OAK RIDGE NATIONAL LABORATORY

MANAGED BY UT-BATTELLE FOR THE DEPARTMENT OF ENERGY

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August 25, 2004

Mr. Bret Rogers
Director of Technical Services
Envirocare of Utah, Inc.
605 North 5600 West
Salt Lake City, UT 84101

Dear Mr. Rogers:

Proposed Revision 5, Radioactive Waste Profile 8014-01, "Low Level Oversized Debris Contaminated with PCBs," August 4, 2004

Please find enclosed a signed copy of the subject Profile including:

- Radioactive Waste Profile Record
- Attachment B.5 Physical Properties
- Attachment C.3 Radiological Evaluation, Continuation
- Low-Level Radioactive Waste Certification Attachment
- Special Nuclear Material Exemption Certification
- PCB Waste Certification

The purpose of this revision is to include Tungsten 188 on Attachment C.3 continuation page and to amend the values for Tungsten 185 and Scandium 46 on attachment C.3 continuation page. In addition there is a typographical error on Revision 4 listing Scandium 46 as Se-46 instead of Sc-46.

Please contact me (865-574-5776) or Greg Larson (865-241-3273) if you have any questions regarding the revised profile.

Sincerely,

Kathy Carney, Director
Environmental Protection and Waste Services Division

KAC:sn

Enclosure

c/enc: D. L. Daugherty
G. R. Larson
J. E. Powell
L. C. Roddye, DOE-ORO
C. A. Schrof
S. D. Van Hoesen

c: K. J. Beierschmitt

ENVIROCARE of Utah, Inc.

RADIOACTIVE WASTE PROFILE RECORD

EC-0230, Revision 5

A. GENERATOR AND WASTE STREAM INFORMATION

GENERAL: Complete this form for one waste stream. Contact Envirocare at (801) 532-1330 if you have any questions while completing this form. Please indicate "N/A" if a category does not apply.

1. GENERATOR INFORMATION

Generator Name: U.S. DOE/UT-Battelle EPA ID #: TN1890090003

Generator Contact: John Powell Title: Manager-Laboratory Waste Services

Mailing Address: P.O. Box 2008 Oak Ridge, Tn. 37831-6021

Utah Site Access Permit #: 0209 001 601

Phone: 865-574-1514 Fax: 865-574-3515 Email: powellje@ornl.gov

Contractor Name: UT-Battelle Location of Material (City, State): Oak Ridge, Tn

Name & Title of Person Completing Form: Greg Larson, Radioactive Waste Mgmt Team Lead Phone: 865-241-3273

2. WASTE STREAM INFORMATION

Waste Stream ID: 8014-01 Waste Stream Name: Low Level Oversized Debris Contaminated with PCB's

Revision: 5 Date: 10-09-03 Volume (ft^3): 50,000 ft3 Delivery Date: Continuing

CHECK APPROPRIATE BOXES BELOW. Please verify the required forms requested below are completed and submitted with the Radioactive Waste Profile Record.

HAZARDOUS MATERIAL: Is the waste classified as hazardous waste as defined by 40 CFR 261?

Y ☐ N ☒ If No, complete and attach the "Low-Level Radioactive Waste Analysis Certification Attachment".

If Yes, complete and attach the "Hazardous Waste Analysis Certification Attachment" and check applicable box below.

Has the waste been treated to meet applicable treatment standards per 40 CFR 268? Y ☐ N ☐

Is the waste to be treated by Envirocare? Y ☐ N ☐

LOW-LEVEL RADIOACTIVE MATERIAL: Is the radioactivity contained in the waste material Low-Level Radioactive Waste as defined in the Low-Level Radioactive Waste Policy Amendments Act of 1985 or in DOE Order 435.1?

Y ☒ N ☐ If Yes, a current copy of a LLRW Compact Export letter authorizing export must be submitted if applicable. This authorization is applicable for non-DOE LLRW (i.e., Mixed Waste, NORM/NARM, 11e.(2) material, and waste from DOE do not require a Compact Export Letter).

