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DRAFT FINAL 030" REMEDIAL ACTION REPORT FINAL INTERIM REMOVAL ACTION AT LAGARDE PARK, ANNISTON, ALABAMA



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

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NMCC/HONI MATERIALS-032



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August 24, 2005

District Engineer US Army Engineer District, Mobile Attention: Jeffery Devine Post Office Box 2288 Mobile, Alabama 36628-0001

Subject: Contract No. DACA01-01-D-0007, DO No. 0009 Draft Final Remedial Action Report, Final Interim Removal Action at LaGarde Park, Anniston, Alabama

Dear Mr. Devine:

Please find enclosed one copy of the *Draft Final Remedial Action Report, Final Interim Removal Action at LaGarde Park, Anniston, Alabama* for your review and comment. All reviewers are requested to provide comments or approval on or before Friday, September 23, 2005.

If you have any question, please call me at 865-481-7837, extension 279.

Sincerely, STEP, Inc.

Roy Hoekstra, PE Project Manager

Enclosure

cc: J. Clement (USACE, Omaha) lcopy T. Williams (ADPH) lcopy R. Button (USEPA) l copy O. Bailey (FM-NLD) Project Files

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

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List of Acronyms

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

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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 (Cs¹³⁷) and cobalt-60 (Co⁶⁰). 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 Co⁶⁰ and Cs¹³⁷ were found to be:

- 2.3 picoCuries per gram (pCi/g) for Co⁶⁰ (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 Cs¹³⁷ and 2.3 pCi/g for Co⁶⁰.

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 Co⁶⁰ and Cs¹³⁷ 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/R1, 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 Cs¹³⁷) 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 Cs¹³⁷) from the initial removal action and measured roughly 10 feet by 10 feet by 10 feet by 10 feet to a maximum depth of 12 to 15 feet bgs.

ES-3

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.

ES-5

 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

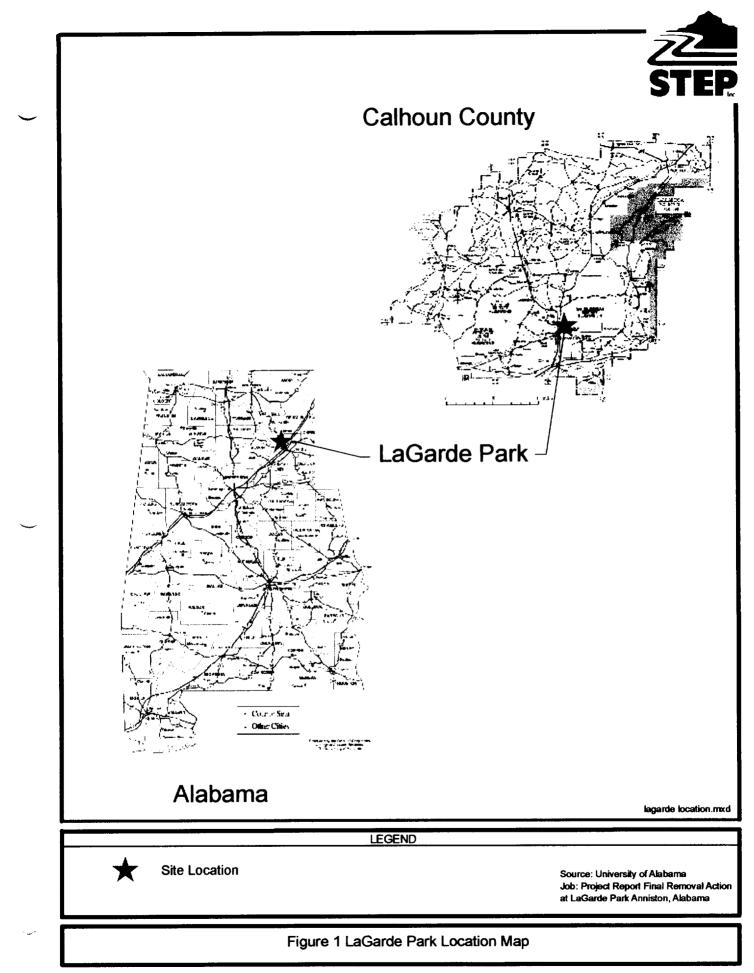
Solutions To Environmental Problems, Inc. (STEP) was contracted by the U.S. Army Corps of Engineers (USACE), Mobile District, to perform a removal action at LaGarde Park in Anniston, Alabama (Contract No. DACA01-01-D-0007, Delivery Order No. 0009). The removal action included the excavation and off-site 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.

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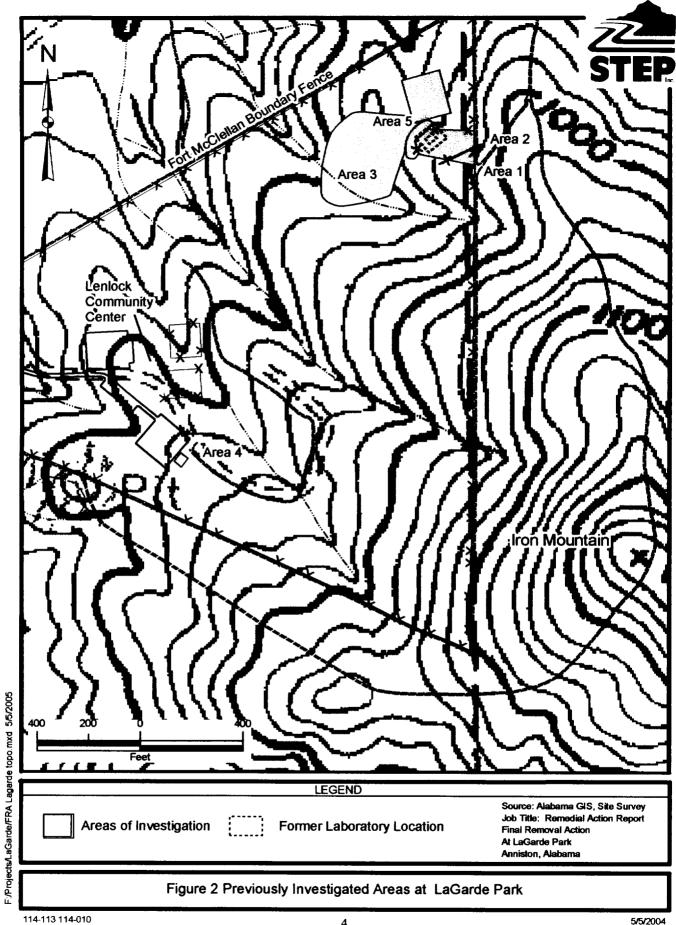


In 1971, a radiation survey was conducted on Iron Mountain, and 22 contaminated spots were identified on the ground surface. In the summer of 1971, five containers of radioactive Co⁶⁰ and Cs¹³⁷ waste and 18 55-gallon drums of contaminated soils were removed from an area approximately 400 feet southeast 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 Co⁶⁰ and Cs¹³⁷. 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.

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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 Cs¹³⁷ 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 Cs¹³⁷ 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.

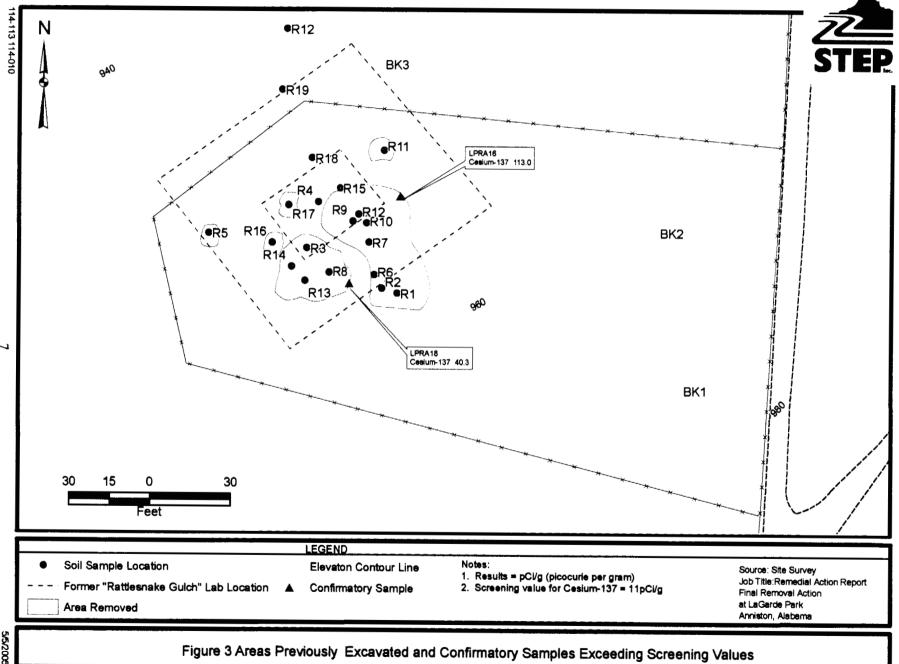
5. EXPANDED SITE INVESTIGATION/REMEDIAL INVESTIGATION

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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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 -
 - Co⁶⁰ 2.9 picoCuries per gram (pCi/g) (Resulting Risk 9 X 10⁻⁵)
 - \circ Cs¹³⁷ 12 pCi/g (Resulting Risk 3 X 10⁻⁴)
- Resident Child -
 - \circ Co⁶⁰ 2.3 pCi/g (Resulting Risk 6 X 10⁻⁵)
 - \circ Cs¹³⁷ 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 Cs¹³⁷exceeding 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.

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The first area, centered between grid nodes LPA1N3E and LPA1N3F, corresponded to the location of confirmatory soil sample LPRA18 (40.3 pCi/g Cs¹³⁷) 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

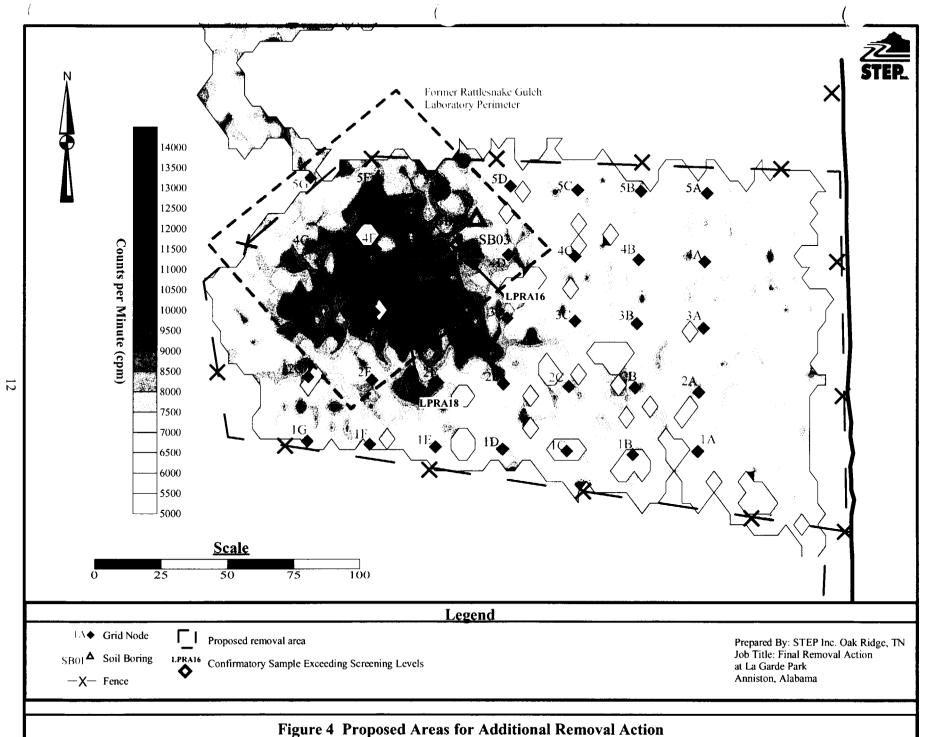
STEP personnel mobilized to the site on March 28, 2005, to conduct the recommended final interim removal action. Construction of the Anniston bypass road by the Alabama Department of Transportation had destroyed the access road to the LaGarde Park site, and two days (March 28 and 29) were spent re-establishing 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.





08/24/2005

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 Cs¹³⁷) 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., \geq 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 Cs¹³⁷) 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

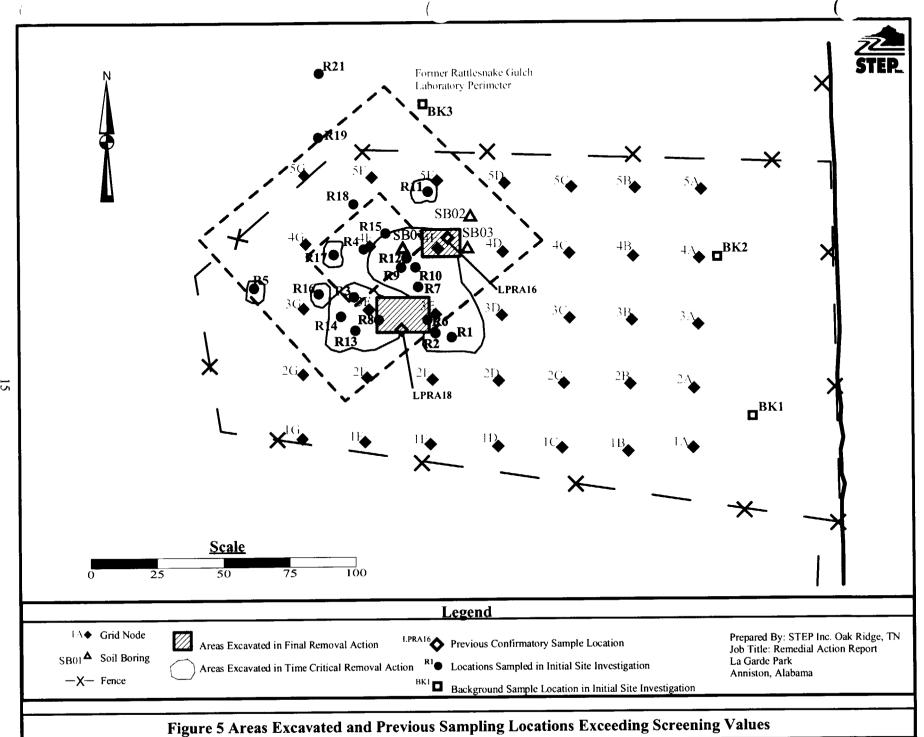
the LLRW container. Successive buckets were scanned as they were removed from the excavation, and buckets of soil that had elevated gamma counts were deposited directly into the LLRW container. All other buckets of soil were spread and scanned as in Area 1. Excavation continued until all the previously 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 walls, additional soil was removed and the area was re-scanned until all of the sidewalls of the excavation walls, additional soil was removed and the area was re-scanned until all of the sidewalls of the excavation walls, additional soil was removed and the area was re-scanned until all of the sidewalls of the excavation walls, additional soil was removed and the area was re-scanned until all of the sidewalls of the excavation walls, additional soil was removed and the area was re-scanned until all of the sidewalls of the excavation walls, additional soil was removed and the area was re-scanned until all of the sidewalls of 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.

