Nevada Environmental Restoration Project

Streamlined Approach for Environmental Restoration Closure Report for Corrective Action Unit 120: Areas 5 and 6 Aboveground Storage Tanks Nevada Test Site, Nevada

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Revision: 0

June 1999

Environmental Restoration
Division

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**STREAMLINED APPROACH FOR ENVIRONMENTAL
RESTORATION CLOSURE REPORT FOR
CORRECTIVE ACTION UNIT 120:
AREAS 5 AND 6 ABOVEGROUND STORAGE TANKS
NEVADA TEST SITE, NEVADA**

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**Prepared for the U. S. Department of Energy
Nevada Operations Office
under Contract No. DE-AC08-96NV11718**

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RESTORATION CLOSURE REPORT FOR
CORRECTIVE ACTION UNIT 120:
AREAS 5 AND 6 ABOVEGROUND STORAGE TANKS
NEVADA TEST SITE, NEVADA**

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ACRONYMS AND ABBREVIATIONS

AST	Aboveground Storage Tank
CAS	Corrective Action Site
CAU	Corrective Action Unit
COC	Constituents of Concern
CP	Control Point
CR	Closure Report
DOE	U.S. Department of Energy
DOE/NV	U.S. Department of Energy, Nevada Operations Office
dpm	disintegrations per minute
EPA	U.S. Environmental Protection Agency
IDW	Investigation-Derived Waste
FFACO	Federal Facility Agreement and Consent Order
HEPA	high efficiency particulate
LLRW	Low-Level Radioactive Waste
MTLC	Maximum Theoretical Leachate Concentration
NDEP	Nevada Division of Environmental Protection
NTS	Nevada Test Site
RADCON	Radiological Control
RMA	Radioactive Management Area
RWAP	Radioactive Waste Acceptance Program
RWMS	Radioactive Waste Management Site

ACRONYMS AND ABBREVIATIONS

SAFER	Streamlined Approach for Environmental Restoration
TCLP	Toxicity Characteristic Leachability Procedure
XRF	X-ray fluorescence
WHF	Waste Handling Facility

EXECUTIVE SUMMARY

This Closure Report provides documentation for the closure of Corrective Action Unit (CAU) 120 of the Federal Facilities Agreement and Consent Order (FFACO). CAU 120 consists of two Corrective Action Sites (CASs) located in Areas 5 and 6 of the Nevada Test Site (NTS), which are approximately 130 kilometers (80 miles) northwest of Las Vegas, Nevada. CAS 05-01-01 is located in Area 5 and consists of three 45,800-liter (12,100-gallon) aboveground storage tanks (ASTs), piping, and debris associated with Well RNM-1. CAS 06-01-01 consists of two ASTs and two tanker trailers (all portable) that were originally located at the Area 6 CP-50 Hot Park and which had been moved to the Area 6 Waste Handling Facility. All of the items in CAU 120 have been used to contain or convey radiologically contaminated fluid that was generated during post-nuclear event activities at the NTS.

Closure for this CAU was completed by the following:

Collecting samples to identify the appropriate method of disposal for tanks, piping, and debris in CAS 05-01-01.

Collecting samples to identify the appropriate method of disposal for tanks and tankers in CAS 06-01-01.

Placing low-level radioactive waste from CAS 05-01-01 into appropriate containers and disposing of the waste in the Area 5 Radioactive Waste Management Site.

Disposing of the remaining, uncontaminated solid waste from CAS 05-01-01 at the Area 9, 10C Landfill.

Disposing of the CAS 06-01-01 tanks and tankers in the Area 3 Radioactive Waste Management Site.

Soil beneath the waste was not a part of this CAU. Soil beneath the CAS 05-01-01 tanks and debris remains an active site and is used for continued sampling of the RNM-1 well. Soil at the CP-50 Hot Park, which is the original location of the CAS 06-01-01 tanks and tankers, is listed as CAS 06-23-04 in CAU 176 of the FFACO.

Based upon the completion of site activities, it is requested that a notice of completion be provided by the Nevada Division of Environmental Protection for CAU 120. Upon closure approval, CAU 120 will be promoted from Appendix III to Appendix IV, "Closed Corrective Action Units," of the FFACO.

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1.0 INTRODUCTION

The U.S. Department of Energy, Nevada Operations Office (DOE/NV) operates the Nevada Test Site (NTS) and has entered into a trilateral agreement with the state of Nevada and the U.S. Defense Threat Reduction Agency. This trilateral agreement is called the Federal Facilities Agreement and Consent Order (FFACO, 1996). The FFACO provides a framework for identifying, characterizing, remediating, and closing DOE/NV environmental sites in Nevada. In the FFACO, each environmental restoration site on the NTS is referenced using a Corrective Action Site (CAS) number. CASs are then grouped into Corrective Action Units (CAUs).

This Closure Report (CR) addresses characterization and closure of CAU 120 of the FFACO. CAU 120 consists of two CASs located in Areas 5 and 6 of the NTS, which is approximately 130 kilometers (80 miles) northwest of Las Vegas, Nevada (Figure 1). CAS 05-01-01 is located in Area 5 and consists of the following items:

- Three 45,800-liter (12,100-gallon) aboveground storage tanks (ASTs) referred to as Tanks A, B, and C.

- Piping associated with the tanks and Well RNM-1

- Debris associated with Well RNM-1.

CAS 06-01-01 consists of the following items:

- Two portable ASTs (property numbers 181770 and 079370).

- Two tanker trailers (property numbers 168313 and 168314).

All items in CAS 06-01-01 were originally located at the Area 6 Control Point (CP)-50 Hot Park and had been moved to the Area 6 Waste Handling Facility (WHF). All of the items in CAU 120 have been used to contain or convey radiologically contaminated fluid that was generated during post-nuclear event activities at the NTS.

The Area 5 tanks, piping, and debris (CAS 05-01-01) were used to hold water that was pumped from Well RNM-1 while purging the well casing prior to collecting water samples from the U-5e test cavity. The tank, piping, and debris were no longer in use; however, the well, the land, and surrounding area are still actively used for annual water sampling of Well RNM-1 and are, therefore, not a part of this closure.

The Area 6 tanks and tankers (06-01-01) were portable units that had been used to convey decontamination rinseate from post-shot activities to disposal areas. These tanks and tankers were moved from the Area 6 CP-50 Hot Park, a temporary radioactive management area (RMA), to the Area 6 WHF in December 1995. The CP-50 Hot Park RMA was decommissioned after all

radiologically contaminated items had been moved from the Hot Park to the Area 6 WHF. The Hot Park is listed separately in the FFACO as CAS 06-23-04 of CAU 176.

Detailed information of the site history and results of preliminary investigation activities can be found in the SAFER Work Plan for Closure of CAU 120: Areas 5 and 6 Aboveground Storage Tanks, Nevada Test Site (U.S. Department of Energy [DOE], 1997a). This document also identifies planned activities for characterization and closure of CAU 120. Remedial activities generally consisted of characterizing the waste tanks, tankers, and debris and disposing of the waste.

1.1 PURPOSE

The purpose of this CR is to:

Document the closure activities and provide supporting information as proposed in the Streamlined Approach for Environmental Restoration (SAFER) Work Plan (DOE, 1997a).

Obtain a Notice of Completion from the Nevada Division of Environmental Protection (NDEP) for remedial activities of CAU 120.

Recommend the movement of CAU 120 from Appendix III to Appendix IV of the FFACO.

1.2 SCOPE

The scope of the closure actions implemented for CAU 120 consisted of the following:

Review existing data to identify whether data were sufficient to show that articles could be disposed of as construction waste.

Collect samples for items that required additional data.

Evaluate the waste to identify where waste minimization would be possible.

Establish waste profiles for appropriate disposal of all items in accordance with the results of this study.

Dispose of the tanks, tankers, piping, debris, and investigation-derived waste (IDW) in accordance with all federal, state, DOE, and NTS site-specific requirements.

1.3 CLOSURE REPORT CONTENTS

This CR is divided into the following sections:

Section 1.0 - Introduction: Site background, purpose, scope, and report contents

Section 2.0 - Closure Activities: Corrective action activities, deviations from the SAFER Work Plan as approved, corrective action schedule as completed, and site plan

Section 3.0 - Waste Disposition

Section 4.0 - Closure Verification Results

Section 5.0 - Conclusions and Recommendations

Section 6.0 - References

Appendix A - Radiological Survey, Swipe Sample, and Laboratory Analytical Results for CAS 05-01-01 Preliminary Investigation

Appendix B - Radiological Survey and Swipe Sample Results for Debris and External Surfaces at CAS 05-01-01

Appendix C - Swipe Sample and Laboratory Analytical Results for Radiological Sampling of CASs 05-01-01 and 06-01-01 Waste

Appendix D - Radiological Survey, Swipe Sample, and Laboratory Analytical Results after Sediment Removal for Tank "A" of CAS 05-01-01

Appendix E - Calculations of Maximum Theoretical Leachate Concentration for Lead from Painted Containers in CAS 06-01-01

Appendix F - Laboratory Analytical Results for TCLP/Metals Analysis of CAS 06-01-01 Containers

Appendix G - Waste Disposition Certificates

Appendix H - Distribution List

Appendix I - NDEP Document Review Sheet

This CR was developed using information and guidance from the following documents:

SAFER Work Plan for Closure of CAU 120: Areas 5 and 6 Aboveground Storage Tanks, Nevada Test Site, Revision 1, DOE, November 1997.

Nevada Environmental Restoration Project, Health and Safety Plan, Revision 2, DOE, 1996.

Nevada Environmental Restoration Project, Industrial Sites, Quality Assurance Project Plan, Nevada Test Site, Revision 1, DOE, DOE/NV--372, 1996.

Nevada Environmental Restoration Project, Project Management Plan, Revision 0, DOE, 1994.

“Use of Total Waste Analysis in Toxicity Characteristic Determinations” from U.S. EPA RCRA/SUPERFUND Hotline Questions and Answers, January 1994 Monthly Hotline Report.

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2.0 CLOSURE ACTIVITIES

2.1 DESCRIPTION OF CORRECTIVE ACTION ACTIVITIES

2.1.1 PRE-FIELD ACTIVITIES

Prior to starting field activities, the following pre-field activities were completed:

Preparation of National Environmental Policy Act documentation.

Preparation of the Site-Specific Health & Safety Plan (DOE, 1997b).

Preparation of the Field Management Plan (Bechtel Nevada, 1997).

Evaluation of preliminary data for CAS 05-01-01.

2.1.2 EVALUATION OF PRELIMINARY DATA FOR CAS 05-01-01 (Area 5 Tanks)

Preliminary data had been obtained from tanks in CAS 05-01-01 to identify the constituents of concern (COCs) and to identify the health and safety precautions that would be needed when working in and around these tanks. The tanks were only used to contain well water that had been pumped from an event cavity. By process knowledge, hazardous waste would not be present. There was no potential for the tanks to be a hazardous waste because of metals in the paint. There was no paint on the tanks.

2.1.2.1 Phase 1: Data Collected to Identify Personnel Protection Needs for Safe Entry

Details of the site-entry investigation, which included general surveying of the site and air sampling to identify the personnel protection requirements, are provided in the SAFER Work Plan (DOE, 1997a).

2.1.2.2 Phase 2: Identification of COCs

After evaluating the results from the initial sampling effort, swipe and sediment samples were collected from inside each tank to identify the COCs. These activities were done as part of the planning process; however, some additional review of the data was needed as was indicated in the SAFER Work Plan (DOE, 1997a). Sampling activities are described in detail in the work plan and generally consisted of the following activities:

Survey the interior of each tank for elevated radioactivity. This was completed for Tanks B and C (Figure 2). A survey of the interior of Tank A was not completed at this time because elevated radioactivity was detected at a location approximately 3 meters (10 feet) from the entrance to the tank. Survey of the interior of Tank A was postponed until analytical results were available for sediment samples collected from the "hot spot" and personnel safety could be adequately addressed.

Collect swipe samples from the interior of Tanks B and C and analyze for removable radioactivity levels within each tank. Swipes were not collected at this time from Tank A because of the survey results.

Collect sediment samples from the base of each tank for laboratory analysis of elevated radioactivity (gross alpha, gross beta, gamma, and tritium). Because survey levels showed no indication of elevated radioactivity within Tanks B and C, numerous samples were collected from each tank and then composited into one sample for the tank. For Tank A, only one sample was collected from the "hot spot."

Survey, swipe sample, and sediment analytical results are provided in Appendix A. Results are described in detail in the SAFER Work Plan (DOE, 1997a). Further evaluation of the results showed the following:

Tank A: Survey and swipe sampling were not completed for Tank A at this time because of personnel protection issues that arose when the "hot spot" was detected. Laboratory analytical results of sediment collected from the "hot spot" were used to identify the COCs for this tank and personnel safety precautions needed for continued sampling of the tank. As described in the SAFER Work Plan (DOE, 1997a), results of this sampling would also be used to identify the appropriate disposition of piping and hoses associated with this site. Laboratory analytical results of the sediment showed 50.8 picoCuries per gram of Cesium 137, which exceeds the activity level allowed under the NV/YMP Radiological Control Manual ([RADCON Manual], DOE, 1996c). The activity levels of all other isotopes were found to be less than the limits established under the RADCON Manual and were therefore not COCs for the site.

Tanks B and C: Survey, swipe sample, and sediment sample results show that radioactivity levels of the tanks and their contents are less than free-release limits established in the RADCON Manual (DOE, 1996c). The limits established in the RADCON Manual (DOE, 1996c) are the same as those established by Title 10 of the Code of Federal Regulations. Radiological isotopes (including tritium) were not detected at levels that indicated that radioactivity had been added to either tank or sediment contained within the tanks. No COCs were identified; therefore, both tanks and the sediment in the tanks could be disposed of as solid waste.

Figure 2
CAS05-01-01 Site Plan View

2.1.3 FIELD SCREENING OF CAS 05-01-01 DEBRIS

The exterior surface of each tank, piping, hoses, and other debris at CAS 05-01-01 was surveyed for elevated radioactivity. The survey was performed on July 17, 1997, using an Electra meter, which is a portable instrument used to count alpha (), beta (), and gamma () activity in the field. Electra meters have a minimum detectable activity level of approximately 0.782 disintegrations per minute (dpm) alpha and 2.53 dpm beta and gamma. Swipe samples were also collected and taken to the Area 6 WHF, where a Tennelec Scaler was used to count removable low-level alpha and beta from the surfaces that were swiped. This survey was completed following standard radiological survey procedures for determining the presence of radioactive material and identifying contamination levels on equipment surfaces.

Results of the radiological survey showed all external surfaces to have activity levels less than the activity levels allowed for unrestricted release under the RADCON Manual (DOE, 1996c). The on-site survey showed maximum levels of alpha plus beta at 312 dpm or less for all surfaces. The background survey level for alpha plus beta was 938 dpm. Swipe samples showed 5.76 dpm alpha for all surfaces (1.0 dpm background) and 17.88 or less dpm beta (22.1 dpm background). A copy of the radiation survey report is provided in Appendix B.

2.1.4 SAMPLE COLLECTION AND WASTE CHARACTERIZATION

On January 8, 1998, samples were collected in accordance with the "Sampling and Analysis Plan" (DOE, 1997a). Samples were collected from Tank A in CAS 05-01-01 and from all tanks and tankers in CAS 06-01-01. All sampling was done in accordance with Radioactive Waste Acceptance Program (RWAP) sample collection and handling procedures. Laboratory analytical results are provided in Appendix C and are summarized in Tables 1 and 2.

2.1.4.1 CAS 05-01-01

Swipe samples were collected from the interior of Tank A. Thirty samples were collected from numerous locations within the tank to identify removable radioactive contamination present on the inside of the tank. Sediment was collected from approximately ten locations within the tank and placed into one container (composited) for analysis of radiological isotopes in the sediment in the tank.

Swipe samples were taken to the Area 6 WHF and checked for removable alpha and beta radionuclides using the Tennelec Scaler. Swipe samples and the sediment sample were then delivered to the Bechtel Nevada Analytical Services Laboratory for analysis using the 20-minute gamma scan.

TABLE 1 - RESULTS OF RADIOLOGICAL SAMPLING OF CAS 05-01-01 WASTE FOR RWAP APPROVAL

SAMPLE LOCATION	SWIPE SAMPLES			SEDIMENT SAMPLES	
	ALPHA(dpm ^A)	BETA (dpm)	GAMMA (pCi ^B)	GAMMA (pCi/g ^C)	
Tank A	1.93	14.04	None detected	Americium 241	1.51
				Cesium 137	87.0
				Potassium 40	6.92
				Plutonium 238	0.546
				Plutonium 239	10.6
				Radon 226	1.13
				Strontium 90	33.9
				Thorium 228	1.97
				Thorium 232	1.34

A - disintegrations per minute

B - picoCuries

C - picoCuries per gram

TABLE 2 - RESULTS OF RADIOLOGICAL SAMPLING OF CAS 06-01-01 WASTE FOR RWAP APPROVAL

SAMPLE LOCATION	SWIPE SAMPLES			SEDIMENT SAMPLES
	ALPHA(dpm ^A)	BETA (dpm)	GAMMA (pCi ^B)	
Tank 079370	284.83	3380.59	Cobalt 60	5,030
			Cesium 137	292
			Plutonium 238	0.970
			Plutonium 239	26.0
			Strontium 90	272
			Cobalt 60	18,200
			Cesium 137	4,870
Tank 181770	50.15	66.11	Plutonium 238	50.3
			Plutonium 239	122
			Strontium 90	16,600
			Tritium	21.8
			Americium 241	363
			Barium 133	11.5
			Cobalt 57	3.10
			Cobalt 60	51.6
			Cesium 134	7.44
			Cesium 137	655
			Eu 152	8.21
			Eu 155	23.5
			Plutonium 238	39.1
			Plutonium 239	965
			Potassium 40	10.0
Tanker 168313	1.93	417.2	Rubidium 106	13.2
			Sb 125	66.6
			Strontium 90	660
			Americium 241	49.0
			Cobalt 60	97.6
			Cesium 137	529
			Plutonium 238	25.6
Tanker 168314	75.87	267.6	Plutonium 239	4.81
			Strontium 90	260
			Cobalt 60	24.6
			Cesium 137	203
			Plutonium 238	5.59
Tanker 168314	75.87	267.6	Plutonium 239	0.399
			Strontium 90	133
			No sediment	

A - disintegrations per minute

B - picoCuries

C - picoCuries per gram

Results of the swipe sample analyses showed no indication of removable contamination on the tank. The sediment sample showed radioactive isotopes at activity levels that warranted disposal of the sediment within the tank as low-level radioactive waste (LLRW). An RWAP profile for disposal of the sediment contained within Tank A was developed based on sediment sample analytical results. Results of swipe sample counting (using the Tennelec) and sediment sample analysis are provided in Appendix C.

The tank surface beneath the sediment in Tank A was surveyed and sampled after sediment had been removed from the tank to evaluate the appropriate disposal method for the tank. Sampling consisted of performing a radiological survey using an Electra meter and collecting 46 swipe samples from the interior of the tank. The survey indicated that removal of the sediment had removed the elevated radioactivity from the tank in all but one location. An activity level of 4,400 dpm beta was detected in an area approximately 0.4 meter (18 inches) in diameter at the base of the tank, below the sediment.

Swipe samples were counted using the Tennelec (for low-level alpha and beta detection) and were also analyzed using a 20-minute gamma scan. Alpha and beta results were predominantly non-detectable and, with maximum levels of 6.25 dpm alpha and 15.08 dpm beta, indicated that the radioactivity detected by the survey was not removable. Results of the 20-minute gamma scan were non-detectable for gamma-emitting isotopes. Survey and swipe results are provided in Appendix D.

On July 15, 1998, the area in Tank A showing 4,000 dpm beta was checked using an *In Situ* sodium-iodide [NaI(Tl)] gamma detector connected to a palm-top multichannel analyzer. This was done to determine whether the beta emitters were present as a result of mixed fission products. Results showed the presence of Cesium-137, a mixed fission product. In accordance with the RADCON Manual, mixed fission products with an activity level less than 5,000 dpm are allowed for unrestricted release and may be disposed of as nonradioactive waste.