If No, check appropriate box: NORM/NARM ☐ 11e.(2) Byproduct Material ☐ Other:

SPECIAL NUCLEAR MATERIAL: Does the waste stream contain material with uranium enriched in U-235 or any of the following radionuclides: U-233, Pu-236, Pu-238, Pu-239, Pu-240, Pu-241, Pu-242, Pu-243, or Pu-244?

Y ☒ N ☐ If Yes, complete and attach the "SNM Exemption Certification" form (EC-0230-SNM). Supporting statements, analytical results, and documentation must be included with the submittal.

PCB MATERIAL: Does the waste contain Polychlorinated Biphenyls (PCB's) that are regulated for disposal per 40 CFR 761?

Y ☒ N ☐ If Yes, complete and attach the "PCB Waste Certification" form (EC-98279).

ASBESTOS: Does the waste contain Asbestos Containing Material?

Y ☒ N ☐ If Yes, Asbestos Containing Material must be managed in accordance with 40 CFR 61. Provide a detailed description of the waste containing asbestos in Section B.5 of the waste profile.

ENVIROCARE of Utah, Inc.

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B. WASTE PHYSICAL PROPERTIES & PACKAGE INFORMATION

1. GENERAL CHARACTERISTICS

Does the waste contain free liquids? Y ☐ N ☒ If Yes, what is the percent of free liquid by waste volume? NA %

Does the waste contain absorbent? Y ☒ N ☐ Density range of the waste: 5 - 200 S.G. ☐ lb/ft3 ☒

List percentage of waste type by volume: Soil ____ % Concrete & Metal ____ % DAW ____ % Resins ____ % Sludge ____ %

Other constituents and percentage by volume? 80%metal, 2% fiberglass, 10% wood, 2% glass, 2% plastic, 4% misc ORNL Debris

2. MATERIAL SIZE

Gradation of Material: Indicate the percentage of waste material that would pass through the following grid sizes. For example, 95% of the material would pass through a 12" square, 90% passes through a 4" square, 80% passes through a 1" square, etc.

12" 10-100 % 4" 10-80 % 1" 0-40 % 1/4" 0-15 % 1/40" 0-1 % 1/200" 0-1 %

Does the waste stream contain oversize debris (i.e., no dimension < 10 inches and any dimension > 12 feet)? Y ☒ N ☐
If Yes, include a detailed description (i.e., weight, size, drawings, etc.) of the oversize debris in the narrative of Section B.5.

3. MOISTURE CONTENT

For soil or soil-like materials, please use **Std. Proctor Method ASTM D-698** to determine the optimum moisture content. The waste material must not exceed 3 percentage points above optimum moisture upon arrival at Envirocare's disposal facility unless approved by Envirocare.

Optimum Moisture Content: NA % at Maximum Dry Density (lb/ft^3): NA

Average Moisture Content: NA % Moisture Content Range: NA% - NA%

4. WASTE SHIPPING & PACKAGING

Transportation Mode: ☒ Highway ☐ Rail

Shipping & Container Packages: (Check all that apply) ☒ Drums (≤ 85 gallons) ☒ Boxes (≤ 100 ft^3) ☐ Soft-Sided Bags (≤ 10 yd^3)

☒ Intermodal ☒ Sealand ☐ Gondola* ☐ Box Car

Other: Tanks may be shipped as their own container

*Dimensions of gondola railcars must be between 48 to 56.5 feet in length and 8.5 to 12.5 feet in height as measured from the top of the rail to the top of the railcar unless approved by Envirocare.