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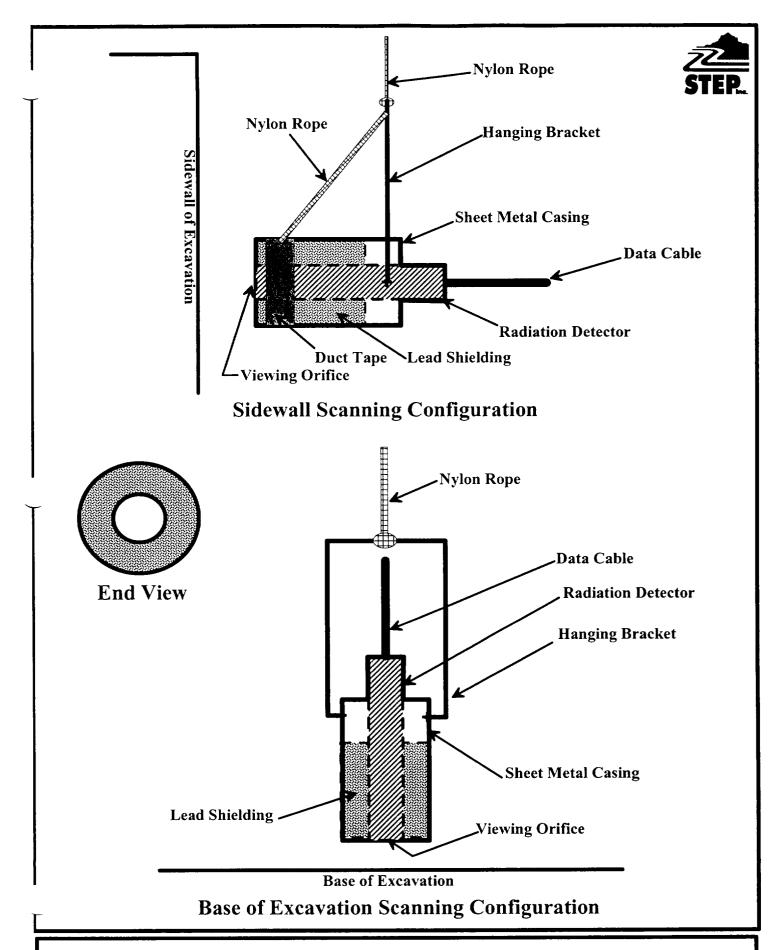


Figure 6 Scanning Configurations for Radiation Detector

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.

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

Table 1 Radionuclide Analytical Results

Bold value is the highest concentration detected for the parameter in any sample.

CRDL = contract required detection limit

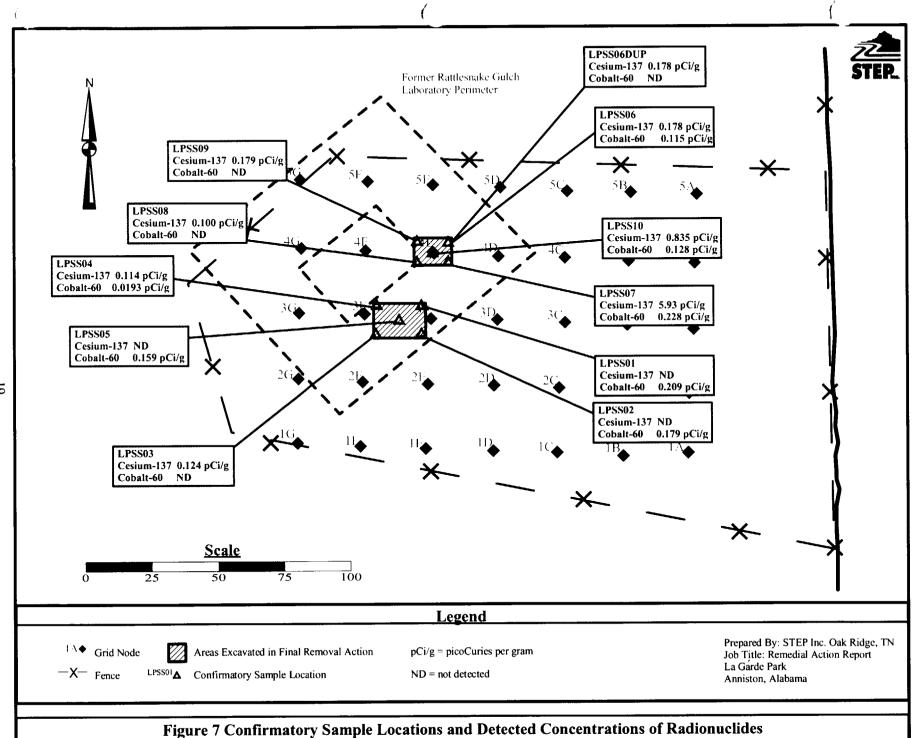
CRQL = contract required quantitation limit

DUP = duplicate sample

pCi/g = picoCuries per gram

U = result validated as not detected

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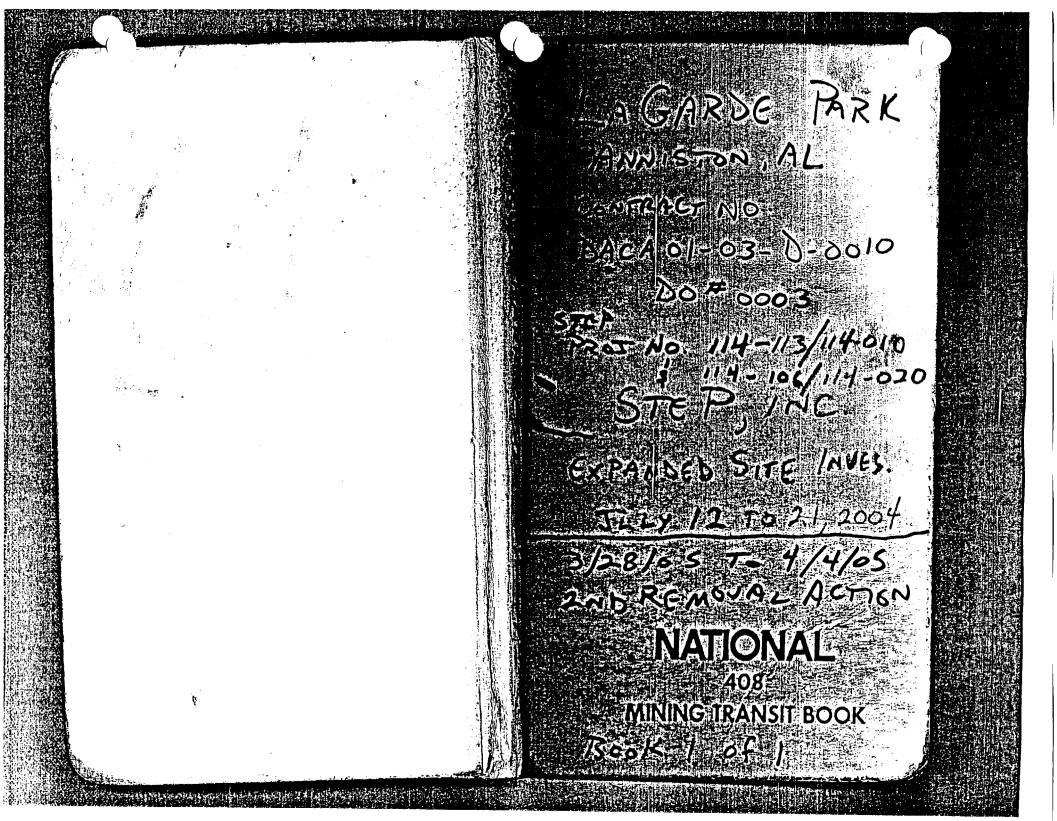
STEP, June 2004. Final Project Plans, Expanded Site Investigation at LaGarde Park Anniston, Alabama.

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Appendix A

Copy of Field Logbook



hom 2ND REMAIN ACTION (82) MON 2ND REMOVAL ACTION 82 3/28/05 LA GARGE PARK 2ND REMOVAL ACTION 114-1 LAGARDE PARK 3/28/05 114-020 (5 TO PACE ROCIC OJ TOP OF 13:30 Ar Sommer ALL GATE SUSPECTES PIPE LINE TRACE (NO DIG FORK LIFT BOSCAT DOZER WORKES ON READ FILL DELIVER 6:30 MET IN STRP CREW JUSTIN MCKAMER, BRIAN MCKAMEY, NEGS MORE CULVERT TREE JAR26- B-A-WRIGHT DO LEAVE For NOTED GAS PIPELINGSONS (V. en printi da la finita ENGE OF DOT RIGHT & WAY CALLEN ALABAMA LINE LOCATER SERVICE (1-800-292-8505) Gor 40CATER # 050871170 GUARANTEES TO HAVE LINES MARKED BY 1:30 WED (3/30) AFTER LOOKING @ SITE DECIDES TO PZOCEED W/CLEARING BRUGH 3 NOT DIG. USHS DOZER TO CLEAR SMALL TREES 7 BRUSH AND KNOCK DOWN BERM OF ABANDONED ROAD. DRDERES 18" CULVERT (10')LONG FROM WEBB CONCRETE 1 (at 3/22/05 7/28/05

LAGARDE THER 114-NG Sel \$129/05 LAGARDE TARK THE 2AS 120001AZ 4000 114-020 2ND REMOIN ACTION 3/29/05 (85) 0700 UN SITC SUNNY, 49°F 30 3, ED CONS OF GRAVEL DEVINER (TRI-AXOL TRUCK WRONG MET 4/ JOFF YOUNG (FODT) 50851-16 AND STEP CREW (BRIAN & JUSTIN ENDED TOR TORKING 670-02 MCKAMEY, JARRENTE BOATWRILHY) 40ABS +++ of Rec 2++++ CONTINUE WORKLING ON ACCESS RAD 2 TRAILER + 4BY TRUCK) 7:30 15 METER BOLES DEZ TERNS FROM MILLER SAND TO SITE BY FEC TRUCKING 800 ROAD EXTNDED MALFWAY UP HILL _ (TO CONNELT WOLD ROAD) 0:86 MR. ODGUE FROM ALL PERSONNEL LEAVING SITE ALABAMA GAS GAME BY HE SAID GAS LINE RANDA ROAD GOOD ENOUGH TO GOT GOVERNMENT NORTH S. DE OF SommHend GATE PERSONNEL UP TOT STIE ROAD BUT HAS REEN TURNED OFF ZANS TO GET ONE MORE LOAK AT VMVE @ HWY 21. THE NEW OF #4 GRAVA + 1 KOAS OF GAS 4. NE PARRALLES NEW HWY. HE STATES AS LONG AS WE WERE RIP RAP TO COMPLETE ROAD ONLY LAYING DOWN ROCK NOT DIGGING NEAR GAS 4. NE WE SHOULD BE FINC WORKING ON ROAM 10:45 2ND LOAD OF GRAVEL DELIVERAD (TRAILER) g 2 3/29/05 1/27/05 (01)

LAGARD PARK ل د ک LAGARDE WED 65 114-106 3/30/05 ZNS REMOJAL 3/30/08 114-020 2ND REMOVAL ACTION OGSO ON POST (LIGHT CLOUDS SUF DOSIMETERS JEFF YOWAS (GODT) 20 JASON FADDIS (AUX JASON FADDIS (AUX) JEFF YONAS (GODF 03 DEFF CARER , BRIAN 1 SUSTIN MERAMEY 0 1 JEFF CARTER (STEP) JARRCITE BOATWRICHT (STEP) 02 JARRATTE BATWRIGHT (STEP) BRIAN MCKAMEY (STEP) 04 0720 CONSUCTOS SAFETY JUSTIN MCKAMEY (STEP) O L MEETING Siscusses UPERATIONS - ALL + CREW PRESENT! DISTRIBUTES PREA 1 4604 S ENITERED AREA SET UP 102 725 Ð 1 18-JASON CONDUCTED RAD SCAN AL. 6.5 OF AREA. TEFFY LOUDUCT \$305 TTTAXO SCAN 5303 3E 245 COMMENCE Ex CONDITION ~ 5'DEEP BETWEEN FLAGS JE ST SCRAPING C" LIFTS SPRTAS SSIL FOR SCANNING AREM 2 09:30 EXCATES AREAT THE ARFA 18 84 10 w/2 Extrus C S.E. CORNER CAROES 2 SKIBS FEER 5CAN BASE BSIDEWALLS REAL A 3/30/05 3/30/05/01 STATES

7/34/05 (87. LAIGARDE PARK LAGARDE PARK しょう 88 130/05 2NDRA WEN 2ND ZENOVAL ACTION 13:40 DUG TO LOF. BACKFILL 10:25 Completes SAMPLING FROM PREVIOUS GXCATATON STOPPED AREA 1 Commence CAPERIX SEP BGST BACKFILL. COLLECTES APPEARE TO BE UNDISTURSES 5 SAMPLES From BASE OF GLAVATION Sout ON NERTHY 7 EAST SIDE OF LP SSO4 EXCATATION ALSO ON WEST 3, DE JASON SCANNIND HOLG 185501 BREA @ CENTER OF HOLF HAD 45503 / 3,00 - Kim SCZAPES MATCRIAL 47.5 1 475505 5 PUT IN BOSE RESCAN BASE OF T. Fever 167502 \$ 49 TOFENCE ON LINE E HOLE - ALL 4 WALLS AND BASE JASON WILL RUN SAMLNES OI SCAN GLGAN COLECTIND SAMOLIS 102 THRONGH FIELD ANALYZER 4:00 COLLECT SAMPLES PLACES TWO SKID STEER LOADS 5509 5506 5506 4 DUP of POTENTIALLY CONTAMINATES SOIL NE CORNER Crossen (9) W LLRW BOX #004 10 LPSS 07 SE 5508 13' 550 11:00 BEGIN EXCATION AREA 2 CORNER D BOTTON @ & BGS FOUND PLASTIC ~ 10'BEFP 475508 50 SHEETING From Isr RA 12:00 BREAK FOR LUNCH CORNER P BOIDA 13:00 RESUME EXCAVAMEN/SCANWING (9')-LPSSON NW CORNER Q BOTTO St Cate 3/30/05 The 7/30/05 C DUTROM (10'

LA GARDE PORK YED LAGARDE PARK (90) 3/30/05 3/30/05 (AT 2NN RA ZND RA 643 CALES UNITED ZENTAL 14:30 CALES ZOY HOLERSTRA (STER) REAGASES EXCAVATOR, SKILS TO REPORT COMPLETIN 08 STEFP & FORKLIFT (SMALL) SAMPLING & GET APORISEL TO PICKUP# 8222412 BACKFILL HOLE + AINISH FIELD EFFORT. KEEPING LARGE FORKLIFT (PARKED INSIDE FENCE, @ SITE) 15:40 HEARD FROM Ruy & DOZER UNTLE BOXES ARE UK TO BACK FILL EXCAVATION SHIPPES ONT UXO TELH SWAPT FNTIRE AREA SIR GATE SECURIO RETRIGUES SO CAN RE GRADE EXCANATION ARM ALL OSSIMETERS AND MOVING TO IMPROVE DIZAINAGE. FILLES DOWN TO SOMMERALL GATE 1 AND 1/2 DOXES 4/PUTTOTALY ROAS CONTRAINONTO MATCRIAL - 177.10 EQUIPMENT STAGES OUTSIDE SommEnALL GATE . REFUELING WILL STAGE FULL BOXES INSIDE FEACE AND MONG ALL EMPTITS BACK ESULPMENT FOR RELEASE To SommERAL ROAD RELEASED JEFF YONAS (FODT UXG) JASON FADDIS (AWIER, RCT) 16:20 COMPLETED BACKFILL & GRADING SITTE STONES STOCKS IN FEALE 720 ML PERSONNEL LEAVING AREA EMPTITS BOXTS MOVED SECURES SOMMERARY GATE D SometRAN GATE RS, RET SCANNES OUT SKID SITER, TRACH HOF & BULLOOZER. RCT SCHWICH BOXES ALL CLEAR 1 3/30/05 3/30/05 AM

MON 4 + GARK 4/4/05 ZWRA 72 114-106+020 12:00 ON SITE SUNNY, MIG70 F MET 4/ DW. 6HT HILSON (MPACT) BR. AN MCKAME, JUSTIN MCKAME, (STOP) MOVING BURES DOWN FROM SITE 14:05 HIKSON CERTIFIED LOAD LOADES PROPERLY ON TRUCK KENING SITT. 14:30 INSTALLS 100' of SILT FENCE @ DOWNSLOPE SIDE of EXCANATION AREA. LOCKES GATE LEAVING SITE 14:40 ALL EQUIPMENT STAGED DUTEIDE SUMMERIAL GATE. CALLS RENTAL COMPANY TO PICKUP. KOCKED SUMPERAL GATE RETURN KEY TO GREG SUTANK (MATRIX) 15:20 LEAVE ANNISTON Al ato 4/4/05 and the second states of the second states and

Appendix B

Photographs of Removal Action

LaGarde Park, Anniston, Alabama Final Removal Action



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Photo 1 Site View Facing South (PreDig)



