receive Date: | 01-APR-05 | | |
| Collector: | Client | | |

| Parameter | Qualifier | Result | Uncertainty | DL | RL | Units | Dwd | DF | Analyst | Date | Time | Batch | Metho |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Rad Gamma Spec Analysis** | | | | | | | | | | | | | |
| *Gammaspec, Gamma, Solid (Standard List)* | | | | | | | | | | | | | |
| Cesium-137 | | 0.100 | +/-0.0291 | 0.0273 | 0.100 | pCi/g | | | AKB | 04/07/05 | 2111 | 413891 | 1 |
| Cobalt-60 | U | -0.0059 | +/-0.0156 | 0.0265 | 0.100 | pCi/g | UC | | | | | | |

**The following Prep Methods were performed**

| Method | Description | Analyst | Date | Time | Prep Batch |
|---|---|---|---|---|---|
| Dry Soil Prep | Dry Soil Prep GL-RAD-A-021 | TCI | 04/04/05 | 1133 | 413761 |

**The following Analytical Methods were performed**

| Method | Description | Analyst Comments |
|---|---|---|
| 1 | EML HASL 300, 4.5.2.3 | |

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

# Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: April 27, 2005

Contact: Mr. Doug Hawn
Project: La Garde Park ES1

Client Sample ID: LPSS090305
Sample ID: 133576010
Matrix: Soil
Collect Date: 30–MAR–05 14:20
Receive Date: 01–APR–05
Collector: Client

Project: STEP00402
Client ID: STEP001

RW

| Parameter | Qualifier | Result | Uncertainty | DL | RL | Units | Qual | DF | Analyst | Date | Time | Batch | Metho |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Rad Gamma Spec Analysis** | | | | | | | | | | | | | |
| *Gammaspec, Gamma, Solid (Standard List)* | | | | | | | | | | | | | |
| Cesium–137 | | 0.179 | +/–0.0434 | 0.0352 | 0.100 | pCi/g | | | AKB | 04/07/05 | 2341 | 413891 | 1 |
| Cobalt–60 | U | 0.00725 | +/–0.0194 | 0.0362 | 0.100 | pCi/g | U | | | | | | |

The following Prep Methods were performed

| Method | Description | Analyst | Date | Time | Prep Batch |
|---|---|---|---|---|---|
| Dry Soil Prep | Dry Soil Prep GL–RAD–A–021 | TC1 | 04/04/05 | 1133 | 413761 |

The following Analytical Methods were performed

| Method | Description | Analyst Comments |
|---|---|---|
| 1 | EML HASL 300, 4.5.2.3 | |

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 – (843) 556-8171 – www.gel.com

# Certificate of Analysis

Company : Step, Inc.
Address : 1006 Floyd Culler Ct.
Oak Ridge, Tennessee 37830

Report Date: April 27, 2005

Contact: Mr. Doug Hawn
Project: La Garde Park ESI

Client Sample ID: LPSS100305
Sample ID: 133576011
Matrix: Soil
Collect Date: 30-MAR-05 14:17
Receive Date: 01-APR-05
Collector: Client

Project: STEP00402
Client ID: STEP001

RW

| Parameter | Qualifier | Result | Uncertainty | DL | RL | Units | Qual | DF | Analyst | Date | Time | Batch | Metho |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Rad Gamma Spec Analysis** | | | | | | | | | | | | | |
| *Gammaspec, Gamma, Solid (Standard List)* | | | | | | | | | | | | | |
| Cesium-137 | | 0.835 | +/-0.141 | 0.0776 | 0.100 | pCi/g | | | AKB | 04/07/05 | 2341 | 413891 | 1 |
| Cobalt-60 | | 0.128 | +/-0.0778 | 0.0649 | 0.100 | pCi/g | | | | | | | |

The following Prep Methods were performed

| Method | Description | Analyst | Date | Time | Prep Batch |
|---|---|---|---|---|---|
| Dry Soil Prep | Dry Soil Prep GL-RAD-A-021 | TCI | 04/04/05 | 1133 | 413761 |

The following Analytical Methods were performed

| Method | Description | Analyst Comments |
|---|---|---|
| 1 | EML HASL 300, 4.5.2.3 | |

# DATA VALIDATION WORKSHEET
## RADIOLOGICAL

Reviewer: Kitchings Date: 4/29
Project: LaGarde Park SDG: 133576 Matrix/No. Samples: S-11

| I. | Sample Management | | | |
|---|---|---|---|---|
| **A.** | **Sample Preservation, Handling and Transport** | | | |
| | 1. Have all samples been preserved with $HNO_3$ to pH <2? | Yes | No | (N/A) |
| | 2. Have sample temperatures been kept at 4° C (+ or - 2 ° C)? | Yes | (No) | N/A |
| | 3. Were all samples received in proper condition? | (Yes) | No | N/A |
| | 4. Were any qualifications required based on this information? | Yes | (No) | N/A |
| | Cooler @ 19.0°C - no quals required. | | | |
| **B.** | **Chain of Custody** | | | |
| | 1. Were all samples properly recorded on COCs? See Worksheet #1 | (Yes) | No | N/A |
| | 2. Were correct analyses performed on samples? | (Yes) | No | N/A |
| **C.** | **Holding Times** | | | |
| | 1. Were samples analyzed within acceptable holding times? | (Yes) | No | N/A |
| | 2. Were any qualifications required based on this information? | Yes | (No) | N/A |

| SAMPLED | PREPPED/ANALYZED |
|---|---|
| 3/30 | 4/5, 4/6 22:06 23:41 |

| II. | Calibrations | | | |
|---|---|---|---|---|
| | 1. Were proper number of calibration standards used for each analytical instrument used? | (Yes) | No | N/A |
| | 2. Is the calibration correlation coefficient >or = 0.995 for each analytical instrument used? | Yes | No | (N/A) |
| | 3. Are initial and continuing calibration verification ~~%R~~ within the ~~10% (+ or - 1%)~~ acceptance window? | (Yes) | No | N/A |
| | 4. Are CRDL Standard %R within 10% (+ or - 1%) acceptance window? | Yes | No | (N/A) |
| | 5. Were any qualifications required based on this information? | Yes | (No) | N/A |

**Comments/Qualifications:**

NELAP CofC for initial standard

| | | | Window |
|---|---|---|---|
| 4/5 @ 7:04 | Cs | 1321 | 1317 - 1325 |
| | Co | 2660 | 2657 - 2663 |
| 4/6 @ 7:07 | | 1322 | 1319 - 1327 |
| | | 2665 | 2663 - 2671 |
| 4/7 @ 7:17 | | 1322 | 1320 - 1326 |
| | | 2662 | 2659 - 2663 |

DATA VALIDATION WORKSHEET
RADIOLOGICAL

Reviewer: Kitchings Date: 4/29
Project: LaGarde Park SDG: 33576 Matrix/No. Samples: S-1

| III. | Blanks | | | |
|---|---|---|---|---|
| | 1. Are any analytes reported in laboratory prep or calibration blanks above the IDL? | Yes | (No) | N/A |
| | 2. Are any analytes reported as negative values in laboratory prep or calibration blanks? | Yes | (No) | N/A |
| | 3. Were any qualifications required based on this information? | Yes | (No) | N/A |
| | **Comments/Qualifications:** 818103 Cs-137 U; Co-60 U | | | |

| IV. | ICP Interference Check Sample (ICS) | | | |
|---|---|---|---|---|
| | 1. Were ICS samples run at the beginning and end of each sample analysis run? | Yes | No | (N/A) |
| | 2. Are ICS %R within 80-120% acceptable control limits? | Yes | No | N/A |
| | 3. Were any qualifications required based on this information? | Yes | No | N/A |
| | **Comments/Qualifications:** | | | |

| V. | Blank Spike/Laboratory Control Sample (LCS) | | | |
|---|---|---|---|---|
| | 1. Are all aqueous LCS %R within 80-120% control limits? | Yes | No | (N/A) |
| | 2. Are all solid LCS %R within control limits established by EPA? 75-125 | (Yes) | No | N/A |
| | 3. Were any qualifications required based on this information? | Yes | (No) | N/A |
| | **Comments/Qualifications:** 818105 Cs 137 9.90/9.07 = 109.2; Co 60 14.2/12.9 = 110.1 | | | |

## DATA VALIDATION WORKSHEET
## RADIOLOGICAL

Reviewer: Kitchings Date: 4/29

Project: LaGarde Park SDG: 133576 Matrix/No. Samples: S-11

| | | | | |
|---|---|---|---|---|
| **VI.** | **Duplicates** | | | |
| | 1. Were samples used for duplicate sample analysis identified as field blanks? | Yes | (No) | N/A |
| | 2. For duplicate samples >5x CRDL, were RPDs within control limits of + or - 20% for water, or + or - 35% for soil? | Yes | No | (N/A) |
| | 3. For duplicate samples <5x CRDL, were duplicate samples within control limit of + or - CRDL for water, or + or - 2xCRDL for soil? | Yes | No | (N/A) |
| | 4. Were any qualifications required based on this information? | Yes | (No) | N/A |
| | **Comments/Qualifications:** 413891 Cs both a's<br>Co 0.209 0.206 RPD = .003/.2075 = 1.45% | | | |
| **VII.** | **Matrix Spike** | | | |
| | 1. Were samples used for matrix spike sample analysis identified as field blanks? | Yes | No | (N/A) |
| | 2. Were spike recoveries within 75-125% limits (limits do not apply when original sample concentration exceeds spike concentration by a factor of 4? | Yes | No | N/A |
| | 3. Were any qualifications required based on this information? | Yes | No | N/A |
| | **Comments/Qualifications:** None | | | |
| **VIII.** | **ICP Serial Dilution** | | | |
| | 1. Were %Ds for ICP serial dilution samples within 10% for analytes with concentrations greater than 50x IDL? | Yes | No | (N/A) |
| | 2. Were any qualifications required based on this information? | Yes | No | N/A |
| | **Comments/Qualifications:** | | | |

## DATA VALIDATION WORKSHEET
## RADIOLOGICAL

Reviewer: Kitchings Date: 4/29
Project: LaGarde Park SDG: 133576 Matrix/No. Samples: S-11

| IX. | Sample Result Qualification<br>Not Required For Level III Data Validation | | | |
|---|---|---|---|---|
| | 1. Were sample results reported by laboratory supported by raw data? | (Yes) | No | N/A |
| | 2. Were correct calculations used to determine sample results? | (Yes) | No | N/A |
| | 3. Were any qualifications required based on this information? | Yes | (No) | N/A |

**Comments/Qualifications:**

16003 Cs-137 0.1242 ✓

Co-60 0.00113 < 0.029 -u ✓

| X. | Field QC | | | |
|---|---|---|---|---|
| | 1. Were any Field Duplicates associated with this SDG? | (Yes) | No | N/A |
| | a. If Yes, were RPDs acceptable (50% for water samples, 100% for soil samples)? | (Yes) | No | N/A |
| | 2. Were any field blanks or equipment rinsates associated with this SDG? | Yes | No | (N/A) |
| | a. If yes, were any analytes reported in samples >IDL? | Yes | No | (N/A) |
| | b. Were any qualifications required based on this information? | Yes | (No) | N/A |

**Comments/Qualifications:**

60305 60305 DUP.

0.178 Cs ✓ 0.178

0.115 Co ✓ u

| XI. | Overall Assessment of Data | | | |
|---|---|---|---|---|
| | 1. Are there any specific concerns or limitations regarding the data in this SDG? | Yes | (No) | N/A |

**Comments/Qualifications:**

# Appendix E

# Bill of Lading and Waste Manifests

*STRAIGHT BILL OF LADING SHORT FORM NOT NEGOTIABLE* *BOL 040405 - 01*

CARRIER: F.C.C.

Shipper No:



Carrier No:

Date: 4/4/05

Purchase / Customer Order No: N/A

Received, subject to the classifications and lawfully filed tariffs in effect on the date of the issue of this Bill of Lading, the property described below in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said carrier agrees to carry to its usual place of delivery, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said route to destination and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. The shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

Consignee: IMPACt Services, Inc.
1001 N. Ferguson Rd. - ETTP
Oak Ridge, TN 37830

Attention: Bobby Parrott, 865-576-8708

From: Army Corps. of Engineers / STEP, Inc.
Sommerall Gate of Fort McClellan
Route 21
Shipper: Anniston, AL

Wade Hixson, tTA / IMPACt Services, Inc.
516-270-7509
Site: LaGarde Park, Anniston, AL

Route: N/A

Trailer No.: 10346 Tractor No.: 98

| No. Pkgs. | HM | Description of Material | Weight (Kgs.) | Class | ERG |
|---|---|---|---|---|---|
| 13 | | **Clean, used, empty metal bins (ST-90s & B-25s) Approx. 750# per bin, ~9,750# Gross Wt.** | 4432 | | |
| 2 | | **Metal bins (ST-90, B-25) containing soil**<br>**DOT Non-Regulated**<br>**Approx. 8000# / bin, ~ 16,000# Gross Wt.** | 7273 | | |
| | | | | | |
| | | **Gross Wt. of Load ~ 25,750#** | | | |
| | | | | | |
| 15 | | Totals | 5455 | | |

Subject to section 7 of conditions of applicable Bill of Lading, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:

The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

N/A
Signature of the Consignor

If freight charges are to be pre-paid, write or stamp here "TO BE PREPAID".