5. NARRATIVE DESCRIPTION AND HISTORY OF WASTE

Please submit a narrative description and history of the waste as an attachment to the Radioactive Waste Profile Record. This attachment should include the following:

- Process that generated the waste
- Waste material physical composition and characteristics
- Radiological and chemical characterization method
- Basis for determining manifested radionuclide concentrations
- Description and amounts of absorbents, if applicable
- Basis of non-hazardous or hazardous waste determinations
- Treatment processes, if applicable
- Product information or Material Safety Data Sheets associated with the waste as applicable
- Information requested in other sections of this form

ATTACHMENT B.5
PHYSICAL PROPERTIES

Generator Name: U.S. DOE/UT-Battelle Generator # / Waste Stream #:8014-01
Revision #: 5 Revision Date: August 4, 2004

Process That Generated The Waste: This low level radioactive waste stream is generated by operation, maintenance, remediation or demolition activities connected with the Department of Energy's facilities associated with the Oak Ridge National Laboratory (ORNL). The waste items included in this waste profile record are categorized as radioactive oversized debris contaminated with polychlorinated biphenyls (PCB's) less than 500 ppm. This waste is generated from a variety of buildings and facilities at ORNL and ORNL-occupied facilities at the Y-12 Plant.

Waste Material Physical Composition and Characteristics: This waste stream is composed primarily of oversized metal debris but includes a wide variety of materials. Much of the waste would be considered as general building demolition/cleanout debris such as, but not limited to, desks, chairs, tables, metal storage cabinets, file cabinets, tools, equipment, refrigerators (certified freon free and oil removed), PCB contaminated electrical equipment (less than 500 ppm PCBs), PCB contaminated articles (less than 500 ppm PCBs), pumps, motors, wire, piping, valves, steel plates, tanks, hydraulic machines and other general debris/materials removed from buildings undergoing renovation and/or remediation. This waste stream will also contain empty gas cylinder carcasses (devalved and/or drilled).

Vacuum pumps and motors contaminated with PCBs less than 500 ppm may be a component of a larger piece of equipment. This assembly could include manifolds, cabinets, control units with small quantities of circuit boards, etc. Additionally, some of these assemblies contain glass tubing attached in various configurations. It is probable that this glass will be broken in packaging and/or transport releasing small particles of glass in the shipping container.

Other individual large items may include, but are not limited to, drained electrical transformers, large diameter piping, piping in varying lengths and diameters, and miscellaneous equipment. Piping is open at both ends and has no residuals. Empty spaces within the piping may be used to add more material that was lighter and smaller such of bags of personal protective equipment (PPE). Some of this filler material would be considered normal debris in size and would be utilized where possible to fill void space in containers. Generators document the contents of each container/shipment of materials with a log/inventory sheet that describes the contained waste.

Radioactive surface-contaminated metals include carbon steel and stainless steel (which only contain chromium and nickel as a raw manufactured material), aluminum and copper. Some items may have painted surfaces that could also contain PCBs; therefore, this material will be PCB bulk product waste known to leach <10ug/L PCBs. Additionally, painted surfaces may contain lead, chromium, cadmium, and/or barium, etc.

Some pieces of equipment or furniture (i.e. fire-proof safe) may contain asbestos material. Asbestos may also be in some miscellaneous materials such as transite siding, and floor and ceiling tile. Asbestos containing waste will be managed in accordance with 40 CFR 61.

Prohibited Materials: Materials that are prohibited from being placed in containers for this profile include, but are not limited to, Resource Conservation and Recovery Act (RCRA) hazardous wastes, free liquids, transuranic (TRU) radioisotopes in concentrations greater than 10 nCi/g of the waste matrix, and sealed radioactive sources. Additionally, all fluids, including but not limited to refrigerants, oils, hydraulic fluids, etc will have been removed prior to the item being placed in the container. Transformers, large and small PCB high and low voltage capacitors and containers whose surfaces have been in direct contact with PCBs greater than 500 ppm will be excluded. During packaging and loading of waste, all items will be visually inspected to verify prohibited items will not be placed in the container and all fluids have been drained from equipment. Items such as transformers that must be drained and flushed per regulatory requirements will be certified as such.