Photo 3 Excavation 1 View Facing Southwest



Photo 2 Site View Facing South (PreDig)



Photo 4 Excavation 1 View Facing Northeast

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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)

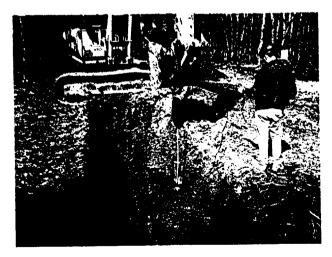


Photo 8 Scanning Base of Excavation 1 (View Facing West)



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



Photo 10 Assembly for Scanning Excavation Sidewall

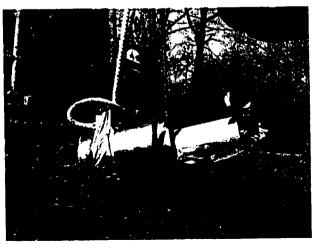


Photo 11 Assembly for Scanning Excavation Sidewall (Closeup)

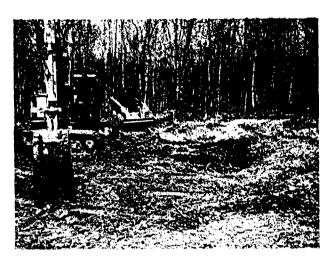


Photo 12 Begin Excavation 2 (View Facing North)

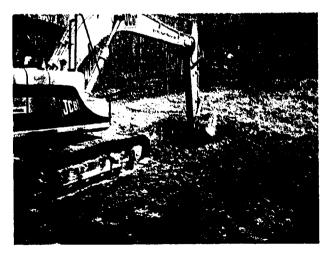


Photo 14 Excavation 2 (View Facing East)



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



Photo 15 Excavation 2 (View Facing South)



Photo 16 Plastic in Excavation 2 (View Facing East)

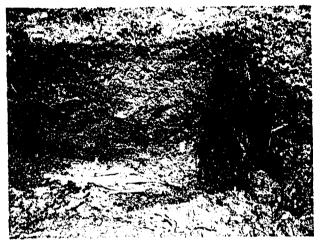


Photo 17 Plastic in Excavation 2 (View Facing North)

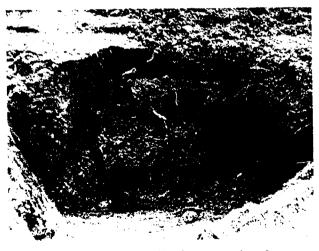


Photo 18 Sidewall of Excavation 2 (View Facing South)

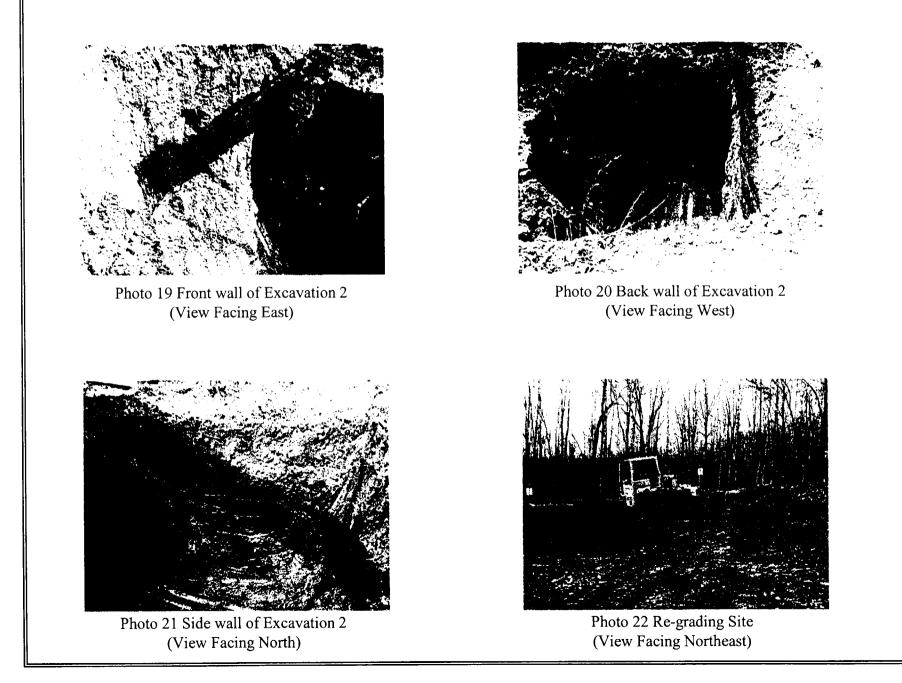




Photo 23, 24, and 25 Panoramic View of Re-graded Site (View Facing East)



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

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

Appendix C

Instrument Calibration Forms

		(INSTRUMENT QUALITY CONTROL CHECK FORM			
METER:	MODEL	8221			
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DUE DATE	1218-105
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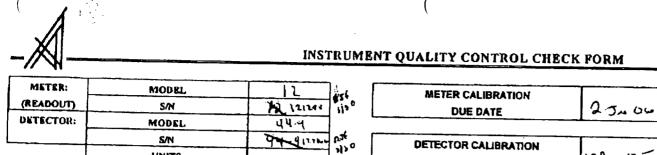
Data Reviewed By: ______

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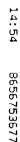
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CUSTOMER AUXIER & ASSOCIATES	CERTIFICATE OF		LUDLUM MEASUREMENTS, INC. POST OFFICE BOX 810 PH. 325-235-5494 501 OAK STREET FAX NO. 325-235-4672 SWEETWATER, TEXAS 79556. U.S.A. ORDER NO. 220960/284119
'tg. Ludium Measurements, Inc.	Model		Serial No. 117650
Mig	Model	·····	Serial No
			nterval <u>1 Year</u> Meterface <u>202-159</u>
			RH55_% Ait698.8_mm Hg
🗋 New Instrument 🛛 Instrument Received	Within Toler. +10%	🛄 10-20% 📋 Out at Tal.	Requiring Repair Other-See comments
	Ck.	Background Subtract Window Operation Batt. ck. (Min. Volt)	
Calibrated in accordance with LMI SOP 1			ce with LMI SOP 14.9 rev 02/07/97.
Instrument Volt Set V Input Sen	s. <u>35</u> mV Det. (OperVat	mv Diai Ratio <u>100 = 10</u> mv
☑ HV Readout (2 points) Ref./inst	500 /	494 V Ref./in	st 2000 / / 1983 V
COMMENTS: Calibrated with 39 inch cable. Firmware: 26 10 72 Calibrated w/ window	יוז ניס" או א	pasitior.	······································

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

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Serving The Nuclear Industry Since 1962

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Designer and Manufacturer of Scientific and industrial Instruments			LUDLUM MEASURE POST OFFICE BOX 810 501 OAK STREET SWEETWATER, TEXAS 79	PH. 325-235-5494 FAX NO: 325-235-4672
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Designer an Scientific	nd Manufocturer of ; and Industrial truments	COP	NY/	LUDLUM MEASUR POST OFFICE BOX 810 501 OAK STREET SWEETWATER, TEXAS 7	PH. 325-235-5494 FAX NO: 325-235-4072
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					00000000000000
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Gamma Calibration: GNI detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.

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Serving The Nuclear Industry Since 1962

JMER	Designer and Manufacturer of Scientific and Industrial Instruments DMER GRIFFIN INSTRUMENTS		E OF CALIBRATION	POST OFFICE BOX 810 PH. 325-23 501 OAK STREET FAX NO. SWEETWATER, TEXAS 79556, U.S.A.	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. ORDER NO. 230493 / 288981		
J	Ludium Measurements, Inc.	Model	19	Serial No/31299	4		
_,tg		Model					
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New Inst	rument Instrument Receive	ed 🔲 Within Tole	r. +-10% 🔲 10-20% 🗍 Out o	f Tol. 🗍 Requiring Repair 📋 Other-See c	comments		
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Calibrated in accordance with LMI SOP 14.8 rev 12/05/89.							
Instrument Vol	t Set <u>775</u> V Input S	ens. <u>35</u> m'	V Det. OperV	Threshold at mV Dial Ratio	=		
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COMMENTS:



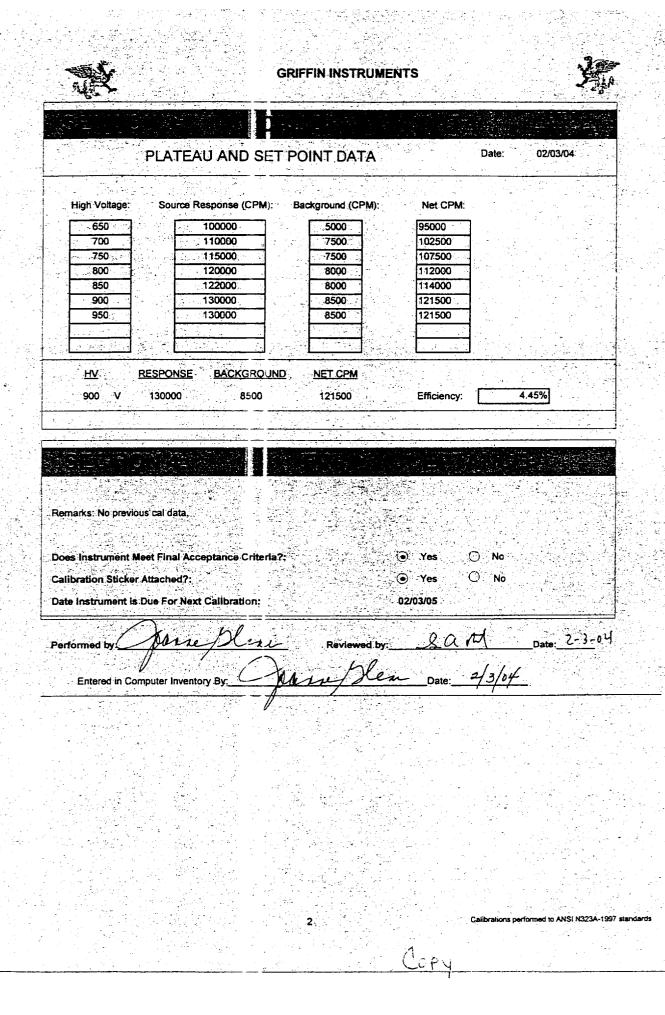
Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source. DECEDENICE

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he calibratio	on system conforms to the requi	rements of ANSI/NCSL Z5	540-1-1994 and ANSI N323-1978		priysies considing	State	of Texas Calib	ration License No. LO-19
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	GRIFFIN INSTRUM	ENTS	<u>×</u>	
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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

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4.0	Analysis-Specific Data Validation Summaries	2
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5.0	Data Qualifier Definitions	3

Tables

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Table 1 Data Validation	Reason Codes	4
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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%.

1

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.

2

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
078	Associated method blank or LCS
08	MS/MSD/Duplicate results outside criteria
 08A	MS/MSD/Duplicate results outside chiena 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
10 10A	
	Recovery Retention time
<u>10B</u>	
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: 13357	16	Project: LaGar	de Park
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	LP 55030305	LP 55 060305 LP 55 0 60 30500P	LP 55090305
		LP SS 0 60 30500P	LPSS 100305

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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	<u>A</u>	
4.	Calibrations	<u></u>	
5.	Blanks	<u> </u>	
б,	ICP/ICS	NIA	
7.	Blank Spike/LCS	A	
8.	Duplicates	<u>A</u>	:
9 .	Matrix Spike	NIA	
10.	Furnace Atomic Absorption QC	N/A	
11.	ICP Serial Dilution	N/A	
12.	Sample Result Verification	<u>A</u>	
13,	Field QC Samples	A	
14. 0	verall Assessment	A	

Status Codes:

A = Acceptable

R = Data RejectedX = Data acceptable but gualified due to problems

SDG: 133576

Method: METALS

Page 2

Qualifications:

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GENERAL ENGINEERING LABORATORIES, LLC 2040 Savage Road Charleston SC 29407 - (843) 556-6171 - www.gel.com

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Gammaspec, Gamma, Cesium–137	Solid (Standard List)	.0194	+/-0.0442	0.0382	0.10D	pCi/g	u	AKB 04/05/05	2207 413891	
Cobalt-60		0.179	+/-0.039	0.037	0.100	pCi/g				-
te following Prep M	lethods were performed	d		•		<u></u>		· · · · ·		
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 Analyt	ical Methods were perf	ormed		:	•					
Method	Description		:		A	nalyst Com	ments			
1	EMIL HASL 300, 4	.5.2.3				<u></u>	•			
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GENERAL ENGINEERING LABORATORIES, LLC 2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