2.1.4.2 CAS 06-01-01

Swipe and sediment sample results are provided in Appendix C and are summarized in Table 2. Swipe samples were collected from the interior of both tanks (property numbers 079370 and 181770) and both tankers (property numbers 168313 and 168314) in CAS 06-01-01. Sediment samples were also collected where there was enough material for a sample. Less than 2.54 centimeters (1 inch) of sediment were present in all the containers. A sediment sample could not be collected from tanker 168314 because sediment was not present.

Results of swipe and sediment sample analysis showed radioactive isotopes at activity levels that warranted disposal of the tanks and tankers as LLRW. An RWAP profile for disposal of this waste as LLRW was developed based on sediment and swipe sample analytical results.

2.1.5 WASTE PREPARATION

2.1.5.1 CAS 05-01-01

LLRW at this site consisted of sediment from Tank A and all piping, hoses, and valves that conveyed water to and between the tanks. On April 20 and 21, 1998, the following actions were taken to remove radioactive contamination from the site:

Sediment was removed from Tank A using a high-efficiency particulate filter (HEPA) vacuum.

Piping was cut into lengths that would fit into B-25 boxes, which were used to contain radioactive waste.

The Tank A sediment, HEPA filter, piping, valves, hoses, and IDW at the site were all placed into two B-25 boxes, sealed, labeled, and transported to the Area 6 WHF pending disposal as LLRW.

All remaining waste at the site (i.e., Tanks A, B, and C; sediment inside Tanks B and C; and debris) were uncontaminated. In September 1998, the ends of the tanks were cut off and the tanks were crushed to minimize the volume of waste for disposal.

2.1.5.2 CAS 06-01-01

The wheel bases were removed from the two tankers (property numbers 168313 and 168314) as a waste minimization activity. The wheel bases were uncontaminated. Holes were cut into the metal tanks and tankers in this CAS for ease in filling the containers so that void space in the landfill would be minimized.

2.2 DEVIATIONS FROM SAFER CLOSURE PLAN AS APPROVED

The SAFER Work Plan (DOE, 1997a) was approved “with comments” by the NDEP and authorized to proceed with the plan as long as the comments were addressed. In general, the comments (provided in Appendix I) requested additional detail to be provided in this report to show that these areas had been fully addressed.

Based on NDEP comments, one deviation from the closure plan was taken to support statements and calculations made in the SAFER Work Plan (DOE, 1997a). Samples were collected of the tanks and tankers in CAS 06-01-01 to verify that the paint on the tanks did not cause the tanks to become a hazardous waste. This had been addressed in Appendix A of the SAFER Work Plan (DOE, 1997a) through a calculation of the maximum theoretical concentration of lead in the

paint on the tanks. The equation used to calculate this concentration was obtained from U.S. EPA guidance, "Use of Total Waste Analysis in Toxicity Characteristic Determinations," from the January 1994 Monthly Hotline Report. According to the guidance document, "If maximum theoretical leachate concentrations are less than the applicable limits under 261.24, the waste does not exhibit the toxicity characteristic and the TCLP [Toxicity Characteristic Leachability Procedure] need not be run." Results of this calculated concentration showed that there would be no possibility of the tanks or tankers being hazardous waste as a result of the paint applied to their surfaces.

The additional sampling was done because the percentage of lead in the paint that was used in the calculation was an assumption rather than a known quantity. The concentration used in the calculations was considered to be a reasonable assumption because it was based off of lead concentrations provided by paint manufacturers. The concentration of chromium in all the paints was less than the lead so that if the lead was not a problem then the chromium would also not be a problem.

In August 1998, the lead content in the paint covering containers in the Area 6 WHF was measured using x-ray fluorescence (XRF) with a Niton Model 400XL machine. This equipment measures the lead by irradiating the surface using x-rays and then measuring the energy emitted from lead atoms. Results provided by the XRF were used to calculate the maximum theoretical leachate concentration (MTLC) based on a measured amount of lead in the paint. Detailed calculations of the MTLCs for each tank are provided in Appendix E. Results of the calculations are summarized in Table 3.

Lead concentrations measured using the XRF were higher than expected for three of the four tanks. This was attributed to evaporation of volatile compounds in the paint after application and while drying. The concentrations presented in the SAFER Work Plan (DOE, 1997a) are superseded by the calculations presented in Appendix E of this report and as summarized in Table 3. Based on the lead measurements, the new MTLCs no longer supported the conclusion that the waste was not hazardous simply based on total lead content in the waste. Therefore, each of the three tanks was sampled to verify that it did not exceed the TCLP levels established for hazardous waste.

Each tank was sampled on September 9, 1998. Samples were collected by drilling into the painted surface of each tank or tanker using a hand-held portable drill and collecting the drill cuttings (paint and metal, or paint and fiberglass). Because contamination of the samples with radioactive isotopes was a concern at this site (the tank interiors were known to be contaminated with significant levels of radioactive isotopes), samples of the tankers were collected from painted metal fender wells. The sample collected from the fiberglass tank, which had no painted surface other than the tank itself, was drilled into the tank but with care taken so that the inner surface of the tank was not breached. The samples collected from the fender wells are representative of the tanker waste. The sample collected from the fiberglass tank is skewed slightly toward higher concentrations of paint because the entire thickness of the waste was not collected for the sample.

TABLE 3 - RESULTS OF TCLP ANALYSIS AND MAXIMUM THEORETICAL LEACHATE CONCENTRATION (MTLC) CALCULATION FOR LEAD IN CAS 06-01-01 CONTAINERS

CONTAINER IDENTIFICATION	MTLC ^A - LEAD (in mg/L)	TCLP ANALYTICAL RESULTS ^B (in ug/L)						
		LEAD	ARSENIC	BARIUM	CADMIUM	CHROMIUM	SELENIUM	SILVER
168313	15	20.4	7.2	9,710	1.6	3.2	8.8	5.2
168314	241	11.5	7.2	441	1.6	3.2	8.8	5.2
181770	27	3,210	7.2	357	6.2	971	8.8	5.2
079370	0	Not sampled - not required based on MTLC						
Regulatory Level	5	5,000	5,000	100,000	1,000	5,000	1,000	5,000

A - Calculated using U.S. EPA guidance from "Use of Total Waste Analysis in Toxicity Characteristic Determinations", EPAs January 1994 Monthly Hotline Report. Calculations are provided in Appendix E.

B - Using EPA Methods 1311 and 6010

mg/L = milligrams per liter

ug/L = micrograms per liter

Results of this sampling event are provided in Appendix F and are summarized in Table 3. As shown in the table, the waste is not a hazardous waste. Analytical results are considerably less than the calculated estimates for the maximum theoretical concentration of lead in the tanks. As described in the SAFER Work Plan (DOE, 1997a), this is an expected outcome because the paint has been applied to a surface, dried, and become predominantly fixed (not leachable) to the surface. The tanks were therefore disposed of as LLRW with no hazardous waste present.

2.3 CORRECTIVE ACTION SCHEDULE AS COMPLETED

Figure 3 provides the schedule for corrective actions as completed for this CAU. The section of the CR where the findings are presented are also listed in the figure.

2.4 SITE PLAN

The location of CAU 120 and CASs 05-01-01 and 06-01-01 are provided in Figure 1. Figure 2 provides the site layout of CAS 05-01-01. All activities for CAS 06-01-01 were strictly for waste characterization purposes, were performed within the Area 6 WHF, and are not location-related; therefore, a site drawing is not provided for that CAS. The site plan for CAS 05-01-01 after corrective actions were completed is provided in Figure 4.

FIGURE 3 - SCHEDULE OF ACTIVITIES FOR CAU 120 CLOSURE

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3.0 WASTE DISPOSITION

Waste generated from CAU 120 closure activities consisted of radiologically impacted tanks, piping, and sediment and uncontaminated demolition waste, and was disposed of as follows:

CAS 05-01-01: Tanks A, B, and C; sediment contained within Tanks B and C; and debris (excluding any piping and hoses) were disposed of as uncontaminated waste in the Area 9 10C Landfill in August 1998. Before moving the tanks off the site, the ends were cut off and the tanks were crushed to minimize landfill space.

CAS 05-01-01: Sediment from within Tank A, piping, hoses, and IDW were placed into two B-25 boxes and moved to the Area 6 WHF pending approval for disposal. After RWAP approval was received, the boxes were disposed of at the Area 3 Radioactive Waste Management Site (RWMS) on January 21, 1999. Waste disposition tracking information is provided in Appendix G.

CAS 06-01-01: All four tanks/tankers in this CAS were disposed of as LLRW. After RWAP approval was received, the tanks/tankers were disposed of at the Area 3 RWMS, an approved repository for bulk LLRW at the NTS, on May 26, May 27, and June 9, 1999. Waste minimization activities consisted of removing the uncontaminated wheel bases from the tankers. Waste disposition tracking information is provided in Appendix G.

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4.0 CLOSURE VERIFICATION RESULTS

This CAU was closed by complete removal of the tanks, aboveground piping and hoses, and debris. Verification sampling was not required. Tank, piping, and debris disposal was based upon process knowledge and data collected from radiological surveys and waste characterization analytical results.

4.1 LAND-USE RESTRICTION

The future use of any land related to CAU 120 is not restricted because soil beneath the waste was not a part of this CAU. Soil beneath the CAS 05-01-01 tanks and debris remains an active site and is used for continued sampling of the RNM-1 well. Soil at the CP-50 Hot Park, which is the original location of the CAS 06-01-01 tanks and tankers, is listed as CAS 06-23-04 in CAU 176 of the FFACO.

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5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

The following conclusions are made based on the completed site closure activities and information provided in this report:

Background information and analytical results of samples collected for waste characterization purposes identified the appropriate disposal for the tanks, sediment, debris, hoses, and piping in CASs 05-01-01 and 06-01-01 of CAU 120.

CAS 05-01-01 and 06-01-01 waste was disposed of in accordance with all federal, state, DOE, and NTS site-specific requirements for disposal of uncontaminated and LLRW, as appropriate.

Land below each CAS was not a part of this CAU. Land below and around CAS 05-01-01 is still in use and is an active site. Land below CAS 06-01-01 is listed under CAS 06-23-04 of CAU 176 and will be closed under that CAU.

Closure activities were performed in accordance with the approved SAFER Work Plan (DOE, 1997a).

5.2 RECOMMENDATIONS

Based on completion of site closure activities, DOE/NV requests that NDEP provide a Notice of Completion for CAU 120. DOE/NV recommends moving CAU 120 from Appendix III to Appendix IV of the FFACO.

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6.0 REFERENCES

- Bechtel Nevada, 1997, Field Management Plan, CAU 120, Area 5&6 Aboveground Storage Tanks, Nevada Test Site, Revision 0.
- Federal Facility Agreement and Consent Order between the State of Nevada Department of Conservation and Natural Resources Division of Environmental Protection AND the United States Department of Energy AND the United States Department of Defense, March 1996.
- U.S. Department of Energy, 1994, Nevada Environmental Restoration Project, Project Management Plan, Revision 0.
- U.S. Department of Energy, 1996a, Nevada Environmental Restoration Project, Health and Safety Plan, Revision 2.
- U.S. Department of Energy, 1996b, Nevada Environmental Restoration Project, Industrial Sites, Quality Assurance Project Plan, Nevada Test Site, Revision 1, DOE/NV--372.
- U.S. Department of Energy, 1996c, NV/YMP Radiological Control Manual, Revision 2, DOE/NV/11718--079, UC-702.
- U.S. Department of Energy, 1997a, SAFER Work Plan for Closure of CAU 120: Areas 5 and 6 Aboveground Storage Tanks, Nevada Test Site, Revision 1, DOE/NV/11718--147, UC-702.
- U.S. Department of Energy, 1997b, Site Specific Health & Safety Plan: Areas 5&6 Aboveground Storage Tanks, CAU 120, Nevada Test Site.
- U.S. EPA, 1994, "Use of Total Waste Analysis in Toxicity Characteristic Determinations" from U.S. EPA RCRA/SUPERFUND Hotline Questions and Answers, January 1994 Monthly Hotline Report.

APPENDIX A

**RADIOLOGICAL SURVEY,
SWIPE SAMPLE, AND
LABORATORY ANALYTICAL RESULTS
FOR CAS 05-01-01
PRELIMINARY INVESTIGATION**

BN-0108 (06

RCT(s): <u>McCloskey</u>		SIGNATURE: <u>[Signature]</u>		SUPERVISOR: <u>BERTHIAUD</u>	
INSTRUMENT(S) TYPE & NO.: <u>ELECTRA # 1283/2224 TENIVELLE # 181856</u>				HEALTH PHYSICIST: <u>BLACK</u>	
COUNTING INFORMATION	COUNT TIME: <u>1/min</u>	EFFICIENCY: <u>A 29.5% B 42.5%</u>	CORRECTION FACTOR: <u>A 3.39 B 2.35</u>	MDA: <u>A 16 dpm B 31 dpm</u>	
DATE SURVEYED: <u>7-17-97</u>	EVENT CODE: <u>156</u>	PURPOSE: <u>SURVEY OF TANKS / MISC EQUIP. A-5</u>			REQUESTER/VAP NO.: <u>BN / MCE</u>

ALL READINGS MEET UNRESTRICTED RELEASE LIMITS? ☒ YES ☐ NO (SEE COMMENTS) FOLLOW UP REQUIRED? ☐ YES ☒ NO

[illegible]

COMMENTS:

Bechtel Nevada

Interoffice Memorandum

To: S. J. Nacht

Date: April 15, 1997

From: T. P. Van Sittert
Analytical Services Laboratory, 295-7472

No.: E110-RB-97-0094

Subject: DATA REPORT FOR SAMPLE DELIVERY GROUP (SDG) A265
Project No. 04001

Analytical Services Laboratory's results have been reported to A. T. Urbon for the gamma spectroscopy, gross alpha, gross beta, and tritium analyses of three samples submitted to the laboratory on March 12, 1997. Also included was a Statement of Services indicating the charge number associated with the SDG.

Please direct any questions you may have to your Client Service Representative, Ted Redding, at 295-7220.

T. P. Van Sittert for TRS

TPV:bv
Subject Code: ENV3

cc: Correspondence Control, NLV 008
K. A. Mobley, NLV 022
A. T. Urbon, (results enc.) NTS 306
ASL SDG A265, (results enc.) NTS 273

RADIOANALYTICAL

RESULTS

Bechtel Nevada Corporation

ANALYTICAL SERVICES LABORATORY
P.O.Box 3936, N. Las Vegas, NV 89036

Page 1

Reported to: Environmental Restoration
A. Urbon
M/S NTS306

Report Date: 7-APR-97
Sample Delivery Group: A265
Batch: 0716
Program: 720

Report No. :

Sample ***** Identification *****	Isotope	Analysis	Result	Error %	Qual Flag	MDA	Result Units	Analysis Date	Sample Coll Date	Size	Size Units	Type Matrix	Tracer Yield %	Spike Recv %	System Detector	Packet-Item Sample
05-01-01-A1	CS137	GAM20	5.08E+01	9.2E+00		1.0E-01	pCi/g	03-13-97	03-11-97	4.40E+02	gm	SOIL G			05-01	G6688-0-25006
05-01-01-A1	K 40	GAM20	6.59E+00	3.7E+01		1.3E+00	pCi/g	03-13-97	03-11-97	4.40E+02	gm	SOIL G			05-01	G6688-0-25006
05-01-01-A1	RA226	GAM20	1.33E+00	4.1E+01		1.4E-01	pCi/g	03-13-97	03-11-97	4.40E+02	gm	SOIL G			05-01	G6688-0-25006
05-01-01-A1	TH228	GAM20	1.38E+00	4.9E+01		1.4E-01	pCi/g	03-13-97	03-11-97	4.40E+02	gm	SOIL G			05-01	G6688-0-25006
05-01-01-A1	TH232	GAM20	7.13E-01	6.0E+01		3.2E-01	pCi/g	03-13-97	03-11-97	4.40E+02	gm	SOIL G			05-01	G6688-0-25006
05-01-01-B1	CS137	GAM20	1.84E-01	6.0E+01		1.0E-01	pCi/g	03-13-97	03-11-97	4.71E+02	gm	SOIL G			05-01	G6688-1-25006
05-01-01-B1	K 40	GAM20	2.76E+00	5.9E+01		1.3E+00	pCi/g	03-13-97	03-11-97	4.71E+02	gm	SOIL G			05-01	G6688-1-25006
05-01-01-B1 <i>Prior to 0.11.238</i>	RA226	GAM20	1.88E+00	2.3E+01		1.8E-01	pCi/g	03-13-97	03-11-97	4.71E+02	gm	SOIL G			05-01	G6688-1-25006
05-01-01-B1	TH228	GAM20	6.31E-01	3.8E+01		1.5E-01	pCi/g	03-13-97	03-11-97	4.71E+02	gm	SOIL G			05-01	G6688-1-25006
05-01-01-B1	TH232	GAM20	3.42E-01	1.0E+02		3.2E-01	pCi/g	03-13-97	03-11-97	4.71E+02	gm	SOIL G			05-01	G6688-1-25006

Comment:
GAM20 = 20 MINUTE GAMMA SCAN.

Qualification Flags:

E = Estimated Quantity
H = High Recovery for Sample
J = Result is less than the RDL
L = Low Recovery for Sample
P = Preliminary Results
Q = Bad Instrument Quality Control, Result is OK
R = Results are Unusable, Resampling is Necessary
U = Result is less than Minimum Detectable Activity

Note: % Error is the 2.0 Sigma Error

Prepared by:

Date: 4/7/97

Approved by:

Date: 4/8/97

(Level 1)

Bechtel Nevada Corporation

ANALYTICAL SERVICES LABORATORY
P.O.Box 3936, N. Las Vegas, NV 89036

Page 2

Reported to: Environmental Restoration
A. Urbon
M/S NTS308

Report Date: 7-APR-97
Sample Delivery Group: A285
Batch: 0716
Program: 720

Report No. :

Sample ***** Identification *****	Isotope	Analysis	Result	Error %	Qual Flag	MDA	Result Units	Analysis Date	Sample Coll Date	Size	Size Units	Type Matrix	Tracer Yield %	Spike Recv %	System Detector	Packet-Item Sample
05-01-01-C1	CS137	GAM20	8.58E-02	1.0E+02	U	9.5E-02	pCi/g	03-13-97	03-11-97	3.12E+02	gm	SOIL G			05-01	G6686-2-25010
05-01-01-C1	K 40	GAM20	4.19E+00	5.1E+01		1.5E+00	pCi/g	03-13-97	03-11-97	3.12E+02	gm	SOIL G			05-01	G6686-2-25010
05-01-01-C1	RA228	GAM20	6.66E-01	3.9E+01		1.7E-01	pCi/g	03-13-97	03-11-97	3.12E+02	gm	SOIL G			05-01	G6686-2-25010
05-01-01-C1	TH228	GAM20	7.94E-01	3.0E+01		1.5E-01	pCi/g	03-13-97	03-11-97	3.12E+02	gm	SOIL G			05-01	G6686-2-25010
QA BKG EMPTY BTL U05	No Nucl Det	GAM20	0.00E+00	0.0E+00	U	0.0E+00	NA	03-13-97	07-01-95	1.00E+00	5M gm	QUAL			05-01	Q0539-0-00431
QA SP:NAS-A0271	AM241	GAM20	1.71E+05	9.2E+00		3.3E+02	pCi	03-13-97	04-01-92	1.00E+00	5M gm	QUAL		105.5	05-01	Q0534-3-12708
QA SP:NAS-A0271	CO60	GAM20	3.08E+05	8.4E+00		4.5E+01	pCi	03-13-97	04-01-92	1.00E+00	5M gm	QUAL		102.7	05-01	Q0534-3-12708
QA SP:NAS-A0271	CS137	GAM20	2.08E+05	8.1E+00		9.9E+01	pCi	03-13-97	04-01-92	1.00E+00	5M gm	QUAL		102.3	05-01	Q0534-3-12708

Comment:
GAM20 = 20 MINUTE GAMMA SCAN.