Radiological and Chemical Characterization Methods: The general approach for achieving radiological characterization starts with process knowledge (PK) information. In essence, if acceptable PK is available, the waste can be adequately characterized. If PK alone is insufficient for characterization, but radionuclide identities and relative concentrations can be determined from PK, sampling and analysis (S&A), and/or gamma spectroscopy, then gross radiation measurements (and scaling factors, if necessary) may be used to develop an adequate radiological characterization. When radionuclide identities and their relative concentrations are unknown, S&A or gamma spectroscopy (if gamma radiation is present) may be used to determine the radiological characterization.

Currently there are several methods that may be utilized at ORNL for calculating activity present in solid radioactive waste. These methodologies are addressed in UT-Battelle procedure EPWSD-LWS-TP-508 "Guidance for Radiological Characterization of Solid Radioactive Waste" current revision. Isotopes that have been identified as being potentially present in waste items are listed in the C.1 Attachment.

For surface-contaminated objects, measured surface contamination levels and estimated surface area are usually recorded on a logsheet. Activity is calculated by applying the known radionuclide distribution (usually from sampling and analysis) to the activity per unit area, and multiplying by the surface area. Items are sorted, then packaged (note: special attention and positioning is given to minimize shifting in transit) in bulk containers. The total activity per container will be determined by summing the activities of all the individual items. The container's total activity is divided by the total mass of material to obtain activity per unit mass.

Due to the physical form of the waste stream, "oversized debris", sampling as described in Section A2 and section D, the "Low Level Radioactive Waste Certification Attachment". (Requiring Chemical Laboratory Analysis), can not be performed. ORNL generators use "Guidance for Characterization of Hazardous, Polychlorinated Biphenyl, and Low-level Mixed Waste" (EPWSD-LWS-TP-509) guidance document for making hazardous/non hazardous waste determinations. For SLLW, the non hazardous waste designation is based on the generator's process knowledge (PK) of the waste stream (known constituents, known chemical or physical properties, known waste generation processes, known reactions, etc.), analyses of the waste stream, or a combination of both. The PCB-contaminated or PCB bulk product waste designation is based on the generator's PK of the waste stream (knowledge of the presence of PCBs in oil-based painted equipment manufactured prior to 1979), analyses of the waste stream, or a combination of both. All waste determinations whether via PK and/or analyses are documented.

Basis For Determining Manifested Radionuclide Concentrations: see radiological and characterization methods above.

Description and Amounts of Absorbents, if Applicable: Where appropriate, a sufficient amount of absorbents may be used to ensure no free liquids accumulate in the containers. The majority of absorbent used at ORNL is inert and consists primarily of radsorb or vermiculite.

Basis for non Hazardous Determination: For debris, non-hazardous waste determinations are largely process knowledge (PK)-based due to the heterogeneity of the waste stream and the difficulty of sampling oversized debris. Some of the metal contaminants found on table 1 of 40 CFR 261.24 (b) are inherent to the structure, design, and fabrication of some of the metal components in this waste stream. Although the majority of the metal debris consists of carbon steel, small quantities of stainless steel, inconel, and monel that contain cadmium and chromium as alloys, may be present. Others could contain low levels of nickel. These would not leach regulated levels of metals under the conditions of SW-846 Test Method 1311 (TCLP). Portions of the metals may have thin layers of paint and prior analyses has indicated that lead, chromium, cadmium, and/or barium may be present in the paint. Oversized debris items that are painted will be evaluated by mass balance for RCRA compliance. This calculation will be performed over the entire shipping container.

Since this waste stream does not contain RCRA-regulated materials and is not amenable to chemical sampling and analysis (primarily metal oversized debris), it is requested that Envirocare waive the RCRA chemical analysis requirements.

Treatment Processes: Not Applicable

Product Information or Material Safety Data Sheets associated with the waste as applicable:

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C. RADIOLOGICAL INFORMATION

Obtain sufficient samples to adequately determine a range and weighted average of activity in the waste. Attach the gamma spectroscopy or radiochemistry data supporting the radionuclide information listed below.