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Company : Address :	Step, Inc. 1006 Floyd Culler Ct. Oak Ridge, Tennessee 3783	30		• •		, a	anout Dutur Anni	177 2005	
Contuci:	Mr. Doug Hawn				٠	К	eport Date: Apri	127,2005	
Project	La Garde Park ESI		· .			·· .	· · ·	·	
· · · · · · · · · · · · · · · · · · ·	Sample ID; Matrix:	LPSS030305 133576003 Spil		· .		roject: lient ID:	STEP00402 STEP00]		
	Coffect Date: Receive Date: Coffector:	30-MAR-05 01-APR-05 Client	10:22			Rev			
Parameter	Qualifier Result	Uncertainty	DL	RL	Units	Ored DF	AnalystDate	Time Batch	Meth
Gammaspec, Gamma, S Cesium-137 Cobalt-60	ບ 0.00347	+/-0.0326 +/-0.0289	0.029 0.0259	0.100 D.100	pCi/g pCi/g	ų	AKB 04/05/05	5 2231 413891	·I
<u>ar following Prep Me</u> Method	thads were performed Description			Annlyst	Date	Tim	e – Prep Batch		
Dry Soil Prep	Dry Soil Prep GL-RAD-	A-021		TCI	04/04/05	113	3 413761		
The following Analytic	al Methods were performed		•				•		
Method	Description			Å	analyst Cor	uments			
I .	EML HASL 300, 4.5.2.3				· · ·				
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	•	•							•			
	Company : Address :	Step, Inc. 1006 Floyd Culler (Oak Ridge, Tennes:		30			· .					
		· .		•			•	Re	port Date: Apri	27, 20	05	•
	Contact:	Mr. Doug Hawn									•	
	Project:	La Gurde Park ES	il	- <u>.</u>		• •	•		•			
· · ·		Client Sample III Sample III:):	LPSS040305 133576004		•	Proj Clie		STEP00402 STEP001			
		Matrix: Collect Date:		Soil 30-MAR-05	10:20				· · · ·	•.		
		Receive Date: Collector:	•	01-APR-05 Client				is	·	•		
Paramete	r · .	Qualifier	Result	Uncertainty	DL	RL -	Unlls 🖓	Ind DF	AnalystDate	Time	Batch	Meth
Rad Gamm	a Spec Analy	sls						-				• •
Gaumaspe	c, Gainma, S	olid (Standard List)				_						
Cesium-1	_		0.114	+/-0.0242	0.0201	0,100 0,100	pCi/g	•	AKB 04/05/05	2232 4	413891	1.
Cobalt-60		· · · ·	0.0193	+/-0.015	0.016	0.100	pCi/g					
he follow	ing Prep Me	thods were perform	ed					· .=.				
Method	· .	Description				Analyst	Date	Time	Prep Batch	•		<u> </u>
Dry Soil Pre	. q	Dry Soil Prep GL	-RAD-	A-021	•	TCI	04/04/05	1133	413761	• •		
The follow	ing Analytic	al Methods were per	rtormed	ľ			· .					
Method		Description					Analyst Comn	ents		•		
1		EML HASL 300,	4.5.2.3					• .				
				·			• . •	. •	•			
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Company : Sing Los Address : HOG Flags Claim CC. Ouk Reige, Temesseu 37330 Control: Mr. Doug Hawn Project I. Jac Carde Park ESI Client Sample ID: LPSS050305 Project: STEP001 Client Sample ID: LPSS050305 Client ID: STEP001 Client ID: IJ3576005 Matrix: Soil Control: 01-AFR-05 Rev Client ID: Client Client Control: 01-AFR-05 Rev Control: 01-AFR-05 Rev Con	•			•		:	• ,
Address: 1005 Floyd Culler CL Oulk Ridge, Tannasses 37330 Repon Date: April 27, 2005 Collect: Mr. Doug Hawn Project: 1 a Garde Fark ESI Client: Sample ID: LPSS0503015 Sample ID: 1 33576005 Matrix: Solit Collect: 30-MAR-05 10:15 Receive Date: 0APR-05 Collect: Collection: Collect: Collection: Collection: Collection: Collection: Client: Collectio: Client: <td>Company</td> <td>Sten, Inc.</td> <td></td> <td></td> <td></td> <td></td> <td></td>	Company	Sten, Inc.					
Out: Ruige, Tennesse: 37830 Report Date: April 27, 2005 Controp: Mr. Doug Hawn Project: I.a. Garde Park ESI Cilient Stangle DD: LPSS000305 Sample DD: 133576005 Collect Date: 30-MAR-05 Collect Date: 30-MAR-0510:15 Receive Date: 01-APR-05 CollectDate: 01-APR-05 CollectDate: 01-APR-05 CollectDate: 01-APR-05 CollectDate: 01-APR-05 CollectDate: 01-APR-05 CollectDate: CollectDate: CollectDate: CollectDate: CollectDate: 01-APR-05 CollectDate: CollectDate: CollectDate: CollectDate: CollectDate: CollectDate: CollectDate: 01-APR-05 CollectDate: 01-APR-05 CollectDate: 01-APR-05 CollectDate: 0.059 CollectDate: 0.109 pCM AKB 040605 0752 413891 CollectDate: 0.109 pCM Aralyst Date Time Projecti: Projecti: The following Aralytica Megloke were performed Method Description Araly							•
Contact: Mr. Doug Hawn Project: La Carde Park ESI Citient Sample ID: LPSS003015 Somple ID: Sold Collecting: Sold Collecting: Sold Collecting: Citient Parameter Qualifier Qualifier Resolut Collecting: Citient <	•		S3D	•			. ·
Projecti La Garde Park ESI Client Sample ID: 133576005 Maritz Soli Collectin: 30-MAR-0510:15 Receive Date: 01-APE-05 Collector: Client Collector: 0.0569 Collector: 0.0569 Collector: 0.0569 Collector: 0.169 Propertield Dire Sciphion Actional Propertield Propertield Diry Soli Prop Cl-RAD-A-021 TCl Option: Analyst Comments I EMUL HASI 300, 4.5.2.3		· · · · · · · · · · · · · · · · · · ·			· · ·	Report Date: Apr	-11 27, 200 5
Client Sample ID: LPSS000305 Sample ID: 132576005 Matrix: Soil Collectur: Client Collectur: Client Purnaneter Qualifier Resolt Uncertainty DL RL Units Quel DE AnalystDate Time Batch Met Bal Guman Spec Analysts Gammappe, Gamma, Solid (Standard Litr) Costan-137 U 0.0509 +/-0.0549 0.0671 0.100 pCirg U AKB 04/06/05 0752 413891 1 Costan-137 U 0.0509 +/-0.0549 0.106 pCirg U AKB 04/06/05 0752 413891 1 Costan-137 U 0.0509 +/-0.0549 0.106 pCirg U AKB 04/06/05 0752 413891 1 Costan-137 D 0.0509 +/-0.0549 0.106 pCirg U AKB 04/06/05 0752 413891 1 Costan-137 D 0.0509 +/-0.0537 0.0498 0.106 pCirg U AKB 04/06/05 0752 413891 1 Dobal60 D159 +/-0.0537 0.0498 0.106 pCirg U AKB 04/06/05 0752 413891 1 TC1 0.404/05 1133 413761 Trace Prep Batch Dry Sail Prep Dry Soil Prep OL-RAD-A-021 TC1 0.404/05 1133 413761 Trace fallwing AnalystCaMethods were performed Method Description Analyst Consumpts 1 EML HASL 300, 4-52.3	•			•			•
Sample ID: 133576005 Client ID: STEP001 Matrix: Soll Collect Date: 30-MAR-0510:15 Receive Date: 01-APE-05 Collector: Client ID: Result Uncertainty DL RL Units Order DF AnalystDate Time Batch Met Rod Ganada Solid (Standard Ltz) Costange, Ganada Solid (Standard Ltz) Distription Analyst Date Time Prep Batch Dry Suit Preg Dry Soil Prep GL-RAD-A-021 TCi 04/04/05 11133 413761 The following Analytical Methods were performed Method Description Analyst Comments 1 EML HASI 300, 4-5-2.3	Project:	Lu Garde Park ESI			· · ·		· ·
Sample TD: 1337/6005 Client ID: STEP001 Matrix: Soil Collect Date: 30-MAR-0510:15 Receive Date: 01-APR-05 Collector: Client Collector: Client Tarameter Qualifier Result Uncertainty DL RL Units Que DF AnalystDate Time Batch Met Red Gamon Spec Analysis Commappe, Gamuna, Solid (Standard Liz) Colluming Spec Analysis Collector: U 00599 +/-0.0369 0.0671 0.109 pCkg L AKB 04/06/05 0752 413891 1 Collowing Prep Methods were performed Method Description Analyst Date Time Prep Batch Dry Suil Preg Dry Sol Prep U-RAD-A-021 TCI 04/04/05 1133 413761 The following Analytical Methods were performed Method Description Analyst Date Time Prep Batch 1 EML HASI 300, 4.5.2.3			· · · · · · · · · · · · · · · · · · ·				
Matrix: Soil Collecting: OL-APE-05 Collecting: Olient Thromatier Qualifier Result Uncertainty DL RL Units QuePDE Analysibute Time Batch Met Gammaspee Analysis Gammaspee Canava, Solid (Sandurd Litr) Cestum-137 U 0.0509 +/-0.0369 D.0671 0.100 pCi/g U AKB 04/06/05 0752 413891 1 Obbui-160 0.139 +/-0.0837 D.0498 0.100 pCi/g U AKB 04/06/05 0752 413891 1 Die follwring Prep Methods were performed Method Description Analyst Date Time Prep Batck Dry Suil Prep Dry Soil Prep GL=RAD=A-021 TC1 04/04/05 1133 413761 The follwring Analytical Methods were performed Method Description Analyst Comments 1 EML HASI. 300, 4.5.2.3		Client Sample ID: Sample ID:		•	Project: Client ID:	STEP00402 STEP001	
Receive Dute: D1-APR-03 Collector: Rw Parameter Qualifier Resolt Uncertainty DL UL Units We DF AnalystBute Time Batch Met Rad Gauma Solid (Standard Liz) Cestum-137 U 0.0509 #/-0.0369 0.0671 0.100 pCl/g L AKB 04/06/05 0752 413591 1 Collecting: D 0.159 #/-0.0537 0.0498 0.100 pCl/g L AKB 04/06/05 0752 413591 1 Collecting: D 0.159 #/-0.0537 0.0498 0.100 pCl/g L AKB 04/06/05 0752 413591 1 Collewing Prep Methads were performed Method Description Awalyst Date Time Prep Batch Dry Soil Prep Dry Soil Prep CL-RAD-A-021 TC1 04/04/05 1133 413761 The following Analytical Methods were performed Method Description Analyst Convacuts 1 1 EMIL HASI, 300, 4.5.2.3 Image: Analyst Convacuts Image: Analyst Convacuts Image: Analyst Convacuts Image: Analyst Convacuts		Matrix:			5.00m 201	011,00.	
Collector: Olient Not Parameter Quilifler Itesult DL UL Units Not Dr Analyst Gammaxpec, Gamma, Solid (Standard Litt) DL UL Units Not Dr Analyst Met Dr Costim=137 U 0.0509 t/-0.0369 0.0671 0,100 pCUg L AKB D4/06/05 0752 413891 I Cobust-60 0.159 t/-0.0537 0.0498 0.100 pCUg L AKB D4/06/05 0752 413891 I Cobust-60 0.159 t/-0.0537 0.0498 0.100 pCUg L AKB D4/06/05 0752 413891 I Cobust-60 0.159 t/-0.0537 0.0498 0.100 pCUg L Imme Prep Batch Dry Soil Prep Dry Soil Prep GL=RAD-A-021 TC1 0.4/04/05 1133 413761 The following Analytical Methods were performed Method Description Analyst Curaweuts I EMU HA				5		•	
Distribution Control of the solution o	•				Rw	•	•
Rad Ganuar Spec Analysis Gammasspec, Gamma, Solid (Standard Lite) Costime-50 0.0509 +/-0.0369 D.0671 0.100 pCi/g L AKB D4/06/05 0752 413891 1 Cobult-60 0.159 +/-0.0357 U.0498 0.100 pCi/g L AKB D4/06/05 0752 413891 1 Method Description Aualyst Date Time Prep Butch Dry Snil Prep Dry Soil Prop CL-RAD-A-021 TC1 04/04/05 1133 413761 The following Analytical Methods were performed Method Description Analyst Comments 1 1 EML (HASI: 300, 4.5.2.3 Analyst Comments 1 1 1 1	Purpostor						
Gammaspec, Gamma, Solid (Standard List) Cestup-137 U 0.0509 +/-0.0359 U.0498 0.100 pCi/g U AKB 04/06/05 0752 413891 1 Cobul-60 Description Aualyst Date Time Prep Butch Method Description Aualyst Date Time Prep Butch Dry Soil Prep Dry Soil Prep OL-RAD-A-021 TC1 0.4/04/05 1133 413761 The following Analytical Methods were performed Method Description Analyst Connecuts 1 EML HASI. 300, 4.5.2.3	· · · ·					Analysionie	Time Baten Meth
Cestim=137 U 0.0509 +/-0.0537 0.100 pCi/g L AKB 0.406/05 0752 413891 1 Cobult-60 0.159 +/-0.0537 0.0498 0.160 pCi/g L AKB 0.406/05 0752 413891 1 In following Prep Methods were performed Date Time Frep Butch Dry Soil Prep Dry Soil Prep CL-RAD-A-021 TC1 0.4/04/05 1133 413761 The following Analytical Methods were performed 413761 The following Analytical Methods were performed 413761 1 EML HASL 300, 4.5.2.3	· ·	•					
Cobalt-60 0.159 #/-0.0537 U.0498 0.160 pCt/g			±/_0.0360 0.06	71 0.00	ptila LL -		י ומערוג רברת ז
Ine 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					E	FILE UNIVER	1 0752 415691
Method Description Analyst Date Time Prep Butch Dry Soil Prep Dry Soil Prep GL-RAD-A-021 TC1 04/04/05 1133 413761					F5		
Dry Soil Prep Dry Soil Prep GL-RAD-A-021 TC1 04/04/05 1133 413761 The fallowing Analytical Methods were performed Motilod Description Analysi Comments 1 EML HASL 300, 4.5.2.3							
Yhe following Analytical Methods were performed Method Description 1 EML HASI. 300, 4.5.2.3							· · · · · · · · · · · · · · · · · · ·
Method Description Analysi Comments 1 EML HASI 300, 4.5.2.3	Dry Soil Prep	Dry Soil Prep GL-RAD-	-A-021	TCI	04/04/05 11:	33 413761	
Method Description Analysi Comments 1 EML HASI 300, 4.5.2.3	The following Analytic	al Methods were performer	 1		•		•
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Company	: Step, Inc.						•		
Address :	1006 Floyd Culler Ct.	· . ·			•		:		
	Oak Ridge, Tennessee 37	830		_		· .			
	- /					R	port Date: Apr	127,2005	
Conlact	Mr. Doug Hawn		. ·		· .		• •	•	
Project.	La Gurde Park ES1			•	•	:	•		
	Client Sample ID:	LPSS060305		· .	Proiec	st:	STEP00402		
	Sample JD: Matrix:	133576006 Şoil		· ·	Client	.D:	STEP001		
	Collect Date:	30-MAR-05			• .				
	Receive Dule:	01-APR-05	·		Res				
	<u>Collector:</u>	Client						Time Butch	h.I.ath
Parameter	Qualifier : Resu	li Uncertainty	DL	RL	Units Qui		AnalystDate	Tune Batea	Metti
Rad Gamma Spee An				•				•	
	a, Solid (Standard List)			0.100	0.15	•	AKB 04/06/D	0760 411901	1
Cesium-137	0.175 0.115		0.0459 0.0396	0.100	pCi/g pCi/g		AKB 114/00/07	0/02/413691	1
Cobalt-60		. +	0.0090	0.100	Tr~1.9		•.		
he following Prep ?	lethods were performed			· .					
Method	Description			Analyst	Date	Tim	Prep Batch	· · · · · · · · · · · · · · · · · · ·	
Dry Soil Prep	Dry Soil Prep GL-RAI	-A-021	<u></u>	TC1 ·	04/04/05	1133	413761		
Diyamirep					••		•		•
The following Analy	tical Methods were perform	લ્વે			•	• •			
Method	Description			A	nalyst Comme	nts		•	
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	Company :	Step, Inc.			· .		• .:			
-	Address :	1006 Floyd Culler Ct.				•			• •	
		Oak Ridge, Tennessee 3	37830							
•	Contact	Mr. Dong Huwn			•		_ R	eport Date: Apr	d 27, 2005	
•	Project:	La Garde Park ESI								
• •	110,000						•			
		Climat Esmale ID:	LPSS060305	DUP		Der	oject:	STEP00402		
•		Client Sample ID: Sample ID:	133576007	DUP		Ċli	ent D:	STEP001	•	
	•	Matrix:	. Soil			•				
		Collect Date: Receive Date:	30-MAR-03							
		Collector:	01-APR-05			R	w ·			
Paramete	er		ult Uncertainty	DL	RI.		Julur	ApplystDate	Thue Batch	Meth
	a Spec Analy						<u>.</u>			
		Solid (Standard List)						· · ·		
Cesium-1		. 0.17		0.0588	0.100	pCi∕ <u>e</u>		AKB 04/06/0	5 0831 413891	1
Cobali_60)	U 0.080	10+0.0-++ 10	0.0862	0.100	pCi/g	ىد			
ae follow	ina Pron Me	thods were performed							•	
Michod	ing trep int	Description			Analyst	Date	"ไว้ทาย	Prep Batcl		
Dry Soil Pre	:n)	Dry Soil Prep GL-RA	D-A-021		TCI	04/04/05	1133	413761		
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	ing Analytic	al Methods were perform	ned	·		nalyst Cour				<u> </u>
Method		Description	·			maryst Colu		· · · · · · · · · · · · · · · · · · ·		
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	Compatity : Address :	Slep, Inc. 1006 Floyd Culler Oak Ridge, Tennes		30	·		. •			:	
	•				•			. Re	port Date: April	27, 2005	
	Contact:	Mr. Doug Hawn				• • •				• •	
•	Project:	La Garde Pork E	SI			· .					
	· .	Client Sample II):	LPS\$070305		,	Proie		STEP00402		
		Sample ID:		133576008			Clien	u ID:	STEP001		
•		Matrix: Collect Date:		Soil	14.15		· ·		• • •		
		Receive Date:	•	30-MAR-05 01-APR-05	14:15		~	••	. •		
· : •		Collector:		Client			Ren	l			
Purameter		Qualifier	Result	Uncertainly	DL	RL	Units ລິນ	2 DF	AnalystDate	Time Batch	Metho
Rad Gumma	Spec Analy	/sis									
Gammaspec	, Gamma, S	iolid (Sundard List)			• •	•					
Cesium-13		•	5.93	+/-0.439	0.0577	0.100	pCi/g		AKB 04/07/05	0753 413891	1
Cohalt-60		• •	0.228	+/-0.0564	0.0507	0.100	pCi/g				
he followir	а Ртер Ме	thods were perform	ed	•			·				
Method	E	Description				Analyst	Date	Time	Frep Batch		
Dry Soil Prep	, .	Dry Soil Prep GL	RAD-	A-021		TCI	04/04/05	1133	413761		
The followin	ny Anglytic	al <u>Methods</u> we <u>re pe</u>	rformed					. •			
Metbud		Description				· · · ·	Analyst Corom	כוס			
1		ENIL HASL 300,	4.5.2.3			•					
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	Company : Address :	Step, Inc. 1006 Floyd Cull Oak Ridge, Tem				 .		· ·	· · ·		
	· .					· ·		Re	cport Date: Apr	il 27, 2005	
	Contact:	Mr. Doug Hawn	•	•							
[Project:	Lu Garde Park	ES1	· . · ·		·	· .				
		Client Sample Sample ID: Matrix: Collect Date:		LPSS080305 133576009 Soil 30-MAR-05			Pro	niect: ent ID:	STEP00402 STEP001		· .
		Receive Date: Collector:	•	01-APR-05			5	in	•		•
Parameter		Qualifier	Result	_Client Uncertainty	DL		Units		AnalystDate	Time Batch	Meth
tad Gamma	Spec Analy	sis					<u> </u>	<u>.</u>			
Cesium-137 Cobalt-60	7	olid (Stundard Lis U hods were period	0.100 0.0059	+/-0.0291 +/-0.0156	0.0273 0.0265	0.100 0.100	pCi/g pCi/g	دد	AKE 04/07/05	2111 413691	1
Method	g Prep Met	Description			<u> </u>	Analyst	Date	Time	Prep Batch		
Dry Soil Prep	•	Dry Soil Prep (GL-RAD-	A-021		TCI	04,04/05	1133			
	e Analytica	l Methods were	performed		•	•					
Method		Description				A	milyst Comn	nents		· · ·	
· ·		EML HASL 30	10, 4.5.2.3		•		· .			. ·	
•	• . •						•				
	· ·	·		• •							: .
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•	• .	· ·		· ·		•			•.		
		•	•			* * *				•	