Qualification Flags:
E = Estimated Quantity
H = High Recovery for Sample
J = Result is less than the RDL
L = Low Recovery for Sample
P = Preliminary Results
Q = Bad Instrument Quality Control, Result is OK
R = Results are Unusable, Resampling is Necessary
U = Result is less than Minimum Detectable Activity

Note: % Error is the 2.0 Sigma Error

Prepared by:

Date: 4/7/97

Approved by:

Date: 4/8/97

Bechtel Nevada Corporation

ANALYTICAL SERVICES LABORATORY
P.O.Box 3936, N. Las Vegas, NV 89036

Page 3

Reported to: Environmental Restoration
A. Urban
M/S NTS306

Report Date: 7-APR-97
Sample Delivery Group: A265
Batch: L853
Program: 720

Report No. :

Sample ***** Identification *****	Isotope	Analysis	Result	Error %	Qual Flag	MDA	Result Units	Analysis Date	Sample Coll Date	Size	Size Units	Type Matrix	Tracer Yield %	Spike Recv %	System Detector	Packet-Item Sample
05-01-01-A1	H3 TR	H3	6.94E-01	6.4E+02	U	7.4E+00	pCi/g	03-18-97	03-11-97	2.55E-01	gm	SOIL G			25-01	G6688-0-25361
05-01-01-B1	H3 TR	H3	-2.12E+00	1.9E+02	U	6.8E+00	pCi/g	03-18-97	03-11-97	2.78E-01	gm	SOIL G			25-01	G6688-1-25362
05-01-01-C1	H3 TR	H3	-1.55E+00	2.9E+02	U	7.6E+00	pCi/g	03-18-97	03-11-97	2.48E-01	gm	SOIL G			25-01	G6688-2-25363
QA REA	H3 TR	H3	1.33E-01	8.5E+02	U	1.8E+00	pCi	03-18-97	03-13-97	1.00E+00	sm	QUAL			25-01	G6687-0-06394
QA SP:H32.5 06	H3 TR	H3	1.20E+01	1.2E+01		1.9E+00	pCi	03-18-97	07-31-96	1.00E+00	sm	QUAL		112.6	25-01	G6687-1-06395

Comment:
GAM20 = 20 MINUTE GAMMA SCAN.

Prepared by: [Signature] Date: 4/7/97

Approved by: [Signature] Date: 4/8/97

Qualification Flags:

E = Estimated Quantity
H = High Recovery for Sample
J = Result is less than the RDL
L = Low Recovery for Sample
P = Preliminary Results
Q = Bad Instrument Quality Control, Result is OK
R = Results are Unusable, Resampling is Necessary
U = Result is less than Minimum Detectable Activity

Note: % Error is the 2.0 Sigma Error

(Level 1)

Bechtel Nevada Corporation

ANALYTICAL SERVICES LABORATORY
P.O.Box 3936, N. Las Vegas, NV 89036

Page 4

Reported to: Environmental Restoration
A. Urban
M/S NTS308

Report Date: 7-APR-97
Sample Delivery Group: A265
Batch: L854
Program: 720

Report No. :

Sample ***** Identification *****	Isotope	Analysis	Result	Error %	Qual Flag	MDA	Result Units	Analysis Date	Sample Coll Date	Size	Size Units	Type Matrix	Tracer Yield %	Spike Recv %	System Detector	Packet-Item Sample
05-01-01-A1	Gross Alpha	Gross A	1.81E+01	1.8E+01		2.3E+00	pCi/g	04-02-97	03-11-97	5.00E-01	gm	SOIL G			14-01	G6688-0-25005
05-01-01-B1	Gross Alpha	Gross A	1.49E+01	2.0E+01		2.8E+00	pCi/g	04-02-97	03-11-97	5.00E-01	gm	SOIL G			14-01	G6688-1-25007
05-01-01-C1	Gross Alpha	Gross A	1.82E+01	1.9E+01		2.8E+00	pCi/g	04-02-97	03-11-97	5.00E-01	gm	SOIL G			14-01	G6688-2-25009
QA REA	Gross Alpha	Gross A	-6.59E-02	3.2E+02	U	4.1E-01	pCi	04-01-97	03-13-97	1.00E+00	am	QUAL			14-01	G6688-0-06768
QA SP:GROSSAB 04	Gross Alpha	Gross A	3.34E+00	1.8E+01		4.1E-01	pCi	04-01-97	02-07-92	1.00E+00	am	QUAL		97.5	14-01	G6688-1-06768
05-01-01-A1	Gross Beta	Gross B	1.08E+02	2.8E+00		2.2E+00	pCi/g	04-02-97	03-11-97	5.00E-01	gm	SOIL G			14-01	G6688-0-25005
05-01-01-B1	Gross Beta	Gross B	6.68E+00	2.2E+01		2.2E+00	pCi/g	04-02-97	03-11-97	5.00E-01	gm	SOIL G			14-01	G6688-1-25007
05-01-01-C1	Gross Beta	Gross B	7.21E+00	2.1E+01		2.2E+00	pCi/g	04-02-97	03-11-97	5.00E-01	gm	SOIL G			14-01	G6688-2-25009
QA REA	Gross Beta	Gross B	-6.48E-02	8.8E+02	U	9.7E-01	pCi	04-01-97	03-13-97	1.00E+00	am	QUAL			14-01	G6688-0-06768
QA SP:GROSSAB 04	Gross Beta	Gross B	4.67E+00	1.8E+01		9.7E-01	pCi	04-01-97	02-07-92	1.00E+00	am	QUAL		91.5	14-01	G6688-1-06768

Comment:

GAM20 = 20 MINUTE GAMMA SCAN. Gross α and Gross β activity reported here will reflect only the aliquot analyzed and will not necessarily represent the entire sample due to sample inhomogeneity.

Prepared by:

Date: 4/3/97

Approved by:

Date: 4/8/97

Qualification Flags:

- E = Estimated Quantity
- H = High Recovery for Sample
- J = Result is less than the RDL
- L = Low Recovery for Sample
- P = Preliminary Results
- Q = Bad Instrument Quality Control, Result is OK
- R = Results are Unusable, Resampling is Necessary
- U = Result is less than Minimum Detectable Activity

Note: % Error is the 2.0 Sigma Error

SUPPORTING DATA

JOB#: _____

BECHTEL NEVADA CORPORATION

TODAY'S DATE: 3-12-97 PAGE 1

ANALYTICAL SERVICES LABORATORY SERVICES REQUEST AND CHAIN OF CUSTODY

REV 6/18/96

PROJECT INFORMATION

ORG #: E110 Charge #: C4NB10DEProject #: ER01720 Funded by: ☐ EM
☐ DPProject Manager: ALLISON URBONPhone: 5-7520 MIS: NTS 306

REPORT INFORMATION

*DATE DUE: NORMAL PRELIMINARY ☒ Yes
REPORT: ☐ No

*There may be additional charges for reports due in less than the standard turnaround time. See back

Send report to: ALLISON URBON MIS: NTS 306Phone: 5-7520 Fax: 5-7761

LAB USE ONLY

SDG #: A 265 Packet #: G6686

SDG #: _____ Packet #: _____

Is the radioactivity level in any of these samples expected to be above typical environmental or bioassay levels? Yes No (circle)

REQUESTER'S SIGNATURE: _____

DATE: 3-12-97

NON-RAD ANALYSIS CODES

RCRA
V = VOA
TV = TCLP VOA
B = BNA
TB = TCLP BNA
PS = Pesticide
P = PCB
PSP = PEST & PCB

TF = TPH - Full
TG = TPH - Gas
TD = TPH - Diesel
TO = TPH - Oil
M = Metals
TM = TCLP Metals
C = Chlor-d-lect
F = Flashpoint

PH = pH
IND HYG
APC = Asb/PCM
APL = Asb/PLM
AT = Asb/TEM
PBF = Pb/Filter
G = Gravimetric
OTHERS - SEE BACK

RAD ANALYSIS CODES

01 = TRITIUM
02 = GROSS ALPHA
03 = GROSS BETA
04 = GAMMA (20 min)
05 = GFP
07 = ISO U
08 = AM

11 = PU
13 = TH
22 = SR-89
23 = SR-90
31 = GAMMA (1000 min)
33 = GAMMA (300 min)
93 = U NAT (KPA)

OTHERS - SEE BACK

RAD MATRIX CODES (RAD MC)

SEE BACK

SAMPLE COLLECTION LOCATION

A.5 5-70th 5-07 ROAD
TANKS

ITEM	ID/DESCRIPTION	RAD MC	ANALYSIS CODES								SAMPLING		MATRIX	COMMENTS <small>PRESERVATIVE, SAMPLE SIZE/VOLUME, SPECIAL ANALYSIS, COUNT TIME</small>
											DATE	TIME		
0	05-01-01-A1	11	01	02	03	04					3-11-97	1420	SOIL	PROVIDING PRELIMINARY RESULTS TO PROJECT MGR. A. URBON
1	05-01-01-B1	11	01	02	03	04					3-11-97	1035	SOIL	WHEN AVAILABLE
2	05-01-01-C1	11	01	02	03	04					3-11-97	1310	SOIL	
3														
4														
5														
6														
7														
8														
9														

NON-RAD SAMPLES

SAMPLED/RELINQUISHED BY(SIG):

DATE / TIME

RECEIVED BY (SIG):

RAD SAMPLES

SAMPLED/RELINQUISHED BY(SIG):

DATE / TIME

RECEIVED BY (SIG):

J. Mosley

3/11/97 0735

CO Custodian

DATE: 3-11-97 NO. A 5967

Reynolds Electrical & Engineering Co., Inc.
Radiological Control Department-Ramatrol

Material Clearance

MONITOR: McCluskey

ORGANIZATION: IN RP

SURVEY LOCATION: A-5

FROM: A-5

TO: A-23

☒ UNRESTRICTED

☐ OFF-SITE

☒ ON-SITE

☐ SALVAGE

☐ EXCESS

THIS MATERIAL HAS BEEN SURVEYED FOR
RADIOACTIVITY AND MEETS DOE
STANDARDS FOR RELEASE TO PUBLIC
USE

INITIAL

Clay

☐ CONTROLLED

DESCRIPTION: _____

30 each Soil Sample
FROM TANKS ON
5-07 ROAD.

REMARKS: EXP 3-13-97

APPENDIX B

**RADIOLOGICAL SURVEY AND
SWIPE SAMPLE RESULTS
FOR DEBRIS AND EXTERNAL SURFACES
AT CAS 05-01-01**

BN-0100 (06/98)

THE MAR 11.1997

GROUP B ROUTINE SURV

SN TIME COUNTS A COUNTS B CPM A CPM B A/0000.277 B/0000.386 HR:MIN:SEC

1	1.00	0	22	-0.20	-3.80	-0.72	-9.84	17:18:27
2	1.00	1	31	0.80	5.20	2.89	13.47	17:19:38
3	1.00	0	31	-0.20	5.20	-0.72	13.47	17:20:50
4	1.00	0	47	-0.20	21.20	-0.72	54.92	17:22:01
5	1.00	0	25	-0.20	-0.80	-0.72	-2.07	17:23:13
6	1.00	1	19	0.80	-6.80	2.89	-17.62	17:24:24
7	1.00	0	25	-0.20	-0.80	-0.72	-2.07	17:25:35
8	1.00	0	23	-0.20	-2.80	-0.72	-7.25	17:26:46
9	1.00	1	33	0.80	7.20	2.89	18.65	17:27:56
10	1.00	0	23	-0.20	-2.80	-0.72	-7.25	17:29:07
11	1.00	1	32	0.80	6.20	2.89	16.06	17:30:19
12	1.00	2	24	1.80	-1.80	3.11	-4.66	17:31:30
13	1.00	0	23	-0.20	-2.80	-0.72	-7.25	17:32:41
14	1.00	0	25	-0.20	-0.80	-0.72	-2.07	17:33:52
15	1.00	0	24	-0.20	-1.80	-0.72	-4.66	17:35:03
16	1.00	0	34	-0.20	8.20	-0.72	21.24	17:36:15
17	1.00	0	33	-0.20	7.20	-0.72	18.65	17:37:26
18	1.00	1	22	0.80	-3.80	2.89	-9.84	17:38:38
19	1.00	0	18	-0.20	-7.80	-0.72	-20.21	17:39:49
20	1.00	0	19	-0.20	-6.80	-0.72	-17.62	17:41:00
21	1.00	1	28	0.80	2.20	2.89	5.70	17:42:11
22	1.00	0	26	-0.20	0.20	-0.72	0.52	17:43:22
23	1.00	1	24	0.80	-1.80	2.89	-4.66	17:44:33
24	1.00	0	19	-0.20	-6.80	-0.72	-17.62	17:45:44
25	1.00	1	27	0.80	1.20	2.89	3.11	17:46:56
26	1.00	0	29	-0.20	3.20	-0.72	8.29	17:48:07
27	1.00	0	27	-0.20	1.20	-0.72	3.11	17:49:18
28	1.00	0	23	-0.20	-2.80	-0.72	-7.25	17:50:29
29	1.00	0	23	-0.20	-2.80	-0.72	-7.25	17:51:40
30	1.00	0	39	-0.20	13.20	-0.72	34.20	17:52:52
31	1.00	0	24	-0.20	-1.80	-0.72	-4.66	17:54:03
32	1.00	0	15	-0.20	-10.80	-0.72	-27.98	17:55:14
33	1.00	0	27	-0.20	1.20	-0.72	3.11	17:56:25
34	1.00	0	21	-0.20	-4.80	-0.72	-12.44	17:57:37
35	1.00	0	21	-0.20	-4.80	-0.72	-12.44	17:58:48
36	1.00	0	20	-0.20	-5.80	-0.72	-15.03	17:59:58
37	1.00	0	28	-0.20	2.20	-0.72	5.70	18:01:10
38	1.00	1	32	0.80	6.20	2.89	16.06	18:02:20
39	1.00	0	20	-0.20	-5.80	-0.72	-15.03	18:03:31
40	1.00	1	22	0.80	-3.80	2.89	-9.84	18:04:42
41	1.00	0	23	-0.20	-2.80	-0.72	-7.25	18:05:53
42	1.00	0	18	-0.20	-7.80	-0.72	-20.21	18:07:04
43	1.00	0	27	-0.20	1.20	-0.72	3.11	18:08:16
44	1.00	0	23	-0.20	-2.80	-0.72	-7.25	18:09:27
45	1.00	0	24	-0.20	-1.80	-0.72	-4.66	18:10:38
46	1.00	0	27	-0.20	1.20	-0.72	3.11	18:11:49
47	1.00	0	18	-0.20	-7.80	-0.72	-20.21	18:13:00
48	1.00	0	14	-0.20	-11.80	-0.72	-30.57	18:14:11
49	1.00	0	24	-0.20	-1.80	-0.72	-4.66	18:15:22
50	1.00	0	24	-0.20	-1.80	-0.72	-4.66	18:16:34

IDENTIFICATION	TIME	PST A	PST B	BKG A	BKG B	Ka	Kb
A GREEN TAGS	1.00	9999999	9999999	0.20	25.80	0.277	0.386
B ROUTINE SURV	1.00	9999999	9999999	0.20	25.80	0.277	0.386
C AIR SAMPLES	30.00	9999999	9999999	0.20	25.80	0.277	0.386
D CHI SQUARE	1.00	9999999	9999999	0.00	0.00	0.000	0.000

APPENDIX C

SWIPE SAMPLE AND LABORATORY ANALYTICAL RESULTS FOR RADIOLOGICAL SAMPLING OF CASs 05-01-01 AND 06-01-01 WASTE

Reliance Bar 444

REF 270-0000 Number 1

<div> <div>ALPHA</div> <div>BETA</div> </div>											
<div> <div>EFF: 31.11 E Bag: 0.40 LLD: 10.73</div> <div>EFF: 44.17 E Bag: 0.80 LLD: 13.17</div> </div>											
ID	CARRIER	RPT	RET	COUNTS	NET CFM	CFM	LIMITS	COUNTS	NET CFM	CFM	LIMITS
AS TANK	1	1	0	0	-0.40	-1.27		0	-0.80	-1.81	
AS TANK	2	1	0	0	-0.40	-1.27		1	0.20	0.45	
AS TANK	3	1	0	0	-0.40	-1.27		0	-0.80	-1.81	
AS TANK	4	1	0	1	0.80	1.93		0	-0.80	-1.81	
AS TANK	5	1	0	1	0.80	1.93		1	0.20	0.45	
AS TANK	6	1	0	1	0.80	1.93		3	2.20	4.98	
AS TANK	7	1	0	0	-0.40	-1.27		1	1.20	2.72	
AS TANK	8	1	0	1	0.80	1.93		1	1.20	2.72	
AS TANK	9	1	0	0	-0.40	-1.27		3	2.20	4.98	
AS TANK	10	1	0	0	-0.40	-1.27		0	-0.80	-1.81	
AS TANK	11	1	0	1	0.80	1.93		3	2.20	4.98	
AS TANK	12	1	0	0	-0.40	-1.27		1	0.20	0.45	
AS TANK	13	1	0	0	-0.40	-1.27		0	-0.80	-1.81	
AS TANK	14	1	0	1	0.80	1.93		1	0.20	0.45	
AS TANK	15	1	0	0	-0.40	-1.27		1	0.20	0.45	
AS TANK	16	1	0	1	0.80	1.93		1	0.20	0.45	
AS TANK	17	1	0	0	-0.40	-1.27		4	2.20	4.98	
AS TANK	18	1	0	0	-0.40	-1.27		0	-0.80	-1.81	
AS TANK	19	1	0	1	0.80	1.93		0	-0.80	-1.81	
AS TANK	20	1	0	0	-0.40	-1.27		0	-0.80	-1.81	
AS TANK	21	1	0	0	-0.40	-1.27		3	2.20	4.98	
AS TANK	22	1	0	0	-0.40	-1.27		2	1.20	2.72	
AS TANK	23	1	0	0	-0.40	-1.27		1	0.20	0.45	
AS TANK	24	1	0	0	-0.40	-1.27		2	1.20	2.72	
AS TANK	25	1	0	0	-0.40	-1.27		2	1.20	2.72	
AS TANK	26	1	0	0	-0.40	-1.27		0	-0.80	-1.81	
AS TANK	27	1	0	0	-0.40	-1.27		7	2.20	4.98	
AS TANK	28	1	0	0	-0.40	-1.27		1	0.20	0.45	
AS TANK	29	1	0	0	-0.40	-1.27		2	1.20	2.72	
AS TANK	30	1	0	1	0.80	1.93		2	1.20	2.72	

Area 5 Tank A

Routine Curves

ABC WFO-7550 Number 1

ALPHA											
BETA											
Eff: 31.11 % Bkg: 0.40 LLD: 15.73 Eff: 44.17 % Bkg: 0.60 LLD: 13.12											
ID	CARRIER	RPT	RCT	COUNTS	NET CPM	BPM	LIMITS	COUNTS	NET CPM	BPM	LIMITS
079370	1	1	0	18	17.60	56.52	WARNING	651	650.20	1472.05	WARNING
079370	2	1	0	20	19.60	53.01	WARNING	472	473.20	1073.23	WARNING
079370	3	1	0	17	16.60	53.37	WARNING	712	711.20	1610.15	WARNING
079370	4	1	0	14	17.60	40.72	WARNING	794	793.20	2390.20	WARNING
079370	5	1	0	7	6.60	21.22	WARNING	187	188.20	434.06	WARNING
079370	6	1	0	35	34.60	101.23	WARNING	463	464.20	1050.94	WARNING
079370	7	1	0	57	56.60	284.83	WARNING	578	597.20	1352.04	WARNING
079370	8	1	0	15	14.60	46.94	WARNING	562	561.20	1270.55	WARNING
079370	9	1	0	63	62.60	201.24	WARNING	677	696.20	2026.99	WARNING
079370	10	1	0	15	14.60	46.94	WARNING	251	250.20	566.45	WARNING
079370	11	1	0	45	47.60	153.02	WARNING	1454	1473.20	3380.59	WARNING
079370	12	1	0	4	7.60	11.57		201	200.20	453.25	WARNING
079370	13	1	0	6	7.60	24.43	WARNING	181	180.20	407.97	WARNING