N/A

Total Activity:

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property:
The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding:

N/A
$_____ per_____ (unit)

SS741 Reference

Additional information:

Material Description: DOT Non-Regulated Load of 13 Empty Metal Bins and 2 Metal Bins of DOT Non-Regulated Soil Material

Project 0502010

Label(s) applied: **none**
Markings: NONE

Placard(s) required:
NONE

Transportation hereunder is for the U.S. Department of Energy and the actual total transportation charges paid to the carrier(s) by the consignor or consignee are to be reimbursed by the U.S. Government, pursuant to cost reimbursable contract number NA

This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to the applicable regulations of the U.S. Department of Transportation.

Shipper: tTA / IMPACt
Contact:
Per: Wade Hixson
Wade Hixson
for
Date: 4/4/05

This shipment is for the U.S. Department of Energy and the actual total transportation charges paid to the carrier(s) by the consignor or consignee are assignable to, and shall be reimbursed by the U.S. Government and is subject to the terms and conditions set forth in the standard form of the U.S. Government Bill of Lading and to any available special rates or charges.
YES ( ) NO (x )

The additions on the face hereof and to the terms and conditions are hereby noted:
Carrier:
Print: Charles Shepherd
Per: Charles Shepherd
Date: 4/4/05

4/4/05

BFI OF TENNESSEE, INC.
P.O. BOX 10267
MURFREESBORO, TN 37129
(615) 896-2075

LMS TICKET NO. _____ 1288

TENNESSEE DIVISION

# NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

## GENERATOR

GENERATOR INSTRUCTIONS — SPECIAL WASTE -- COMPLETE SECTIONS: I, II, V, VII, VIII, IX, XI
ASBESTOS WASTE -- COMPLETE SECTIONS: I THRU XII (Section 1, if required to analyze for hazardous waste characteristics)

SECTION I BFI WASTE CODE L45Y21940 / / / /

SECTION II GENERATOR — GENERATING LOCATION

NAME IMPACT SERVICES

MAILING ADDRESS P.O. BOX 4849 OAK RIDGE, TN 37831 PHONE NO. 865-803-2829

SECTION III OPERATOR/CONTRACTOR

NAME _____

ADDRESS _____ PHONE NO. _____

SECTION IV OWNER

NAME _____ PHONE NO. _____

SECTION V WASTE DISPOSAL SITE — PHYSICAL SITE LOCATION

NAME MIDDLE POINT SANITARY LANDFILL

MAILING ADDRESS P.O. BOX 10267 - MURFREESBORO, TN 37129 PHONE NO. (615) 896-2075

SECTION VI RESPONSIBLE AGENCY (LOCAL STATE, EPA)

NAME ST. of TENNESSEE

ADDRESS 711 R. S. GASS BLVD., NASHVILLE, TN 37216 PHONE NO. 615-687-7000

| SECTION VII DESCRIPTION OF WASTE | CONTAINERS NO. | CONTAINERS TYPE | CONTAINERS UNIT | TYPE | TYPE |
|---|---|---|---|---|---|
| CO-MINGLED WASTE<br>BKRU025283<br>0402075 M1 and<br>0502010 (657516) | 1 | Intermodal | TONNAGE<br>11.42 | DM -- METAL DRUM<br>DM -- PLASTIC DRUM<br>BA -- 6 MIL PLASTIC BAGS/WRAP<br>T -- TRUCK<br>O -- OTHER | P -- POUND<br>Y -- YARDS<br>M³ -- CUBIC METER<br>Y³ -- CUBIC YARDS<br>O -- OTHER |

ASBESTOS WASTE: RQ, ASBESTOS, 9, NA 2212, PG 111

REGULATED _____ NON-REGULATED _____

SECTION VIII SPECIAL HANDLING INSTRUCTIONS AND ADDITIONAL INFORMATION

SECTION IX GENERATOR CERTIFICATION

I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if the waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions, I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste as defined by 40 CFR Part 261.

Bobby Parrott Ops. Mgr 4/12/05
Print/Type Name & Title — Shipment Date

[signature] 4/12/05
Signature — Date

SECTION X OPERATOR CERTIFICATION (ASBESTOS)

I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.

_____
Print/Type Name & Title — Shipment Date

_____
Operators Signature — Date

## TRANSPORTER

SECTION XI TRANSPORTER 1

NAMEOF CO. Southern Freight

ADDRESS Kingston TN

X DRIVER Charles McLean
Print/Type Name/Title

TRUCK NO. 142 PHONE NO. 865-717-8870

Acknowledgement of receipt of materials.

X Charles McLean 4/12/05
Signature — Date

SECTION XI TRANSPORTER 2

NAME OF CO. _____

ADDRESS _____

DRIVER _____
Print/Type Name/Title

TRUCK NO. _____ PHONE NO. _____

Acknowledgement of receipt of materials.

_____
Signature — Date

## DISPOSAL SITE

DISCREPANCY INDICATION SPACE

MP 25yd. 17.29tn,
Print/Type Name — Signature/Date

DISPOSAL COORDINATES
(Landfill use only)

PERMIT # SNL 75-0219
MIDDLE POINT LANDFILL
750 E. JEFFERSON PIKE (37130)

I hereby certify that the above material has been accepted and to the best of my knowledge the foregoing is true and accurate.

Don Burgess
AUTHORIZED AGENT (PLEASE PRINT)

[signature] 4-18-05
SIGNATURE OF AUTHORIZED AGENT — Receipt Date

DISPOSAL INSTRUCTIONS

Visionary Solutions LLC

# STRAIGHT BILL OF LADING SHORT FORM NOT NEGOTIABLE

CARRIER: R&R Trucking

Shipper No: 0926-02-0001

Carrier No: EPA ID # MOR000501973 SCAC No:

Date: 05/23/05

Purchase / Customer Order No: P.O. 22 Rev. 2



Received, subject to the classifications and lawfully filed tariffs in effect on the date of the issue of this Bill of Lading, the property described below in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said carrier agrees to carry to its usual place of delivery, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said route to destination and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. The shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

Consignee:
Envirocare of Utah, Inc.
Clive Disposal Site (Bulk Waste Facility)
Interstate 80, Exit 49
Clive, UT 84029

Shipper: Impact Services, Inc.
P.O Box 4849
Oak Ridge, TN 37831
Site: ETTP, Building K-1220, Hwy 58
Oak Ridge, TN 37831

Route: See Transporter for Route

Vehicle Initial and Number: Trailer No: 5948 / 38300440

| No. Pkgs. | HM | Description of Material | Weight (Kgs.) | Class | ERG |
|---|---|---|---|---|---|
| 1 | X | Radioactive Material, low specific activity, (LSA-I), 7, UN2912, solid, oxide, See Note 1 fissile-excepted | 992 | 7 | 162 |
| 1 | X | Radioactive Material, low specific activity, (LSA-I), 7, UN2912, solid, oxide, See Note 1 fissile-excepted | 984 | 7 | 162 |
| 1 | X | Radioactive Material, low specific activity, (LSA-I), 7, UN2912, solid, oxide, See Note 1 fissile-excepted | 1,073 | 7 | 162 |
| 1 | X | Radioactive Material, low specific activity, (LSA-I), 7, UN2912, solid, oxide, See Note 1 fissile-excepted | 2,828 | 7 | 162 |
| 1 | X | DOT - Non Regulated DAW | 1,435 | NA | NA |
| 1 | X | Radioactive Material, low specific activity, (LSA-II), 7, UN3321, solid, oxide, See Note 1 fissile-excepted | 727 | 7 | 162 |
| | | | | | |
| | | | | | |
| | | | | | |

Subject to section 7 of conditions of applicable Bill of Lading, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:

The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

N/A

Signature of the Consignor:

If freight charges are to be pre-paid, write or stamp here "TO BE PREPAID".

N/A

Remarks:

Total Shipment weight = {8039.1 kgs} {17686.0 Lbs.}

Note 1: See attachment for isotopes and activity per package.

Total Activity in MBq = 2.878E+03

Exclusive Use Shipment – Instructions included.

Additional information:

In case of an emergency, call IMPAC+ Services, Inc. at (865) 576-8724.

In case of an emergency, contact Anne Weaver at 865-482-8670.

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property:

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding:

N/A

$_____ per _____ (unit)

SS741 Reference

Label(s) applied:

None

Marking(s) required

Class A Unstable
Weight (Kgs), LSA-I, LSA-II

Placard(s) required:

Radioactive

IF THIS BILL OF LADING LISTS HAZARDOUS MATERIALS - NOTE AS FOLLOWS:

Emergency Response No.: 865 576-8724

This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to the applicable regulations of the U.S. Department of Transportation.

Shipper: Visionary Solutions
Contact: Brad Squibb
Per: Brad Squibb 5/23/05
Date:

The additions on the face hereof and to the terms and conditions are hereby noted:
Carrier: R&R Trucking
Per: 5-23-05
Date: 05/23/05

# UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

## ISOTOPES REPORT

For Manifest #
0926-02-0001
Envirocare of Utah, Inc.



900-0086

| Total Activity | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Isotope | (MBq) | | (mCi) | | (Ci) | | | | |
| C-14 | 4.77E+02 | | 1.2900E+01 | | 1.2900E-02 | | | | |
| Cs-137 | 8.33E-01 | | 2.2500E-02 | | 2.2500E-05 | | | | |
| H-3 | 1.43E+02 | | 3.8600E+00 | | 3.8600E-03 | | | | |
| I-129 | 1.72E-03 | | 4.6400E-05 | | 4.6400E-08 | | | | |
| Ra-226 | 5.37E+00 | | 1.4500E-01 | | 1.4500E-04 | | | | |
| Sr-90 | 3.22E+00 | | 8.6900E-02 | | 8.6900E-05 | | | | |
| Tc-99 | 2.38E+02 | | 6.4400E+00 | | 6.4400E-03 | | | | |
| Activity Totals | 8.6781E+02 | | 2.3454E+01 | | 2.3454E-02 | | | | |

01-900-0299

| Total Activity | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Isotope | (MBq) | | (mCi) | | (Ci) | | | | |
| C-14 | 4.74E+02 | | 1.2800E+01 | | 1.2800E-02 | | | | |
| Cs-137 | 8.25E-01 | | 2.2300E-02 | | 2.2300E-05 | | | | |
| H-3 | 1.42E+01 | | 3.8300E-01 | | 3.8300E-04 | | | | |
| I-129 | 1.70E-03 | | 4.6000E-05 | | 4.6000E-08 | | | | |
| Ra-226 | 5.33E+00 | | 1.4400E-01 | | 1.4400E-04 | | | | |
| Sr-90 | 3.19E+00 | | 8.6100E-02 | | 8.6100E-05 | | | | |
| Tc-99 | 2.36E+02 | | 6.3800E+00 | | 6.3800E-03 | | | | |
| Activity Totals | 7.3317E+02 | | 1.9815E+01 | | 1.9815E-02 | | | | |

01-900-0089

| Total Activity | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Isotope | (MBq) | | (mCi) | | (Ci) | | | | |
| C-14 | 5.33E+02 | | 1.4400E+01 | | 1.4400E-02 | | | | |
| Cs-137 | 9.29E-01 | | 2.5100E-02 | | 2.5100E-05 | | | | |
| H-3 | 1.59E+01 | | 4.3100E-01 | | 4.3100E-04 | | | | |
| I-129 | 1.91E-03 | | 5.1700E-05 | | 5.1700E-08 | | | | |
| Ra-226 | 5.99E+00 | | 1.6200E-01 | | 1.6200E-04 | | | | |
| Sr-90 | 3.59E+00 | | 9.6900E-02 | | 9.6900E-05 | | | | |
| Tc-99 | 2.66E+02 | | 7.1800E+00 | | 7.1800E-03 | | | | |
| Activity Totals | 8.2492E+02 | | 2.2295E+01 | | 2.2295E-02 | | | | |

200-00064

| Total Activity | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Isotope | (MBq) | | (mCi) | | (Ci) | | | | |
| Cs-137 | 6.51E+00 | | 1.7600E-01 | | 1.7600E-04 | | | | |
| Am-241 | 5.07E-03 | | 1.3700E-04 | | 1.3700E-07 | | | | |
| Fe-55 | 4.51E+00 | | 1.2200E-01 | | 1.2200E-04 | | | | |
| Co-60 | 1.81E+01 | | 4.8900E-01 | | 4.8900E-04 | | | | |
| Ni-63 | 2.55E+01 | | 6.8800E-01 | | 6.8800E-04 | | | | |
| Sr-90 | 6.55E-02 | | 1.7700E-03 | | 1.7700E-06 | | | | |
| Ce-144 | 8.36E-01 | | 2.2600E-02 | | 2.2600E-05 | | | | |
| Hf-172 | 6.03E+00 | | 1.6300E-01 | | 1.6300E-04 | | | | |
| Pu-238 | 2.59E-03 | | 6.9900E-05 | | 6.9900E-08 | | | | |
| Pu-239/240 | 3.92E-03 | | 1.0600E-04 | | 1.0600E-07 | | | | |
| Pu-241 | 2.81E-01 | | 7.5900E-03 | | 7.5900E-06 | | | | |
| Cm-242 | 9.29E-05 | | 2.5100E-06 | | 2.5100E-09 | | | | |
| Cm-243 | 8.99E-04 | | 2.4300E-05 | | 2.4300E-08 | | | | |
| Zn-65 | 5.44E+01 | | 1.4700E+00 | | 1.4700E-03 | | | | |
| Activity Totals | 1.1619E+02 | | 3.1403E+00 | | 1.6703E-03 | | | | |