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

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			<u>Certi</u>	<u>ficate</u>	of Ana	<u>lysis</u>	•	••••		
•			· .		•			· · ·		
	•							· · ·	:	
•.	Company :	Siep, Inc. 1006 Floyd Culler Ci.							:	
	Address :	Oak Ridge, Tennessee 378	330			• •		•		
		•					Re	port Date: Apri	1 27, 2005	
•	Contaci:	Mr. Doug Hawn	•				· ·			
•	Project:	La Garde Purk ES1				•				
		Client Sample ID:	LPSS090305			Proie	ct:	STEP00402		
		Sample ID:	133576010 Soil	• •	•	Cher	at ID:	STEP001		
		Matrix: Collect Date:	30-MAR-05 I	4:20						
		Receive Date:	01-APR-05	•		Rin	, ,	·		
		Collector, Qualifier Result	_ <u>Client</u>	DL	RL	Units Ju		AnalystDate	Time Tistel	Aleth
Parame	ter ва Spec Auth		Ducertainty	LfL					·····	
	0	0.179 U 0.00725 thuds were performed		0.0352 0.0362	0.100 0.100	· · ·	u	AKE 04/07/05		1
Method		Description	·		Analyst	Date	Time			
Dry Soil P	rep	Dry Soil Frep GL-RAD	-A-021	•	TCI	04/04/05	1133	413761		
The follo	wing Analytic	al Methods were performe	d		. ·				•	
Method		Description	·		A	nalyst Comm	ents			<u></u>
[EML HASL 300, 4.5.2.3	• .		•	·				
		•	• •	•						
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Certificate of Analysis

			• . •	· ·	•		• .		
Comp									
Addre	055 : 1006 Floyd Culler Oak Ridge, Tennes						• .'		
	Onk Muge, Tunnes	Sec 21070	• •			Re	port Dale: Apr	0 27. 2005	
Conta	ict: Mr. Doug Hawn	•					· · · · · · · · · · · · · · · · · · ·		
Proje	• –	SI		•		• •	•		
		· ·	· · ·			·			
	Client Sample II	: LPSS100	1305		Proi	ect:	STEP00402		
· .	Sample ID:	1335760.			Clie	nt ID:	STEPUOI		
	Matrix:	Soil.							
	Collect Date: Receive Date:		2-05 14:17		•		•	• •	
	Collector:	01-APR Client	-03		. Ru) ·	• •		
Parameter	Qualifier	Result Uncerta	inty DL	· RL	Units N	of DF	AnalysiDate	Time Balck	1 Meth
Rad Camma Spec					<u> </u>				
-	nma, Solid (Standard List)		• .		•	•			
Cesium-137		0.835 +/0.1-	41 0.0776	0.100	pCi/g		AKB 04/07/0	5 2341 413891	1
Cobalt-60		0.128 +/-0.07		· 0.100	pCi/g				•
_ /									
<u>ne following Pro</u> Methnd	ep Methods were perform Description		•	Analyst	Date	Time	Prep Batch		
Dry Soil Prep	Dry Soil Prep GL	-240-4-021		тсі	04/04/05	1133			
Dry son Prep	Di yaon rich Or						413701	•	
The following Au	alytical Methods were pe	rformed							
Method	Description	· .		· .	Analyst Comm	ents			
1 .	EMIL HASL 300,	4.5.2.3					•		
	•	· · ·	· ·						
	· ·					•		• •	
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	• • • •		• •			•			· .
-	•		:	. • •		•			

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Reviewer: Kitchings		Date: 4/29
njoet: LaGarde Park	SDG: 133576	Matrix/No. Samples: S-/l
<u>)</u>		

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[, S	Sample Management			
٨	A. Sumple Preservation, Handling and Transport			
	1. Have all samples been preserved with HNO_3 to pH <27	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
C	Cooler @ 19.09 - no quals required.		\bigcirc	
B	B. Chain of Custody	· · · · · · · · · · · · · · · · · · ·		<u> </u>
	1. Were all samples properly recorded on COCs? See		No	N/A
	Were all samples properly recorded on COCs? Scent 4 2. Were correct analyses performed on samples? Computer	(Yes)	Nu	N/A
C	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/ANALY		
	3/30	415 416	13:41	
α. c	Calibrations			
}	Were proper number of calibration standards used for each analytical instru-	ment used?	No	N/A
2	2. Is the calibration correlation coefficient $>$ or = 0.995 for each analytical inst	runcat used? Yes	No	N/A
3	Are initial and continuing calibration verification TSR within the 10% (1 or = 196) acceptance window?	Pes	No	N/A
4	I. Are CRDL Standard %R within 10% (+ or - 1%) acceptance window?	Yes	No	N/A
5	5. Were any qualifications required based on this information?	Yes	(N)	N/A
	in the states	Wind 1321 1317-1 2660 2657- 1322 1319-	325 2665	
	4/7@7:17	2665 2663 1322 1520 = 2662 2659		~

viewer: Kitchings		Date: 4 29
ject: LaGarde Park	SDG: 33576	_ Matrix/No. Samples: S-1

	Bianks			
	1. Are any analytes reported in laboratory prep or culibration 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	(11)	N/A
	Comments/Qualifications:		Ŭ	
	818103 CS-137 UL Co-60 4			
	(u-60 4			
IV.	ICP Interference Check Sample (ICS)			
	1. Were ICS samples run at the beginning and end of each sample analysis run?	Yes	Na	TAA
	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	NA
	Comments/Qualifications:			\mathbb{V}
	Blank Spike/Laboratory Control Sample (LCS)			
v		1	1	
v	1. Are all aqueous LCS %R within 80-120% control limits?	Yes	No	NIA
<u>v.</u>	 Are all aqueous LCS %R within 80-120% control limits? Are all solid LCS %R within control limits established by EPA? 75-125 	Yes	No Nu	<u> </u>
V	······································			N/A
v.	 Z. Are all solid LCS %R within control limits established by EPA? 75-125 3. Were any qualifications required based on this information? Comments/Qualifications:	(Yes)	Nu	
v.	2. Are all solid LCS %R within control limits established by EPA7 75-125 3. Were any qualifications required based on this information? Comments/Qualifications: 818105 Cs 137 $9.90/(9.07 = 109.2)$	(Yes)	Nu	N/A
v.	 Z. Are all solid LCS %R within control limits established by EPA? 75-125 3. Were any qualifications required based on this information? Comments/Qualifications:	(Yes)	Nu	N

Reviewer: <u>Klitchlags</u>	Date: 4/29
oject: LaGarde Park SDG: 137	5576 Matrix/No. Samples: <u>5-11</u>
VL Duplicates	

). Were samples used for duplicate sample analysis identified as field blanks?	Yes	No	N/A
	2. For du dente samples >5x CRDL, were RPDs within control limits of + or - 20% for water, or ÷ or - 35% for soil?	Yes	Nu	D###
	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 Co 0.209 0.226 LPD	K = 1.4	5202	
VII.	Matrix Spike	·····		
	1. Were samples used for matrix spike sample analysis identified as field blanks?	Yes	No	TYA
	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	NA
\smile	3. Were any qualifications required based on this information?	Yes	No	Ny
VШ.	ICP Serial Dilution	1	·····	
	 Were %Ds for ICP serial dilution samples within 10% for analytes with concentrations greater than 50x IDL? 	Yes	N0	(N/A)
	2. Were any qualifications required based on this information?	Yes	No	NA
	Comments/Qualifications:			-

Yes Yes Yes	No No	N/A N/A N/A
Yes	No	N/A N/A
(Ves) Yes	No	N/A
(Yes)	No	
(Yes)	No	NIA
(Yes)	No	NIA
	No	NIA
		(NIA
		(N/A
165		N/A
Yes	Nu	N/A
	Yes Yes Yes Yes	Yes No Yes No Yes No

4

Appendix E

Bill of Lading and Waste Manifests

	STR	AIGHT BILL OF LADING SHORT FOR	M NOT NEGOI	TIABLE	E		BOL (040405 - 01
CARRIER:	F.C					Shipp	er No:	D
rier No:	:						Date:	Page 1 of 1 4/4/05
Purchase /	Custor	her Order No: N/A						
contents of packa said destination. be subject to all t	ages unknow It is mutually the Bill of Lac	sifications and lawfully filed tariffs in effect on the date of the issuin), marked, consigned, and destined as indicated below, which y agreed as to each carrier of all or any of said route to destinat ing terms and conditions in the governing classification on the 4 he said terms and conditions are hereby agreed to by the shipp	i said carrier agrees to c ion and as to each party date of shipment. The s	carry to its i y at any tim shipper her	usual place of one interested in reby certifies the	delivery, if on all or any of :	its route, othe said property,	envise to deliver to another carrier on the route to that every service to be performed hereunder shall
Consignee		Ct Services, Inc.		Fro				neers / STEP, Inc.
		N. Ferguson Rd ETTP Ridge, TN 37830			-	nmerall (ite 21	Sate of F	ort McClellan
	Uaki			Shippe		iston, AL	-	
					516-2	270-7509)	IPACt Services, Inc.
Attention: Route:	Bobb	y Parrott, 865-576-8708	Traile	Site er No.:			, Annisto	on, AL
	VIA				1034	6		pr No.: 98
No. Pkgs.	HM	Description of Material			Weight (Kgs.)	Class	ERG	Subject to section 7 of conditions of applicable Bill of Lading, if this shipment is to be delivered to the consignee without
13		Clean, used, empty metal bins (S Approx. 750# per bin, ~9,750# G	Gross Wt.	5s)	4432			recourse on the consignor, the consignor shall sign the following statement:
2		Metal bins (ST-90, B-25) containi	ng soil		7273			
		DOT Non-Regulated						The carrier shall not make delivery of this shipment without payment of freight and all
								other lawful chargesN/A
		Approx. 8000# / bin, ~ 16,000# Gi	ross Wt.					Signature of the Consignor
			. <u></u>					
· · · · · · · · · · · · · · · · · · ·		Gross Wt. of Load ~ 25,750#						
								If freight charges are to be pre-paid, write or stamp here "TO BE PREPAID". N/A
15		Totals	<u> </u>		5455			
Total Activ	vity:							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
		· · · · · · · · · · · · · · · · · · ·						S(unit)
Additional	informat	ion:						55741 Neidelike
	-	otion: DOT Non-Regulated Load o DOT Non-Regulated Soil Material		Metal	Bins and	I		Label(s) applied: none Markings: ルロル イ
Project 05	502010							
								Placard(s) required:
Transportation he cost reimbursable		r the U.S. Department of Energy and the actual total transportal mberNA	tion charges paid to the	e carrier(s)	by the consign	or or consign	ee are to be n	imbursed by the U.S. Government, pursuant to
Th [:] to certify th	nat the above	named materials are properly classified, described,						nsportation charges paid to the carrier(s) by the
1, market	d, and labele	d, and are in proper condition for transportation according the U.S. Department of Transportation.						J.S. Government and is subject to the terms and ing and to any available special rates or charges.
Contact:	tTA / IMP		The additions on the fa					
Per:	Wade Hix	son / /	Print: (ha	Fle	<u>15 B</u>	636	her	d
	Noo	le Hidson	Print: <u>Charl</u> Per: <u>Charl</u>	Les.	8.L	entre	ent	Date: 41 4 105
	fa.r	4/4/05				7		

.