Tank #: 079370

Routine Surveys

ABC WPC-9550 Number 1

ALPHA										BETA			
Eff: 31.11 % Bkg: 0.40 LLD: 15.73										Eff: 44.17 % Bkg: 0.80 LLD: 13.12			
ID	CARRIER	RFT	RCF	COUNTS	NET CPM	DPH	LIMITS	COUNTS	NET CPM	DPH	LIMITS	DATE	TIME
181770	1	1	0	6	5.60	18.00		30	25.20	65.71		01-08-1998	13:40:13
181770	2	1	0	2	1.60	5.14		11	10.20	23.09		01-08-1998	13:41:37
181770	3	1	0	7	6.60	21.22	WARNING	26	25.20	57.05		01-08-1998	13:42:57
181770	4	1	0	3	2.60	8.36		9	8.20	18.56		01-08-1998	13:44:21
181770	5	1	0	0	-0.40	-1.27		20	15.20	43.47		01-08-1998	13:45:44
181770	6	1	0	3	2.60	8.36		7	8.20	18.56		01-08-1998	13:47:06
181770	7	1	0	1	0.60	1.93		11	10.20	23.09		01-08-1998	13:48:28
181770	8	1	0	3	2.60	8.36		6	5.20	11.77		01-08-1998	13:49:51
181770	9	1	0	3	2.60	8.36		16	15.20	34.41		01-08-1998	13:51:13
181770	10	1	0	16	13.60	25.01	WARNING	25	25.20	57.05		01-08-1998	13:52:35

Tank # 181770

Routine Surveys

ASD WFC-7550 Number 1

ALPHA												BETA											
Eff: 31.11 % Bkg: 0.40 LLD: 15.73												Eff: 44.17 % Bkg: 0.80 LLD: 13.12											
ID	CARRIER	RFT	RCT	COUNTS	NET CPM	DFM	LIMITS	COUNTS	NET CPM	DFM	LIMITS	DATE	T										
168313	1	1	0	1	0.60	1.93		11	10.20	23.09		01-06-1978	13										
168313	2	1	0	1	0.60	1.93		4	3.20	7.24		01-06-1978	13										
168313	3	1	0	0	-0.40	-1.27		3	2.20	4.96		01-06-1978	13										
168313	4	1	0	0	-0.40	-1.27		19	18.20	11.77		01-06-1978	14										
168313	5	1	0	1	0.60	1.93		4	3.20	7.24		01-06-1978	14										
168313	6	1	0	0	-0.40	-1.27		0	-0.80	-1.81		01-06-1978	14										
168313	7	1	0	0	-0.40	-1.27		6	7.20	16.30		01-06-1978	14										
168313	8	1	0	0	-0.40	-1.27		7	6.20	14.04		01-06-1978	14										
168313	9	1	0	1	0.60	1.93		15	14.20	32.15		01-06-1978	14										
168313	10	1	0	0	-0.40	-1.27		6	5.20	11.77		01-06-1978	14										
168313	11	1	0	1	0.60	1.93		4	3.20	7.24		01-06-1978	14										
168313	12	1	0	0	-0.40	-1.27		14	13.20	29.88		01-06-1978	14										
168313	13	1	0	1	0.60	1.93		6	5.20	11.77		01-06-1978	14										
168313	14	1	0	1	0.60	1.93		1	0.20	0.45		01-06-1978	14										

Tank # 168313

Routine Surveys

ASC WPC-9550 Number 1

-----ALPHA-----											
Eff: 31.11 % Bkg: 0.40 LLD: 15.73											
-----BETA-----											
Eff: 44.17 % Bkg: 0.80 LLD: 13.12											
NO	CARRIER	RPT	RCY	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS
DATE	TIME										
168314	1	1	0	19	18.60	59.79	WARNING	47	46.20	104.60	01-08-1998 13:16:54
168314	2	1	0	9	8.60	27.65	WARNING	50	49.20	111.37	01-08-1998 13:18:12
168314	3	1	0	9	8.60	27.65	WARNING	66	67.20	152.14	01-08-1998 13:19:41
168314	4	1	0	3	2.60	8.36		35	24.20	54.77	01-08-1998 13:21:03
168314	5	1	0	24	23.60	75.87	WARNING	119	118.20	267.60	01-08-1998 13:22:25
168314	6	1	0	6	5.60	18.00		49	48.20	109.12	01-08-1998 13:23:47
168314	7	1	0	11	10.60	34.08	WARNING	52	51.20	206.48	01-08-1998 13:25:10
168314	8	1	0	6	5.60	18.00		32	31.20	70.64	01-08-1998 13:26:32
168314	9	1	0	9	8.60	27.65	WARNING	53	52.20	118.18	01-08-1998 13:27:54
168314	10	1	0	4	3.60	11.37		31	30.20	68.37	01-08-1998 13:29:17
168314	11	1	0	7	6.60	21.22	WARNING	65	63.20	147.61	01-08-1998 13:30:39
168314	12	1	0	8	7.60	24.43	WARNING	35	32.20	126.10	01-08-1998 13:32:01
168314	13	1	0	1	0.60	1.53		74	73.20	165.72	01-08-1998 13:33:23
168314	14	1	0	8	7.60	24.43	WARNING	49	48.20	109.12	01-08-1998 13:34:46

TANK # 168314

Bechtel Nevada

Interoffice Memorandum

To: S. J. Nachi

Date: February 17, 1998

From: T. P. Van Sittert
Analytical Services Laboratory, 295-7472

No.: 2150-AL-98-0133

Subject: DATA REPORT FOR SAMPLE DELIVERY GROUP (SDG) B063
Project No. 04001

Analytical Services Laboratory's results have been reported to A. T. Urbon for the gamma spectroscopy and tritium analyses of 18 soil and swipe samples submitted to the laboratory on January 18, 1998. Also included was a statement of services which indicated the charge number associated with this SDG.

SPECIFIC:

Gamma Spectroscopy:

Method associated quality assurance and quality control (QA/QC) criteria were met.

The swipe samples were digested in acid solution in order to put them in an appropriate counting geometry. The additional labor and materials required are reflected on the services statement.

Tritium:

Method associated QA/QC criteria were met.

The soil samples did not contain sufficient moisture to support this determination. Ten milliliters of blank laboratory water was added to each soil sample in order to produce the necessary volume of distillate.

Please direct any questions you may have to your Client Service Representative, Ted Redding, at 295-7220.

T. P. Van Sittert

TPV:mm

Subject Code: ENV3

cc: Correspondence Control, NLV008
K. A. Quintana, NLV022
A. T. Urbon (results enc.), NTS 306
ASL SDG B063 (results enc.), NTS 273

Bechtel Nevada Corporation

ANALYTICAL SERVICES LABORATORY
P.O.Box 3936, N. Las Vegas, NV 89036

Page 1

Reported to: CAU 120, Areas 5 & 6 Tanks
Remediation Projects
A. T. Urbon
M/S NTS306

Report Date: 4-FEB-98
Sample Delivery Group: B063
Batch: 0558
Program: 720

Report No. :

Sample ***** Identification *****	Isotope	Analysis	Result	Error %	Qual Flag	MDA	Result Units	Analysis Date	Sample Coll Date	Size	Size Units	Type Matrix	Tracer Yield %	Spike Recv %	System Detector	Packet-Item Sample
120-5A-SWIPE	No Nucl Det	GAM20	0.00E+00	0.0E+00	U	0.0E+00	NA	01-14-98	01-08-98	1.00E+00	sm	Surfac			08-01	G8318-0-82992
120-8-079370-SWIPE	CO60	GAM20	5.03E+03	9.7E+00		5.5E+01	pCi	01-14-98	01-08-98	1.00E+00	sm	Surfac			08-01	G8318-3-84102
120-8-079370-SWIPE	CS137	GAM20	2.92E+02	2.0E+01		4.9E+01	pCi	01-14-98	01-08-98	1.00E+00	sm	Surfac			08-01	G8318-3-84102
120-8-168313-SWIPE	CS137	GAM20	1.35E+01	7.0E+01		1.6E+01	pCi	01-14-98	01-08-98	1.00E+00	sm	Surfac			08-01	G8318-1-83070
120-8-168314-SWIPE	CO60	GAM20	2.46E+01	5.6E+01		2.1E+01	pCi	01-14-98	01-08-98	1.00E+00	sm	Surfac			08-01	G8318-2-84058
120-8-168314-SWIPE	CS137	GAM20	2.03E+02	1.9E+01		1.8E+01	pCi	01-14-98	01-08-98	1.00E+00	sm	Surfac			08-01	G8318-2-84058
120-8-181770-SWIPE	CO60	GAM20	6.10E+01	3.5E+01		2.3E+01	pCi	01-14-98	01-08-98	1.00E+00	sm	Surfac			08-01	G8318-4-84228
QA BKG WATER U08	No Nucl Det	GAM20	0.00E+00	0.0E+00	U	0.0E+00	NA	01-14-98	06-01-97	5.00E+02	ml	QA Sur			08-01	Q0538-0-00088
QA SP:QAW-8	AM241	GAM20	7.59E+04	9.7E+00		1.3E+03	pCi	01-14-98	08-01-90	1.00E+00	sm	QA Sur		108.4	08-01	Q0586-3-16884
QA SP:QAW-8	CO60	GAM20	7.19E+04	8.4E+00		2.4E+02	pCi	01-14-98	08-01-90	1.00E+00	sm	QA Sur		99.6	08-01	Q0586-3-16884

Comment:
GAM20 = 20 MINUTE GAMMA SCAN

Qualification Flags:

E = Estimated Quantity
H = High Recovery for Sample
J = Result is less than the RDL
L = Low Recovery for Sample
P = Preliminary Results
Q = Bad Instrument Quality Control, Result is OK
R = Results are Unusable, Resampling is Necessary
U = Result is less than Minimum Detectable Activity

Note: % Error is the 2.0 Sigma Error

Prepared by:

Date: 2/4/98

Approved by:

Date: 2/5/98

(Level 1)

Bechtel Nevada Corporation

ANALYTICAL SERVICES LABORATORY
P.O.Box 3936, N. Las Vegas, NV 89036

Page 2

Reported to: CAU 120, Areas 5 & 8 Tanks
Remediation Projects
A. T. Urban
M/S NTS306

Report Date: 4-FEB-98
Sample Delivery Group: B063
Batch: 0558
Program: 117

Report No. :

Sample Identification	Isotope	Analysis	Result	Error %	Qual Flag	MDA	Result Units	Analysis Date	Sample Coll Date	Size	Size Units	Type Matrix	Tracer Yield %	Spike Recv %	System Detector	Packet-Item Sample
QA SP:QAW-8	CS137	GAM20	6.20E+04	7.9E+00		1.1E+02	pCi	01-14-98	08-01-90	1.00E+00	sm	QA Sur		99.8	08-01	Q0586-3-16884

Comment:
GAM20 = 20 MINUTE GAMMA SCAN

Prepared by:

Date: 2/4/98

Approved by:

Date: 2/5/98

Qualification Flags:

E = Estimated Quantity
H = High Recovery for Sample
J = Result is less than the RDL
L = Low Recovery for Sample
P = Preliminary Results
Q = Bad Instrument Quality Control, Result is OK
R = Results are Unusable, Resampling is Necessary
U = Result is less than Minimum Detectable Activity

Note: % Error is the 2.0 Sigma Error

Bechtel Nevada Corporation

ANALYTICAL SERVICES LABORATORY
P.O.Box 3936, N. Las Vegas, NV 89036

Page 3

Reported to: CAU 120, Areas 5 & 6 Tanks
Remediation Projects
A. T. Urbon
M/S NTS306

Report Date: 4-FEB-98
Sample Delivery Group: B063
Batch: 0779
Program: 720

Report No. :

Sample ***** Identification *****	Isotope	Analysis	Result	Error %	Qual Flag	MDA	Result Units	Analysis Date	Sample Coll Date	Size	Size Units	Type Matrix	Tracer Yield %	Spike Recv %	System Detector	Packet-Item Sample
120-5A-SOIL	AM241	GAM20	1.51E+00	7.1E+01		2.8E-01	pCi/g	01-14-98	01-08-98	4.64E+02	gm	SOIL G			05-01	G8317-0-25015
120-5A-SOIL	CS137	GAM20	8.70E+01	8.7E+00		6.7E-02	pCi/g	01-14-98	01-08-98	4.64E+02	gm	SOIL G			05-01	G8317-0-25015
120-5A-SOIL	K 40	GAM20	6.92E+00	3.3E+01		1.2E+00	pCi/g	01-14-98	01-08-98	4.64E+02	gm	SOIL G			05-01	G8317-0-25015
120-5A-SOIL	RA226	GAM20	1.13E+00	6.3E+01		1.5E-01	pCi/g	01-14-98	01-08-98	4.64E+02	gm	SOIL G			05-01	G8317-0-25015
120-5A-SOIL	TH228	GAM20	1.97E+00	3.3E+01		1.6E-01	pCi/g	01-14-98	01-08-98	4.64E+02	gm	SOIL G			05-01	G8317-0-25015
120-5A-SOIL	TH232	GAM20	1.34E+00	4.0E+01		3.2E-01	pCi/g	01-14-98	01-08-98	4.64E+02	gm	SOIL G			05-01	G8317-0-25015
120-6-079370-SOIL	CO60	GAM20	1.82E+04	7.7E+00		1.1E+00	pCi/g	01-14-98	01-08-98	4.67E+02	gm	SOIL G			05-01	G8317-2-25017
120-6-079370-SOIL	CS137	GAM20	4.87E+03	8.3E+00		5.8E-01	pCi/g	01-14-98	01-08-98	4.67E+02	gm	SOIL G			05-01	G8317-2-25017
120-6-168313-SOIL	AM241	GAM20	4.90E+01	1.2E+01		2.8E-01	pCi/g	01-14-98	01-08-98	4.15E+02	gm	SOIL G			05-01	G8317-1-25016
120-6-168313-SOIL	CO60	GAM20	9.78E+01	9.0E+00		1.4E-01	pCi/g	01-14-98	01-08-98	4.15E+02	gm	SOIL G			05-01	G8317-1-25016

Comment:

Soil moisture content was insufficient to support
the tritium determinations. Blank water was added.

Prepared by:

Date:

2/4/98

Approved by:

Date:

2/5/98

Qualification Flags:

E = Estimated Quantity
H = High Recovery for Sample
J = Result is less than the RDL
L = Low Recovery for Sample
P = Preliminary Results
Q = Bad Instrument Quality Control, Result is OK
R = Results are Unusable, Resampling is Necessary
U = Result is less than Minimum Detectable Activity

Note: % Error is the 2.0 Sigma Error

(Level 1)

Bechtel Nevada Corporation

ANALYTICAL SERVICES LABORATORY
P.O.Box 3936, N. Las Vegas, NV 89036

Page 4

Reported to: CAU 120, Areas 5 & 6 Tanks
Remediation Projects
A. T. Urbon
M/S NTS306

Report Date: 4-FEB-98
Sample Delivery Group: B063
Batch: 0779
Program: 720

Report No. :

Sample ***** Identification *****	Isotope	Analysis	Result	Error %	Qual Flag	MDA	Result Units	Analysis Date	Sample Coll Date	Size	Size Units	Type Matrix	Tracer Yield %	Spike Recv %	System Detector	Packet-Item Sample
120-6-168313-SOIL	CS137	GAM20	5.29E+02	7.7E+00		6.8E-02	pCi/g	01-14-98	01-08-98	4.15E+02	gm	SOIL G			05-01	G8317-1-25018
120-6-181770-SOIL	AM241	GAM20	3.63E+02	8.3E+00		2.9E-01	pCi/g	01-14-98	01-08-98	3.13E+02	gm	SOIL G			05-01	G8317-3-25018
120-6-181770-SOIL	BA133	GAM20	1.15E+01	1.8E+01		9.7E-02	pCi/g	01-14-98	01-08-98	3.13E+02	gm	SOIL G			05-01	G8317-3-25018
120-6-181770-SOIL	CO57	GAM20	3.10E+00	2.5E+01		6.3E-02	pCi/g	01-14-98	01-08-98	3.13E+02	gm	SOIL G			05-01	G8317-3-25018
120-6-181770-SOIL	CO60	GAM20	5.16E+01	9.9E+00		1.5E-01	pCi/g	01-14-98	01-08-98	3.13E+02	gm	SOIL G			05-01	G8317-3-25018
120-6-181770-SOIL	CS134	GAM20	7.44E+00	1.6E+01		1.2E-01	pCi/g	01-14-98	01-08-98	3.13E+02	gm	SOIL G			05-01	G8317-3-25018
120-6-181770-SOIL	CS137	GAM20	6.55E+02	7.6E+00		7.3E-02	pCi/g	01-14-98	01-08-98	3.13E+02	gm	SOIL G			05-01	G8317-3-25018
120-6-181770-SOIL	EU152	GAM20	8.21E+00	2.5E+01		4.2E-01	pCi/g	01-14-98	01-08-98	3.13E+02	gm	SOIL G			05-01	G8317-3-25018
120-6-181770-SOIL	EU155	GAM20	2.35E+01	1.4E+01		2.4E-01	pCi/g	01-14-98	01-08-98	3.13E+02	gm	SOIL G			05-01	G8317-3-25018
120-6-181770-SOIL	K 40	GAM20	1.00E+01	3.0E+01		1.4E+00	pCi/g	01-14-98	01-08-98	3.13E+02	gm	SOIL G			05-01	G8317-3-25018

Comment:

Soil moisture content was insufficient to support
the tritium determinations. Blank water was added.

Qualification Flags:

E = Estimated Quantity
H = High Recovery for Sample
J = Result is less than the RDL
L = Low Recovery for Sample
P = Preliminary Results
Q = Bad Instrument Quality Control, Result is OK
R = Results are Unusable, Resampling is Necessary
U = Result is less than Minimum Detectable Activity

Note: % Error is the 2.0 Sigma Error

Prepared by:

Date: 2/4/98

Approved by:

Date: 2/5/98

Bechtel Nevada Corporation

ANALYTICAL SERVICES LABORATORY
P.O.Box 3936, N. Las Vegas, NV 89036

Page 5

Reported to: CAU 120, Areas 5 & 6 Tanks
Remediation Projects
A. T. Urbon
M/S NTS306

Report Date: 4-FEB-98
Sample Delivery Group: B063
Batch: 0779
Program: 720

Report No. :

Sample ***** Identification *****	Isotope	Analysis	Result	Error %	Qual Flag	MDA	Result Units	Analysis Date	Sample Coll Date	Size	Size Units	Type Matrix	Tracer Yield %	Spike Recv %	System Detector	Packet-Item Sample
120-6-181770-SOIL	RU106	GAM20	1.32E+01	5.1E+01		8.3E-01	pCi/g	01-14-98	01-08-98	3.13E+02	gm	SOIL G			05-01	G8317-3-25018
120-6-181770-SOIL	SB125	GAM20	6.66E+01	1.2E+01		2.7E-01	pCi/g	01-14-98	01-08-98	3.13E+02	gm	SOIL G			05-01	G8317-3-25018
QA BKG EMPTY BTL U05	No peaks	GAM20	0.00E+00	0.0E+00		0.0E+00	NA	01-14-98	07-01-95	1.00E+00	sm	QUAL			05-01	Q0539-0-00087
QA SP:NAS-A0270	AM241	GAM20	1.07E+05	8.8E+00		1.6E+02	pCi	01-14-98	04-01-92	1.00E+00	sm	QUAL		111.1	05-01	Q0534-2-16869
QA SP:NAS-A0270	CO60	GAM20	1.84E+05	8.5E+00		9.5E+01	pCi	01-14-98	04-01-92	1.00E+00	sm	QUAL		103.5	05-01	Q0534-2-16869
QA SP:NAS-A0270	CS137	GAM20	1.24E+05	8.1E+00		4.2E+01	pCi	01-14-98	04-01-92	1.00E+00	sm	QUAL		102.7	05-01	Q0534-2-16869

Comment:

Soil moisture content was insufficient to support
the tritium determinations. Blank water was added.