1. Does the waste material contain accessible surfaces with contact dose rates greater than 500 mR/hr? Y ☐ N ☒

2. Does the waste material contain any of the following isotopes: Aluminum-26, Berkelium-247, Calcium-41, Californium-249, Californium-250, Chlorine-36, Rhenium-187, Terbium-157, or Terbium-158? Y ☒ N ☐

3. Please list the following information for each isotope associated with the waste. The manifested concentration on the Uniform LLRW Manifest Form 541 must not exceed the upper concentration range listed below for each isotope. Provide an explanation in the narrative description of Section B.5 if the waste contains localized "hot spots" or elevated concentrations that significantly exceed the upper concentration range. Envirocare's license assumes that short-lived decay products of specified isotopes are present in concentrations equal to the parent. Consequently, these short-lived isotopes do not need to be listed below. If additional space is needed, provide an Attachment C.3 to this profile record formatted as below.

Isotopes	Manifested Concentration Range (pCi/g)			Weighted Avg. per Container (pCi/g)	Isotopes	Manifested Concentration Range (pCi/g)			Weighted Avg. per Container (pCi/g)
U-234	0.0	to	300,000	500	I-125	0.0	to	30,000	100
U-235	0.0	to	1,190	100	I-129	0.0	to	100	2
U-236	0.0	to	50,000	100	Fe-99	0.0	to	100	2
U-238	0.0	to	60,000	1,500	Mn-54	0.0	to	40,000	4,000
Tc-99	0.0	to	10,000	470	Ag-110m	0.0	to	250,000	26,000
Pu-239/240	0.0	to	4,000	40	Pu-236	0.0	to	50	1
Pu-238	0.0	to	6,000	55	Ag-108m	0.0	to	50	2
Np-237	0.0	to	1000	5	Ba-133	0.0	to	3,500	350
Am-241	0.0	to	4,500	10	C-14	0.0	to	1,000,000	500
Th-230	0.0	to	1,000	100	Ce-141	0.0	to	100	1
Th-232	0.0	to	200	20	Kr-85	0.0	to	300	10
U-233	0.0	to	66,000	6,600	Pb-210	0.0	to	25,000	250
Cs-134	0.0	to	35,000	1,000	Po-210	0.0	to	200	5
Cs-137	0.0	to	60,000	2,000	Ra-228	0.0	to	100	5
Sr-89/90	0.0	to	25,000	3,000	Ra-226	0.0	to	100	10
Cm-244	0.0	to	9,000	4,500	Sr-85	0.0	to	10,000	500
Co-57	0.0	to	40,000	200	H-3	0.0	to	10,000	100
Co-58	0.0	to	6,000	10	Y-88	0.0	to	16,000	1,700
Co-60	0.0	to	30,000	10,000	Zr-95	0.0	to	10,000	15
Eu-152	0.0	to	20,000	5,000	DU	0.0	to	30,000	1,000
Eu-154	0.0	to	27,000	6,100	Pu-241	0.0	to	210,000	210
Eu-155	0.0	to	21,000	2,100	Ce-139	0.0	to	50	5
K-40	0.0	to	1,000	50	Cm-242	0.0	to	500	5
Ru-106	0.0	to	170,000	17,000	Cm-243	0.0	to	5,000	50
Sb-125	0.0	to	500	100	Cm-245	0.0	to	450	5
Na-22	0.0	to	40,000	4,000	Cr-51	0.0	to	60,000	6,000
Cd-109	0.0	to	2,000	100	Fe-55	0.0	to	20,000	150
Ce-144	0.0	to	20,000	200	Hg-203	0.0	to	100	1

ATTACHMENT C.3
RADIOLOGICAL EVALUATION, CONTINUATION

Generator Name: U.S. DOE/UT-Battelle Generator # / Waste Stream # 8014-01
Revision #: 5 Page 2 Revision Date: 08/04/04