MURFREESBORO, TN 37129 NON	NESSEE DIVISION		BESTOS WASTE M	
(615) 896-2075 NOR	GENER		SESTUS WASTEN	
GENERATOR SPECIAL WASTE - CO INSTRUCTIONS ASBESTOS WASTE - CO			red to analyze for hazardous was	le characteristics)
SECTION I BEI WASTE CODE L45Y21940	1		/ /	
SECTION II GENERATOR			GENERATING LOCATION	
NAME IMPACT SERVICES				
MAILING ADDRESS P.O. BOX 4849 OAK	RIDGE, TN 37831		PHONE NO 865-803-282	9
SECTION III OPERATOR/CONTRACTOR				
NAME		<u> </u>	-	
ADDRESS			PHONE NO.	
NAME			PHONE NO.	
	OINT SANITARY LA		PHYSICAL SITE LOCATION	i
MIDDLE P MAILING ADDRESS P.O. BOX 1026				16 007F
		<u>0, 1N 3/129</u>	PHONE NO. (615) 8	96-2075
SECTION VI RESPONSIBLE AGENCY (LOCA NAME ST. of TENNESSEE	L STATE, EPA)			
ADDRESS 711 R. S. GASS BLVD., NASHV	/ILLE TN 37216		DUONE NO 645 687 70	00
SECTION VII DESCRIPTION OF WASTE	CONTAINERS	CONTAINERS	PHONE NO. 615-687-70 TYPE	
CO-MINGLED WASTE	NO. TYPE	UNIT	DM METAL DRUM	P - POUND
	1 Intermodal	TONNAGE	DM PLASTIC DRUM BA 6 MIL PLASTIC	Y YARDS M ³ CUBIC
BKRUO25283		11.42	BAGS/WRAP	METER
0402075 H1 und		11172	T TRUCK O OTHER	Y ³ - CUBIC YARDS
0502010 (657516) ASBESTOS WASTE: RQ ASBESTOS, 9, NA 22	212. PG 111		L	0 OTHER
REGULATED	NON-REG			
SECTION IX GENERATOR CERTIFICATION		SECTION X OPERATO	R CERTIFICATION (ASBEST	.,
ECTION IX GENERATOR CERTIFICATION I hereby certify that the above named material is not a hazard FR Part 261 or any applicable state law, has been properly de ged, and is in proper condition for transportation according to a two sets is a treatment residue of a previously restricted hazardo isposal Restrictions. I certify and warrant that the waste has bee	dous waste as defined by 40 scribed, classified and pack- pplicable regulations, AND, if Dus waste subject to the Land en treated in accordance with	SECTION X OPERATO	R CERTIFICATION (ASBEST ents of this consignment are fully and a and are cleased, marked and a ansport by highway according to applica	accurately described
SECTION IX GENERATOR CERTIFICATION I hereby certify that the above named material is not a hazard IFR Part 261 or any applicable state law, has been property de- ged, and is in proper condition for transportation according to a rewaste is a treatment residue of a previously restricted hazardo haposal Restrictions, I certify and warrant that the waste has bee requirements of 40 CFR Part 268 and is no longer a hazardo FR Part 261 Bobby Parrott, OPS, Mar	dous waste as defined by 40 scribed, classified and pack- pplicable regulations. AND, if ous waste subject to the Land en treated in accordance with an accordance with sous waste as defined by 40 4/12/05	SECTION X OPERATO I hereby declare that the conti above by proper shipping name t respects in proper condition for tr government regulations.	ents of this consignment are fully and a and are classified packed, marked and b	accurately described sobled, and are in all sole international and
SECTION IX GENERATOR CERTIFICATION I hereby certify that the above named material is not a hazard IFR Part 261 or any applicable state law, has been property de- ged, and is in proper condition for transportation according to a rewaste is a treatment residue of a previously restricted hazardo haposal Restrictions, I certify and warrant that the waste has bee requirements of 40 CFR Part 268 and is no longer a hazardo FR Part 261 Bobby Parrott, OPS, Mar	dous waste as defined by 40 scribed, classified and pack- pplicable regulations. AND, if ous waste subject to the Land an treated in accordance with sous waste as defined by 40 <u>4/12/05</u> Shipment Date	SECTION X OPERATO I hereby declare that the cont above by proper shipping name I respects in proper condition for tr	ents of this consignment are fully and a and are classified packed, marked and b	accurately described
SECTION IX GENERATOR CERTIFICATION I hereby certify that the above named material is not a hazard IFR Part 261 or any applicable state law, has been properly de- ged, and is in proper condition for transportation according to a rewaste is a treatment residue of a previously restricted hazard isposal Restrictions, I certify and warrant that the waste has been to requirements of 40 CFR Part 268 and is no longer a hazard IFR Part 261 Bobby Parrott-Ops, Mgr TrintType Name & Title Watarow	dous waste as defined by 40 scribed, classified and pack- pplicable regulations. AND, if ous waste subject to the Land en treated in accordance with sous waste as defined by 40 $\frac{4/12/05}{Shipment Date}$	SECTION X OPERATO I hereby declare that the conti above by proper shipping name t respects in proper condition for tr government regulations.	ents of this consignment are fully and a and are classified packed, marked and b	accurately described sobled, and are in all sole international and
SECTION IX GENERATOR CERTIFICATION I hereby certify that the above named material is not a hazard IFR Part 261 or any applicable state law, has been property de- ged, and is in proper condition for transportation according to ay rewaste is a treatment residue of a previously restricted hazard isposal Restrictions, I certify and warrant that the waste has been to requirements of 40 CFR Part 268 and is no longer a hazard IFR Part 261 Bobby Parrott-Ops, Mgr rrintType Name & Title With according to a provide the state of the s	dous waste as defined by 40 scribed, classified and pack- pplicable regulations. AND, if ous waste subject to the Land en treated in accordance with sous waste as defined by 40 $\frac{4/12/05}{Shipment Date}$	SECTION X OPERATO i hereby declare that the conti above by proper shipping name t respects in proper condition for tr government regulations. Print/Type Name & Title Operators Signature	ents of this consignment are fully and a and are classified packed, marked and b	accurately described baled, and are in all bble international and Shipment Date
SECTION IX GENERATOR CERTIFICATION I hereby certify that the above named material is not a hazare FR Part 261 or any applicable state law, has been properly de ged, and is in proper condition for transportation according to ay the waste is a treatment residue of a previously restricted hazardo strapest Restrictions, I certify and warrant that the waste has bee the requirements of 40 CFR Part 268 and is no longer a hazard FR Part 261 Bobby Parrott-Ops, Mgr trintType Name & Title Warrantee Section XI TRANSPORTER 1	dous waste as defined by 40 scribed, classified and pack- policable regulations. AND, if ous waste subject to the Land en treated in accordance with sous waste as defined by 40 $\frac{4112/65}{Shipment Date}$ $\frac{4112/65}{Date}$	SECTION X OPERATO I hereby declare that the conti above by proper shipping name i respects in proper condition for tr government regulations. Print/Type Name & Title Operators Signature ORTER SECTION XI TRANSPO	ents of this consignment are fully and a and are clessified pecked, marked and a ansport by highway according to applica	accurately described soletd, and are in all ble international and Shipmeni Date Date
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SECTION IX GENERATOR CERTIFICATION I hereby certify that the above named material is not a hazare FR Part 261 or any applicable state law, has been properly de ged, and is in proper condition for transportation according to ay re waste is a treatment residue of a previously restricted hazard speak Restrictions, I certify and warrant that the waste has bee requirements of 40 CFR Part 268 and is no longer a hazard FR Part 261 Bobby Parrott Ops, Mgr vinit ype Name & Title Warrant Section XI TRANSPORTER 1 NAMEOF CO. Southern Freight NDRESS KIngston TA DRIVER LACIES MILE	dous waste as defined by 40 acribed, classified and pack- policable regulations, AND, if ous waste subject to the Land en treated in accordance with dous waste as defined by 40 $\frac{4/12/05}{Shipment Date}$ Date TRANSPO	SECTION X OPERATO I hereby declare that the conti above by proper shipping name i respects in proper condition for tr government regulations. Print/Type Name & Title Operators Signature ORTER SECTION XI TRANSPO	ents of this consignment are fully and a and are clessified pecked, marked and a ansport by highway according to applica	accurately described soletd, and are in all ble international and Shipmeni Date Date
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larrier No:	EPA		SCAC No:				Date:		05/23/05
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ceived, subject to the da	esifications and lawly	Ay fied tarifs in effect or	The data of the issue of this Bill of Lading, the property the other sector of the mate to	described below in apparent go	od order, except as note	t (contents and condition o a di all or ann di anid state	contents of pe	citages unit	unowp), mented, consegned, and destined as indicabled in sch perty at any time interseted in all or any of said prov
Lenaxy service to be per	termed herewood sh	all be subject to all the Bi	I of Lading terms and conditions in the governing classif or himself and his assigns.	fication on the data of shipment	. The shipper hereby car	ties hat he is familier with	al the Bli of L	sting terms	and conditions in the governing classification and the st
onsignee:					Shipper	: Impact Serv	ices, In	c.	
nvirocare of	Utah, Inc.					P.O Box 484	-		
live Disposa	l Site (Bull	k Waste Faci	lity)		1	Oak Ridge, 1	FN 3783	1	
nterstate 80,	Exit 49				Site	ETTP, Build	ling K-1	220, F	twy 58
live, UT 8402	29					Oak Ridge, 1	N 3783	1	
oute: See Tran	sporter for l	Route			Vehicle Initial	and Number: T	railer No		5948 38304
No. Pkgs.	НМ		Description of Ma	terial		Weight (Kgs.)	Class	ERG	Subject to section 7 of conditions of
		Radioar	tive Material, low specific ad	tivity (I SA-I) 7	UN2912				applicable Bill of Lading, it this shipment is be delivered to the consignee without
1	X		ie, See Note 1		fissile-	992	7	162	recourse on the consignor, the consigno shall sign the following statement
	┟╌╵╌┨	Radioac	excepted tive Material, low specific ac	tivity /1 SA-1 7	UN2912	<u> </u>			The carner shall not make delivery of the
1			le, See Note 1		fissile-	984	7	162	shipment without payment of freight and a
	X		excepted						NA
			tive Material, low specific ac	tivity, (LSA-I), 7	, UN2912,				Signature of the Commynia
1	X	solid, oxid	le, See Note 1		fissile-	1,073	7	162	
		Detter	excepted	4	1112040				If frught charges are to be pre-pact, write or sharep have "TO
1			ive Material, low specific ac e, See Note 1	uvity, (LSA-I), 7	, UN2912, fissile-	2,828	7	162	PREPART.
'		3000, UXIU	e, see Note 1 excepted		13216.	2,020	•	102	NA
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			· · · · · · · · · · · · · · · · · · ·						NOTE: Where the rate is dependent on
narks: al Shipment w	veinht =	{8039.1 kgs}	{17686.0 Lbs.}						value, shippens are required to state specifically in writing the agreed or declared value of the property:
	-								The agreed or declared value of the property
			activity per package.						is hereby specifically stated by the shipper to be not exceeding:
al Activity in N	VIBq =	2.878E+03							NZA
			- taa						s
lusive Use Sh	upment – In	suructions int	siudea.						SS741 Reference
									Label(s) applied:
									None
itional inform									Marking(s) required
ise of an eme	rgency, call	IMPAC+ Ser	vices, Inc. at (865) 576-8724.					[Class A Unstable
se of an eme	rgency, con	rtact Anne We	eaver at 865-482-8670.					1	Weight (Kgs), LSA-I, LSA-I
								i i	Placerd(s) required:
									Radioactive
<u></u>			<u> </u>						

eto dentry bail the above ed, and are in proper con riment of Transportation e property classified, described, packaged, marked, an on according to the applicable regulations of the U.S. for transport on Visionary Solutions hippe

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	The additions on the face hereof and to the terms and conditions	are hereby noted	
5/23/05		5-2) Date:	<i>VI</i> 05/23/05
Date: /			

ereby noted:

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

ISOTOPES REPORT

For Manifest #

0926-02-0001 Envirocare of Utah, Inc.

0-0086	1			01-900-0299		Page 2 of 3	
<u> </u>	To	otal Activity			· · · · · · · · · · · · · · · · · · ·	Total Activity	
Isotope	(MBq)	(mCi)	(Ci)	Isotope	(MBg)	(mCi)	(Ci)
C-14	4.77E+02	1.2900E+01	1.2900E-02	C-14	4.74E+02	1.2800E+01	1.2800E-02
Cs-137	8.33E-01	2.2500E-02	2.2500E-05	Cs-137	8_25E-01	2.2300E-02	2.2300E-05
H-3	1.43E+02	3.8600E+00	3.8600E-03	Н-3	1.42E+01	3.8300E-01	3.8300E-04
I-129	1.72E-03	4.6400E-05	4.6400E-08	1-129	1.70E-03	4.6000E-05	4.6000E-08
Ra-226	5.37E+00	1.4500E-01	1.4500E-04	Ra-226	5.33E+00	1.4400E-01	1.4400E-04
Sr-90	3.22E+00	8.5900E-02	8.6900E-05	Sr-90	3.19E+00	8.6100E-02	8.6100E-05
Tc-99	2.38E+02	6.4400E+00	6.4400E-03	Tc-99	2.36E+02	6.3800E+00	6.3800E-03
ctivity Totals	8.6781E+02	2.3454E+01	2.3454E-02	Activity Totals	7.3317E+02	1.9815E+01	1.9815E-02

01-900-0089	1			200-00064]		
	То	tal Activity			-	Total Activity	
isotope	(MBg)	(mCi)	(Ci)	Isotope	(MBq)	(mCi)	(C1)
C-14	5.33E+02	1.4400E+01	1.4400E-02	Cs-137	6.51E+00	1.7600E-01	1.7600E-04
Cs-137	9.29E-01	2.5100E-02	2.5100E-05	Am-241	5.07E-03	1.3700E-04	1.3700E-07
H-3	1.59E+01	4.3100E-01	4.3100E-04	Fe-55	4.51E+00	1.2200E-01	1.2200E-04
I-129	1.91E-03	5.1700E-05	5.1700E-08	Co-60	1.81E+01	4.8900E-01	4.8900E-04
Ra-226	5.99E+00	1.6200E-01	1.6200E-04	Ni-63	2.55E+01	6.8800E-01	6.8800E-04
Sr-90	3.59E+00	9.6900E-02	9.6900E-05	Sr-90	6.55E-02	1.7700E-03	1.7700E-06
Tc-99	2.66E+02	7,1800E+00	7.1800E-03	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
\sim				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
ctivity Totals	8.2492E+02	2.2295E+01	2.2295E-02	Activity Totals	1.1619E+02	3.1403E+00	1.6703E-03

200-00065	T			200-000100	1		
	T	otal Activity				Total Activity	
Isotope	(MBq)	(mCi)	(Ci)	Isotope	(MBq)	(mCi)	(Ci)
Cs-137	7.03E-02	1.9000E-03	1.9000E-06	Am-241	1.14E+00	3.0800E-02	3.0800E-05
Am-241	5.48E-05	1.4800E-06	1.4800E-09	C-14	1.02E+01	2.7700E-01	2.7700E-04
Fe-55	4.85E-02	1.3100E-03	1.3100E-06	Co-60	1.02E+01	2.7700E-01	2.7700E-04
Co-60	4.00E-01	1.0800E-02	1.0800E-05	Cs-137	7.96E+00	2.1500E-01	2.1500E-04
Ni-63	2.66E-01	7.1800E-03	7.1800E-06	Fe-55	7.73E+01	2.0900E+00	2.0900E-03
Sr-90	7.07E-04	1.9100E-05	1.9100E-08	H-3	1.69E+02	4.5600E+00	4.5600E-03
Ce-144	9.03E-03	2.4400E-04	2.4400E-07	Ni-63	3.07E+01	8.3100E-01	8.3100E-04
Hf-172	6.48E-02	1.7500E-03	1.7500E-06	Pu-241	1.48E+01	4.0000E-01	4.0000E-04
Pu-238	2.78E-05	7.5200E-07	7.5200E-10	Tc-99	1.25E+01	3.3900E-01	3.3900E-04
Pu-239/240	4.22E-05	1.1400E-06	1.1400E-09	Cs-134	4.22E-01	1.1400E-02	1.1400E-05
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	1			
ctivity Totals	1.4463E+00	3.9088E-02	3.9088E-05	Activity Totals	3.3415E+02	9.0312E+00	9.0312E-03

Total Activity in MBq

2.878E+03

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BECHTEL JACOBS COMPANY, LLC INSTRUCTIONS REGARDING CONTROLS FOR RADIOACTIVE SHIPMENTS CONSIGNED AS EXCLUSIVE USE (SOLE USE OR FULL LOAD) Page 3 of 3

948 1 3830040 + RTransporter **D9** Truck/Trailer No. Date. Signature

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.
- 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.

GUIDE (DIOACTIVE MATERIAL	\$	ERG2004		12004	RADIOACTIVE N (Low to Moderate Level Ra		GUE
162	wow to Moderate Lev	/el Radiation)	incurrente incurs senierat		ATTER MARTINE ASSAULT AND ADDRESS OF A			
	POTENTIA	AL HAZARDS	5 ^m			EMERGENIONALEERONIEE		
• Rediation and the pu potential h • Undamage				鐗 "	FIRM • Presence of radioactive	material will not influence the fire con	rol processes ;	and should
end the pu	nia Antina Irangnofibilon buch	orl workers, emergency response lents. Packaging durability increas	66 88		not influence selection of	f lechniques. re area if you can do it withoul risk.	•	
potential h						ackages; move undameged packages	out of fire zone	
radiation ex	posure, or both external and inter	if dameged packages may cause hig nai radiation exposure if contents are le container, if material is released fr manicale, i avai of bazzeri will den	released. om package or		Small Fires		,	
					Large Fires	er spray or regular foam.		
type and a	mount of radioactivity, the Killo o ertal may be released from pac	of material it is in, and/or the surfaces skages during accidents of modera	ite severity but 🤤		• Water apray, fog (floodi			
risks to pe	ople are not graat.	ated obloats usually will be visible if p	eckliging fells. 🕼	And	Olke fire-control water f BEILINGRIDEAK	or ibler dispúsal.	وجرغية ومقائلية ويروع فيرك الأستر	
10022180	when were ablamants of bulk 1200 D	RCKARERI MAIORAIS WILLIULIIUVE IVVV	UTSM TTO IS			ackeges or spilled material.		
inbais, P	acards, markings and snipping i	TWEE (shall and a sacond hazard h	abel. The		 Cover liquid spill with s 	and, earth or other non-nombuallble ab	sorbent materi	ial.
second h	ezard is usually greater than th	18 radiation nazaro, ao ronow dha -			 Dike to collect large liq Cover nowder spill with 	iid spills. plastic sheal or larp to minimize spra:	dian	
BARRAN PLANSA PAL	lasalive mainriele changle ut u	BIRCIBU DA COUNTAINT GLAUCERIO	struinents.		FIRSTAID	under mit eine ander an eine eine eine eine eine eine eine e	₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩	
• Runoff fr	om control of cargo tire may ca	iuse low-level pollution,	No. of the second s		 Medical problems take 	priority over radiological concerns.		
	XPLOSION Inese materials may burn, but i	most do not ignile readily.			 Do not delay care and i 	ecording to the nature of the injury. canaport of a seriously injured person.		
• Uranium	ond Thorium motal culungo mi	ay ignite choursuannais i exhore		9	 Give artificial respiration 	n if victim is not breathing.		
hitenino	ere nytilizers and may jonite of	ther combustibles (see GUIDE 141			 Administer oxygen if br in case of contact with 	eathing is difficult. substance, wipe from skin immediatel	u Duch akta a	
AV. BOLDALLAN	hanne Tolank	ICISIAN UKA	111111. 11	AF	 running water for at least 	i 20 minutes.		
		Buanon totor is apprenting	aphone	<u> </u>	 Injured persons contain health care porsonnel, e 	nated by contact with released material quipment or fácilites.	are not a seriou	us hazard to
number	liated on the inside blick si	rsi aid, fire control and other h			 Ensure that medical per 	sonnel are aware of the material(s) invo prevent spread of contamination.	ved, take preca	autions to
higher	than the priority for mousu	fing further conditions Radiation At	thority is usually		protost (nemasives and	provent spraad of containingtion.		
• As an ti	nmediale precautionary measu	ure, isolate spin of teak area for er	nonel BWay.	(Paris)				
• Detain	or isolate uninjured persons or	requipment suspecied to be contain requipment suspecied to be contain ructions are received from Radiatio	n Authority.	State State		۰ (
18217 (1321)								
Electron American	e pressure self-contained breat live clothing will provide adeque	hing apparatus (SCBA) and structur	ral lifelighters.	() market				
EVACU	ATION		۵۰۵، «۱۰» و۵۰ «۱۰» (۵۰۰» (۵۰۰» (۵۰۰» و۵۰۰» و۵۰۰ و۵۰۰	(The state of the				
		for at least 100 meters (330 feel).		All the second s				
CONTRACTOR AND			en Inilial	S. Lin				
EDEXALE/AN LAT.	a large quantily of this material ation distance of 300 meters (10	is involved in a major fire, consider 000 feet) in all directions.		()				
			本的政策和分子的政策和政策				研究的建立的行政的主要	