Prepared by:

Date: 2/4/98

Approved by:

Date: 2/5/98

Qualification Flags:

E = Estimated Quantity
H = High Recovery for Sample
J = Result is less than the RDL
L = Low Recovery for Sample
P = Preliminary Results
Q = Bad Instrument Quality Control, Result is OK
R = Results are Unusable, Resampling is Necessary
U = Result is less than Minimum Detectable Activity

Note: % Error is the 2.0 Sigma Error

(Level 1)

Bechtel Nevada Corporation

ANALYTICAL SERVICES LABORATORY
P.O.Box 3936, N. Las Vegas, NV 89036

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Reported to: CAU 120, Areas 5 & 6 Tanks
Remediation Projects
A. T. Urbon
M/S NTS308

Report Date: 4-FEB-98
Sample Delivery Group: B063
Batch: M327
Program: 720

Report No. :

Sample ***** Identification *****	Isotope	Analysis	Result	Error %	Qual Flag	MDA	Result Units	Analysis Date	Sample Coll Date	Size	Size Units	Type Matrix	Tracer Yield %	Spike Recv %	System Detector	Packet-Item Sample
120-6-079370-SOIL	H3 TR	H3 Trit	2.18E+01	2.3E+01		7.5E+00	pCi/g	01-27-98	01-08-98	2.60E-01	gm	SOIL G			27-01	G8317-2-25364
120-6-181770-SOIL	H3 TR	H3 Trit	1.13E+00	4.1E+02	U	7.7E+00	pCi/g	01-27-98	01-08-98	2.52E-01	gm	SOIL G			27-01	G8317-3-25365
QA REA	H3 TR	H3 Trit	3.00E-01	3.9E+02	U	1.9E+00	pCi	01-27-98	01-12-98	1.00E+00	sm	QUAL			27-01	G8321-0-08400
QA SP:H32.5 07	H3 TR	H3 Trit	1.18E+01	1.2E+01		2.0E+00	pCi	01-27-98	05-05-97	1.00E+00	sm	QUAL		102.2	27-01	G8321-1-08401

Comment:

Soil moisture content was insufficient to support
the tritium determinations. Blank water was added

Prepared by: [Signature] Date: 3/4/98

Approved by: [Signature] Date: 2/5/98

Qualification Flags:

E = Estimated Quantity
H = High Recovery for Sample
J = Result is less than the RDL
L = Low Recovery for Sample
P = Preliminary Results
Q = Bad Instrument Quality Control, Result is OK
R = Results are Unusable, Resampling is Necessary
U = Result is less than Minimum Detectable Activity

Note: % Error is the 2.0 Sigma Error

Bechtel Nevada Corporation

ANALYTICAL SERVICES LABORATORY
P.O.Box 3936, N. Las Vegas, NV 89036

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Reported to: CAU 120, Areas 5 & 6 Tanks
Remediation Projects
A. T. Urbon
M/S NTS306

Report Date: 4-FEB-98
Sample Delivery Group: B063
Batch: M328
Program: 720

Report No. :

Sample ***** Identification *****	Isotope	Analysis	Result	Error %	Qual Flag	MDA	Result Units	Analysis Date	Sample Coll Date	Size	Size Units	Type Matrix	Tracer Yield %	Spike Recv %	System Detector	Packet-Item Sample
120-6-079370-BL	H3 TR	H3 Trit	2.49E+00	9.5E+01	U	3.9E+00	pCi	01-13-98	01-08-98	1.00E+00	sm	Surfac			27-01	G8319-8-84786
120-6-079370-T1	H3 TR	H3 Trit	1.15E+01	2.2E+01		3.9E+00	pCi	01-12-98	01-08-98	1.00E+00	sm	Surfac			27-01	G8319-0-84464
120-6-079370-T2	H3 TR	H3 Trit	1.72E+01	1.6E+01		3.9E+00	pCi	01-13-98	01-08-98	1.00E+00	sm	Surfac			27-01	G8319-1-84516
120-6-079370-T3	H3 TR	H3 Trit	9.14E+00	2.8E+01		3.9E+00	pCi	01-13-98	01-08-98	1.00E+00	sm	Surfac			27-01	G8319-2-84526
120-6-181770-T1	H3 TR	H3 Trit	5.43E+00	4.5E+01		3.9E+00	pCi	01-13-98	01-08-98	1.00E+00	sm	Surfac			27-01	G8319-4-84543
120-6-181770-T2	H3 TR	H3 Trit	3.83E+00	6.3E+01	U	3.9E+00	pCi	01-13-98	01-08-98	1.00E+00	sm	Surfac			27-01	G8319-5-84551
120-6-181770-T3	H3 TR	H3 Trit	3.94E+00	6.1E+01		3.9E+00	pCi	01-13-98	01-08-98	1.00E+00	sm	Surfac			27-01	G8319-6-84571
120-6-181770-T4	H3 TR	H3 Trit	4.26E+00	5.7E+01		3.9E+00	pCi	01-13-98	01-08-98	1.00E+00	sm	Surfac			27-01	G8319-7-84572
129-6-079370-T4	H3 TR	H3 Trit	1.06E+01	2.4E+01		3.9E+00	pCi	01-13-98	01-08-98	1.00E+00	sm	Surfac			27-01	G8319-3-84528
QA REA	H3 TR	H3 Trit	8.13E-01	1.4E+02	U	1.9E+00	pCi	01-12-98	01-12-98	1.00E+00	sm	QA Sur			27-01	G8323-0-07278

Comment:
GAM20 = 20 MINUTE GAMMA SCAN

Qualification Flags:

E = Estimated Quantity
H = High Recovery for Sample
J = Result is less than the RDL
L = Low Recovery for Sample
P = Preliminary Results
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R = Results are Unusable, Resampling is Necessary
U = Result is less than Minimum Detectable Activity

Note: % Error is the 2.0 Sigma Error

Prepared by:

Date:

Approved by:

Date:

(Level 1)

Bechtel Nevada Corporation

ANALYTICAL SERVICES LABORATORY
P.O.Box 3936, N. Las Vegas, NV 89036

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Reported to: CAU 120, Areas 5 & 6 Tanks
Remediation Projects
A. T. Urbon
M/S NTS306

Report Date: 4-FEB-98
Sample Delivery Group: B063
Batch: M328
Program: 888

Report No. :

Sample ***** Identification *****	Isotope	Analysis	Result	Error %	Qual Flag	MDA	Result Units	Analysis Date	Sample Coll Date	Size	Size Units	Type Matrix	Tracer Yield %	Spike Recv %	System Detector	Packet-Item Sample
QA SP:H32.5 07	H3 TR	H3 Trit	1.43E+01	1.1E+01		2.0E+00	pCi	01-12-98	05-05-97	1.00E+00	sm	QA Sur		123.3	27-01	G8323-1-07279

Comment:
GAM20 = 20 MINUTE GAMMA SCAN

Prepared by: [Signature] Date: 2/4/98

Approved by: [Signature] Date: 2/5/98

Qualification Flags:

E = Estimated Quantity
H = High Recovery for Sample
J = Result is less than the RDL
L = Low Recovery for Sample
P = Preliminary Results
Q = Bad Instrument Quality Control, Result is OK
R = Results are Unusable, Resampling is Necessary
U = Result is less than Minimum Detectable Activity

Note: % Error is the 2.0 Sigma Error

Bechtel Nevada

Interoffice Memorandum

To: S. J. Nacht

Date: May 4, 1998

From: T. P. Van Sittert
Analytical Services Laboratory, 295-7472

No.: 2150-AL-98-0212

Subject: DATA REPORT FOR SAMPLE DELIVERY GROUP (SDG) B195
Project No. 04001

Analytical Services Laboratory's results have been reported to A. T. Urbon for the strontium and plutonium analyses of eight soil and swipe samples submitted to the laboratory on January 18, 1998. Also included was a statement of services which indicated the charge number associated with this SDG.

The samples were submitted as a part of 18 soil and swipe samples initially processed for gamma spectroscopy and tritium analyses. These determinations were completed and reported under SDG B063. Subsequently, the client requested additional analyses of the eight samples based on review of those data.

SPECIFIC:

Plutonium:

Method associated quality assurance (QA) and quality control (QC) criteria were met.

Small aliquots of the soil samples were processed for this determination. Accordingly, the data reflects strictly the aliquot analyzed and may not be representative of the sample as a whole.

The swipe samples were previously acid digested and put into solution for counting by gamma spectroscopy. Aliquots of those solutions were processed for this determination.

Strontium:

Method associated QA and QC criteria were met.

Small aliquots of the soil samples were processed for this determination. Accordingly, the data reflects strictly the aliquot analyzed and may not be representative of the sample as a whole.

The swipe samples were previously acid digested and put into solution for counting by gamma spectroscopy. Aliquots of those solutions were processed for this determination.

2150-AL-98-0212

S. J. Nacht

Page 2 of 2

May 4, 1998

Please direct any questions you may have to your Client Service Representative, Ted Redding,
at 295-7220.

T. P. Van Sittert

TPV:mm

Subject Code: ENV3

cc: Correspondence Control, NLV008

K. A. Quintana, NLV022

A. T. Urbon (results enc.), NTS306

ASL SDG B195 file (results enc.), NTS273

ASL SDG B063 file (results enc.), NTS273

Bechtel Nevada Corporation

ANALYTICAL SERVICES LABORATORY
P.O.Box 3936, N. Las Vegas, NV 89036

Page 1

Reported to: CAU 120, Areas 5 & 6 Tanks
Remediation Projects
A. T. Urbon
M/S NTS306

Report Date: 30-APR-98
Sample Delivery Group: B195
Batch: M424
Program: 720

Report No. :

Sample ***** Identification *****	Isotope	Analysis	Result	Error %	Qual Flag	MDA	Result Units	Analysis Date	Sample Coll Date	Size	Size Units	Type Matrix	Carrier Yield %	Spike Recv %	System Detector	Packet-Item Sample
120-5A-SOIL	SR90 A	SR-90	3.39E+01	3.5E+00		3.3E-01	pCi/g	04-14-98	01-08-98	8.00E-01	gm	SOIL G	74.6		09-01	G8599-0-75018
120-6-079370-SOIL	SR90 A	SR-90	1.66E+04	3.4E-01		3.1E-01	pCi/g	04-14-98	01-08-98	8.00E-01	gm	SOIL G	80.8		09-03	G8599-2-75020
120-6-168313-SOIL	SR90 A	SR-90	2.60E+02	1.2E+00		3.0E-01	pCi/g	04-14-98	01-08-98	8.00E-01	gm	SOIL G	77.5		09-02	G8599-1-75019
120-6-181770-SOIL	SR90 A	SR-90	6.60E+02	1.1E+00		6.6E-01	pCi/g	04-14-98	01-08-98	4.00E-01	gm	SOIL G	77.5		09-04	G8599-3-75021
QA REA	SR90 A	SR-90	6.99E-02	2.8E+02	U	3.4E-01	pCi/g	04-14-98	03-02-98	8.00E-01	gm	QUAL	76.9		09-05	G8615-0-08255
QA SP:PUSR 02	SR90 A	SR-90	3.54E+00	1.2E+01		3.6E-01	pCi/g	04-14-98	02-07-92	8.00E-01	gm	QUAL	76.6	111.3	09-06	G8615-1-08256

Comment:

Analyses requested by client based on review of SDG B063 data. Sr and Plutonium in soil analyses were conducted on small aliquots of the samples. Data may not represent the entire sample.

Prepared by: [Signature]

Date: 4/30/98

Approved by: [Signature]

Date: 4/30/98

Qualification Flags:

E = Estimated Quantity
H = High Recovery for Sample
J = Result is less than the RDL
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Note: % Error is the 2.0 Sigma Error

Bechtel Nevada Corporation

ANALYTICAL SERVICES LABORATORY
P.O.Box 3936, N. Las Vegas, NV 89036

Page 2

Reported to: CAU 120, Areas 5 & 6 Tanks
Remediation Projects
A. T. Urbon
M/S NTS306

Report Date: 30-APR-98
Sample Delivery Group: B195
Batch: M425
Program: 720

Report No. :

Sample ***** Identification *****	Isotope	Analysis	Result	Error %	Qual Flag	MDA	Result Units	Analysis Date	Sample Coll Date	Size	Size Units	Type Matrix	Tracer Yield %	Spike Recv %	System Detector	Packet-Item Sample
120-6-079370-SWIPE	PU239	Pu	2.60E+01	7.7E+00		3.6E-02	pCi	04-07-98	01-08-98	1.00E+00	sm	Surfac	102.5		30-13	G8614-2-75024
120-6-079370-SWIPE	PU238	Pu	9.70E-01	1.6E+01		3.6E-02	pCi	04-07-98	01-08-98	1.00E+00	sm	Surfac	102.5		30-13	G8614-2-75024
120-6-168313-SWIPE	PU239	Pu	1.72E-01	4.2E+01		5.3E-02	pCi	04-07-98	01-08-98	1.00E+00	sm	Surfac	70.4		30-10	G8614-0-75022
120-6-168313-SWIPE	PU238	Pu	5.10E-01	2.5E+01		5.3E-02	pCi	04-07-98	01-08-98	1.00E+00	sm	Surfac	70.4		30-10	G8614-0-75022
120-6-168314-SWIPE	PU239	Pu	3.99E-01	2.7E+01		4.8E-02	pCi	04-07-98	01-08-98	1.00E+00	sm	Surfac	72.0		30-11	G8614-1-75023
120-6-168314-SWIPE	PU238	Pu	5.59E+00	1.1E+01		4.8E-02	pCi	04-07-98	01-08-98	1.00E+00	sm	Surfac	72.0		30-11	G8614-1-75023
120-6-181770-SWIPE	PU239	Pu	2.05E+01	8.2E+00		4.0E-02	pCi	04-07-98	01-08-98	1.00E+00	sm	Surfac	90.7		30-14	G8614-3-75025
120-6-181770-SWIPE	PU238	Pu	5.85E-01	2.0E+01		4.0E-02	pCi	04-07-98	01-08-98	1.00E+00	sm	Surfac	90.7		30-14	G8614-3-75025
QA REA	PU239	Pu	0.00E+00	0.0E+00	U	1.4E-02	pCi	04-07-98	03-02-98	1.00E+00	sm	QUAL	80.6		30-12	G8616-0-06340
QA REA	PU238	Pu	1.87E-03	3.5E+02	U	1.4E-02	pCi	04-07-98	03-02-98	1.00E+00	sm	QUAL	80.6		30-12	G8616-0-06340

Comment:

Analyses requested by client based on review of SDG B063 data.

Qualification Flags:

Note: % Error is the 2.0 Sigma Error

E = Estimated Quantity
H = High Recovery for Sample
J = Result is less than the RDL
L = Low Recovery for Sample
P = Preliminary Results
Q = Bad Instrument Quality Control, Result is OK
R = Results are Unusable, Resampling is Necessary
U = Result is less than Minimum Detectable Activity

Prepared by:

Date:

4/30/98

Approved by:

Date:

4/30/98

Bechtel Nevada Corporation

ANALYTICAL SERVICES LABORATORY
P.O.Box 3936, N. Las Vegas, NV 89036

Page 3

Reported to: CAU 120, Areas 5 & 6 Tanks
Remediation Projects
A. T. Urban
M/S NTS306

Report Date: 30-APR-98
Sample Delivery Group: B195
Batch: M425
Program: 888

Report No. :

Sample ***** Identification *****	Isotope	Analysis	Result	Error %	Qual Flag	MDA	Result Units	Analysis Date	Sample Coll Date	Size	Size Units	Type Matrix	Carrier Yield %	Spike Recv %	System Detector	Packet-Item Sample
QA SP:PUSR 02	PU239	Pu	8.62E-01	1.2E+01		1.3E-02	pCi	04-07-98	02-07-92	1.00E+00	sm	QUAL	80.4	100.8	30-09	G8816-1-08341
QA SP:PUSR 02	PU238	Pu	1.65E-03	3.5E+02	U	1.3E-02	pCi	04-07-98	02-07-92	1.00E+00	sm	QUAL	80.4		30-09	G8816-1-08341
120-6-079370-SWIPE	SR90 A	SR-90	2.72E+02	1.4E+00		4.8E-01	pCi	04-15-98	01-08-98	1.00E+00	sm	Surfac	78.1		09-05	G8814-2-75024
120-6-168313-SWIPE	SR90 A	SR-90	6.37E+00	1.1E+01		5.3E-01	pCi	04-15-98	01-08-98	1.00E+00	sm	Surfac	57.7		09-02	G8814-0-75022
120-6-168314-SWIPE	SR90 A	SR-90	1.33E+02	2.1E+00		4.9E-01	pCi	04-15-98	01-08-98	1.00E+00	sm	Surfac	68.2		09-03	G8814-1-75023
120-6-181770-SWIPE	SR90 A	SR-90	3.87E+00	1.3E+01		4.4E-01	pCi	04-15-98	01-08-98	1.00E+00	sm	Surfac	71.8		09-06	G8814-3-75025
QA REA	SR90 A	SR-90	3.38E-01	6.0E+01		3.1E-01	pCi	04-15-98	03-02-98	1.00E+00	sm	QUAL	64.8		09-04	G8816-0-08340
QA SP:PUSR 02	SR90 A	SR-90	2.56E+00	1.4E+01		3.3E-01	pCi	04-15-98	02-07-92	1.00E+00	sm	QUAL	68.5	100.4	09-01	G8816-1-08341

Comment:

Analyses requested by client based on review of SDG B063 data.

Prepared by: [Signature]

Date: 4/30/98

Approved by: [Signature]

Date: 4/30/98

Qualification Flags:

E = Estimated Quantity
H = High Recovery for Sample
J = Result is less than the RDL
L = Low Recovery for Sample
P = Preliminary Results
Q = Bad Instrument Quality Control, Result is OK
R = Results are Unusable, Resampling is Necessary
U = Result is less than Minimum Detectable Activity

Note: % Error is the 2.0 Sigma Error

(Level 1)

Bechtel Nevada Corporation

ANALYTICAL SERVICES LABORATORY
P.O.Box 3936, N. Las Vegas, NV 89036

Page 4

Reported to: CAU 120, Areas 5 & 6 Tanks
Remediation Projects
A. T. Urbon
M/S NTS306

Report Date: 30-APR-98
Sample Delivery Group: B195
Batch: M486
Program: 720

Report No. :

Sample ***** Identification *****	Isotope	Analysis	Result	Error %	Qual Flag	MDA	Result Units	Analysis Date	Sample Coll Date	Size	Size Units	Type Matrix	Tracer Yield %	Spike Recv %	System Detector	Packet-Item Sample
120-5A-SOIL	PU239	Pu	1.06E+01	1.4E+01		2.8E-01	pCi/g	04-14-98	01-08-98	5.63E-02	gm	SOIL G	72.1		30-02	G8599-0-75034
120-5A-SOIL	PU238	Pu	5.46E-01	5.0E+01		1.8E-01	pCi/g	04-14-98	01-08-98	5.63E-02	gm	SOIL G	72.1		30-02	G8599-0-75034
120-6-079370-SOIL	PU239	Pu	1.22E+02	1.0E+01		9.3E-01	pCi/g	04-14-98	01-08-98	1.40E-02	gm	SOIL G	80.8		30-04	G8599-2-75036
120-6-079370-SOIL	PU238	Pu	5.03E+01	1.2E+01		6.4E-01	pCi/g	04-14-98	01-08-98	1.40E-02	gm	SOIL G	80.8		30-04	G8599-2-75036
120-6-168313-SOIL	PU239	Pu	4.81E+00	4.2E+01		1.5E+00	pCi/g	04-14-98	01-08-98	9.74E-03	gm	SOIL G	80.3		30-03	G8599-1-75035
120-6-168313-SOIL	PU238	Pu	2.56E+01	1.9E+01		1.0E+00	pCi/g	04-14-98	01-08-98	9.74E-03	gm	SOIL G	80.3		30-03	G8599-1-75035
120-6-181770-SOIL	PU239	Pu	9.65E+02	1.3E+01		1.9E+01	pCi/g	04-14-98	01-08-98	8.02E-04	gm	SOIL G	72.7		30-07	G8599-3-75037
120-6-181770-SOIL	PU238	Pu	3.91E+01	5.0E+01		1.3E+01	pCi/g	04-14-98	01-08-98	8.02E-04	gm	SOIL G	72.7		30-07	G8599-3-75037
QA REA	PU239	Pu	-2.39E-03	1.9E+02	U	1.7E-02	pCi/g	04-14-98	04-09-98	1.00E+00	gm	QUAL	64.8		30-05	G8819-0-08275
QA REA	PU238	Pu	-5.99E-04	3.8E+02	U	1.2E-02	pCi/g	04-14-98	04-09-98	1.00E+00	gm	QUAL	64.8		30-05	G8819-0-08275

Comment:

Analyses requested by client based on review of SDG B063 data. Sr and Plutonium in soil analyses were conducted on small aliquots of the samples. Data may not represent the entire sample.