Isotopes	Manifested Concentration Range (pCi/g)			Weighted Avg per Container (pCi/g)	Isotopes	Manifested Concentration Range (pCi/g)			Weighted Avg per Container (pCi/g)
Ni-63	0.0	to	4,200	42			to		
Pu-242	0.0	to	50	5			to		
Pu-244	0.0	to	275	3			to		
Zn-65	0.0	to	63,000	6,300			to		
Ac-225	0.0	to	450	3			to		
Am-243	0.0	to	2,000	100			to		
Cf-249	0.0	to	100	10			to		
Cf-250	0.0	to	100	10			to		
Cf-252	0.0	to	450	30			to		
Cm-248	0.0	to	100	10			to		
Co-56	0.0	to	100	10			to		
Hf-175	0.0	to	450	47			to		
Ir-192	0.0	to	70,000	500			to		
Os-191	0.0	to	500	300			to		
S-35	0.0	to	3,000	300			to		
Se-75	0.0	to	5E+07	1,500,000			to		
Sc-46	0.0	to	1e6	1e5			to		
Sm-145	0.0	to	450	300			to		
Sn-113	0.0	to	1000	10			to		
Ta-182	0.0	to	14,000	1,400			to		
Th-229	0.0	to	450	1			to		
U-232	0.0	to	21,000	2,100			to		
W-188	0.0	to	2e7	500000			to		
Zr-88	0.0	to	100	10			to		
I-131	0.0	to	200	50			to		
Ni-59	0.0	to	1000	103			to		
Be-7	0.0	to	12,000	1,200			to		
Cl-36	0.0	to	1,500	40			to		
U Natural	0.0	to	360,000	2,000			to		
Ac-227	0.0	to	1,190	100			to		
W-185	0	to	2e7	500000			to		
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LOW-LEVEL RADIOACTIVE WASTE CERTIFICATION ATTACHMENT

This form is required only if the checkbox for Hazardous Material on page one has been checked No. Envirocare may waive the chemical laboratory analyses if the material is not amenable to chemical sampling and analysis (e.g., debris items including metal pieces, concrete, plastic, etc.). Justification for waiving the chemical analyses must be provided in Section B.5.

D. MINIMUM REQUIRED CHEMICAL ANALYSIS

The following parameters must be analyzed by a Utah or NELAC certified laboratory. Typical SW-846 analytical methods have been listed. Other approved methods are acceptable. Attach the most recent or applicable chemical analytical results representing the waste.

1. GENERAL CHEMICAL PARAMETERS

	SW-846 Analytical Methods
Soil pH:_____	**Method 9045** Please provide the range of the pH analyses performed.
PFLT:_____ Pass / Fail	**Method 9095** Not applicable for liquid radioactive waste streams.
Reactive Sulfide:_____ mg/kg	**Method 9034**
Reactive Cyanide:_____ mg/kg	**Method 9014**

2. 40 CFR 261.24 Table 1 – Contaminants of Toxicity Characteristic

Metals plus Zinc: Methods 6010 & *7470 (Envirocare's GWQDP requires zinc analysis) ☐ TCLP (mg/L) or ☐ Total (mg/kg)

Arsenic_____	Chromium_____	Selenium_____
Barium_____	Lead_____	Silver_____
Cadmium_____	*Mercury_____	Zinc_____

Organics, Pesticides/Herbicides: Methods 8081/8151 ☐ TCLP (mg/L) or ☐ Total (mg/kg)

Endrin_____	Toxaphene_____	Chlordane_____
Lindane_____	*2,4-D_____	Heptachlor_____
Methoxychlor_____	*2,4,5-TP Silvex_____	

Organics, Semi-Volatile: Method 8270 ☐ TCLP (mg/L) or ☐ Total (mg/kg)

o-Cresol_____	Hexachlorobenzene_____	Pentrachlorophenol_____
m-Cresol_____	Hexachlorobutadiene_____	Pyridine_____
p-Cresol_____	Hexachloroethane_____	2,4,5-Trichlorophenol_____
Total Cresol_____	Nitrobenzene_____	2,4,6-Trichlorophenol_____
2,4-Dinitrotoluene_____		

Organics, Volatile: Method 8260 ☐ TCLP (mg/L) or ☐ Total (mg/kg)