ORM 540	Envirocare of	Utah, Inc.	5. SHIPP	ER - NAME AND FACILITY			SHIPMENT	D NUMBER							FEST NUMBER
				Services, inc.					7 FORM 540 A			PAGE 1 OF		1	
UNIFORM LOW-LEVE	EL RADIOACTI	VE	P.O. Bo				0926-0	2-0001	FORM 541 A			PAGE 1 OF	2 PAGE(5)		is number on all continuetion
WASTE MA	NIFEST		1	ge, TN 37831			COLLECTOR		FORM 542 A			NA	1 PAGE(S)	paga	•)
							PROCESSOR					NA			0926-02-0001
SHIPPING P	APER		USER PER	WIT NUMBER	SHIPM	ENT NUMBER		ATOR TYPE		E - Name and Facility Ac		NA	X PAGE(S)	CONTACT	·
EMERGENCY TELEPHONE NUMBER (Include	Area Code)		0406002			26-02-0001	H	ec/fy)G		of Utah, inc.				CONTACT	
865-574-32			CONTACT			20 02 0001			Clive Dispo						Shipping and Receiving
			-				(Include Area Code)	•	Interstate 8					TELEPHO	NE NUMBER (include Area Code)
			Ann	e Weaver/Visionary Sol	utions		865-48	2.8670	Clive, UT B						1-435-884-0155
IMPAC+ Servic	es, inc.		A CARRI	RER - Name and Address			EPA LD NUMBER		01176, 01 0			knowledging weste rece	d		
IS THIS AN "EXCLUSIVE USE" SHIPMENT?	TOTAL NUMBER OF	T	R&R Tri				1		[DATE	
IS THIS AN EXCLUSIVE OUL SHIP MENT	PACKAGES IDENTIFIED		P.O. Bo	-			MOR000	501973	1						
X YES	ON THIS MANIFEST	6	1	g, MD 54841			SHIPPING DATE			··· ·		10 CER	TIFICATION		
NO			1200,000	9, 110 04041			05/21	105			-1				
	PA MANIFEST NUMBER		CONTACT				TELEPHONE NUMBER			hat the herein-named m					
WASTE REQUIRING A XX NO			1				(Include Area Code)		1	in for transportation acc					
MANIFEST ACCOMPANY				Don Ritchle			1-800-62	5-6885		natarials are classified, area in accordance with					
THIS SHIPMENT?	NA .		SIGNATURE	1.1.0	edaina weste receilat		DATE	0.0000	AUTHORIZED	~	regulations				
If "Yes", provide Manifest Number emesas				V 1/ 1/	10				AUTOCEU:		$\overline{\neg}$	TITLE			DATE
		· · · · · · · · · · · · · · · · · · ·	1	apall	¥		5-27-0	<u>'5</u>	1-1	I A	M	WASTE	BROK	er_	5/23/05
11. U.S. DEPARTMENT OF TRANSPORTATION (DESCRIPTION	12	6	14.			1			10	. '	17.	18. TOT/	L WEIGHT	18. IDENTIFICATION
(Including proper shipping name, hazard class, UP	ID aumber,	DOT LABEL "RADIOACTIVE"	TRANSPORT NDEX	PHYSICAL	LAND FORM		NOM RADION	UCLIDES		TOTAL PACK	AGE ACTIMITY	LSAISCO		OLUME	NUMBER OF PACKAGE
and any additional information		<u>}</u>								MBq	mCi	CLASS	(Une separ	oriste unite)	
						C-14	Cs-137	H-3	I-129	1			96	Cu Ft	
Radioactive material, Low Spe	cific Activity .	"NA"	"NA"	Soli	đ	Ra-226	Sr-90	Tc-99		8.68E+02	2.35E+01	LSA-I	992	kg	<i>c</i> .
(LSA-I), 7, UN2912, fissile-	excepted			••••	•	1				0.002.01	2.332+01	COAN		-	01-900-0086
			1	Meta	1							1]	
				-		+									
						C-14	Cs-137	H-3	I-129				96	Cu Ft	
Radioactive material, Low Spe	cific Activity ,	"NA"	"NA"	Solid	đ	Ra-226	Sr-90	Tc-99		7.33E+02	1.98E+01	LSA	964	kg	
(LSA-I), 7, UN2912, fissile-	excepted														01-900-0299
				Meta	ł							}		1	
						1							192	Cu Ft	
								To	tals	1.60E+03	4.33E+01	1	1,975		
CONSIGNEE USE ONLY		I			r	I						l	1,3/5	kg	
		Record Waste	Description	inadecuata	1										
		Contamination		•	20 TERMILAND CONC A. HAZARDOUS	WATERIALS: Gone	rater represente & wartunts	test Weets Metarial	is (of) X is not a haza		GCFR 261. Where Be	meterial is a hegeroloue			
		Unexpected E			weste, this ship 40 CFR 268.1.	ment is also accord	partied by a separate and co	mpleted hazardous wi	eta manifast, along wi	th the appropriate land-day	notel notice and/or certif	ication as required by			
	<u> </u>	Labels, Markir	•		from Generater	and be veeled in Er	nonel alle by Environare of Ul nvironare of Utah, Inc.								
		Container Inte	•	•	C WASTE MATER	RIAL: Generator rep	proverile and westants that ail no and Envirocare of Ulah, bi	l dela set larth in this : c.'s facility icense	UNIFORM LOW-LEV	EL RADIOACTIVE WAST	E MANNFEST) are true a	nd correct in all respects	and in accordance will	al applicable	
			• · · · · · · · · · · · · · · · · · · ·		0 INDEMNIFICAT	ION: Generator pos	rees to indemnify Environme	of Utah, inc., its office	rs, employees and ep	ents against al losses and	hability whether we if suc	h losses or jubility results	ten the failure of the	Waste Material	
		Other													
		Other No Violations (Detected on	this Shipment.	te ponform in ell er any governme	entel spency baving	o the data supplied on the (U jurisdiction over such matter	NIP ORM LOW-LEVE N.	L RADIOAC TIME WAS	SIE WANNESI) OF FINA	National and in conserva-	e standerds prescribed s	y by Deptitional of T	anaportation	

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			UNIFORM LOW-L		JACTIVE								MANIFEST NUMBER
				MANIFEST									0926-02-0001
		······································	SHIPPING PAP	ER (CONTINUAT	ION)			_				3.	PAGE 2 OF 2 PAGE(S)
U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (Including proper shipping name, Inszerd class, UN ID number, and any additional information	12. DOT LABEL "RADIOACTIVE"	13. TRANSPORT HIDEX	14. PHYSICAL AND CHEMICAL FORM		INDI	15. MDUAL NUCLIDES			16. Age activity mCi	17. LSA/SCO CLASS	OR	AL WEIGHT VOLUME opriate 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	1-129	8.25E+02	2.23E+01	LSAI	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	1.16E+02	3.14E+00	LSAI	90 2628	Cu Ft kg	200-00064
DOT - Non Regulated DAW	"NA"	-NA"	Solid Oxides(DAW)	Cs-137 Ni-63 Pu-238	Am-241 Sr-90 Pu-239/240	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 ,	"NA"	-NA-	Solid	Cm-243 Am-241 Fe-55	Zn-65 C-14 H-3	Co-60 Ni-63	Cs-137 Pu-241	3.34E+02	9.035+00	LSA-	96 727	Cu Ft kg	
(LSA-II), 7, UN3321, fissile-excepted			Oxides(DAW)	Tc-99	Cs-134								200-000100
													-
						Subtotal		1.28E+03	3.45E+01		372.0	Cu ft kgs	
					•		***********						
5404					ī	otals		2.88E+03	7.76E+01		564.0 8,039	Cu Ft kgs	

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ORM 641				Enviroce	re of Utah, Inc					1. MANIFEST	TOTALS								
						1 NL	MBER OF					SPECIAL NUC	LEAR MATERIAL (gr	ms)			2. MANIFES	T NUMBER	
						P/	CKAGES	NET WAST	E NET	T WASTE	U-233	U-235	Pu	TOTAL			0926-02-000)1	
	UNIFORM L	OW-LEVEL F	RADIOACTIV	E		0	SPOSAL	VOLUME	N N	ÆIGHT									
	w	ASTE MANIF	EST				NTAINERS				NP	NP	5.417-06	- gs			3. PAGE 1 OF	F 4 PAGE(S)	
							6	m3 16.5	167 Kg	6,055			NP						
	CONTAINER A	ND WASTE DES	RIPTION				·	n3 66-		6.66			_1 parchages	5 NP	·		4. SHIPPE		
									ACTIVITY					URCE		IM	PAC+ Service	s, inc.	
						ALL	NUCLIDES T	itium	C-14	ī	-99	1-129				Anne W	eaver/Visional	ry Solutions	
Additional Nucl	ear Regulatory Com	unission (NRC) Re	quirements for C	ontrol, Transfer	and	MBq 2	878E+03 3.1	6E+02	.61E+02	4.8	E+02	6.33E-03	(kgs)	NP			SHIPMENT ID	NUMBER	
	Dispo	sal of Radioactive	Waste			mCi 7	778E+01	3E+00	2.80E+01	2.03	E+01	1.44E-04	(tons)	NP			0925-02-000	1	
		DISPOSAL CONT	AINER DESCRIP	NOIT								WASTE DES	CRIPTION FOR EACH	WASTE TYPE IN	CONTAINER				
		7.	1		19			12		13.		14.		18					16.
CONTAINER			WASTE		SURFACE C	ONTAMINATION	1	APF	ROXIMATE	1		CHEMICA	L DESCRIPTION		RADIC	LOGICAL DESCR	RIPTION		WASTE CL
		1	AND	SURFACE	1	/100 cm2			WASTE			CHEMICAL	WEIGHT		INDIVIUAL RADION			ND	AS-Class
ENTIFICATION NUMBER	-	LOCI LINE	CONTAINER	RADIATION		/100 cm2	WAST	1	UME(S) IN	SOUDIE	ICATION	FORM	%		CONTAINER TOTA				Stable
GENERATOR ID	CONTAINER	VOLUME	1				_	1	NTAINER		LIZATION	CHELATING				UNIONUCLIDE PE			1
NUMBER(S)	DESCRIPTION		WEIGHT	LEVEL			DESCRIP			1		1			ANDRA	WOUNDCLIDE PE	RUCNI		AU-Class
UTAH DISPOSAL	(See Note 1 &	_(m3)_	_0.00)	<u>mSv/hr</u>			(See Not		_(m3)_	ME		AGENT	AGENT						Unstable
PERMIT NUMBER	Note 1A)	(113)	(ton)	നത്തന	ALPHA	BETA/GAMM	A & Note 2	A)	(#3)	(See)	iote 3)		IF>0.1%				T	T	B-Cless I
0405002911			<u> </u>							<u></u>					dionudides	pCVgm	MBg	mCl	C-Çlaşs (
_	}							F						C-14		1.796E+04	4.773E+02	1.290E+01	4
01-900-0086	2	2.72	992	0.0050	<1.20E-03	<6.00E-03	40 H		2.72] 10	0	Oxides	NP	Cs-137	1	3.133E+01	8.325E-01	2.250E-02	AU-Class
	1							}						H-3		5.374E+03	1.428E+02	3.860E+00	
SWC E-05060		96	1.09	0.5000	<2.00E+01	<1.00E+02		1	96.0			None		1-129		8.480E-02	1.717E-03	4.640E-05	1
SMC E-03060		20		0.0000	-2.002			1		j .				Ra-226		2.019E+02	6.365E+00	1.460E-01	1
										1						1	1		1
														Sr-90	-{	1.210E+02	3.215E+00	8.690E-02	-
	1											1	1	Tc-99	<u> </u>	8.967E+03	2.383E+02	6.440E+00	4
	1 1		1 1													ļ			-
			1 1													ļ	l		
																			1
								1				}		· ·					
	1 1		1					1				1]
			1 1												1	1		1	1
													1		1				
	Subtotal	2.72	991.82				1		2.72					Subtotal	· · · · · · · · · · · · · · · · · · ·	3.27E+04	8.68E+02	2.36E+01	
Shipment Totals					1														
			1					1						SNM	0.000E+00				
<u> </u>	Total	96.00	1.09				1		96.0			N-4- 24. F		Total		3.27E+04	8.68E+02	2.35E+01	I
TE 1: Container Description			Note 1A: Bulk I			: Weste Descrip		- h				Note 2A: Specific 1	AT 84	1	Ication and Stabilization				
r containers weste requirin		• •	Description Co				ch predominate by v		10 Fur-	nias Dallar -		Descriptions			dominate by volume				
approved structural over-p			(Choose one co	de as may	20. Chu		29. Demolition Ru		,	ator Bottoms		(Choose all applica			lity requirements, the media vendor and b				
nerical code must be folio			be applicable).		21. Inci 22. Soli	nerator	30, Calion Jon-exc 31, Anion Ion-excl	•	-	ctible Trash		codes). G Dewater	-		e 100-NONE REQUI		and he issuing	-	
	9. Demineralizer		A Gondola B Islamadal		22. Sol 23. Get		31. Anion lon-excr 32. Mixed Bed lon	-		ncoole trasn mpacifible Trast		H Solid	5 4	in nem 13. C00	THOME REQUI				
	10. Gas Cylinder	and Minete	B Intermodial C End-dump		23. G88 24. D8		32. Moted Bed Ion 33. Contaminated	-	41, Animal			I Combus	tible	Solidification					
	11. Bulk, Unpackaged C		D Roll-off		1	eous Liquid	34. Organic Liquid			cal Material (ex	ant	J Non-con		90. Cement			94. Vinvî Ester S	tyrane	
	12. Unpackaged L 13. High integrity C		E Seavan		26. Filte		35. Glassware or L		(animal can			K Air Filtrai		91. Concrete			99. Other Descri		
	19, Other, Describ					hanical Filter	35. Sealed Source		43 Activate			L Asbesto		(encepsulation)			in item 13, or		
	or additional page.				28 EPA		37. Paint or Plating			Describe in Item	11,			92. Bitumen			eddilonal páge		
Fiberplass Tank or Liner					Hazardo		-		or additiona					93. Vinyl Chlorid			100 None requir	-	

FORM 541(10-96)