Prepared by:

Date: 4/30/98

Approved by:

Date: 4/20/98

Qualification Flags:

E = Estimated Quantity
H = High Recovery for Sample
J = Result is less than the RDL
L = Low Recovery for Sample
P = Preliminary Results
Q = Bad Instrument Quality Control, Result is OK
R = Results are Unusable, Resampling is Necessary
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Note: % Error is the 2.0 Sigma Error

Bechtel Nevada Corporation

ANALYTICAL SERVICES LABORATORY
P.O.Box 3936, N. Las Vegas, NV 89036

Page 5

Reported to: CAU 120, Areas 5 & 6 Tanks
Remediation Projects
A. T. Urbon
M/S NTS306

Report Date: 30-APR-98
Sample Delivery Group: B195
Batch: M486
Program: 888

Report No. :

Sample ***** Identification *****	Isotope	Analysis	Result	Error %	Qual Flag	MDA	Result Units	Analysis Date	Sample Coil Date	Size	Size Units	Type Matrix	Tracer Yield %	Spike Recv %	System Detector	Packet-Item Sample
QA SP:PU.25 01	PU239	Pu	8.24E-01	1.3E+01		1.6E-02	pCi/g	04-14-98	10-22-92	1.00E+00	gm	QUAL	73.9	96.3	30-06	G8819-1-06276
QA SP:PU.25 01	PU238	Pu	-5.59E-04	3.8E+02	U	1.1E-02	pCi/g	04-14-98	10-22-92	1.00E+00	gm	QUAL	73.9		30-06	G8819-1-06276

Comment:

Analyses requested by client based on review of SDG B063 data.
Plutonium in soil analyses were conducted on small aliquots of
the samples. Data may not represent the entire sample.

Prepared by:

Date: 4/30/98

Approved by:

Date: 4/30/98

Qualification Flags:

E = Estimated Quantity
H = High Recovery for Sample
J = Result is less than the RDL
L = Low Recovery for Sample
P = Preliminary Results
Q = Bad Instrument Quality Control, Result is OK
R = Results are Unusable, Resampling is Necessary
U = Result is less than Minimum Detectable Activity

Note: % Error is the 2.0 Sigma Error

***** End of Report *****

(Level 1)

From: Allison Urbon
To: REECO_Merc.PO_ACHEM.TJREDD
Date: 2/26/98 11:49am
Subject: Areas 5&6 Tanks - Analytical Services Request

Ted,

I have received and reviewed the analytical data under sample delivery ground (SDG) B063, regarding the above-referenced site. Based on the analytical results, I would like additional analytical performed on some of the samples. Please perform isotopic analysis for both Strontium and Plutonium on the following samples from this group (using the samples you have):

Sample Numbers:

120-5A-SOIL - 25015
120-6-079370-SOIL - 25364
120-6-168313-SOIL - 25016
120-6-181770-SOIL - 25365
120-6-079370-SWIPE - 84102
120-6-168313-SWIPE - 93070
120-6-168314-SWIPE - 84058
120-6-181770-SWIPE - 84228

A standard turnaround time should be used for these analyses. The same charge number as used previously (C4N2B0DE) should be used.

Please contact me if you have any questions.

Allison

CC: MERC-132.ALDERSL

SAMPLE REPROCESSING INSTRUCTIONS

CUSTOMER: Remediation Projects / 720

DATE: February 26, 1998

The following samples need to be (circle): **PROCESSED FOR ADDITIONAL ISOTOPES**

REWORKED

REPLATED

RECOUNTED

REPROCESSED

RESCREENED

RE-REVIEWED

OLD SAMPLE #	NEW SAMPLE #	NEW CHEM BATCH #	PROCESS DATE	PARAMETER	SDG B195	OLD PACKET-ITEM	NEW PACKET-ITEM	SAMPLE TYPE	ANALYSIS
25015	75018	M424			B063	G8317-0	G8599	11	11, 23
25016	75019	↓			↓	-1	↓	11	↓
25017	75020	↓			↓	-2	↓	11	↓
25018	75021	↓			↓	-3	↓	11	↓
83070	75022	M425			↓	G8318-1	G8614	80	↓
84058	75023	↓			↓	-2	↓	80	↓
84102	75024	↓			↓	-3	↓	80	↓
84228	75025	↓			↓	-4	↓	80	↓

Routing List: Initial/Date Instructions:

CSR

TR/2-26-98

Initiate process to login the samples for additional Pu and Sr determinations.

Receiving

CAI 3/01/98

Create a new SDG and packets-items for these samples for Pu and Sr analyses. Pull the parent samples and processed samples (swipes were digested for prior Gamma analysis) and submit to chemistry.

Lab

Process aliquots of the parent samples (soils) or digested samples (swipes) for the Pu and Sr determinations.

Counting

Process as normal.

Reviewer

Process as normal.

APPENDIX D

**RADIOLOGICAL SURVEY,
SWIPE SAMPLE, AND
LABORATORY ANALYTICAL RESULTS
AFTER SEDIMENT REMOVAL
FOR TANK “A”
OF CAS 05-01-01**

TUE APR 21.1998

GROUP A A 23 SURVEYS

SN	TIME	COUNTS A	COUNTS B	CPM A	CPM B	A/0000.304	B/0000.431	HR:MIN:SEC
1	1.00	0	3	-0.10	-0.50	-0.33	-1.16	13:53:21
2	1.00	1	3	0.90	-0.50	2.96	-1.16	13:54:32
3	1.00	0	1	-0.10	-2.50	-0.33	-5.80	13:55:42
4	1.00	0	2	-0.10	-1.50	-0.33	-3.48	13:56:53
	1.00	0	4	-0.10	0.50	-0.33	1.16	13:58:03
6	1.00	0	3	-0.10	-0.50	-0.33	-1.16	13:59:13
7	1.00	0	2	-0.10	-1.50	-0.33	-3.48	14:00:24
8	1.00	1	5	0.90	1.50	2.96	3.48	14:01:34
9	1.00	0	2	-0.10	-1.50	-0.33	-3.48	14:02:45
10	1.00	0	2	-0.10	-1.50	-0.33	-3.48	14:03:55
11	1.00	0	4	-0.10	0.50	-0.33	1.16	14:05:05
12	1.00	0	3	-0.10	-0.50	-0.33	-1.16	14:06:16
13	1.00	0	4	-0.10	0.50	-0.33	1.16	14:07:26
4	1.00	0	2	-0.10	-1.50	-0.33	-3.48	14:08:37
5	1.00	0	2	-0.10	-1.50	-0.33	-3.48	14:09:47
6	1.00	0	5	-0.10	1.50	-0.33	3.48	14:10:57
7	1.00	0	8	-0.10	4.50	-0.33	10.44	14:12:08
8	1.00	2	8	1.90	4.50	6.25	10.44	14:13:18
9	1.00	1	5	0.90	1.50	2.96	3.48	14:14:29
0	1.00	0	2	-0.10	-1.50	-0.33	-3.48	14:15:39
	1.00	1	8	0.90	4.50	2.96	10.44	14:16:50
2	1.00	0	6	-0.10	2.50	-0.33	5.80	14:18:00
3	1.00	0	3	-0.10	-0.50	-0.33	-1.16	14:19:10
4	1.00	1	3	0.90	-0.50	2.96	-1.16	14:20:21
5	1.00	0	3	-0.10	-0.50	-0.33	-1.16	14:21:31
6	1.00	1	5	0.90	1.50	2.96	3.48	14:22:42
7	1.00	0	3	-0.10	-0.50	-0.33	-1.16	14:23:52
8	1.00	0	4	-0.10	0.50	-0.33	1.16	14:25:03
9	1.00	0	6	-0.10	2.50	-0.33	5.80	14:26:13
0	1.00	0	8	-0.10	4.50	-0.33	10.44	14:27:23
1	1.00	0	3	-0.10	-0.50	-0.33	-1.16	14:28:34
2	1.00	0	0	-0.10	-3.50	-0.33	-8.12	14:29:44
3	1.00	0	7	-0.10	3.50	-0.33	8.12	14:30:55
4	1.00	0	3	-0.10	-0.50	-0.33	-1.16	14:32:05
5	1.00	0	-	-0.10	-0.50	-0.33	-1.16	14:33:16

→ 4400 dpm Hot Spot

38	1.00	0	3	-0.10	-0.50	-0.33	-1.16	14:36:47
39	1.00	0	1	-0.10	-2.50	-0.33	-5.80	14:37:57
40	1.00	0	2	-0.10	-1.50	-0.33	-3.48	14:39:07
41	1.00	0	1	-0.10	-2.50	-0.33	-5.80	14:40:18
42	1.00	0	3	-0.10	-0.50	-0.33	-1.16	14:41:28
43	1.00	0	10	-0.10	6.50	-0.33	-15.08	14:42:39
44	1.00	1	3	0.90	-0.50	2.96	-1.16	14:43:49
45	1.00	0	2	-0.10	-1.50	-0.33	-3.48	14:44:59
46	1.00	0	5	-0.10	1.50	-0.33	3.48	14:46:10

# IDENTIFICATION	TIME	PST A	PST B	BKG A	BKG B	Ka	Kb
A A 23 SURVEYS	1.00	9999999	9999999	0.10	3.50	0.304	0.431
B A 23 SURVEYS	1.00	9999999	9999999	0.10	3.50	0.304	0.431
C CHI SQUARE	1.00	9999999	9999999	0.00	0.00	0.000	0.000
A 23 SURVEYS	1.00	9999999	9999999	0.10	3.50	0.304	0.431
E EFFICIENCY	10.00	9999999	9999999	0.00	0.00	0.000	0.000

Bechtel Nevada

Interoffice Memorandum

To: S. J. Nacht

Date: May 4, 1998

From: T. P. Van Sittert
Analytical Services Laboratory, 295-7472

No.: 2150-AL-98-0214

Subject: DATA REPORT FOR SAMPLE DELIVERY GROUP (SDG) B321
Project No. 04001

Analytical Services Laboratory's results have been reported to A. T. Urbon for the gamma spectroscopy analysis of one composite sample consisting of forty-six swipes submitted to the laboratory on April 21, 1998. Also included was a statement of services which indicated the charge number associated with this SDG.

SPECIFIC:

Gamma Spectroscopy:

Method associated quality assurance and quality control criteria were met.

The swipe samples were digested in acid solution in order to put them in an appropriate counting geometry. The additional labor and materials required in this effort are reflected on the services statement.

Please direct any questions you may have to your Client Service Representative, Ted Redding, at 295-7220.

T. P. Van Sittert

TPV:mm

Subject Code: ENV3

cc: Correspondence Control, NLY008

K. A. Quintana, NLV022

A. T. Urbon (results enc.), NTS 306

ASL SDG B321 file (results enc.), NTS 273

Bechtel Nevada Corporation

ANALYTICAL SERVICES LABORATORY
P.O.Box 3936, N. Las Vegas, NV 89036

Page 1

Reported to: Remediation Projects

A. T. Urbon
M/S NTS306

Report Date: 29-APR-98

Sample Delivery Group: B321

Batch: 0692

Program: 720

Report No. :

Sample ***** Identification *****	Isotope	Analysis	Result	Error %	Qual Flag	MDA	Result Units	Analysis Date	Sample Coil Date	Size	Size Units	Type Matrix	Tracer Yield %	Spike Recv %	System Detector	Packet-Item Sample
46 SWIPE SAMPLES	No peaks	GAM20	0.00E+00	0.0E+00		0.0E+00	NA	04-23-98	04-21-98	1.00E+00	sm	Surfac			06-01	G8876-0-75038
QA BKG WATER U06	No Nucl Det	GAM20	0.00E+00	0.0E+00	U	0.0E+00	NA	04-23-98	07-01-95	5.00E+02	ml	QUAL			06-01	Q0536-0-00163
QA BKG WATER U06	AM241	GAM20	0.00E+00	0.0E+00	U	1.3E+02	pCi	04-23-98	07-01-95	1.00E+00	sm	QUAL			06-01	Q0536-0-00163
QA BKG WATER U06	CO60	GAM20	0.00E+00	0.0E+00	U	3.7E+01	pCi	04-23-98	07-01-95	1.00E+00	sm	QUAL			06-01	Q0536-0-00163
QA BKG WATER U06	CS137	GAM20	0.00E+00	0.0E+00	U	6.8E+01	pCi	04-23-98	07-01-95	1.00E+00	sm	QUAL			06-01	Q0536-0-00163
QA SP:QAW-6	AM241	GAM20	7.32E+04	8.0E+00		2.7E+02	pCi	04-23-98	08-01-90	1.00E+00	sm	QUAL		104.6	06-01	Q0586-1-13880
QA SP:QAW-6	CO60	GAM20	7.01E+04	8.8E+00		2.8E+02	pCi	04-23-98	08-01-90	1.00E+00	sm	QUAL		97.1	06-01	Q0586-1-13880
QA SP:QAW-6	CS137	GAM20	6.16E+04	8.1E+00		1.2E+02	pCi	04-23-98	08-01-90	1.00E+00	sm	QUAL		99.2	06-01	Q0586-1-13880

Comment:

The swipes were ashed, put into solution, and counted by gamma spectroscopy.

Prepared by:

Date:

4/29/98

Approved by:

Date:

4/29/98

Qualification Flags:

E = Estimated Quantity

H = High Recovery for Sample

J = Result is less than the RDL

L = Low Recovery for Sample

P = Preliminary Results

Q = Bad Instrument Quality Control, Result is OK

R = Results are Unusable, Resampling is Necessary

U = Result is less than Minimum Detectable Activity

Note: % Error is the 2.0 Sigma Error

***** End of Report *****

(Level 1)

PROJECT / CLIENT INFORMATION						REPORT INFORMATION								SAMPLE INFORMATION										
Project:		BN Org#:		Send Report to:		ALLISON URBON								Sampling Site: A-5 STORAGE TANK										
Charge No.: C4N2BODE		ASL Prog.: 720		Phone: 5-7520		Fax: 5-7761				M/S: NTS 306				The samples submitted contain (check); () Hazardous () Radioactive () Unknown contamination. If known, attach a brief narrative summary identifying contaminants. This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.										
Project Manager: STEVE NAUGHT				Turnaround: X Standard - 30 days Non-rad, 60 Days Rad, Other: () Rush Preliminary by: Final by:																				
Phone: 5-7234		Fax: 5-7761		M/S: NTS 306		Final report format: () Standard () NTS-WAC () Other:																		
LAB USE ONLY						ANALYSES & METHOD										SAMPLE RECEIPT INFORMATION								
Rad SGD: B321 Non-Rad SGD:						20 MIN SPEC										Are all sample containers received intact () Yes () No Comments:								
Rad Packet: G8876 Non-Rad Packet:																Do the labels agree with this form? () Yes () No Comments:								
Client Services Representative:																Was a Material Clearance Tag submitted? () Yes () No Comments:								
Will these analyses be performed under a signed SOW? () YES () NO If so, do analyses entered here agree with the SOW? () YES () NO () N/A If not, identify the variation _____ CSR initials indicating review and approval: Date:																								
ITEM		ID / DESCRIPTION		SAMPLING DATE TIME		MATRIX												COMMENTS (Preservative, size/volume, MS/MSD, special analysis, rad matrix code, count time, etc.)						
0		46 SWIPE SAMPLES		4-21-98 1100		80 04												N/A Ashed & put into solution. JFC						
1																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
Transfer of samples submitted for analyses 1600						Complete for samples shipped to an OFF-SITE Subcontract Laboratory																		
Sampled/Relinquished (Signature/Organization)				DATE / TIME		Received by (Signature/Organization)				Relinquished (BN Representative Signature)				DATE / TIME		Received (Courier & Tracking Info.)								
[Signature] BN ER				4-21-98		CD Castaneda																		
										Relinquished (Courier & Tracking Info.)				DATE / TIME		Received (1st tier Subcontractor Rep)								
										Relinquished (1st tier Subcontractor Rep)				DATE / TIME		Received (2nd tier Subcontractor Rep)								

DATE: 4-21-98 NO. A003377

Bechtel Nevada

Radiological Control Department- Ramatrol

Material Clearance

MONITOR: McCloskey
 ISSUING ORGANIZATION: BN-EN
 REQUESTING ORGANIZATION: LAR
 SURVEY LOCATION: A-5
 FROM: A-5
 TO: A-23

THIS MATERIAL HAS BEEN SURVEYED
 FOR RADIOACTIVITY AND MEETS
 DOE STANDARDS FOR RELEASE
 TO PUBLIC USE

INITIAL

CL

DESCRIPTION: _____

46 LA SWIPES
FOR 30 MIN GAMMA

REMARKS: EXP 4-28-98

THIS TAG EXPIRES 7 DAYS FROM
 ISSUE DATE

APPENDIX E

**CALCULATIONS OF
MAXIMUM THEORETICAL LEACHATE
CONCENTRATION FOR LEAD
FROM PAINTED CONTAINERS
IN CAS 06-01-01**

LEAD-BASED PAINT CALCULATION

The TCLP procedure is used to determine whether a waste meets the toxicity characteristic and is therefore considered a hazardous waste. Section 1.2 of the TCLP states, "If a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded, the TCLP need not be run." According to EPA guidance (January 1994 Monthly Hotline Guidance), "If no maximum theoretical leachate concentration equals or exceeds the appropriate regulatory limit, the solid cannot exhibit the toxicity characteristic, and the TCLP need not be run." Accordingly, the maximum theoretical leachate concentration of lead was calculated for each tank in CAS 06-01-01 based on the January 1994 guidance provided by EPA.

Maximum theoretical leachate concentration (M) for lead in paint on containers, where the waste is the containers and the paint, is calculated using the following equation:

$$M = \frac{[A \times B] + [C \times D]}{[B \times 20 \text{ L/kg}] + [D \times 20 \text{ L/kg}]}$$

where:

M = Maximum theoretical leachate concentration (in mg/L) of lead in the tank waste

A = Concentration of lead in the tank (mg/kg)

B = Weight of the tank (in mg)

C = Concentration of lead in the paint (in mg/kg)

D = Weight of the paint (in mg)

Calculations for each of these values for each tank are provided below and in the following tables.

"A" - Concentration of lead in the tank (steel)

The tanks and tankers (container) were constructed of either steel or fiberglass. There is no lead in either steel or fiberglass; therefore, for all containers, A = 0.

"B" - Weight of Tank Calculations

Container 181770 was a fiberglass tank. The weight of this container was taken directly from a specification sheet for fiberglass tanks.

Containers 168313, 168314, and 079370 were constructed of steel approximately 1/4-inch (0.0208333 foot) thick. Container 168313 was a dual-walled tanker with a gap of approximately 3 inches between tank layers. The volume of steel for each container, V, is determined by subtracting the volume of the inside dimensions of the container (Vi) from the outside dimensions of the container (Vo). For container 168313, the volume of steel for each container (inner and outer) was calculated separately and added together for the total volume of steel comprising the container. The following equations were

$$V = V_o - V_i = (\pi r_o^2 h_o) - (\pi r_i^2 h_i) \quad \text{used to calculate the volume of steel in each container:}$$

where:

r_o = radius of outside of tank
 h_o = length of outside of tank
 r_i = radius of inside of tank
 h_i = length of inside of tank

Because the containers were oval cylinders, rather than circular cylinders, the volume calculation is

$$V = V_o - V_i = (\pi r_o^2 h_o) - (\pi r_i^2 h_i) = (\pi r_{ov} r_{oh} h_o) \quad \text{determined using the vertical radii (rov and riv)}$$

and the horizontal radii (roh and rih) of the container. The equation to determine the volume of material comprising the containers (V) becomes:

$$B = V \times d$$

The weight of the steel, B, is then calculated by multiplying the volume of the container, V, by the density of the container:

where:

B = weight of the tank
V = Volume of steel comprising the tank
d = density of steel = 7.86 g/cm³

Table E-1 provides dimensions of the containers and resultants of the above calculations for CAS 06-01-01 tanks and tankers.