200-00065

| Total Activity | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Isotope | (MBq) | | (mCi) | | (Ci) | | | | |
| Cs-137 | 7.03E-02 | | 1.9000E-03 | | 1.9000E-06 | | | | |
| Am-241 | 5.48E-05 | | 1.4800E-06 | | 1.4800E-09 | | | | |
| Fe-55 | 4.85E-02 | | 1.3100E-03 | | 1.3100E-06 | | | | |
| Co-60 | 4.00E-01 | | 1.0800E-02 | | 1.0800E-05 | | | | |
| Ni-63 | 2.66E-01 | | 7.1800E-03 | | 7.1800E-06 | | | | |
| Sr-90 | 7.07E-04 | | 1.9100E-05 | | 1.9100E-08 | | | | |
| Ce-144 | 9.03E-03 | | 2.4400E-04 | | 2.4400E-07 | | | | |
| Hf-172 | 6.48E-02 | | 1.7500E-03 | | 1.7500E-06 | | | | |
| Pu-238 | 2.78E-05 | | 7.5200E-07 | | 7.5200E-10 | | | | |
| Pu-239/240 | 4.22E-05 | | 1.1400E-06 | | 1.1400E-09 | | | | |
| Pu-241 | 3.02E-03 | | 8.1600E-05 | | 8.1600E-08 | | | | |
| Cm-242 | 9.99E-07 | | 2.7000E-08 | | 2.7000E-11 | | | | |
| Cm-243 | 9.66E-06 | | 2.6100E-07 | | 2.6100E-10 | | | | |
| Zn-65 | 5.85E-01 | | 1.5800E-02 | | 1.5800E-05 | | | | |
| Activity Totals | 1.4463E+00 | | 3.9088E-02 | | 3.9088E-05 | | | | |

200-000100

| Total Activity | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Isotope | (MBq) | | (mCi) | | (Ci) | | | | |
| Am-241 | 1.14E+00 | | 3.0800E-02 | | 3.0800E-05 | | | | |
| C-14 | 1.02E+01 | | 2.7700E-01 | | 2.7700E-04 | | | | |
| Co-60 | 1.02E+01 | | 2.7700E-01 | | 2.7700E-04 | | | | |
| Cs-137 | 7.96E+00 | | 2.1500E-01 | | 2.1500E-04 | | | | |
| Fe-55 | 7.73E+01 | | 2.0900E+00 | | 2.0900E-03 | | | | |
| H-3 | 1.69E+02 | | 4.5600E+00 | | 4.5600E-03 | | | | |
| Ni-63 | 3.07E+01 | | 8.3100E-01 | | 8.3100E-04 | | | | |
| Pu-241 | 1.48E+01 | | 4.0000E-01 | | 4.0000E-04 | | | | |
| Tc-99 | 1.25E+01 | | 3.3900E-01 | | 3.3900E-04 | | | | |
| Cs-134 | 4.22E-01 | | 1.1400E-02 | | 1.1400E-05 | | | | |
| Activity Totals | 3.3415E+02 | | 9.0312E+00 | | 9.0312E-03 | | | | |

Total Activity in MBq 2.878E+03

BECHTEL JACOBS COMPANY, LLC
INSTRUCTIONS REGARDING CONTROLS FOR RADIOACTIVE SHIPMENTS
CONSIGNED AS EXCLUSIVE USE (SOLE USE OR FULL LOAD)

Transporter R + R Trucking Truck/Trailer No. 5948 / 3830040

Signature [signature] Date 5-23-05

*These written instructions are provided to the carrier named on the shipping papers for the above referenced shipment and are to be maintained with said shipping papers. It is the carrier's responsibility to ensure that these instructions are conveyed to its driver(s) and administrative personnel, as appropriate, for the duration of the movement to final destination.*

1. Maintain exclusive use of this vehicle for the duration of the movement. No other freight is to be loaded with this shipment except as directed by the consignor.

2. All loading or unloading of freight in this shipment shall only be done, or as directed, by the consignor or consignee.

3. The carrier is to move this shipment without delay, but in accordance with the legal statutes of transit jurisdictions.

4. Stops enroute are to be minimized to the extent practical and limited to accepted safe haven areas. Bechtel Jacobs Company must approve stops in excess of ninety-six hours.

5. The carrier is to take positive steps enroute and during necessary stops to segregate this shipment from other freight, buildings, and personnel, so as to minimize potential exposures.

6. The carrier is to make periodic inspection of equipment, load, and placarding at appropriate intervals enroute to ensure maintenance of shipment safety controls.

7. To the maximum extent practical, the carrier, when movement is by highway, is to use interstate or limited access divided highways and avoid high density urban areas, especially where circumferential interstate highways are available to allow avoidance of travel through the highest populated portion of an urban area.

SPECIAL HANDLING INSTRUCTIONS

1. If provided, by highway, the carrier's driver(s) is to maintain visual contact with escort(s) and obey all traffic signs.

2. Radiation surveys enroute will be made only with acceptable monitoring devices and the consignor or consignee will be notified that such monitoring has been done and by whom. Radiation surveys taken at destination by authorized personnel of the consignee will be provided to the carrier on request or the carrier will be notified if there are contamination levels that would warrant taking the conveyance out of service.

3. Each motor vehicle used for transporting Radioactive Materials under Exclusive Use conditions in accordance with 173.427 shall be surveyed with radiation detection instruments after each use. The carrier should ensure the vehicle has met the Department of Transportation Return to Service Limits as required by 49 CFR 173.443(c) and 49 CFR 177.843(a).

4. The carrier is to take the appropriate emergency response actions should an accident or spillage occur enroute. The carrier will make notification as indicated on accompanying shipping papers in the event of a delay, accident, or other emergency enroute.

## POTENTIAL HAZARDS

### HEALTH

- Radiation presents minimal risk to transport workers, emergency response personnel and the public during transportation accidents. Packaging durability increases as potential hazard of radioactive content increases.
- Undamaged packages are safe. Contents of damaged packages may cause higher external radiation exposure, or both external and internal radiation exposure if contents are released.
- Low radiation hazard when material is inside container. If material is released from package or bulk container, hazard will vary from low to moderate. Level of hazard will depend on the type and amount of radioactivity, the kind of material it is in, and/or the surfaces it is on.
- Some material may be released from packages during accidents of moderate severity but risks to people are not great.
- Released radioactive materials or contaminated objects usually will be visible if packaging fails.
- Some exclusive use shipments of bulk and packaged materials will not have "RADIOACTIVE" labels. Placards, markings and shipping papers provide identification.
- Some packages may have a "RADIOACTIVE" label and a second hazard label. The second hazard is usually greater than the radiation hazard; so follow this GUIDE as well as the response GUIDE for the second hazard class label.
- Some radioactive materials cannot be detected by commonly available instruments.
- Runoff from control of cargo fire may cause low-level pollution.

### FIRE OR EXPLOSION

- Some of these materials may burn, but most do not ignite readily.
- Uranium and Thorium metal cuttings may ignite spontaneously if exposed to air (see GUIDE 136).
- Nitrates are oxidizers and may ignite other combustibles (see GUIDE 141).

## PUBLIC SAFETY

- CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.
- Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels.
- Radiation Authority must be notified of accident conditions. Radiation Authority is usually responsible for decisions about radiological consequences and closure of emergencies.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions. • Stay upwind. • Keep unauthorized personnel away.
- Detain or isolate uninjured persons or equipment suspected to be contaminated; delay decontamination and cleanup until instructions are received from Radiation Authority.

### PROTECTIVE CLOTHING

- Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide adequate protection.

### EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 meters (1000 feet) in all directions.



## EMERGENCY RESPONSE

### FIRE

- Presence of radioactive material will not influence the fire control processes and should not influence selection of techniques.
- Move containers from fire area if you can do it without risk.
- Do not move damaged packages; move undamaged packages out of fire zone.

Small Fires

- Dry chemical, $CO_2$, water spray or regular foam.

Large Fires

- Water spray, fog (flooding amounts).
- Dike fire-control water for later disposal.

### SPILL OR LEAK

- Do not touch damaged packages or spilled material.
- Cover liquid spill with sand, earth or other non-combustible absorbent material.
- Dike to collect large liquid spills.
- Cover powder spill with plastic sheet or tarp to minimize spreading.

### FIRST AID

- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- Do not delay care and transport of a seriously injured person.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, wipe from skin immediately; flush skin or eyes with running water for at least 20 minutes.
- Injured persons contaminated by contact with released material are not a serious hazard to health care personnel, equipment or facilities.
- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

FORM 540 — Envirocare of Utah, Inc.

# UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

SHIPPING PAPER

1. EMERGENCY TELEPHONE NUMBER (Include Area Code): 865-574-3282

ORGANIZATION: IMPAC+ Services, Inc.

2. IS THIS AN "EXCLUSIVE USE" SHIPMENT? [X] YES [ ] NO

3. TOTAL NUMBER OF PACKAGES IDENTIFIED ON THIS MANIFEST: 6

4. DOES EPA REGULATED WASTE REQUIRING A MANIFEST ACCOMPANY THIS SHIPMENT? [ ] YES [XX] NO

If "Yes", provide Manifest Number: NA

5. SHIPPER – NAME AND FACILITY
IMPAC+ Services, Inc.
P.O. Box 4849
Oak Ridge, TN 37831

USER PERMIT NUMBER: 0405002911
SHIPMENT NUMBER: 0926-02-0001
CONTACT: Anne Weaver/Visionary Solutions

6. CARRIER – Name and Address
R&R Trucking
P.O. Box 545
Duenweg, MO 54841

CONTACT: Don Ritchie

SIGNATURE – Authorized carrier acknowledging waste receipt: Robert Dill
DATE: 5-23-05

SHIPMENT I.D. NUMBER: 0926-02-0001
[ ] COLLECTOR
[ ] PROCESSOR
[X] GENERATOR TYPE (Specify) G
TELEPHONE NUMBER (Include Area Code): 865-482-8670
EPA I.D. NUMBER: MOR000501973
SHIPPING DATE: 05/23/05
TELEPHONE NUMBER (Include Area Code): 1-800-525-6885

7. FORM 540 AND 540A — PAGE 1 OF — 2 PAGE(S)
FORM 541 AND 541A — PAGE 1 OF — 4 PAGE(S)
FORM 542 AND 542A — NA — 1 PAGE(S)
ADDITIONAL INFORMATION — NA — X PAGE(S)

8. MANIFEST NUMBER (Use this number on all continuation pages): 0926-02-0001

9. CONSIGNEE - Name and Facility Address
Envirocare of Utah, Inc.
Clive Disposal Site
Interstate 80, Exit 49
Clive, UT 84029

CONTACT: Shipping and Receiving
TELEPHONE NUMBER (Include Area Code): 1-435-884-0155

SIGNATURE – Authorized consignee acknowledging waste receipt:
DATE:

10. CERTIFICATION

This is to certify that the herein-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. This also certifies that the materials are classified, packaged, marked, and labeled and are in proper condition for transportation and disposal as described in accordance with the requirements of 10 CFR Parts 20 and 61, or equivalent state regulations.

AUTHORIZED SIGNATURE: Robert Smith
TITLE: WASTE BROKER
DATE: 5/25/05

| 11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (Including proper shipping name, hazard class, UN ID number, and any additional information) | 12. DOT LABEL "RADIOACTIVE" | 13. TRANSPORT INDEX | 14. PHYSICAL AND CHEMICAL FORM | 15. INDIVIDUAL RADIONUCLIDES | 16. TOTAL PACKAGE ACTIVITY MBq | mCi | 17. LSA/SCO CLASS | 18. TOTAL WEIGHT OR VOLUME (Use appropriate units) | | 19. IDENTIFICATION NUMBER OF PACKAGE |
|---|---|---|---|---|---|---|---|---|---|---|
| Radioactive material, Low Specific Activity, (LSA-I), 7, UN2912, fissile-excepted | "NA" | "NA" | Solid Metal | C-14 Cs-137 H-3 I-129 Ra-226 Sr-90 Tc-99 | 8.68E+02 | 2.35E+01 | LSA-I | 96 952 | Cu Ft kg | 01-900-0086 |
| Radioactive material, Low Specific Activity, (LSA-I), 7, UN2912, fissile-excepted | "NA" | "NA" | Solid Metal | C-14 Cs-137 H-3 I-129 Ra-226 Sr-90 Tc-99 | 7.33E+02 | 1.98E+01 | LSA-I | 96 904 | Cu Ft kg | 01-900-0299 |
| | | | | Totals | 1.60E+03 | 4.33E+01 | | 192 1,975 | Cu Ft kg | |

FOR CONSIGNEE USE ONLY

_____ Record Waste Description Inadequate
_____ Contamination or Leakage Detected
_____ Unexpected Exposure Rates Detected
_____ Labels, Markings, etc. Inadequate
_____ Container Integrity Inadequate
_____ Other
_____ No Violations Detected on this Shipment.

20. TERMS AND CONDITION

A. HAZARDOUS MATERIALS: Generator represents & warrants that Waste Material __ is (or) X is not a hazardous waste as defined in 40 CFR 261. Where the material is a hazardous waste, this shipment is also accompanied by a separate and completed hazardous waste manifest, along with the appropriate land-disposal notice and/or certification as required by 40 CFR 268.1.

B. TITLE: Upon acceptance at the disposal site by Envirocare of Utah, Inc., and all appropriate regulatory authorities, title to the Waste Material which conforms to Generator's representations herein shall thereupon transfer from Generator and be vested in Envirocare of Utah, Inc.