						LOW LEVEL VASTE MANI	RADIOACTIVE							2. MA	NIFEST NUMBE	R	
														09	26-02-0901		
					NTAINER AND V	VASTE DESCRI	PTION (CONTINUAT	ION)	<u> </u>					3. PAG	E 2 OF 4 PAGE	S)	
		DISPOSAL	CONTAINER DE	SCRIPTION			·		, <u></u>	WASTE DESCRIP	TION FOR EA	CH WASTE, TYPE					
5	6.	7.		P	10		11	12.	13	14		15.					16.
CONTAINER	CONTAINER	VOLUME	WASTE	SURFACE		ONTAMINATION	WASTE	APPROXIMATE	SOLIDIFICATION	CHEMICAL DE	SCRIPTION		RADIOLO	GICAL DESCR	RIPTION		WASTE CLA
IDENTIFICATION	DESCRIPTION			RADIATION LEVEL	1	100 cm2	DESCRIPTOR	WASTE	OR STABILIZATION	CHEMICAL	WEIGHT		NDIVIUAL RADIONUC				AS-Class
NUMBER	-1 1		WEIGHT	LEVEL	dpm/	100 cm2	4	VOLUME(S) IN	MEDIA	FORM	5%		CONTAINER TOTAL: (/ ITY	Stable
UTAH DISPOSAL	(See Note 1 &	<u>(m3)</u>	(kg)	mSv/hr			(See Note 2	CONTAINER		CHELATING	CHELATIN	3	AND RADI	IONUCLIDE PE	RCENT		AU-Class
PERMIT NUMBER	Note 1A)	(113)	(lon)	mrem/tar	ALPHA	BETA/GAMMA	& Note 2A)	_ <u>(m3)</u> (ft3)	(See Note 3)	AGENT	AGENT						Unstable
0406002911	1							(113)	(388 14018 3)		IF 20.178	RADIO	NUCLIDES	pCi/gm	MBg	mCi	B-Class B
															· · · · ·		C-Class C
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	1
01-000-0200	-						//		100	Oxides		Cs-137	╀──────┼	3.141E+01	8.251E-01	2.230E-02	AU-Class
		96	1.08	2.0000	<2.00E+01	<1.00E+02						H-3	<u>∔</u> ∔	5.394E+02	1.417E+01	3.830E-01	4
SWC E-05060		20	1.00	2.0000	N2.00E+01	<1.00E+02		96.0		None		1-129	<u> </u>	6.478E-02	1.702E-03	4.600E-05	4
												Ra-226	<u> </u>	2.028E+02	5.328E+00	1.440E-01	L
								1				Sr-90		1.213E+02	3.186E+00	8.610E-02	1
												Tc-99		8.985E+03	2.361E+02	6.380E+00	1
			1														
								ļļ									
		i		1				1				C-14		1.802E+04	5.328E+02	1.440E+01	
01-900-0089	2	2.72	1073	0.0050	<1.20E-03	<6.00E-03	40 H	2.72	100	Oxides	NP	Cs-137		3.141E+01	9.287E-01	2.510E-02	AU-Class A
												H-3		5.394E+02	1.595E+01	4.310E-01	
SWC E-05060		96	1.18	0.5000	<2.00E+01	<1.00E+02		96.0		None		i-129		6.470E-02	1.913E-03	5.170E-05	
								1				Ra-226			5.994E+00	1.620E-01	
												\$r-90			3.585E+00	9.690E-02	
				ł		ł		·				Tc-99			2.657E+02	7.180E+00	
														1			
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	Cubertater 1		2055 20			+											_
	Subtotal	5.44	2056.36				ļ	5.44			1	Subtotal	5	5.58E+04	1.56E+03	4.21E+01	
Shipment Totals		192.00	2.26	1				192.00			1						
	Totals	1	1					ł									
		8.16	3048.18				İ	8.16			1	NM	1			i	
RM 541A		288.00	3.35					268.00			1	otals	8.	.85E+04	2.43E+03	6.66E+01	

							RADIOACTIVE							2. M	ANIFEST NUMBE	R	
					v	VASTE MANII	FEST							0	926-02-0001		
				00	TAINER AND V	VASTE DESCRIP	TION (CONTINUATI	ON)						3. PA	GE 3 OF 4 PAGE	(5)	
		DISPOSAL	CONTAINER DES	CRIPTION						WASTE DESCRI	PTION FOR EAC	H WASTE TYPE	IN CONTAINER				
	6.	7	8	9.	10		11	12.	13.	14.		15					16
CONTAINER	CONTAINER	VOLUME	WASTE	SURFACE		ONTAMINATION	WASTE	APPROXIMATE	SOLIDIFICATION	CHEMICAL D	SCRIPTION		RADIO	LOGICAL DESC	RIPTION		WASTE CLA
IDENTIFICATION	DESCRIPTION		AND CONTAINER	RADIATION LEVEL		100 cm2	DESCRIPTOR	WASTE	OR STABILIZATION		WEIGHT		NDIVIUAL RADION				AS-Class /
NUMBER	-		WEIGHT	LEVEL	apmy	00 cm2		VOLUME(S) IN CONTAINER	MEDIA	FORM	*	1	CONTAINER TOTAL			ATY	Stable
UTAH DISPOSAL	(See Note 1 &	(m3)	(ka)	<u>mSv/nr</u>	ALPHA	BETA / GAMMA	(See Note 2	(m3)		AGENT	CHELATING		AND RA	DIONUCLIDE P	ERCENT		AU-Class /
PERMIT NUMBER	Note 1A)	(f13)	(lon)	mrem/hr		BETA/ GAMMA	& Note 2A)	(ft3)	(See Note 3)	, include	IF>0.1%						Unstable 8-Class E
0406002911												RADIC	NUCLIDES	pCl/gm	MBq	mCl	C-Class C
								1				Cs-137	T	7.048E+01	6.512E+00	1.760E-01	1
200-00064	2	2.55	2828	0.0500	<1.20E-03	<6.00E-03	40 H	2.55	100	Oxides	NP	Am-241	1	5.487E-02	5.069E-03	1.370E-04	AU-Class
								1				Fe-55	1	4.886E+01	4.514E+00	1.220E-01	1
LO5435		90	3.11	5.0000	<2.00E+01	<1.00E+02		90.0		None	1	Co-60		1.958E+02		4.890E-01	1
												NI-63		2.755E+02	2.546E+01	6.880E-01	1
												Sr-90		7.089E-01	6.549E-02	1.770E-03	
												Ce-144		9.051E+00	8.362E-01	2.260E-02	1
												Hf-172		6.528E+01	6.031E+00	1.830E-01	1
								1				Pu-238	(4.11E-09g)	2.799E-02	2.586E-03	6.990E-05	1
	ŀ											Pu-239/240	(1.71E-06g)	4.245E-02	3.922E-03	1.060E-04	1
	·			1					1			Pu-241	(7.59E-08g)	3.040E+00	2.808E-01	7.590E-03	
									1			Cm-242		1.005E-03	9,287E-05	2.510E-06	1
												Cm-243		9.732E-03	8.991E-04	2.430E-05	1
	L											Zn-65		5.887E+02	5.439E+01	1.470E+00	1
						1						Cs-137		1.941E+00	7.030E-02	1.900E-03	
200-00065	2	2.55	1435	0.3000	<1.20E-03	<6.00E-03	39 H	2.55	100	Oxides	NP	Am-241		1.512E-03	5.476E-05	1.480E-06	AU-Class A
				1						ł		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	
						1						NI-63		7.335E+00	2.657E-01	7.180E-03	
										ł		Sr-90		1.951E-02	7.067E-04	1.910E-05	
												Ce-144		2.493E-01	9.028E-03	2.440E-04	
											Ļ	Hf-172		1.788E+00	6.476E-02	1.750E-03	
						Į		1			L	Pu-238	(4.42E-11g)	7.683E-04	2.782E-05	7.520E-07	
							1				L	Pu-239/240	(1.84E-08g)	1.165E-03	4.218E-05	1.140E-06	
								[1			Pu-241	(8.16E-10g)	8.337E-02	3.019E-03	8.160E-05	
				ļ							L	Cm-242		2.758E-05	9.990E-07	2.700E-08	
									1		L	Cm-243		2.666E-04	9.657E-06	2.610E-07	
. <u> </u>												Zn-65		1.614E+01	5.846E-01	1.580E-02	
	Subtotal	5,10	4263.64		1			6.10			s	blotal		1.30E+03	1.18E+02	3.18E+00	
Shipment Totals		180.00	4.69					180.00	1								
			CETARX				-				191		***********		**********	222 3	
	Totals	13.25	7311.82			Í		13.25			SM	M					
N 541A		468.00	8.04					468.00			То	tais		8.98E+04	2.54E+03	6.87E+01	I

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							RADIOACTIVE							2. MA	NIFEST NUMBER	l							
															25-02-0001								
CONTAINER AND WASTE DESCRIPTION (CONTINUATION)														3. PAGE 4 OF 4 PAGE(S)									
	· · · · · · · · · · · ·	DISPOSAL C	ONTAINER DES				· · · · · · · · · · · · · · · · · · ·		·	WASTE DESCRIP	WASTE TYPE	STE TYPE IN CONTAINER											
	8	7	8	-	10.		11	APPROXIMATE	13. SOLIDIFICATION	14 CHEMICAL DE		15					16. WASTE CLA						
CONTAINER IDENTIFICATION	CONTAINER	VOLUME	WASTE AND	SURFACE RADIATION		DNTAMINATION	WASTE	WASTE	OR STABILIZATION	CHEMICAL DE	WEIGHT	+	INDIVIUAL RADION	LOGICAL DESCR		ND	AS-Class /						
NUMBER	DESCRIPTION		CONTAINER	LEVEL		100 cm2	DEGGATIFICAT	VOLUME(S) IN	MEDIA	FORM	*	4	CONTAINER TOTAL				Stable						
HOMEST	1		WEIGHT					CONTAINER		CHELATING	CHELATING			DIONUCLIDE PE			AU-Cless						
UTAH DISPOSAL	(See Note 1 &	<u>(m3)</u>	_(KQ)	<u>mSv#v</u>	ALPHA	BETA/GAMMA	(See Note 2	_ <u>(m3)_</u>		AGENT	AGENT				Unstable								
PERMIT NUMBER	Note 1A)	(113)	(ton)	<u>rrtvmervm</u>			& Note 2A)	(13)	(See Note 3)		IF>0.1%			1	1		B-Class E						
0406002911							- <u></u>				╂────		ONUCLIDES	pCi/gm	MBq	mCl	C-Class C						
								1				Am-241		8.927E+01	1.140E+00	3.080E-02	1						
200-000100	2	2.72	727	0.0120	<1.20E-03	<6.00E-03	39 H	2.72	100	Oxides	NP	C-14	+	8.028E+02	1.025E+01	2.770E-01	AU-Class						
								1			1	Co-60	+	8.028E+02	1.025E+01	2.770E-01	-						
R-73024-E07		96	0.60	1.2000	<2.00E+01	<1.00E+02		96.0		None		Cs-137		6.231E+02	7.955E+00	2.150E-01	1						
					<u> </u>			fi			†	Fe-55		6.057E+03	7.733E+01	2.090E+00	<u> </u>						
				ļ							1	H-3	+	1.322E+04	1,687E+02	4.560E+00	1						
											}	Ni-63	+	2.408E+03	3.075E+01	8.310E-01	1						
				1							}	Pu-241	(4.00E-06g)	1.159E+03	1.480E+01	4.000E-01	1						
												Tc-99		9.825E+02	1.254E+01	3.390E-01							
						L						C8-134		3.304E+01	4.218E-01	1.140E-02	·						
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	++		777 77					2.72				iubtotal	1	2.62E+04	3.34E+02	9.03E+00							
	Subtotal	2.72	727.27			l		96.00		1													
Shipment Totais		96.00	08.0			1					-	**********		 	 Etterpress								
	Totals	1	1	1				15.97			1	NM			1	i							
	1	15.97 564.00	8039.09		1			564.00				otals		1.16E+05	2.88E+03	7.78E+01							

FORM 541A

APPROVED BY OMB: NO.3150-0165	
EXPIRES 08/30/2007	

EXHREB DRAD/2007						WASTE COLLEC	TOR/PROCESSOR			· · · ·		2. MANIFE	EST NUMBER		
IRC FORM 542		U.S. NUCLEA	R REGULATRO	Y COMMISSION	NAME	IMPAC+ Services, Inc.		SHIPPER US	E ON Y		_				
INIFORM LOW-LEY	VEL RADIOACTIVE V	WASTE MANIFEST		MANIFEST	1	Oak Ridge, TN 37831		Shirren us			3	0926-	02-0001		
List all original "PROCESSED	WASTE" generators (if any) WASTE	generators.	before	"COLLECTED	SHIPPING DATE	zlas		1				PAGE 1 C	OF 1 PAGE(S))	
	5.]6.	17		8. 8.						AS PROCESSED / COLLECTED TOTAL				
Generator Identification NUMBER	GENERATOR NAME, PERMIT NUMBER (IF APPLICABLE), AND TELEPHONE NUMBER	GENERATOR FACILITY ADDRESS		SSED WASTE IAL VOLUME) (f13)	MANIFEST NUMBER(S) UNDER WHICH WASTE (OR MATERIAL) RECEIVED AND DATE OF RECEIPT	WASTE CODE P = PROCESSED C = COLLECTED	ORIGINATING COMPACT REGION OR STATE	A. SOURCE MATER		B. SNM	C. ACTIVITY (MBq) (mCl		(m3)	OLUME (113)	
SWC E-05060 01-900-0086	ICN Biomedicals	ICN Biomedicals 2727 Campus Drive Irvine, CA 92512	12.59	448.0	RSR4294	"P"	Southwestern Low-Level Radioactive Waste Commission*	0	0	D.00	8.68E+02	2.35E+01	2.72	96.0	
	ICN Biomedicals	ICN Biomedicals 2727 Campus Drive Irvins, CA 92512	12.69	448.0	RSR4294	"P"	Southwestern Low-Level Radioactive Waste Commission*	0	0	0.00	7.33E+02	1.98E+01	2.72	96.0	
SWC E-05060 01-900-0089	ICN Biomedicals	ICN Biomedicals 2727 Campus Drive 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	96.0	
LO5435 200-00054	Trace Radiochemical	Trace Radiochemicals, Inc. 2101 Shady Oaks Drive Denton, TX 75205	6.37	225.0	TRACE051204	"P"	Texas	0	0	0.00	1.16E+02	3.14E+00	2.56	90.0	
LO5436 200-00055	Trace Radiochemical	Trace Radiochemicals, Inc. 2101 Shady Oaks Drive Denton, TX 76205	6.37	225.0	TRACE051204	*P*	Texas	0	0	0.00	1.45E+00	3.91E-02	2.56	90.0	
	IMPACt Services, inc.	IMPAC+ Services ETTP, Bldg, K-1220, Hwy 58 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	96.0	
			TOTALS	OF ALL PA	GES (NRC FORMS 542	AND 542A)		0.0	0.0	0.00	2.88E+03	7.78E+01	16.0	564.	

NRC FORM 542 (6-2004)



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

~	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)
\boxtimes	< 10 %	≤ 20 %	≤ 1 %	≤ 1,900	≤ 285
	Unlimited	≤ 20 %	≤ 1 %	≤ 1,190	<i>≤</i> 179
	Unlimited	Sum of both $\leq 45\%$	of waste by weight	≤ 680	≤ 102
	Unlimited	Unlimited	Unlimited	≤ 26	<u>≤ 10</u>
	Not Applicable	e - Enriched U-235 is r	ot present in the wast	e.	

1. Check applicable category below for the waste stream:

* 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 <u>liquid waste</u> 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:

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



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			

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

- 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 analyzed results have been submitted to Envirocare of Utah, Inc.

		-	
A stad for	Brad Squibb	Waste Broker	5/23/05
Authorized Signature	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	0406002911
Generator Name / Waste Location	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	TBD
Waste Stream Name	Volume (fi^3)
Waste Type: NORM 🗌 LLRW 🛛 RCI	RA 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 a If yes, indicate "Treatment Facility" in Block 9 of If no, indicate "Bulk Waste Facility" in Block 9 of	the Uniform ILRW Manifest Form 540.
Disposal Cell Location (Bulk Waste Facility):	Class A LLRW Mixed Waste 11e.(2)
1200	3/3/2005

Signature

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.

Date

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:

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

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.

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