TABLE E-1 - CAS 06-01-01 CONTAINER DIMENSIONS AND CALCULATIONS OF THE WEIGHT OF THE CONTAINERS "B"

CONTAINER IDENTIFICATION	r_{oh} (in feet)	r_{ov} (in feet)	h_o (in feet)	V_o (in feet)	r_{ih} (in feet)	r_{iv} (in feet)	h_i (in feet)	V_i (in feet)	V (in ft ³)	V (in cm ³)	B - Weight of container (in kg)
181770	2.17	1.50	7.00	71.49							305
168313 (outer shell)	3.71	2.21	27.00	695.00	3.69	2.19	26.96	683.52	11.48	325,078	5,053
168313 (inner shell)	3.58	2.21	27.00	671.57	3.56	2.19	26.96	660.35	11.22	317,806	
168314	3.92	2.46	26.67	806.99	3.90	2.44	26.63	794.65	12.34	349,381	2,746
079370	3.50	3.50	7.08	272.70	3.48	3.48	7.04	267.87	4.82	136,539	1,073

Notes: - Weight of fiberglass container taken from manufacturer specification sheet
- Steel container thickness = 0.0208333 ft
- Density of steel = 7.86 g/cm³

"D" - Weight of Paint Calculations

The weight of the paint is calculated in the same manner as the weight of the tank; however, the outside dimensions of the paint are calculated by adding the thickness of the paint to the outside dimension of the tank. Therefore, the inside dimension of the paint is the same as the outside dimension of the container. The average thickness of the paint was approximated at one millimeter (0.00328 foot). Table E-2 provides dimensions and calculated values for the paint using the calculations as provided above.

CONTAINER IDENTIFICATION	r_{oh} (in feet)	r_{ov} (in feet)	h_o (in feet)	V_o (in feet)	V_i (in feet)	V_{paint} (in ft ³)	V_{paint} (in cm ³)	D - WEIGHT OF PAINT (in kg)
181770	2.170	1.503	7.007	71.83	71.49	0.33	9,403	24
168313	3.712	2.212	27.007	696.82	695.00	1.82	51,453	129
168314	3.920	2.462	26.674	808.94	806.99	1.95	55,284	138
079370	3.503	3.503	7.090	273.46	272.70	0.76	21,645	54

TABLE E-2 - CALCULATIONS OF THE WEIGHT OF PAINT ON THE CONTAINERS, "B"

Notes:

- Inside volume of paint = outside volume of outer container, or V_i (paint) = V_o (container)
- Paint thickness = 0.00328 ft
- Density of paint = 2.5 g/cm³

"C" - Concentration of Lead in Paint Calculations

The concentration of lead in the paint is not directly measured using the XRF; therefore, the "C" value is also not identified directly. The XRF measures the concentration of lead over the area of the tank (grams per centimeter squared). By using this areal concentration and calculating over the area of the tank, the weight of the lead in the paint (which is the resultant of CxD) can be obtained and plugged directly into the calculation for the maximum theoretical leachate concentration for the tank. The data used to calculate the "C x D" resultant are provided in Table E-3.

TABLE E-3 - CALCULATIONS OF THE WEIGHT OF LEAD IN THE PAINT BASED ON RESULTS OF MEASURED LEAD CONCENTRATIONS FOR EACH CONTAINER

* Maximum concentration of lead on the painted surface measured with the XRF.

CONTAINER IDENTIFICATION	AREA OF CYLINDRICAL TANK SURFACE (ft ²)	AREA OF TANK ENDS (ft ²)	TOTAL AREA OF TANK SURFACE (ft ²)	AREA OF TANK SURFACE (cm ²)	LEAD IN PAINT* (mg/cm ²)	C x D - WEIGHT OF LEAD IN PAINT (mg)
181770	80.7	21.1	101.8	94,564.2	1.9	179,672
168313	502.1	55.0	557.1	517,578.5	3.1	1,604,493
168314	534.3	63.9	598.2	555,705.3	25	13,892,633
079370	155.8	77.0	232.8	216,302.4	0	0

"M" - Maximum Theoretical Leachate Concentration Calculation (MTLC)

The MTLC can now be calculated for each container using the equation provided on page E-1. Results are shown in Table E-4.

TABLE E-4 - MTLC CALCULATIONS

CONTAINER IDENTIFICATION	A	B	C x D	D	M (mg/L)
181770	0	305	179,672	24	27
168313	0	5,053	1,604,493	129	15
168314	0	2,746	13,892,633	138	241
079370	0	1,073	0	54	0

APPENDIX F

LABORATORY ANALYTICAL RESULTS FOR TCLP/METALS ANALYSIS OF CAS 06-01-01 CONTAINERS

Bechtel Nevada

Interoffice Memorandum

To: S. J. Nacht

Date: October 22, 1998

From: L. W. Hatcher
Analytical Services Laboratory, 295-7109

No.: 2150-AL-99-0013

Subject: DATA REPORT FOR SAMPLE DELIVERY GROUP (SDG) V509
Project No. 04001

Quanterra Environmental Service's (QES) results for the Toxicity Characteristic Leaching Procedure (TCLP) metals (except mercury) analyses of three samples collected on September 28, 1998 are included with a copy of this memorandum to A. T. Urbon. Also included is a statement of services which indicates the analytical costs and charge number associated with this project.

Preliminary data were faxed to the client on October 21, 1998.

SPECIFIC:

TCLP 7 Metals:

Method associated quality assurance and quality control criteria were met. Sample results qualified with a "B" indicate the concentration is between the customer required quantitation limit (CRQL) and instrument detection limit (IDL).

Sample PBT186469 was an extraction blank carried through the extraction and analysis process.

Please direct any questions you may have to your Client Service Representative, Ted Redding, at 295-7220.

L. W. Hatcher

LWH:tr

Subject Code: ENV3

cc: Correspondence Control, NLV008
EM correspondence, NLV080
A. T. Urbon, (results enc.) NTS306
ASL SDG V509, (results enc.) NTS273

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

CASE NARRATIVE

Bechtel Nevada Corporation
MAIL STOP NTS273
2621 Losee Road
Building A-2, Receiving
North Las Vegas, NV 89030-4129

October 16, 1998

Attention: Ted Redding

Quanterra Project Number	: 625.01
Date Received	: September 30, 1998
Number of Samples	: Three (3)
SDG Name	: V509
Bechtel Report No.	: W1540
Sample type	: Solid

INTRODUCTION

Three (3) solid samples from Bechtel Nevada were received at Quanterra Environmental Services, Earth City, MO for TCLP ICAP analyses. The analytical test performed, as well as date of receipt and analysis, can be found in the enclosed data package and corresponding summary report.

Reviewed and Approved

Allen M. Field
Quanterra Project Manager

PAGE 2 of 3

October 16, 1998

Quanterra Project Number: 625.01

The sample was labeled as follows:

<u>CLIENT ID</u>	<u>LAB ID</u>	<u>MATRIX</u>
120-6-168313	18989-001	Solid
120-6-168314	18989-002	Solid
120-6-181770	18989-003	Solid

ANALYTICAL RESULTS/METHODOLOGY

The analytical results are presented by analytical test in the attached data packages. This report includes information on client identification numbers, lab identification numbers, preparation date, analysis date, results, units, and results for quality control samples.

The following table is a list of the analyses and the methods used for the above samples:

<u>Analysis</u>	<u>Method</u>
TCLP ICAP	EPA 1311/6010

QUALITY CONTROL

A method blank and a laboratory control sample were analyzed with the samples listed above per parameter.

NONCONFORMANCES

No nonconformance was observed with the analysis of these samples.

COMMENTS

TCLP

All the client's samples were prepped 25 mls to 100 mls for the ICP digestion. The extraction blank (PBT186469) was prepped undiluted.

Receipt

Login 18989 was received at a temperature of 3°C.

PAGE 3 of 3

October 16, 1998

Quanterra Project Number: 625.01

QUALIFIERS/DEFINITIONS

*	= Reported value outside the QC limits
NC	= No criteria at this time
NA	= Not applicable
ND	= Non - detect
MG/L	= Milligrams per liter
UG/L	= Micrograms per liter
%REC	= Percent Recovery
QCBLK	= Method Blank
QCLCS	= Laboratory Control Sample
CRDL	= Customer Required Detection Limit
RPD	= Relative Percent Difference
IDL	= Instrument detection limit
DL	= PQL
J	= Estimated Value (Organics only)
D	= Diluted
U	= Non - Detect
B	= Value greater than IDL but less than CRDL (Metals only)
B	= Analyte found in the blank (Organics only)
E	= Exceeds calibration

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

[illegible]

Comments:

Signature: _____ Name: _____
Date: _____ Title: _____

000002

000003

EPA SAMPLE NO.

120-6-168313

SDG No. : V509

Lab Sample ID: P18989-001

Date Received: 09/30/98

0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

[illegible]

Clarity Before: _____

Texture: _____

Clarity After: _____

Artifacts:

omments:

FORM I - IN

TCLP

00004

1
INORGANIC ANALYSES DATA SHEET

120-6-168314

Solids: 0.0

[illegible]

ments:

TCLP

000005

1

INORGANIC ANALYSES DATA SHEET

120-6-181770

Concentration Units (ug/L or mg/kg dry weight): UG/L

000006

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

TCLP

000007

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

[illegible]

000003

3
BLANKS

[illegible]

000009

4
ICP INTERFERENCE CHECK SAMPLE

Concentration Units: ug/L

[illegible]

000011

LABORATORY CONTROL SAMPLE

[illegible]

000011

U.S. EPA - CLP

11A

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

b Name: QUANTERRA_MO Contract: 625.01

b Code: ITMO Case No.: SAS No.: SDG No.: V509

P ID Number: TJA61E Date: 10/01/98

Analyte	Wave-length (nm)	Interelement Correction Factors for :				
		Al	Ca	Fe	Mg	AL_
Arsenic	193.70	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	455.40	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	228.80	0.0000000	0.0000000	0.0000600	0.0000000	0.0000000
Chromium	267.72	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	220.35	0.0003800	0.0000000	0.0001870	0.0000000	0.0002300
Copper	196.03	0.0000000	0.0000000	0.0000270	0.0000000	0.0000000
Lead	328.07	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Mercury						
Manganese						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silver						
Sodium						
Sulfur						
Titanium						
Zinc						

Comments:

FORM XI (Part 1) - IN

TCLP

000013

11B
ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

ICP ID Number: TJA61E Date: 10/01/98

[illegible]

TCLP

000014

11B

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

P ID Number: TJA61E Date: 10/01/98

[illegible]

ments:

12

Lab Name: QUANTERRA MO _____, Contract: 625.01 _____

Lab Code: ITMO_ Case No.: _____ SAS No.: _____ SDG No.: V509_____

ICP ID Number: TJA61E_____ Date: 10/01/98

[illegible]

omments:

FORM XII - IN

TCLP

nnnnn

13
PREPARATION LOG

ethod: P_

[illegible]

TCLP

000017

U.S. EPA - CLP

14
ANALYSIS RUN LOG

Lab Name: QUANTERRA_MO _____ Contract: 625.01 _____

Lab Code: ITMO _____ Case No.: _____ SAS No.: _____ SDG No.: V509 _____

Instrument ID Number: TJA61E _____ Method: P_

Start Date: 10/05/98 End Date: 10/05/98

EPA Sample No.	D/F	Time	% R	Analytes																									
				A S	B A	C D	C R	P B	S E	A G																			
S0	1.00	1753		X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
S	1.00	1758		X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
S	1.00	1802		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
S	1.00	1806		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ICV	1.00	1811		X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ICB	1.00	1816		X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ICSA	1.00	1820		X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ICSAB	1.00	1825		X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PBW186753	1.00	1829		X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LCSW186753	1.00	1834		X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZZZZZZ	1.00	1838		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZZZZZZ	1.00	1843		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZZZZZZ	1.00	1848		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZZZZZZ	1.00	1852		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZZZZZZ	1.00	1857		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZZZZZZ	1.00	1901		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CCV	1.00	1906		X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CCB	1.00	1910		X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZZZZZZ	1.00	1915		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
120-6-168313	1.00	1920		X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
120-6-168314	1.00	1924		X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
120-6-181770	1.00	1929		X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZZZZZZ	1.00	1933		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZZZZZZ	1.00	1938		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZZZZZZ	1.00	1942		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZZZZZZ	1.00	1947		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZZZZZZ	1.00	1952		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZZZZZZ	1.00	1956		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CCV	1.00	2001		X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CCB	1.00	2005		X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZZZZZZ	1.00	2010		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZZZZZZ	1.00	2014		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

FORM XIV - IN

TCLP

000013

14
ANALYSIS RUN LOG

[illegible]

TCLP

000013

SAMPLE DELIVERY GROUP: V509

CLIENT: ER - ALLISON URBON

LABORATORY: NEL

FINAL REPORT RECEIVED: 10/19/98

DATE REVIEWED: 10/21/98

REVIEWED BY:

TCLP METALS:

MATRIX: SOLID

ARE TCLP METALS DATA ACCEPTABLE: YES

1. Are Method Blanks Acceptable:	<u>YES</u>
2. Are Matrix Spikes Acceptable:	<u>N/A</u>
3. Are QC Samples Acceptable:	<u>YES</u>
4. Are Holding Times Acceptable:	<u>YES</u>

		<u># DAYS</u>	<u>ACCEPTABLE</u>
a. Date Sampled:	<u>9/28/98</u>	<u>0</u>	<u>0</u>
b. Date ASL Received:	<u>9/28/98</u>	<u>0</u>	<u>1</u>
c. Date Contract Lab Received:	<u>9/30/98</u>	<u>2</u>	<u>5</u>
d. Date Extracted:	<u>10/2/98</u>	<u>4</u>	<u>Hg-28/Others-180</u>
e. Date Hg Analyzed:	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
f. Date Others Analyzed:	<u>10/5/98</u>	<u>3</u>	<u>180</u>

5. Are Forms correct:	<u>YES</u>
6. Are correct concentration units used:	<u>YES</u>
7. Are analyses completed:	<u>YES</u>
8. Chain-of-Custody agrees:	<u>YES</u>

COMMENTS: Method associated quality assurance and control criteria were met. Sample PBT186469 was an extraction blank carried through the extraction and analysis process. Sample results qualify with a "B" indicate the concentration is between the CRQL and IDL.

BN-0732 (02/98)

Project Manager: A. Field

raft: Final:

Entered and Reviewed by: [Signature]

PH Review: [Signature]

Sample Header Template:

Sample No.	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
Comments								
# Container Type		Analysis	Class	Preservative	Anal. Due Date	Hold Date Site	(Container Numbers:X Filled)	
8989-001	120-6-168313	Solid	28-SEP-98 10:45	30-SEP-98 09:00	14-OCT-98	FED-EX	1	Screening not Required
LIMITED VOLUME.								
1 GN - Glass Jar-120ML		EXTMETAL/TCLP/Q4	S	COLD	12-OCT-98	26-OCT-98 R14C		(407793:1)
1		ICAP/TCLP/Q4	S	COLD	12-OCT-98	27-MAR-99 R14C		(407793:1)
8989-002	120-6-168314	Solid	28-SEP-98 11:00	30-SEP-98 09:00	14-OCT-98	FED-EX	1	Screening not Required
LIMITED VOLUME.								
1 GN - Glass Jar-120ML		EXTMETAL/TCLP/Q4	S	COLD	12-OCT-98	26-OCT-98 R14C		(407794:1)
1		ICAP/TCLP/Q4	S	COLD	12-OCT-98	27-MAR-99 R14C		(407794:1)
8989-003	120-6-181770	Solid	28-SEP-98 11:15	30-SEP-98 09:00	14-OCT-98	FED-EX	1	Screening not Required
LIMITED VOLUME.								
1 GN - Glass Jar-120ML		EXTMETAL/TCLP/Q4	S	COLD	12-OCT-98	26-OCT-98 R14C		(407795:80)
1		ICAP/TCLP/Q4	S	COLD	12-OCT-98	27-MAR-99 R14C		(407795:80)

*=Sample has not been rad screened.

***** BECHTEL NEVADA SHIPPING SYSTEM *****

Run Date: 9/29/1998 MATERIALS/EQUIPMENT MOVEMENT Page 1
 Run Time: 09:01 REQUEST
 Run Date: 9/29/1998

NON HAZARDOUS

Request #: NTS 070616 Movement to a non BN location

B2

From: CASTANEDA, C
 SN/MS: F14D / NTS273
 JG/RM: 650 13
 PHONE: 295-7884

To: QUANTERRA
 13715 RIDER TRAIL NORTH
 EARTH CITY
 MO 63045
 ALLEN FIELD
 (314) 298-8566

Item	PROP #	Serial #	QTY	U/M	ACCT	Job/ISO/ACT	ORGN
PAINT CHIPS			3	EA	6241	C4N2B0DE	2150

Not a Hazardous Material

Creation Date: 9/29/1998 Transmit Date: 9/29/1998
 Required at DESTN: 9/30/1998 Return Date:
 Reason for Shipment: LAB ANALYSIS P.O. #2668
 Method of Shipment: AIR SHIPMENT/HAND CARRY TO WAREHOUSE
 Stores Request NBR: OLD PO:
 Warehouse Response: PR:
 SE Response date: PO:
 Delivery Date: BUYER:
 Number of pieces: 1 Buyer Approval Date:
 Date Shipped: RMA #

Department managers signature required
 AIR SHIPMENTS and TRANSFERS.

Released By	Date
<u>CS Castaneda</u>	09/29/98
Received By	Date

***** END OF REQUEST *****

Federal Express Tracking #804740081909

71bs.

Login No.: 18985

Condition Upon Receipt Variance Report
St. Louis LaboratoryClient: BechtelDate: 9-30-98 Time: 0900Project No: 625.01Initiated by: Joe TremainShipper/No: Fedex

RFA/COC Numbers: _____

Condition/Variance (Check all that apply):

1. ☐ Sample received broken/leaking.	8. ☐ Sample ID on container does not match sample ID on paperwork. Explain: _____
2. ☐ Sample received without proper preservative.	
☐ Cooler temperature not within 4°C ± 2°C	
Record temperature: _____	
☐ pH _____	9. ☐ All coolers on airbill not received with shipment.
☐ other: _____	10. ☐ Other (explain below): _____
3. ☐ Sample received in improper container.	
4. ☐ Sample received without proper paperwork. Explain: _____	
5. ☐ Paperwork received without sample.	
6. ☐ No sample ID on sample container.	
7. ☐ Custody tape disturbed/broken/missing.	