C. WASTE MATERIAL: Generator represents and warrants that all data set forth in this (UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST) are true and correct in all respects and in accordance with all applicable governmental laws, rules, regulations and Envirocare of Utah, Inc.'s facility license.

D. INDEMNIFICATION: Generator agrees to indemnify Envirocare of Utah, Inc., its officers, employees and agents against all losses and liability whatsoever if such losses or liability results from the failure of the Waste Material to conform in all material respects to the data supplied on the (UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST,) or if this shipment fails to meet the standards prescribed by the Department of Transportation or any governmental agency having jurisdiction over such matters.

# UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

*SHIPPING PAPER (CONTINUATION)*

8. MANIFEST NUMBER: 0926-02-0001

3. PAGE 2 OF 2 PAGE(S)

| 11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (Including proper shipping name, hazard class, UN ID number, and any additional information | 12. DOT LABEL "RADIOACTIVE" | 13. TRANSPORT INDEX | 14. PHYSICAL AND CHEMICAL FORM | 15. INDIVIDUAL RADIONUCLIDES | | | | 16. TOTAL PACKAGE ACTIVITY MBq | 16. TOTAL PACKAGE ACTIVITY mCi | 17. LSA/SCO CLASS | 18. TOTAL WEIGHT OR VOLUME (Use appropriate units) | | 19. IDENTIFICATION NUMBER OF PACKAGE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Radioactive material, Low Specific Activity , (LSA-I), 7, UN2912, fissile-excepted | "NA" | "NA" | Solid Metal | C-14 Ra-226 | Cs-137 Sr-90 | H-3 Tc-99 | I-129 | 8.25E+02 | 2.23E+01 | LSA-I | 96 1073 | Cu Ft kg | 01-900-0089 |
| Radioactive material, Low Specific Activity , (LSA-I), 7, UN2912, fissile-excepted | "NA" | "NA" | Solid Metal | Cs-137 Ni-63 Pu-238 Cm-243 | Am-241 Sr-90 Pu-239/240 Zn-65 | Fe-55 Ce-144 Pu-241 | Co-60 Hf-172 Cm-242 | 1.18E+02 | 3.14E+00 | LSA-I | 90 2828 | Cu Ft kg | 200-00064 |
| DOT - Non Regulated DAW | "NA" | "NA" | Solid Oxides( DAW) | Cs-137 Ni-63 Pu-238 Cm-243 | Am-241 Sr-90 Pu-239/240 Zn-65 | Fe-55 Ce-144 Pu-241 | Co-60 Hf-172 Cm-242 | 1.45E+00 | 3.91E-02 | "NA" | 90 1435 | Cu Ft kg | 200-00065 |
| Radioactive material, Low Specific Activity , (LSA-II), 7, UN3321, fissile-excepted | "NA" | "NA" | Solid Oxides( DAW) | Am-241 Fe-55 Tc-99 | C-14 H-3 Cs-134 | Co-60 Ni-63 | Cs-137 Pu-241 | 3.34E+02 | 9.03E+00 | LSA-II | 96 727 | Cu Ft kg | 200-000100 |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | Subtotal | | | | 1.28E+03 | 3.45E+01 | | 372.0 | Cu Ft | |
| | | | | | | | | | | | 6063.6 | kgs | |
| | | | | | | | | | | | 564.0 | Cu Ft | |
| | | | | Totals | | | | 2.88E+03 | 7.78E+01 | | 8,039 | kgs | |

FORM 540A

FORM 541 — Envirocare of Utah, Inc.

# UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

CONTAINER AND WASTE DESCRIPTION

Additional Nuclear Regulatory Commission (NRC) Requirements for Control, Transfer and Disposal of Radioactive Waste

**1. MANIFEST TOTALS**

| NUMBER OF PACKAGES DISPOSAL CONTAINERS | NET WASTE VOLUME | NET WASTE WEIGHT | SPECIAL NUCLEAR MATERIAL (grams) U-233 | U-235 | Pu | TOTAL |
|---|---|---|---|---|---|---|
| 6 | m3 15.9707 / ft3 564 | Kg 6.055 / Ton 6.66 | NP | NP | ~~5.81E-05~~ BS NP / ~~1 packages~~ BS | ~~5.81E-05~~ BS NP |

ACTIVITY

| | ALL NUCLIDES | Tritium | C-14 | Tc-99 | I-129 | SOURCE | |
|---|---|---|---|---|---|---|---|
| MBq | 2.878E+03 | 3.26E+02 | 9.61E+02 | 4.87E+02 | 5.33E-03 | (kgs) | NP |
| mCi | 7.778E+01 | 9.23E+00 | 2.60E+01 | 2.03E+01 | 1.44E-04 | (tons) | NP |

2. MANIFEST NUMBER: 0926-02-0001

3. PAGE 1 OF 4 PAGE(S)

4. SHIPPER NAME: IMPAC+ Services, Inc. Anne Weaver/Visionary Solutions

SHIPMENT ID NUMBER: 0926-02-0001

DISPOSAL CONTAINER DESCRIPTION / WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER

| 5. CONTAINER IDENTIFICATION NUMBER / GENERATOR ID NUMBER(S) / UTAH DISPOSAL PERMIT NUMBER | 6. CONTAINER DESCRIPTION (See Note 1 & Note 1A) | 7. VOLUME (m3) (ft3) | 8. WASTE AND CONTAINER WEIGHT (kg) (ton) | 9. SURFACE RADIATION LEVEL mSv/hr mrem/hr | 10. SURFACE CONTAMINATION MBq/100 cm2 dpm/100 cm2 ALPHA | BETA / GAMMA | 11. WASTE DESCRIPTOR (See Note 2 & Note 2A) | 12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER (m3) (ft3) | 13. SOLIDIFICATION OR STABILIZATION MEDIA (See Note 3) | 14. CHEMICAL DESCRIPTION: CHEMICAL FORM CHELATING AGENT | CHEMICAL DESCRIPTION: WEIGHT % CHELATING AGENT IF>0.1% | 15. RADIOLOGICAL DESCRIPTION: INDIVIDUAL RADIONUCLIDES AND ACTIVITY (MBq) AND CONTAINER TOTAL; OR CONTAINER TOTAL ACTIVITY AND RADIONUCLIDE PERCENT | | | | 16. WASTE CLASS (AS-Class A Stable AU-Class A Unstable B-Class B C-Class C) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Radionuclides | pCi/gm | MBq | mCi | |
| 01-900-0086 | 2 | 2.72 | 992 | 0.0050 | <1.20E-03 | <6.00E-03 | 40 H | 2.72 | 100 | Oxides | NP | C-14 | 1.796E+04 | 4.773E+02 | 1.290E+01 | AU-Class A |
| | | | | | | | | | | | | Cs-137 | 3.133E+01 | 8.325E-01 | 2.250E-02 | |
| SWC E-05060 | | 96 | 1.09 | 0.5000 | <2.00E+01 | <1.00E+02 | | 96.0 | | None | | H-3 | 5.374E+03 | 1.428E+02 | 3.860E+00 | |
| | | | | | | | | | | | | I-129 | 6.460E-02 | 1.717E-03 | 4.640E-05 | |
| | | | | | | | | | | | | Ra-226 | 2.019E+02 | 5.365E+00 | 1.450E-01 | |
| | | | | | | | | | | | | Sr-90 | 1.210E+02 | 3.215E+00 | 8.690E-02 | |
| | | | | | | | | | | | | Tc-99 | 8.967E+03 | 2.383E+02 | 6.440E+00 | |
| Shipment Totals | Subtotal | 2.72 | 991.82 | | | | | 2.72 | | | | Subtotal | 3.27E+04 | 8.68E+02 | 2.35E+01 | |
| | | | | | | | | | | | | SNM 0.000E+00 | | | | |
| | Total | 96.00 | 1.09 | | | | | 96.0 | | | | Total | 3.27E+04 | 8.68E+02 | 2.35E+01 | |

NOTE 1: Container Description Codes
For containers waste requiring disposal in approved structural over-packs the numerical code must be followed by "OP."
1. Wooden Box or Crate
2. Metal Box
3. Plastic Drum or Pail
4. Metal Drum or Pail
5. Metal Tank or Liner
6. Concrete Tank / Liner
7. Polyethlene Tank / Liner
8. Fiberglass Tank or Liner
9. Demineralizer
10. Gas Cylinder
11. Bulk, Unpackaged Waste
12. Unpackaged Components
13. High Integrity Container
19. Other. Describe in Item 6, or additional page.

Note 1A: Bulk Packaging Description Codes
(Choose one code as may be applicable).
A Gondola
B Intermodal
C End-dump
D Roll-off
E Seavan

NOTE 2: Waste Descriptor Codes.
(Choose up to three which predominate by volume)
20. Charcoal
21. Incinerator
22. Soil
23. Gas
24. Oil
25. Aqueous Liquid
26. Filter Media
27. Mechanical Filter
28. EPA or State Hazardous
29. Demolition Rubble
30. Cation Ion-exchange Media
31. Anion Ion-exchange Media
32. Mixed Bed Ion-exchange Media
33. Contaminated Equipment
34. Organic Liquid (except oil)
35. Glassware or Labware
36. Sealed Source/Device
37. Paint or Plating
38. Evaporator Bottoms Sludges / Concentrates
39. Compactible Trash
40. Noncompactible Trash
41. Animal Carcass
42. Biological Material (except (animal carcass)
43. Activated Material
59. Other. Describe in Item 11, or additional page

Note 2A: Specific Waste Descriptions
(Choose all applicable codes).
G Dewatered
H Solid
I Combustible
J Non-combustible
K Air Filtration Filters
L Asbestos

Note 3. Solidification and Stabilization Media Codes. (Choose up to three which predominate by volume.) For media meeting disposal site structural stability requirements, the numerical code must be followed by "-S" and the media vendor and brand name must also be identified in Item 13. Code 100=NONE REQUIRED

Solidification
90. Cement
91. Concrete (encapsulation)
92. Bitumen
93. Vinyl Chloride
94. Vinyl Ester Styrene
99. Other. Describe in Item 13, or additional page
100. None required.

FORM 541(10-96)

# UNIFORM LOW LEVEL RADIOACTIVE WASTE MANIFEST

## CONTAINER AND WASTE DESCRIPTION (CONTINUATION)

2. MANIFEST NUMBER
0926-02-0001
3. PAGE 2 OF 4 PAGE(S)

DISPOSAL CONTAINER DESCRIPTION | WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER

| 5. CONTAINER IDENTIFICATION NUMBER<br>UTAH DISPOSAL PERMIT NUMBER | 6. CONTAINER DESCRIPTION<br>(See Note 1 & Note 1A) | 7. VOLUME<br>(m3)<br>(ft3) | 8. WASTE AND CONTAINER WEIGHT<br>(kg)<br>(ton) | 9. SURFACE RADIATION LEVEL<br>mSv/hr<br>mrem/hr | 10. SURFACE CONTAMINATION MBq/100 cm2 / dpm/100 cm2<br>ALPHA | BETA / GAMMA | 11. WASTE DESCRIPTOR<br>(See Note 2 & Note 2A) | 12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER<br>(m3)<br>(ft3) | 13. SOLIDIFICATION OR STABILIZATION MEDIA<br>(See Note 3) | 14. CHEMICAL DESCRIPTION<br>CHEMICAL FORM CHELATING AGENT | WEIGHT % CHELATING AGENT IF>0.1% | 15. RADIOLOGICAL DESCRIPTION<br>INDIVIDUAL RADIONUCLIDES AND ACTIVITY (MBq) AND CONTAINER TOTAL; OR CONTAINER TOTAL ACTIVITY AND RADIONUCLIDE PERCENT | | | | 16. WASTE CLASS<br>AS-Class A Stable<br>AU-Class A Unstable<br>B-Class B<br>C-Class C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0406002911 | | | | | | | | | | | | RADIONUCLIDES | | pCi/gm | MBq | mCi | |
| 01-900-0299 | 2 | 2.72 | 984 | 0.0200 | <1.20E-03 | <6.00E-03 | 40 H | 2.72 | 100 | Oxides | NP | C-14 | | 1.803E+04 | 4.736E+02 | 1.280E+01 | AU-Class A |
| | | | | | | | | | | | | Cs-137 | | 3.141E+01 | 8.251E-01 | 2.230E-02 | |
| SWC E-05060 | | 96 | 1.08 | 2.0000 | <2.00E+01 | <1.00E+02 | | 96.0 | | None | | H-3 | | 5.394E+02 | 1.417E+01 | 3.830E-01 | |
| | | | | | | | | | | | | I-129 | | 6.478E-02 | 1.702E-03 | 4.600E-05 | |
| | | | | | | | | | | | | Ra-226 | | 2.028E+02 | 5.328E+00 | 1.440E-01 | |
| | | | | | | | | | | | | Sr-90 | | 1.213E+02 | 3.186E+00 | 8.610E-02 | |
| | | | | | | | | | | | | Tc-99 | | 8.985E+03 | 2.361E+02 | 6.380E+00 | |
| 01-900-0089 | 2 | 2.72 | 1073 | 0.0050 | <1.20E-03 | <6.00E-03 | 40 H | 2.72 | 100 | Oxides | NP | C-14 | | 1.802E+04 | 5.328E+02 | 1.440E+01 | AU-Class A |
| | | | | | | | | | | | | Cs-137 | | 3.141E+01 | 9.287E-01 | 2.510E-02 | |
| SWC E-05060 | | 96 | 1.18 | 0.5000 | <2.00E+01 | <1.00E+02 | | 96.0 | | None | | H-3 | | 5.394E+02 | 1.595E+01 | 4.310E-01 | |
| | | | | | | | | | | | | I-129 | | 6.470E-02 | 1.913E-03 | 5.170E-05 | |
| | | | | | | | | | | | | Ra-226 | | 2.027E+02 | 5.994E+00 | 1.620E-01 | |
| | | | | | | | | | | | | Sr-90 | | 1.213E+02 | 3.585E+00 | 9.690E-02 | |
| | | | | | | | | | | | | Tc-99 | | 8.966E+03 | 2.657E+02 | 7.180E+00 | |
| Shipment Totals | Subtotal | 5.44<br>192.00 | 2056.36<br>2.26 | | | | | 5.44<br>192.00 | | | | Subtotal | | 5.58E+04 | 1.56E+03 | 4.21E+01 | |
| | Totals | 8.16<br>288.00 | 3048.18<br>3.35 | | | | | 8.16<br>288.00 | | | | SNM<br>Totals | | 8.65E+04 | 2.43E+03 | 6.56E+01 | |