☒ No variances were noted during sample receipt.Cooler Temperature Upon Receipt: 43°C

Notes: _____

Corrective Action:

☐ Client's Name: _____	Informed verbally on: _____	By: _____
☐ Client's Name: _____	Informed in writing on: _____	By: _____
☐ Sample(s) processed "as is".	_____	
☐ Sample(s) on hold until: _____	=	If released, notify: _____

Sample Control Supervisor Review: (or designate) Joe Tremain Date: 9-30-98Project Management Review: Allen M. Field Date: 10-2-98

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

DATE: 9-21-91 NO. A001713

Bechtel Nevada

Radiological Control Department- Ramatrol

Material Clearance

MONITOR: L. PARADISI
 ISSUING ORGANIZATION: MLSD
 REQUESTING ORGANIZATION: EPH
 SURVEY LOCATION: A-6 Brown Pass
 FROM: A-6
 TO: A-73

THIS MATERIAL HAS BEEN SURVEYED
 FOR RADIOACTIVITY AND MEETS
 DOE STANDARDS FOR RELEASE
 TO PUBLIC USE

INITIAL

[Handwritten initials]

DESCRIPTION: TRAILER
TRAILER (FLAT) - 10
HPA TRAILER
NO. 100 500000

REMARKS:

THIS TAG EXPIRES 7 DAYS FROM
 ISSUE DATE

COPY 1: HPD RECORDS M/S NTS450
 COPY 2: WITH ITEMS THAT WERE CLEARED

BN-0488 (10/96)

APPENDIX G

WASTE DISPOSITION CERTIFICATES

WASTE CONTROL TRAFFIC

Shipment No.	Carrier	Trailer No	Seals	HRCQ?
DPL99002	BECHTL	N/A	1 N/A	N
			2	

Drums	Boxes	NS/ICC	Pieces	Pounds	Kilograms
0	+	2	+	0	-
				2	
				4560	2068

	Time	Date	Day
Departed Home At	08:00	21-JAN-1999	THURSDAY
ETA At NTS	09:00	21-JAN-1999	THURSDAY
ATA At NTS RWMS	09:25	21-JAN-1999	THURSDAY
Departed NTS RWMS	10:00	21-JAN-1999	THURSDAY

Comments

Bechtel Nevada

<<	<	>	>>	Query	Save	Exit
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Bechtel Nevada

WASTE CONTROL TRAFFIC

Shipment No.	Carrier	Trailer No	Seals	HRCQ?
DPL99049	BECHTL	84177	1 NA	N
			2	

Drums	Boxes	NS/ICC	Pieces	Pounds	Kilograms
0	+	0	+	1	-
				1	
				8250	3742

	Time	Date	Day
Departed Home At	13:00	26-MAY-1999	WEDNESDAY
ETA At NTS	14:00	26-MAY-1999	WEDNESDAY
ATA At NTS RWMS	10:50	27-MAY-1999	THURSDAY
Departed NTS RWMS	11:10	27-MAY-1999	THURSDAY

Comments

HPD TANKER NO. 168313

Bechtel Nevada

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Query

Save

Exit

Bechtel Nevada

WASTE CONTROL TRAFFIC

Shipment No.	Carrier	Trailer No	Seals	HSEQ?
DPL99050	BECHTL	84177	1 NA	N
			2	

Drums	Boxes	NS/ICC	Pieces	Pounds	Kilograms
0	+	0	+	1	=
				1	
				7560	3429

	Time	Date	Day
Departed Home At	13:00	26-MAY-1999	WEDNESDAY
ETA At NTS	14:00	26-MAY-1999	WEDNESDAY
ATA At NTS RWMS	15:55	26-MAY-1999	WEDNESDAY
Departed NTS RWMS	16:30	26-MAY-1999	WEDNESDAY

Comments

HPD TANKER NO. 168314

Bachtel Nevada

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Query

Save

Exit

Bachtel Nevada

WASTE CONTROL TRAFFIC

Shipment No.	Carrier	Trailer No	Seals	HRCQ7
DPL99048	BECHTL	84177	1 NA	N
			2	

Drums	Boxes	NS/ICC	Pieces	Pounds	Kilograms
0	+	0	+	1	=
				1	
				680	
					308

	Time	Date	Day
Departed Bone At	13:00	26-MAY-1999	WEDNESDAY
ETA At NTS	14:00	26-MAY-1999	WEDNESDAY
ATA At NTS RWMS	15:55	26-MAY-1999	WEDNESDAY
Departed NTS RWMS	16:30	26-MAY-1999	WEDNESDAY

Comments

HPD TANKER NO. 079370

Bechtel Nevada

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Query

Save

Exit

Bechtel Nevada

Basic Control Traffic

Shipment No.	Carrier	Trailer No	Seals	HREQ
DPL99051	BECHTL	81477	1 MA	N
			2	

Drums	Boxes	NS/ICC	Pieces	Pounds	Kilograms
0	0	1	1	560	254

	Time	Date	Day
Departed Home At	09:30	09-JUN-1999	WEDNESDAY
ETA At NTS	10:00	09-JUN-1999	WEDNESDAY
ATA At NTS RWMS	10:15	09-JUN-1999	WEDNESDAY
Departed NTS RWMS	11:15	09-JUN-1999	WEDNESDAY

Comments

HPD TANK NO. 181770

Bechtel Nevada

<< < > >> Query Save Exit

Bechtel Nevada

APPENDIX H
DISTRIBUTION LIST

DISTRIBUTION LIST

* Provide copy of initial distribution of Revision 0; remainder of list gets Revision 0 if approved without changes. The entire list receives Revision 1, if issued.

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APPENDIX I

NDEP DOCUMENT REVIEW SHEETS

DOCUMENT REVIEW SHEET

CR - CAU 120
Areas 5&6 ASTs
Section: REFERENCES
Revision: 0
Date: June 8, 1999

1. Document Title/Number: SAFER Work Plan for Closure of CAU 120: Areas 5 and 6 Aboveground Storage Tanks, Nevada Test Site 2. Document Date: November 1997 3. Revision Number: 1 4. Originator/Organization: Bechtel Nevada 5. Date Comments Due: 6. Reviewer/Organization: Nevada Division of Environmental Protection				
7. Comment Number/ Location	8. Type ^a	9. Comment	10. Comment Response	11. Accept
1. Section 1.1, Scope		The scope limits the corrective action to the "tanks, piping, and associated debris, including any residues in the tanks, and does not include the ground under and around these Above Ground Storage Tanks (ASTs). As it is prudent to assume some leakage or spillage from these tanks, the soil must be included in the characterization of the SAFER plan or the soils assigned a new CAS identification for entry into a CAU in Appendix II.	The ground under and around the ASTs is not included in this scope of work for the following reasons: <ul style="list-style-type: none"> CAS 05-01-01 - The site remains an active site for sampling and discharging water from the associated well (RNM-1). The ground below these tanks was specifically excluded based on this reason, as discussed in a December 20, 1996 letter from DOE to NDEP. CAS 06-01-01 - The ground under and around the ASTs at the Area 6 CP-50 Hot Park is already listed in CAU 176 and is assigned CAS number 06-23-04. 	Yes - No action required as it has already been addressed.

a. Comment Types: M=Mandatory S=Suggested

DOCUMENT REVIEW SHEET

CR - CAU 120
Areas 5&6 ASTs
Section: REFERENCES.
Revision: 0
Date: June 8, 1999

7. Comment Number/ Location	8. Type ^a	9. Comment	10. Comment Response	11. Accept
2. Section 1.1, Scope		The constituents of concern (COC) are not "limited to radiological constituents". It is necessary to determine and confirm that hazardous wastes, listed and characteristic, are below regulatory limits. The results of the SAFER corrective action must demonstrate the status of "mixed waste/debris" or "low level waste" or "ordinary solid waste/debris".	<p>The containers in this CAU were not found to be regulated under RCRA for the following reasons:</p> <ul style="list-style-type: none"> • The generator had sufficient knowledge of the process used for CAS 05-01-01. The process generating the waste would not have produced any hazardous waste. NDEP comment #4 indicates support for this determination. • CAS 06-01-01 consists only of four containers. All four containers were found to meet the empty container definition of RCRA 261.7(b) and were therefore not regulated under RCRA. • Appendix A of the SAFER Work Plan provided results from U.S. EPA calculations that showed the paint on the tanks would not cause them to be a hazardous waste. Based on NDEP comments on the Work Plan, samples were collected to validate this conclusion. These results also showed that much higher concentrations of lead than had been used in the initial calculations would not cause containers to become hazardous waste. Results are presented in Section 2.2 of the Closure Report. 	<p>No</p> <p>Existing information (CAS 05-01-01) and RCRA regulations (06-01-01) support the list of COCs.</p> <p>Section 2.2 of Closure Report provides additional support of this list of COCs.</p>

a. Comment Types: M=Mandatory S=Suggested

DOCUMENT REVIEW SHEET

CR - CAU 120-
Areas 5&6 ASTs
Section: REFERENCES.
Revision: 0
Date: June 8, 1999

7. Comment Number/ Location	8. Type*	9. Comment	10. Comment Response	11. Accept
3. Section 1.1, Scope		The statement that the "appropriate corrective action for both CASs is clean closure" must apply to the soils within each CAU, unless any soil contamination is divorced from CAU 120.	Soil contamination is not covered under CAU 120, as is described in Comment #1.	Addressed elsewhere
4. Section 1.3, Approach for Characterization and Closure		The approach is silent on the subject of hazardous properties which may or may not be present. Whereas the tanks comprising CAS 05-01-01 may not exhibit a hazardous characteristic and that may be defended by documented process knowledge, the history of the tanks comprising CAS 06-01-01 indicates a more varied exposure and the assumption that hazardous properties are absent has not been satisfactorily documented. In other words, the SAFER plan can not be constrained solely to radiological interests; the issue of possible mixed waste must be confirmed or refuted.	<p>CAS 05-01-01 - As mentioned in this comment by the NDEP, DOE has sufficient generator knowledge to support the absence of hazardous characteristics based on the history of the tanks.</p> <p>CAS 06-01-01 - It is agreed that these tanks potentially contained more varied constituents than those in CAS 05-01-01. However, all of these tanks/tankers were also found to be RCRA-empty. On this basis, the plan was constrained to radiological interests. The only other area of potential RCRA regulation was in the form of metal-bearing paint on the tanks/tankers (refer to NDEP comment #12).</p>	No

a. Comment Types: M=Mandatory S=Suggested

DOCUMENT REVIEW SHEET

CR - CAU 120
Areas 5&6 ASTs
Section: REFERENCES.
Revision: 0
Date: June 8, 1999

7. Comment Number/ Location	8. Type ^a	9. Comment	10. Comment Response	11. Accept
5. Section 1.4, SAFER Work Plan Contents		The reference to the NERP Industrial Sites Quality Assurance Project Plan, Rev 1, is appropriate only so far as the deficiencies of the QAP are repaired in the specific corrective action plan. The closure documentation must be persuasive that the radiological and chemical measurements adequately represent the wastes comprising the CASs, such that the closure has better than 95% chance of not requiring further action under the FFACO.	The closure activities as presented have better than 95% chance of not requiring further action under the FFACO because remediation at this site consisted of waste characterization and disposal, which was done under existing waste characterization and disposal procedures.	Yes - No action required.
6. Section 2.1.2, Preliminary Investigation		What does an Electra meter measure and what is its sensitivity; i.e., what is the lowest energy that it can detect?	An Electra meter counts the alpha, beta, and gamma emissions and measures them in disintegrations per minute. The average minimum detectable activity is 0.782 dpm alpha and 2.53 dpm beta or gamma.	Yes See section 2.1.3
7. Section 2.1.2, Preliminary Investigation		Concerning the screening of Tank A (Area 5), the indication was that elevated beta levels were detected and screening was suspended at that time for that tank, yet a later inference is made concerning radioactive levels for the entire tank. If the screening wasn't completed, how can this inference be made?	It appears that clarification only is required for this comment. The inference regarding radioactive levels for the entire tank states that "the total level of radioactivity [for the whole tank], which is the basis for the POC, is not supported by this one sample." In other words, the level of radioactivity for the entire tank cannot be determined based on the one sample. On this basis, additional sampling was performed and is reported in the Closure Report.	No change required

a. Comment Types: M=Mandatory S=Suggested

DOCUMENT REVIEW SHEET

CR - CAU 120
Areas 5&6 ASTs
Section: REFERENCES.
Revision: 0
Date: June 8, 1999

7. Comment Number/ Location	8. Type ^a	9. Comment	10. Comment Response	11. Accept
8. Section 2.1.2, Preliminary Investigation		Can the Proteon and Tennelec detectors referred to detect the low energy beta (6 kev average) emitted by tritium?	No. Samples requiring tritium analysis were either submitted for laboratory analysis of tritium or they were analyzed on-site using a liquid scintillation meter.	No change required
9. Section 2.1.2, Preliminary Investigation		Sludge (sediment) samples were taken from each tank in the CAU and the samples analyzed for gross alpha, gross beta, tritium, and gamma. No explanation is presented as to the reason these samples were not analyzed for at least the RCRA metals; process knowledge has not yet been persuasive that these metals are absent from all of these tanks.	The historic use of these tanks is well documented. Generator knowledge is sufficient to support non-introduction of RCRA constituents into these wells, which were constructed to monitor groundwater quality. NDEP comment #4 also indicates NDEP's agreement with generator knowledge for these tanks. As described in previous sections of the Work Plan, radiological compounds were the only COCs at this site.	No change required
10. Section 2.2, CAS 06-01-01, Area 6 Tank and Tankers		The text indicates a visual inspection of each container showed they are free of liquids and therefore meet the empty container definition of RCRA 261.7(b). To meet this definition, there has to be less than 1" of residue remaining at the bottom of the tank, or less than 0.3% (by weight). Attention to the quantity of residue in each tank must be given during the corrective action. If the empty container status can not be confirmed by this attention, the residues must be removed for proper management and disposal, after which the empty container status will apply.	As discussed in Section 2.1.4.2, all of the containers in CAS 06-01-01 met the definition for an empty container.	Refer to Section 2.1.4.2

a. Comment Types: M=Mandatory S=Suggested

DOCUMENT REVIEW SHEET

CR - CAU 120
Areas 5&6 ASTs
Section: REFERENCES.
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Date: June 8, 1999

7. Comment Number/ Location	8. Type*	9. Comment	10. Comment Response	11. Accept
11. Section 3.1, Constituents of Concern		Does applying paint on-site automatically make it "not readily leachable"?	This section states that the paint was an applied product, not that it was applied on-site. Metal compounds that may be present in the paint mixture do not readily leach out of paint that has been applied to a surface and allowed to dry.	No change required
12. Section 3.1, Constituents of Concern		Paint chips from each tank must be analyzed for at least total chromium and total lead. If the burden of these elements exceed the concentrations assumed for the calculations, TCLP and analysis is indicated.	<p>Appendix A of the SAFER Work Plan provides calculations of the maximum theoretical leachate concentration for lead on these tanks. These calculations were made based on US EPA guidance for "Use of Total Waste Analysis in Toxicity Characteristic Determinations" (January 1994). The estimate for the total lead potentially present in paint applied to the tanks and tankers was based on typical percentages of lead present in lead-based paints used at the NTS. These percentages are actual numbers from MSDSs. Calculations using these percentages showed that the waste could not possibly exceed the TCLP concentrations.</p> <p>Due to NDEP concerns, samples were collected of the painted tank/tankers and submitted for TCLP analysis. Results support the conclusion that the waste is non-hazardous. See Section 2.2.</p>	<p>Addressed in Appendix A of the SAFER Work Plan.</p> <p>Although not required (based on results of results presented in Work Plan), additional information is provided in Section 2.2 of report.</p>

a. Comment Types: M=Mandatory S=Suggested

DOCUMENT REVIEW SHEET

CR - CAU 120 -
Areas 5&6 ASTs
Section: REFERENCES.
Revision: 0
Date: June 8, 1999

7. Comment Number/ Location	8. Type*	9. Comment	10. Comment Response	11. Accept
13. Appendix A, Lead-Based Paint Calculations		In the equation for maximum credible leachate, where does the 20 L/kg conversion originate?	This is part of the equation provided by EPA in their January 1994 guidance, as was referenced in Appendix A of the SAFER Work Plan (where the equation was provided).	No change required.
14. Appendix B, 1.2.1 CAS 05-01-01		The text indicates "several inches of dry sediment was observed on the bottom of each AST". This observation appears to contradict the less than 1 inch or the less than 0.3% provision of RCRA 261.7(b) for empty container. This apparent contradiction must be resolved during the implementation of the SAFER work plan.	This referenced only the tanks in CAS 05-01-01. Hazardous waste was not present in these tanks based on generator knowledge.	No change required.
15. Appendix B, Project Description		Gamma spectroscopy does not detect low-energy betas like tritium. To quantify these emissions, liquid scintillation is required.	Analysis for tritium had previously been done for CAS 05-01-01 tanks, as was discussed in the SAFER Work Plan, and is reported in Section 2.1.2. Sampling for tritium from the CAS 06-01-01 tanks was planned, as described in Appendix B (Section 3) of the SAFER Work Plan, and is reported in Section 2.1.4.2 of this report.	No change required as this was the planned method.

a. Comment Types: M=Mandatory S=Suggested

DOCUMENT REVIEW SHEET

CR - CAU 120
 Areas 5&6 ASTs
 Section: REFERENCES.
 Revision: 0
 Date: June 8, 1999

7. Comment Number/ Location	8. Type ^a	9. Comment	10. Comment Response	11. Accept
16. Appendix B, Sampling Technique		How will tritium be assessed?	Analytical laboratory analysis using liquid scintillation, as reported in analytical laboratory reports in the appendices (where tritium has been identified as a COC).	No change required as this was identified in the Work Plan. Results are reported in the Closure Report.

a. Comment Types: M=Mandatory S=Suggested

DOCUMENT REVIEW SHEET

CR - CAU 120
Areas 5&6 ASTs
Section: REFERENCES
Revision: 0
Date: June 8, 1999

1. Document Title/Number: Draft <u>Streamlined Approach for Environmental Restoration Closure Report for Corrective Action Unit 120: Areas 5 and 6 Aboveground Storage Tanks, Nevada Test Site</u> 2. Document Date: March 1999 3. Revision Number: 0 4. Originator/Organization: Bechtel Nevada 5. Date Comments Due: April 8, 1999 6. Reviewer/Organization: Nevada Division of Environmental Protection				
7. Comment Number/ Location	8. Type*	9. Comment	10. Comment Response	11. Accept
1. Acronyms and Abbreviations, Page ix, lines 6 and 8		Correct typographical errors, DOE is U.S. Department of Energy and dpm is <u>disintegrations</u> per minute.	Typographical errors have been corrected.	Yes
2. Executive Summary, pg. xi		The Executive Summary appears on Page xi of the document. Past document format has been to place the executive summary in its own section and begin pagination with Page ES-1.	Formatting has been revised, per NDEP request.	Yes
3. Introduction, pg. 1, line 3		Defense Special Weapons Agency has been renamed Defense Threat Reduction Agency.	Named agency has been replaced with the current name.	Yes
4. Closure Activities, pg. 8, lines 25 and 30		The full title of the <u>NV/YMP Radiological Control Manual</u> (DOE/1996c) (the RADCON Manual) should be cited at its first mention on line 25, not line 30.	The full title citation has been changed to the first mention, per the comment.	Yes

a. Comment Types: M=Mandatory S=Suggested

DOCUMENT REVIEW SHEET

CR - CAU 120
Areas 5&6 ASTs
Section: REFERENCES.
Revision: 0
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7. Comment Number/ Location	8. Type ^a	9. Comment	10. Comment Response	11. Accept
5. Table 1 and Table 2, pg. 11 and pg. 12		Laboratory forms for analyses of sediment samples from CAS 05-01-01 Tank A, CAS 06-01-01 Tank 079370, and CAS 06-01-01 Tank 181770 appear to indicate detections of tritium above the method detection limit without qualification. These results should be added to the tables or the reason for their omission should be explained in the text.	<p>CAS 05-01-01, Tank A: In Appendix A, page 3, the tritium result for the soil sample collected from this Tank received a "U" qualifier from the lab. According to the footnote on that page, the "U" qualifier signifies that the "Result is less than Minimum Detectable Activity."</p> <p>CAS 06-01-01, Tank 181770: In Appendix C, page 6, the tritium result for the soil sample collected from this tank also received a "U" qualifier from the lab.</p> <p>CAS 06-01-01, Tank 079370: Result has been added to the table. The level of tritium in the sample does not change the method of waste handling or disposal.</p>	<p>No</p> <p>No</p> <p>Yes</p>

a. Comment Types: M=Mandatory S=Suggested

DOCUMENT REVIEW SHEET

CR - CAU 120
Areas 5&6 ASTs
Section: REFERENCES
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Date: June 8, 1999

7. Comment Number/ Location	8. Type ^a	9. Comment	10. Comment Response	11. Accept
6. Land-Use Restriction, pg. 23, line 6		<p>“...The future use of any land related to CAU 120 is not restricted because...”</p> <p>Revise sentence to read “Land-use restrictions arising from activities associated with CAU 120 are not required because all items in the CAU have been removed and no residual soil contamination above an action level associated with CAU 120 remains at the site.”</p>	<p>Testing for residual soil contamination is outside of the scope of CAU 120 (proposed in 12/20/1996 and 4/21/1997 letters from DOE to NDEP and agreed upon). This is stated in the Executive Summary, the Introduction to the report, the Conclusions, and in the section regarding Land Use Restrictions. The paragraph in the Land Use Restriction section was revised, as follows, because it was not clearly stated that the land was not a part of the CAU. The revised paragraph reads:</p> <p>“The future use of any land related to CAU 120 is not restricted because soil beneath the waste was not a part of this CAU. Soil beneath the CAS 05-01-01 tanks and debris remains an active site and is used for continued sampling of the RNM-1 well. Soil at the CP-50 Hot Park, which is the original location of the CAS 06-01-01 tanks and tankers, is listed as CAS 06-23-04 in CAU 176 of the FFAO.”</p>	No, but revisions have been made to clarify the status of land where the CAU 120 tanks had been located.

a. Comment Types: M=Mandatory S=Suggested