FORM 541A

# UNIFORM LOW LEVEL RADIOACTIVE WASTE MANIFEST

## CONTAINER AND WASTE DESCRIPTION (CONTINUATION)

2. MANIFEST NUMBER: 0826-02-0001

3. PAGE 3 OF 4 PAGE(S)

| DISPOSAL CONTAINER DESCRIPTION | | | | | | | WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5. | 6. | 7. | 8. | 9. | 10. | | 11. | 12. | 13. | 14. | | 15. | | | | 16. |
| CONTAINER IDENTIFICATION NUMBER | CONTAINER DESCRIPTION | VOLUME | WASTE AND CONTAINER WEIGHT | SURFACE RADIATION LEVEL | SURFACE CONTAMINATION MBq/100 cm2 dpm/100 cm2 | | WASTE DESCRIPTOR | APPROXIMATE WASTE VOLUME(S) IN CONTAINER | SOLIDIFICATION OR STABILIZATION MEDIA | CHEMICAL DESCRIPTION | | RADIOLOGICAL DESCRIPTION | | | | WASTE CLASS |
| | | | | | | | | | | CHEMICAL FORM CHELATING AGENT | WEIGHT % CHELATING AGENT IF>0.1% | INDIVIUAL RADIONUCLIDES AND ACTIVITY (MBq) AND CONTAINER TOTAL; OR CONTAINER TOTAL ACTIVITY AND RADIONUCLIDE PERCENT | | | | AS-Class A Stable AU-Class A Unstable B-Class B C-Class C |
| UTAH DISPOSAL PERMIT NUMBER | (See Note 1 & Note 1A) | (m3) (ft3) | (kg) (ton) | mSv/hr mrem/hr | ALPHA | BETA / GAMMA | (See Note 2 & Note 2A) | (m3) (ft3) | (See Note 3) | | | RADIONUCLIDES | | pCi/gm | MBq | mCi | |
| 0406002911 | | | | | | | | | | | | | | | | | |
| 200-00064 | 2 | 2.55 | 2828 | 0.0500 | <1.20E-03 | <6.00E-03 | 40 H | 2.55 | 100 | Oxides | NP | Cs-137 | | 7.048E+01 | 6.512E+00 | 1.760E-01 | AU-Class A |
| | | | | | | | | | | | | Am-241 | | 5.467E-02 | 5.069E-03 | 1.370E-04 | |
| | | | | | | | | | | | | Fe-55 | | 4.886E+01 | 4.514E+00 | 1.220E-01 | |
| LO5435 | | 90 | 3.11 | 5.0000 | <2.00E+01 | <1.00E+02 | | 90.0 | | None | | Co-60 | | 1.958E+02 | 1.809E+01 | 4.890E-01 | |
| | | | | | | | | | | | | Ni-63 | | 2.755E+02 | 2.546E+01 | 6.880E-01 | |
| | | | | | | | | | | | | Sr-90 | | 7.089E-01 | 6.549E-02 | 1.770E-03 | |
| | | | | | | | | | | | | Ce-144 | | 9.051E+00 | 8.362E-01 | 2.260E-02 | |
| | | | | | | | | | | | | Hf-172 | | 6.528E+01 | 6.031E+00 | 1.630E-01 | |
| | | | | | | | | | | | | Pu-238 | (4.11E-09g) | 2.799E-02 | 2.586E-03 | 6.990E-05 | |
| | | | | | | | | | | | | Pu-239/240 | (1.71E-06g) | 4.245E-02 | 3.922E-03 | 1.060E-04 | |
| | | | | | | | | | | | | Pu-241 | (7.59E-08g) | 3.040E+00 | 2.808E-01 | 7.590E-03 | |
| | | | | | | | | | | | | Cm-242 | | 1.005E-03 | 9.287E-05 | 2.510E-06 | |
| | | | | | | | | | | | | Cm-243 | | 9.732E-03 | 8.991E-04 | 2.430E-05 | |
| | | | | | | | | | | | | Zn-65 | | 5.887E+02 | 5.439E+01 | 1.470E+00 | |
| 200-00065 | 2 | 2.55 | 1435 | 0.3000 | <1.20E-03 | <6.00E-03 | 39 H | 2.55 | 100 | Oxides | NP | Cs-137 | | 1.941E+00 | 7.030E-02 | 1.900E-03 | AU-Class A |
| | | | | | | | | | | | | Am-241 | | 1.512E-03 | 5.476E-05 | 1.480E-06 | |
| | | | | | | | | | | | | Fe-55 | | 1.338E+00 | 4.847E-02 | 1.310E-03 | |
| LO5435 | | 90 | 1.58 | 30.0000 | <2.00E+01 | <1.00E+02 | | 90.0 | | None | | Co-60 | | 1.103E+01 | 3.996E-01 | 1.080E-02 | |
| | | | | | | | | | | | | Ni-63 | | 7.335E+00 | 2.657E-01 | 7.180E-03 | |
| | | | | | | | | | | | | Sr-90 | | 1.951E-02 | 7.067E-04 | 1.910E-05 | |
| | | | | | | | | | | | | Ce-144 | | 2.493E-01 | 9.028E-03 | 2.440E-04 | |
| | | | | | | | | | | | | Hf-172 | | 1.788E+00 | 6.475E-02 | 1.750E-03 | |
| | | | | | | | | | | | | Pu-238 | (4.42E-11g) | 7.683E-04 | 2.782E-05 | 7.520E-07 | |
| | | | | | | | | | | | | Pu-239/240 | (1.84E-08g) | 1.165E-03 | 4.218E-05 | 1.140E-06 | |
| | | | | | | | | | | | | Pu-241 | (8.16E-10g) | 8.337E-02 | 3.019E-03 | 8.160E-05 | |
| | | | | | | | | | | | | Cm-242 | | 2.758E-05 | 9.990E-07 | 2.700E-08 | |
| | | | | | | | | | | | | Cm-243 | | 2.666E-04 | 9.657E-06 | 2.610E-07 | |
| | | | | | | | | | | | | Zn-65 | | 1.614E+01 | 5.846E-01 | 1.580E-02 | |
| Shipment Totals | Subtotal | 5.10 180.00 | 4263.64 4.69 | | | | | 5.10 180.00 | | | | Subtotal | | 1.30E+03 | 1.18E+02 | 3.18E+00 | |
| | Totals | 13.25 468.00 | 7311.82 8.04 | | | | | 13.25 468.00 | | | | SNM Totals | | 8.98E+04 | 2.54E+03 | 6.87E+01 | |

FORM 541A

# UNIFORM LOW LEVEL RADIOACTIVE WASTE MANIFEST

CONTAINER AND WASTE DESCRIPTION (CONTINUATION)

2. MANIFEST NUMBER
0926-02-0001

3. PAGE 4 OF 4 PAGE(S)

| DISPOSAL CONTAINER DESCRIPTION | | | | | | | WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5. CONTAINER IDENTIFICATION NUMBER<br>UTAH DISPOSAL PERMIT NUMBER | 6. CONTAINER DESCRIPTION<br>(See Note 1A) | 7. VOLUME<br>(m3)<br>(ft3) | 8. WASTE AND CONTAINER WEIGHT<br>(kg)<br>(ton) | 9. SURFACE RADIATION LEVEL<br>mSv/hr<br>mrem/hr | 10. SURFACE CONTAMINATION MBq/100 cm2 dpm/100 cm2<br>ALPHA | BETA / GAMMA | 11. WASTE DESCRIPTOR<br>(See Note 2 & Note 2A) | 12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER<br>(m3)<br>(ft3) | 13. SOLIDIFICATION OR STABILIZATION MEDIA<br>(See Note 3) | 14. CHEMICAL DESCRIPTION<br>CHEMICAL FORM CHELATING AGENT | WEIGHT % CHELATING AGENT IF>0.1% | 15. RADIOLOGICAL DESCRIPTION<br>INDIVIUAL RADIONUCLIDES AND ACTIVITY (MBq) AND CONTAINER TOTAL; OR CONTAINER TOTAL ACTIVITY AND RADIONUCLIDE PERCENT | | | | | 16. WASTE CLASS<br>AS-Class A Stable<br>AU-Class A Unstable<br>B-Class B<br>C-Class C |
| | | | | | | | | | | | | RADIONUCLIDES | | pCi/gm | MBq | mCi | |
| 200-000100<br>R-73024-E07 | 2 | 2.72<br>96 | 727<br>0.80 | 0.0120<br>1.2000 | <1.20E-03<br><2.00E+01 | <6.00E-03<br><1.00E+02 | 39 H | 2.72<br>96.0 | 100 | Oxides<br>None | NP | Am-241 | | 8.927E+01 | 1.140E+00 | 3.080E-02 | AU-Class A |
| | | | | | | | | | | | | C-14 | | 8.028E+02 | 1.025E+01 | 2.770E-01 | |
| | | | | | | | | | | | | Co-60 | | 8.028E+02 | 1.025E+01 | 2.770E-01 | |
| | | | | | | | | | | | | Cs-137 | | 6.231E+02 | 7.955E+00 | 2.150E-01 | |
| | | | | | | | | | | | | Fe-55 | | 6.057E+03 | 7.733E+01 | 2.090E+00 | |
| | | | | | | | | | | | | H-3 | | 1.322E+04 | 1.687E+02 | 4.560E+00 | |
| | | | | | | | | | | | | Ni-63 | | 2.408E+03 | 3.075E+01 | 8.310E-01 | |
| | | | | | | | | | | | | Pu-241 | (4.00E-06g) | 1.159E+03 | 1.480E+01 | 4.000E-01 | |
| | | | | | | | | | | | | Tc-99 | | 9.825E+02 | 1.254E+01 | 3.390E-01 | |
| | | | | | | | | | | | | Cs-134 | | 3.304E+01 | 4.218E-01 | 1.140E-02 | |
| Shipment Totals | Subtotal | 2.72<br>96.00 | 727.27<br>0.80 | | | | | 2.72<br>96.00 | | | | Subtotal | | 2.62E+04 | 3.34E+02 | 9.03E+00 | |
| | Totals | 15.97<br>564.00 | 8039.09<br>8.84 | | | | | 15.97<br>564.00 | | | | SNM<br>Totals | | 1.16E+05 | 2.88E+03 | 7.78E+01 | |

FORM 541A

APPROVED BY OMB: NO.3150-0165
EXPIRES 06/30/2007

NRC FORM 542 U.S. NUCLEAR REGULATROY COMMISSION

# UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST
INDEX AND REGIONAL COMPACT TABULATION

MANIFEST

List all original "PROCESSED WASTE" generators (if any) before "COLLECTED WASTE" generators.

1. WASTE COLLECTOR/PROCESSOR
NAME IMPAC+ Services, Inc.
P.O. Box 4849 Oak Ridge, TN 37831
IDENTIFICATION NUMBER
R-73024-E07
SHIPPING DATE
~~05/20/05~~ BS 5/23/05

SHIPPER USE ONLY

2. MANIFEST NUMBER
0926-02-0001

3. PAGE 1 OF 1 PAGE(S)

| 4. GENERATOR IDENTIFICATION NUMBER | 5. GENERATOR NAME, PERMIT NUMBER (IF APPLICABLE), AND TELEPHONE NUMBER | 6. GENERATOR FACILTIY ADDRESS | 7. PREPROCESSED WASTE (OR MATERIAL VOLUME) (m3) | (ft3) | 8. MANIFEST NUMBER(S) UNDER WHICH WASTE (OR MATERIAL) RECEIVED AND DATE OF RECEIPT | 9. WASTE CODE P = PROCESSED C = COLLECTED | 10. ORIGINATING COMPACT REGION OR STATE | 11. AS PROCESSED / COLLECTED TOTAL A. SOURCE MATERIAL (kg) | (lb) | B. SNM (g) | C. ACTIVITY (MBq) | (mCi) | D. VOLUME (m3) | (ft3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SWC E-05060<br>01-900-0086 | ICN Biomedicals | ICN Biomedicals<br>2727 Campus Drive<br>Irvine, CA 92612 | 12.69 | 448.0 | RSR4294 | "P" | Southwestern Low-Level Radioactive Waste Commission* | 0 | 0 | 0.00 | 8.68E+02 | 2.35E+01 | 2.72 | 96.00 |
| SWC E-05060<br>01-900-0299 | ICN Biomedicals | ICN Biomedicals<br>2727 Campus Drive<br>Irvine, CA 92612 | 12.69 | 448.0 | RSR4294 | "P" | Southwestern Low-Level Radioactive Waste Commission* | 0 | 0 | 0.00 | 7.33E+02 | 1.98E+01 | 2.72 | 96.00 |
| SWC E-05060<br>01-900-0089 | ICN Biomedicals | ICN Biomedicals<br>2727 Campus Drive<br>Irvine, CA 92612 | 12.69 | 448.0 | RSR4294 | "P" | Southwestern Low-Level Radioactive Waste Commission* | 0 | 0 | 0.00 | 8.25E+02 | 2.23E+01 | 2.72 | 96.00 |
| LO5435<br>200-00054 | Trace Radiochemical | Trace Radiochemicals, Inc.<br>2101 Shady Oaks Drive<br>Denton, TX 76205 | 6.37 | 225.0 | TRACE051204 | "P" | Texas | 0 | 0 | 0.00 | 1.16E+02 | 3.14E+00 | 2.55 | 90.00 |
| LO5435<br>200-00055 | Trace Radiochemical | Trace Radiochemicals, Inc.<br>2101 Shady Oaks Drive<br>Denton, TX 76205 | 6.37 | 225.0 | TRACE051204 | "P" | Texas | 0 | 0 | 0.00 | 1.45E+00 | 3.91E-02 | 2.55 | 90.00 |
| R-73024-E07<br>200-000100 | IMPACt Services, Inc.<br>865-806-6693 | IMPAC+ Services<br>ETTP, Bldg, K-1220, Hwy 58<br>Oak Ridge, TN 37830 | 2.72 | 96.0 | NA | "C" | Southeast Compact TN | 0 | 0 | 0.00 | 3.34E+02 | 9.03E+00 | 2.72 | 96.00 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| TOTALS OF ALL PAGES (NRC FORMS 542 AND 542A) | | | | | | | | 0.0 | 0.0 | 0.00 | 2.68E+03 | 7.78E+01 | 16.0 | 564.0 |

NRC FORM 542 (6-2004)

ENVIROCARE of Utah, Inc.

# Special Nuclear Material Exemption Certification

EC-0230-SNM, Revision 2

The Special Nuclear Material Exemption Certification form must be completed and signed by each generator certifying to the following conditions. Please attach this form and all required information to the Radioactive Waste Profile Record (EC-0230). **A completed and signed copy of this form must also accompany each waste manifest.**

Waste Stream ID: 02 Manifest No. 0926-02-0001

1. **Check applicable category below for the waste stream:**

| √ | Uranium Enrichment Percent | Weight Percent of Chemicals in Condition 2c | Weight Percent of Materials in Condition 2d | U-235 Concentration (pCi/g) | Measurement Uncertainty* (pCi/g) |
|---|---|---|---|---|---|
| ☒ | < 10 % | ≤ 20 % | ≤ 1 % | ≤ 1,900 | ≤ 285 |
| ☐ | Unlimited | ≤ 20 % | ≤ 1 % | ≤ 1,190 | ≤ 179 |
| ☐ | Unlimited | Sum of both ≤ 45 % of waste by weight | | ≤ 680 | ≤ 102 |
| ☐ | Unlimited | Unlimited | Unlimited | ≤ 26 | ≤ 10 |
| ☐ | Not Applicable - Enriched U-235 is not present in the waste. | | | | |

* A concentration value is used for the maximum measurement uncertainty limit rather than a percentage value to allow greater flexibility for generators with waste having very low SNM concentrations.

2. **Certify to the following requirements by checking each box:**

☒ a. Concentrations of SNM in individual waste containers do not exceed the applicable values listed in the above table and SNM isotope concentrations listed in Table 1.

☒ b. The SNM is homogeneously distributed throughout the waste or the SNM concentrations in any contiguous mass of 600 kilograms (1,323 lbs) do not exceed on average the specified limits. (Based on process knowledge or testing).

☒ c. Except as allowed by Condition 1, the waste does not contain "pure forms" of chemicals containing carbon, fluorine, magnesium, or bismuth in bulk quantities (e.g., a pallet of drums, a B-25 box). By "pure forms," it is meant that mixtures of the above elements such as magnesium oxide, magnesium carbonate, magnesium fluoride, bismuth oxide, etc. do not contain other elements. (Based on process knowledge or testing).

☒ d. Except as allowed by Condition 1, the waste does not contain total quantities of beryllium, hydrogenous material enriched in deuterium, or graphite above one percent of the total weight of the waste. (Based on process knowledge, physical observations, or testing).

☒ e. Waste packages do not contain highly soluble forms of uranium greater than 350 grams of uranium-235 or 200 grams of uranium-233. If the waste contains mixtures of U-233 and U-235, the waste meets the sum of the fractions rule. Highly soluble forms of uranium include, but are not limited to: uranium sulfate, uranyl acetate, uranyl chloride, uranyl formate, uranyl fluoride, uranyl nitrate, uranyl potassium carbonate, and uranyl sulfate. (Based on process knowledge or testing).

☐ f. For containers of liquid waste with more than 600 kilograms of waste, the total activity (pCi) of SNM in the manifested container does not exceed the SNM concentration in the above table or Table 1 times 600 kilograms of waste (based on process knowledge or testing). For example, the maximum activity of Pu-239 in any manifested container of liquid waste is 6.0 mCi (6.0E+09 pCi) as shown below:

$$10{,}000\frac{pCi}{g} \times 600{,}000\,g = 6.0X10^{9}\ pCi = 6.0\,mCi\ Pu\text{-}239$$

ENVIROCARE of Utah, Inc.

Table 1. Maximum concentrations of SNM in individual waste containers (refer to above table for U-235 limits).

| Radionuclide | Maximum Concentration (pCi/g) | Measurement Uncertainty (pCi/g) | Radionuclide | Maximum Concentration (pCi/g) | Measurement Uncertainty (pCi/g) |
|---|---|---|---|---|---|
| U-233 | 75,000 | 11,250 | Pu-241 | 350,000 | 50,000 |
| Pu-236 | 500 | 75 | Pu-242 | 10,000 | 1,500 |
| Pu-238 | 10,000 | 1,500 | Pu-243 | 500 | 75 |
| Pu-239 | 10,000 | 1,500 | Pu-244 | 500 | 75 |
| Pu-240 | 10,000 | 1,500 | | | |

3. **Indicate that the following information is attached to the Radioactive Waste Profile Record by checking each box. (Note: Only the two-page Special Nuclear Material Exemption Certification form needs to be included with each manifest).**

   ☒ a. Provide a description of how the waste was generated, list the physical forms in the waste, and identify the uranium chemical composition.

   ☒ b. Provide a general description of how the waste was characterized (including the volumetric extent of the waste, and the number, location, type, and results of any analytical testing), the range of SNM concentrations, and the analytical results with error values used to develop the concentration ranges.

   ☒ c. Describe the process by which the waste was generated showing that the spatial distribution of SNM must be uniform, or other information supporting spatial distribution.

   ☒ d. Describe the methods to be used to determine the concentrations on the manifests. These methods could include direct measurement and the use of scaling factors. Describe the uncertainty associated with sampling and testing used to obtain the manifest concentrations.

4. **Generator's certification of compliance with the SNM exemption:** I certify that the information provided on this form is complete, true, and correct and is based on process knowledge, physical observations, or approved laboratory testing. I also certify that sampling and radiological testing of waste containing SNM was performed in accordance with Envirocare's Radioactive Material License and that any supporting documentation and analytical results have been submitted to Envirocare of Utah, Inc.

| Authorized Signature | Brad Squibb | Waste Broker | 5/23/05 |
|---|---|---|---|
| | Printed Name | Title | Date |

# Notice to Transport

EC-1800, Revision 1

Envirocare has reviewed the Radioactive Waste Profile Record and supporting documentation for the waste stream identified below. Based on our review of the information and certifications provided, Envirocare hereby issues notice that the following waste may be scheduled for transport and delivery to the Envirocare Disposal Facility.

Impact Services / Oak Ridge, TN — Generator Name / Waste Location

0406002911 — Utah Site Access Permit Number

NFS — Contractor Name

0926-02 Notice to Transport Rev# 0 Waste Profile Rev# 0 (Date:2/21/2005) — Waste Stream ID

Debris — Waste Stream Name

TBD — Volume ($ft^3$)

Waste Type: NORM ☐ LLRW ☒ RCRA Treated LLRW ☐ 11e.(2) ☐
MW ☐ Treated MW ☐ MW Needing Treatment ☐
PCB/Rad ☐ PCB/MW ☐ PCB/MW Needing Treatment ☐

Waste Form: Solid ☒ Liquid ☐

Waste will require treatment or solidification at Envirocare's Treatment Facility: ☐ Yes ☒ No
If yes, indicate "Treatment Facility" in Block 9 of the Uniform LLRW Manifest Form 540.
If no, indicate "Bulk Waste Facility" in Block 9 of the Uniform LLRW Manifest Form 540.

Disposal Cell Location (Bulk Waste Facility): ☒ Class A LLRW ☐ Mixed Waste ☐ 11e.(2)

Signature — Date: 3/31/2005

NOTICE: Transport and delivery of the material are to be done in accordance with a signed Disposal Agreement. Upon arrival at the facility, the shipment will be made subject to incoming-shipment procedures and may be accepted or rejected by Envirocare for management at the facility. To generators of mixed waste designated above, notice is hereby provided that Envirocare possesses a RCRA permit for the treatment, storage and disposal of mixed (radioactive/hazardous) waste. Hazardous waste manifests and applicable LDR notices and certifications must also accompany mixed waste shipments. Envirocare will accept conforming waste shipped by the generator in accordance with our permits and waste disposal agreement.

NOTE: THE WASTE MUST NOT CONTAIN UNAUTHORIZED FREE LIQUIDS OR PYROPHORIC, SHOCK-SENSITIVE, AIR-REACTIVE, OR WATER-REACTIVE MATERIALS, AND MUST CONFORM WITH THE FOLLOWING INCOMING SHIPMENT PARAMETER TOLERANCES:

| Solid pH | Ox/Red Test | Cyanide Test | "Sniffer" | Sulfide test |
|---|---|---|---|---|
| NA | NA | NA | NA | NA |

The above ranges have been established for the waste using the pre-shipment samples that were submitted prior to waste stream approval. DO NOT SHIP MATERIAL THAT EXCEEDS ANY OF THE ABOVE TOLERANCES.

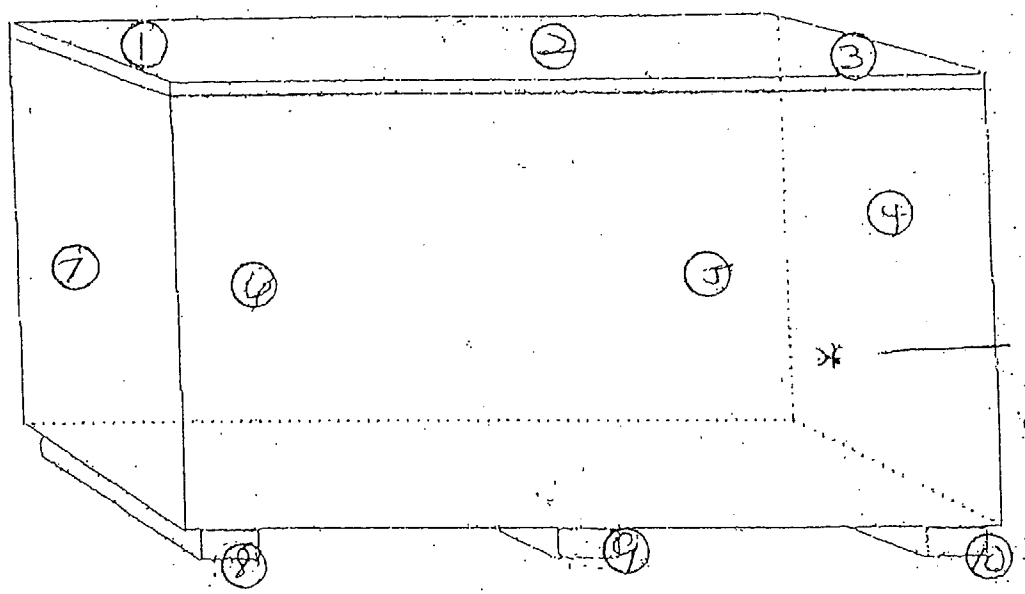
1 IMPACT COPY

Tracking No: 301-004-052 Technician: [illegible] Reviewed: [illegible]

No. 1219 P. 2

Box-ST-90

Serial # 1136 BC # 200-00064




Date: 4/14/05 Time: 1000 Reason for Survey Shipment - out

RWP #(s): ASCO0003 Type of Survey: Rad. Con

| | Rad Inst(s) | Contam Inst(s) | Lab Inst(s) |
|---|---|---|---|
| Model: | Ludlum | | UPC9510 |
| Serial #: | 88382 | | 04614 |
| Cal Due: | 3-12-06 | | 3-12-06 |

Remarks: [illegible]

Smear locations are Circled and Numbered.

Dose Rates are in mR/hr, unless otherwise noted; underlined to indicate General Area; and, * to indicate Contact reading

Contamination (in CCPM/masslin ☐ ) or (dpm/100 cm² ☐ ).

| | | |
|---|---|---|
| 1 | 11 | 21 |
| 2 SOS | 12 | 22 |
| 3 | 13 | 23 |
| 4 ATTACHED | 14 | 24 |
| 5 | 15 | 25 |
| 6 | 16 | 26 |
| 7 | 17 | 27 |
| 8 | 18 | 28 |
| 9 | 19 | 29 |
| 10 | 20 | 30 |

Apr. 25. 2005 9:48AM

IMPACT

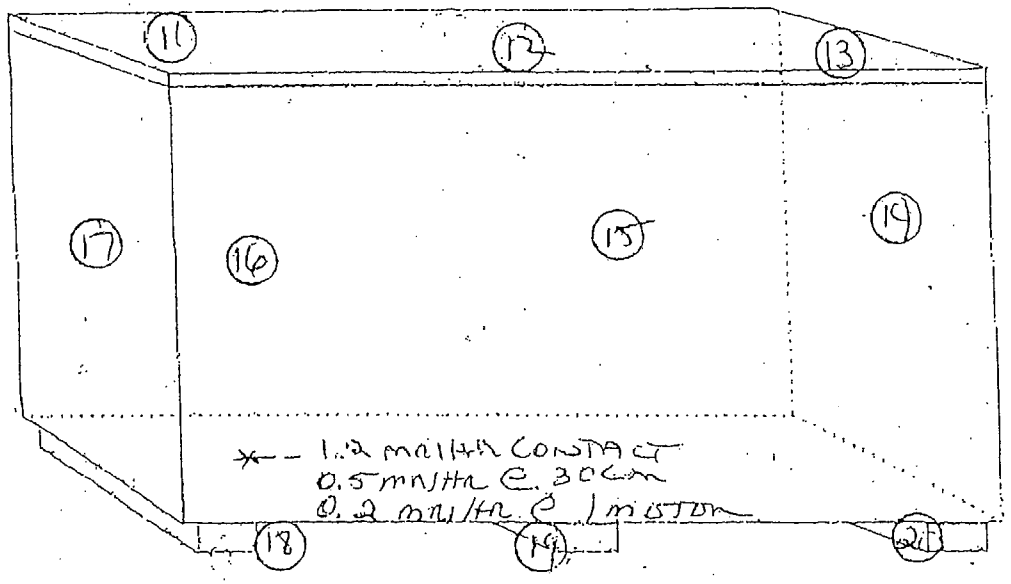
COPY

Tracking No: 301,004,052 Technician: [illegible] Reviewed: [illegible]

No. 1219 P. 3

Box-B-25

Serial # N/A BC # 200-00106




Date: 4/4/05 Time: 1022 Reason for Survey Shipment-Out

RWP #(s): ABC00505 Type of Survey: Rad-Con

| | Rad Inst(s) | Contam Inst(s) | Lab Inst(s) |
|---|---|---|---|
| Model: | BICRON | | WPC9550 |
| Serial #: | B33382 | N/A | 026014 |
| Cal Due: | 2-12-06 | | 3-12-06 |

Remarks

Smear locations are Circled and Numbered.

Dose Rates are in mR/Hr, unless otherwise noted; underlined to indicate General Area; and, * to indicate Contact reading

Contamination (in CCPM/masslin ☐ ) or (dpm/100 cm²)

| | | |
|---|---|---|
| 1 | 11 | 21 |
| 2 SOS | 12 | 22 |
| 3 | 13 | 23 |
| 4 ATTACHED | 14 | 24 |
| 5 | 15 | 25 |
| 6 | 16 | 26 |
| 7 | 17 | 27 |
| 8 | 18 | 28 |
| 9 | 19 | 29 |
| 10 | 20 | 30 |

Apr-25-2005 9:48AM

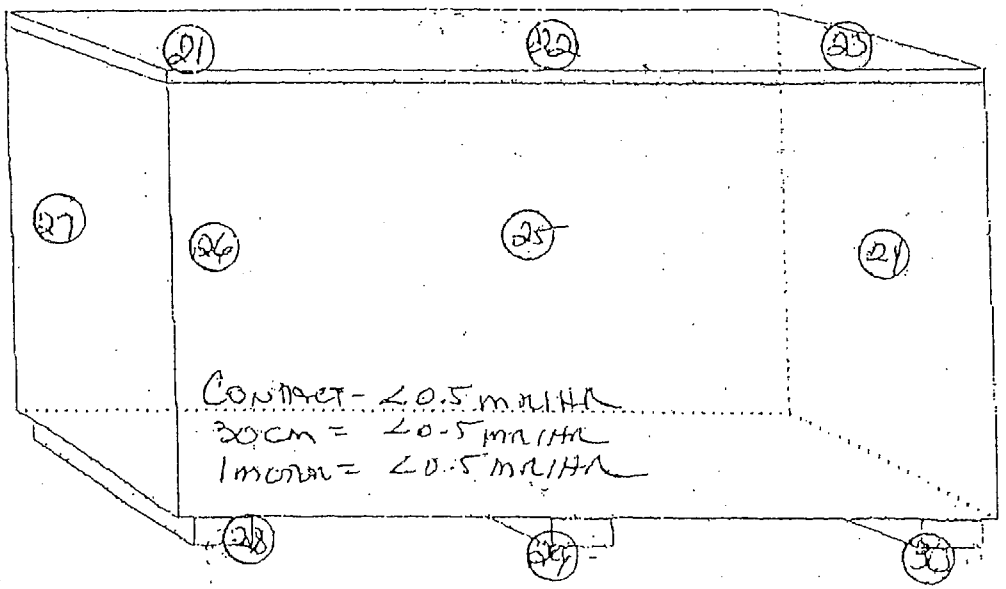
# IMPACT

COPY

Tracking No: 301.004.052 Technician: DShuton Reviewed: C. Hayden / C. Hayden

Box-B-25

Serial # N/A BC# 01-700-02089




Date: 4/14/05 Time: 1002 Reason for Survey Shipment - out

RWP #(s): ABC00503 Type of Survey: B-10-CW

| | Rad Inst(s) | Contam Inst(s) | Lab Inst(s) |
|---|---|---|---|
| Model: | BICW | | WACSWD |
| Serial #: | 53382 | | 01614 |
| Cal Due: | 2-12-06 | | 3-10-06 |

Remarks:

Smear locations are Circled and Numbered.

Dose Rates are in mR/hr, unless otherwise noted; underlined = indicate General Area reading, * to indicate Contact reading

Contamination (in CCPM/masslin □) or (dpm/100 cm² ◯)

| | | |
|---|---|---|
| 1 | 11 | 21 |
| 2 SSC | 12 | 22 |
| 3 | 13 | 23 |
| 4 ATTACHED | 14 | 24 |
| 5 | 15 | 25 |
| 6 | 16 | 26 |
| 7 | 17 | 27 |
| 8 | 18 | 28 |
| 9 | 19 | 29 |
| 10 | 20 | 30 |

4

# IMPACT

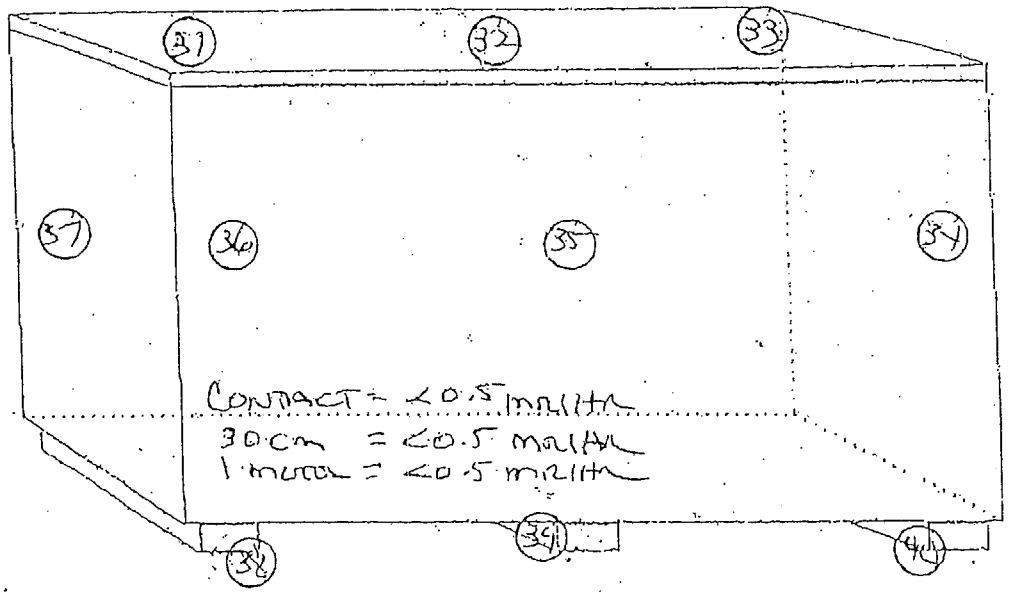
COPY

Tracking No: 301.004.052 Technician: [illegible] Reviewed: [illegible]

No. 1219 P. 5

Box-B25

Serial # N/A BC # 01-900-0086




Date: 4/14/05 Time: 1000 Reason for Survey Shipment - OUT

RWP #(s): ASCO 0503 Type of Survey: Rad Con

| | Rad Inst(s) | Contam Inst(s) | Lab Inst(s) |
|---|---|---|---|
| Model: | Bicron | | WC9550 |
| Serial #: | 58382 | | 010114 |
| Cal Due: | 2-12-06 | | 3-12-06 |

Remarks: [illegible]

Smear locations are Circled and Numbered.

Dose Rates are In mR/hr, unless otherwise noted; underlined to indicate General Area; and, * to indicate Contact reading

Contamination (in CCPM/masslin ☐ ) or (dpm/100cm² ☒)

| | | |
|---|---|---|
| 1 [illegible] | 11 | 21 |
| 2 SCBX | 12 | 22 |
| 3 | 13 | 23 |
| 4 ATMC 120 | 14 | 24 |
| 5 | 15 | 25 |
| 6 | 16 | 26 |
| 7 | 17 | 27 |
| 8 | 18 | 28 |
| 9 | 19 | 29 |
| 10 | 20 | 30 |

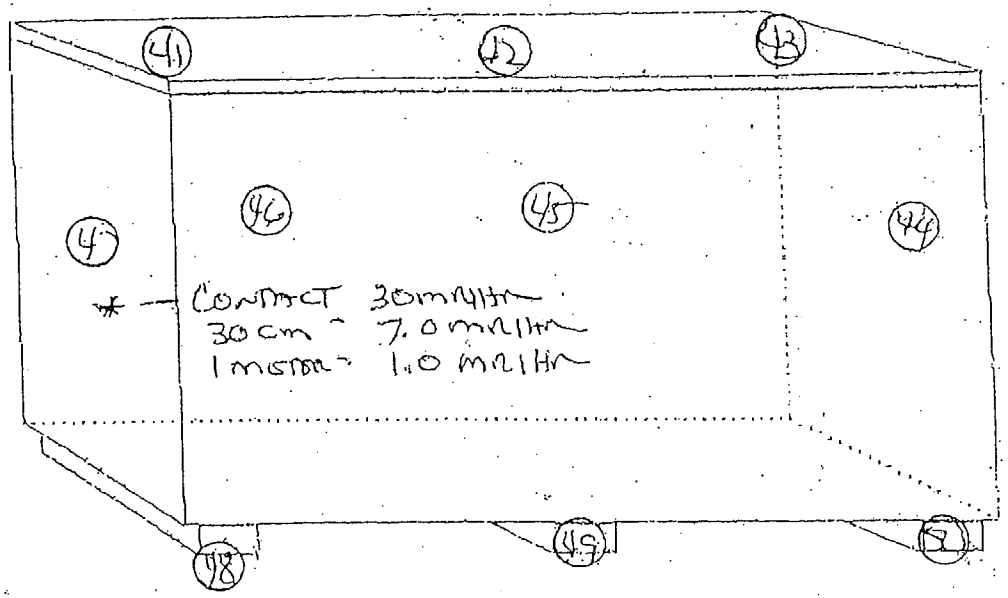
Apr-25-2005 9:48AM

# IMPACT

Tracking No: 301.004.052 Technician: [illegible] Reviewed: [illegible]

Box - ST 90

Serial # 0147 BC # 200000625




Date: 4/14/05 Time: 1000 Reason for Survey: Shipment out

RWP #(s): ABD00503 Type of Survey: Rad. Con

| | Rad Inst(s) | Contam Inst(s) | Labs Inst(s) |
|---|---|---|---|
| Model: | Bicron | | WAC 9550 |
| Serial #: | B-6322 | | 01614 |
| Cal Due: | 2-13-06 | | 3-12-06 |

Remarks

Smear locations are Circled and Numbered.

Dose Rates are In mR/Hr, unless otherwise noted; underlined to indicate General Area reading, * to indicate Contact reading

Contamination (in CCPM/masslin ☐ ) or (dpm/100 cm² ☒)

| | | |
|---|---|---|
| 1 | 11 | 21 |
| 2 588 | 12 | 22 |
| 3 | 13 | 23 |
| 4 ATTACHED | 14 | 24 |
| 5 | 15 | 25 |
| 6 | 16 | 26 |
| 7 | 17 | 27 |
| 8 | 18 | 28 |
| 9 | 19 | 29 |
| 10 | 20 | 30 |

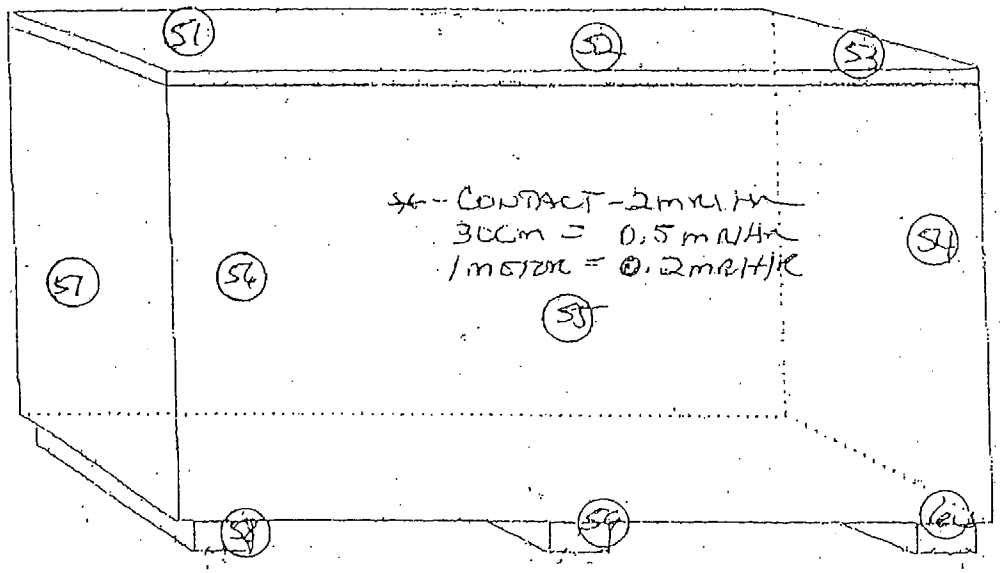
16

IMPACT COPY

Tracking No: 301.004.052 Technician: [signature] Reviewed: [signature]

Box-B 2.5

Serial # N/A BC# 01-900-0099




Date: 4/14/05 Time: 1003 Reason for Survey Shipment-Out

RWP #(s): ABCD0503 Type of Survey: Rad-Con

| | Rad Inst(s) | Contam Inst(s) | Lab Inst(s) |
|---|---|---|---|
| Model: | Bicron | | WPC 9550 |
| Serial #: | B8382 | | 016014 |
| Cal Due: | 2-12-06 | | 3-12-06 |

Remarks:

Smear locations are Circled and Numbered.

Dose Rates are in mR/Hr, unless otherwise noted; underlined to indicate General Area; and, " to indicate Contact reading

Contamination (in CCPM/measlin ☐) or (dpm/100 cm² ☒)

| | | |
|---|---|---|
| 1 | 11 | 21 |
| 2 SMS | 12 | 22 |
| 3 ATM Cart | 13 | 23 |
| 4 | 14 | 24 |
| 5 | 15 | 25 |
| 6 | 16 | 26 |
| 7 | 17 | 27 |
| 8 | 18 | 28 |
| 9 | 19 | 29 |
| 10 | 20 | 30 |

Gross Alpha Beta

Client Number 1



| | | | | ALPHA | | | | | BETA | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Eff: 25.31 % Bkg: | 0.27 LLD: | 17.47 | Eff: 29.34 % Bkg: | 2.91 LLD: | 23.04 | | | | |
| ID | CARRIER | APT | RCT | COUNTS | NET CPM | PPM | LIMITS | COUNTS | NET CPM | PPM | LIMITS | DATE | TIME |
| 991,906,652 | 1 | 1 | 0 | 1 | 0.73 | 2.90 | | 1 | -2.85 | -6.97 | | 04-14-2005 | 09:40:31 |
| | 2 | 1 | 0 | 1 | 0.73 | 2.90 | | 3 | -0.05 | -0.16 | | 04-14-2005 | 09:41:52 |
| | 3 | 1 | 0 | 0 | -0.27 | -1.06 | | 6 | 3.29 | 11.17 | | 04-14-2005 | 09:43:12 |
| | 4 | 1 | 0 | 1 | 0.73 | 2.90 | | 3 | -0.05 | -0.16 | | 04-14-2005 | 09:44:33 |
| | 5 | 1 | 0 | 0 | -0.27 | -1.06 | | 2 | -0.72 | -2.47 | | 04-14-2005 | 09:45:53 |
| | 6 | 1 | 0 | 0 | -0.27 | -1.06 | | 1 | -1.72 | -5.87 | | 04-14-2005 | 09:47:14 |
| | 7 | 1 | 0 | 0 | -0.27 | -1.06 | | 3 | 0.28 | 0.94 | | 04-14-2005 | 09:48:35 |
| | 8 | 1 | 0 | 1 | 0.73 | 2.90 | | 2 | -1.05 | -3.57 | | 04-14-2005 | 09:49:55 |
| | 9 | 1 | 0 | 0 | -0.27 | -1.06 | | 10 | 7.28 | 24.80 | | 04-14-2005 | 09:51:16 |
| | 10 | 1 | 0 | 1 | 0.73 | 2.90 | | 2 | -1.05 | -3.57 | | 04-14-2005 | 09:52:36 |
| | 11 | 1 | 0 | 0 | -0.27 | -1.06 | | 0 | -2.72 | -9.28 | | 04-14-2005 | 09:53:57 |
| | 12 | 1 | 0 | 0 | -0.27 | -1.06 | | 2 | 2.28 | 7.76 | | 04-14-2005 | 09:55:17 |
| | 13 | 1 | 0 | 0 | -0.27 | -1.06 | | 9 | 6.28 | 21.39 | | 04-14-2005 | 09:56:38 |
| | 14 | 1 | 0 | 0 | -0.27 | -1.06 | | 1 | -1.72 | -5.87 | | 04-14-2005 | 09:57:58 |
| | 15 | 1 | 0 | 0 | -0.27 | -1.06 | | 2 | -0.72 | -2.47 | | 04-14-2005 | 09:59:19 |
| | 16 | 1 | 0 | 4 | 3.73 | 14.75 | | 10 | 5.99 | 20.40 | | 04-14-2005 | 10:00:39 |
| | 17 | 1 | 0 | 0 | -0.27 | -1.06 | | 6 | 3.28 | 11.17 | | 04-14-2005 | 10:02:00 |
| | 18 | 1 | 0 | 0 | -0.27 | -1.06 | | 0 | -2.72 | -9.28 | | 04-14-2005 | 10:03:20 |
| | 19 | 1 | 0 | 1 | 0.73 | 2.90 | | 5 | 1.95 | 6.66 | | 04-14-2005 | 10:04:41 |
| | 20 | 1 | 0 | 1 | 0.73 | 2.90 | | 9 | 5.98 | 20.39 | | 04-14-2005 | 10:06:01 |
| | 21 | 1 | 0 | 1 | 0.73 | 2.90 | | 5 | 1.93 | 6.66 | | 04-14-2005 | 10:07:22 |
| | 22 | 1 | 0 | 0 | -0.27 | -1.06 | | 7 | 4.28 | 14.58 | | 04-14-2005 | 10:08:42 |
| | 23 | 1 | 0 | 1 | 0.73 | 2.90 | | 8 | 4.98 | 16.98 | | 04-14-2005 | 10:10:03 |
| | 24 | 1 | 0 | 2 | 1.73 | 6.85 | | 10 | 6.98 | 22.60 | | 04-14-2005 | 10:11:23 |
| | 25 | 1 | 0 | 0 | -0.27 | -1.06 | | 9 | 6.28 | 21.39 | | 04-14-2005 | 10:12:44 |
| | 26 | 1 | 0 | 1 | 0.73 | 2.90 | | 5 | 2.95 | 10.07 | | 04-14-2005 | 10:14:10 |
| | 27 | 1 | 0 | 1 | 0.73 | 2.90 | | 3 | -0.05 | -0.16 | | 04-14-2005 | 10:15:12 |
| | 28 | 1 | 0 | 2 | 1.73 | 6.85 | | 1 | -2.37 | -8.07 | | 04-14-2005 | 10:16:14 |
| | 29 | 1 | 0 | 0 | -0.27 | -1.06 | | 0 | -2.72 | -9.28 | | 04-14-2005 | 10:17:35 |
| | 30 | 1 | 0 | 0 | -0.27 | -1.06 | | 9 | 6.28 | 21.39 | | 04-14-2005 | 10:18:55 |
| | 31 | 1 | 0 | 0 | -0.27 | -1.06 | | 1 | -1.26 | -4.35 | | 04-14-2005 | 10:20:16 |
| | 32 | 1 | 0 | 2 | 1.73 | 6.85 | | 14 | 10.63 | 35.13 | | 04-14-2005 | 10:21:36 |
| | 33 | 1 | 0 | 0 | -0.27 | -1.06 | | 1 | 1.28 | 4.35 | | 04-14-2005 | 10:23:17 |
| | 34 | 1 | 0 | 0 | -0.27 | -1.06 | | 6 | 3.28 | 11.17 | | 04-14-2005 | 10:24:37 |
| | 35 | 1 | 0 | 2 | 1.73 | 6.85 | | 3 | 1.43 | 5.56 | | 04-14-2005 | 10:25:58 |
| | 36 | 1 | 0 | 0 | -0.27 | -1.06 | | 9 | 6.28 | 21.39 | | 04-14-2005 | 10:27:18 |
| | 37 | 1 | 0 | 0 | -0.27 | -1.06 | | 9 | 6.28 | 21.39 | | 04-14-2005 | 10:28:39 |
| | 38 | 1 | 0 | 0 | -0.27 | -1.06 | | 3 | 0.28 | 0.94 | | 04-14-2005 | 10:30:00 |
| | 39 | 1 | 0 | 0 | -0.27 | -1.06 | | 2 | -0.72 | -2.47 | | 04-14-2005 | 10:31:20 |
| | 40 | 1 | 0 | 1 | 0.73 | 2.90 | | 3 | -0.05 | -0.16 | | 04-14-2005 | 10:32:41 |
| | 41 | 1 | 0 | 1 | 0.73 | 2.90 | | 5 | 1.95 | 6.66 | | 04-14-2005 | 10:34:01 |
| | 42 | 1 | 0 | 1 | 0.73 | 2.90 | | 5 | 1.95 | 6.66 | | 04-14-2005 | 10:35:22 |
| | 43 | 1 | 0 | 1 | 0.73 | 2.90 | | 4 | 0.95 | 3.25 | | 04-14-2005 | 10:36:42 |
| | 44 | 1 | 0 | 1 | 0.73 | 2.90 | | 2 | -1.05 | -3.57 | | 04-14-2005 | 10:38:03 |
| | 45 | 1 | 0 | 2 | 1.73 | 6.85 | | 8 | 3.28 | 7.76 | | 04-14-2005 | 10:39:23 |
| | 46 | 1 | 0 | 0 | -0.27 | -1.06 | | 2 | -0.72 | -2.47 | | 04-14-2005 | 10:40:44 |
| | 47 | 1 | 0 | 0 | -0.27 | -1.06 | | 3 | 0.28 | 0.94 | | 04-14-2005 | 10:42:04 |
| | 48 | 1 | 0 | 0 | -0.27 | -1.06 | | 0 | -2.72 | -9.28 | | 04-14-2005 | 10:43:25 |
| | 49 | 1 | 0 | 0 | -0.27 | -1.06 | | 1 | -1.72 | -5.87 | | 04-14-2005 | 10:44 |
| | 50 | 1 | 0 | 1 | 0.73 | 2.90 | | 4 | 1.95 | 6.66 | | 04-14-2005 | 10:46 |
| | 51 | 1 | 0 | 2 | 1.73 | 6.85 | | 3 | 1.63 | 5.56 | | 04-14-2005 | 10:47 |
| | 52 | 1 | 0 | 4 | 3.73 | 14.75 | | 3 | 1.95 | 6.77 | | 04-14-2005 | 10:49 |
| | 53 | 1 | 0 | 0 | -0.27 | -1.06 | | 6 | 3.28 | 11.17 | | 04-14-2005 | 10:50 |

Gross Alpha Beta

Client Number 1

| | ALPHA | | | | | | | BETA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Eff: 25.31 % Bkg: | | 0.27 LLD: | | 17.45 | Eff: 29.34 % Bkg: | | 2.81 LLD: | | 28.04 | | | | |
| ID | CHANNEL | RPT | RCT | COUNTS | NET CPM | DPM | LIMITS | COUNTS | NET CPM | DPM | LIMITS | DATE | TIME | |
| 54 | 1 | 0 | 1 | 0.73 | 2.90 | | 1 | -2.05 | -6.97 | | | 04-14-2005 | 10:51 | |
| 55 | 1 | 0 | 1 | 0.73 | 2.90 | | 3 | -0.65 | -0.18 | | | 04-14-2005 | 10:53 | |
| 56 | 1 | 0 | 1 | 0.73 | 2.90 | | 5 | 1.95 | 6.66 | | | 04-14-2005 | 10:54 | |
| 57 | 1 | 0 | 0 | -0.27 | -1.06 | | 0 | -0.72 | -0.25 | | | 04-14-2005 | 10:55 | |
| 58 | 1 | 0 | 0 | -0.27 | -1.06 | | 3 | 0.28 | 0.94 | | | 04-14-2005 | 10:57 | |
| 59 | 1 | 0 | 0 | -0.27 | -1.06 | | 5 | 2.28 | 7.76 | | | 04-14-2005 | 10:58 | |
| 60 | 1 | 0 | 0 | -0.27 | -1.06 | | 3 | 0.28 | 0.94 | | | 04-14-2005 | 10:59 | |