Benzene_____	1,4-Dichlorobenzene_____	Methyl ethyl keytone_____
Carbon Tetrachloride_____	1,2-Dichloroethane_____	Tetrachloroethylene_____
Chlorobenzene_____	1,1-Dichloroethylene_____	Trichloroethylene_____
Chloroform_____		

3. Was the waste at the point of generation a RCRA hazardous waste per 40 CFR 261? Y ☐ N ☒

If Yes, list former hazardous waste codes and former underlying hazardous constituents. List worst-case concentrations for each hazardous constituent. If additional space is needed, provide an Attachment D.3 to this profile record formatted as below. Attach the most recent chemical analytical results demonstrating compliance with applicable treatment standards.

If No, indicate "N/A" in Section D.3 below.

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D. 3.

Former EPA HW Codes or Underlying Hazardous Constituents	Treatment Standard (mg/kg unless noted as mg/L TCLP or Technology Code)	Worst Case Concentration (mg/kg unless noted as mg/L TCLP)
NA		

4. OTHER CHEMICAL CONSTITUENTS

List any other chemical constituents of concern (e.g., PCBs, chelating agents, etc.) and worst-case concentrations. If additional space is needed, provide an Attachment D.4 to this profile record formatted as below.

Other Chemical Constituents	Worst-Case Concentration (mg/kg unless noted as mg/L TCLP)	Other Hazardous Constituents	Worst-Case Concentration (mg/kg unless noted as mg/L TCLP)
See B.5 attached			

5. LABORATORY CERTIFICATION

☐ **UTAH or NELAC CERTIFIED**
The Utah or NELAC certified laboratory holds a current certification for the applicable chemical test methods insofar as such official certifications are given. Please provide a copy of the laboratory's current certification letter for each parameter analyzed and each method used for chemical analyses required by this form.

☐ **OTHER LABORATORY CERTIFICATION** (Describe below)

Wavier to Chemical Laboratory Analysis requested.

6. CERTIFICATION

I certify that sample results representative of the waste described in this profile were or shall be obtained using state- and EPA-approved analytical methods. I also certify that where necessary representative samples were or shall be provided to Envirocare and to qualified laboratories for the analytical results reported herein. I further certify that the waste described in this record is not prohibited from land disposal in 40 CFR 268 (unless prior arrangements are made for treatment at Envirocare) and that all applicable treatment standards are clearly indicated on this form. I also certify that the information provided on this form is complete, true, and correct and is accurately supported and documented by any laboratory testing as required by Envirocare. I certify that the results of any said testing have been submitted to Envirocare. I certify that the waste does not contain any prohibited items listed in Envirocare's Radioactive Material License.

Generator's Signature: _____ Title: US-Battelle Radwaste Management Team Lead Date: 8/18/04

Low-Level Radioactive Waste Certification Attachment

ENVIROCARE of Utah, Inc.

Special Nuclear Material Exemption Certification

EC-0230-SNM, REvision 5

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

Waste Stream ID: 8014-01 Manifest No._____

1. Check applicable category below for the waste stream:

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

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

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

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

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

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

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

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

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

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

ENVIROCARE of Utah, Inc.

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

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

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

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

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

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

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

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

Authorized Signature	Printed Name	Title	Date
	G.R. Larsen	Waste Management Team Lead	8/18/04

ENVIROCARE of Utah, Inc.

PCB Waste Certification

EC-98279, Revision 0

☒ PCB/Radioactive Waste ☐ *PCB/Mixed Waste

The waste stream contains the following PCB Groups (please check all that apply):

- ☐ *Drained PCB Transformers (contained ≥ 500 ppm PCB concentration)**
- ☐ *Other Drained PCB Articles (≥ 500 ppm PCB concentration)
- ☐ *Intact, non-leaking PCB Small Capacitors (including intact, non-leaking light ballasts with PCB concentrations < 50 ppm in the potting material)
- ☐ *Drained PCB Hydraulic Machines (≥ 50 ppm PCB concentration)
- ☐ *PCB concentrations ≥ 1,000 ppm**
- ☒ Drained PCB-Contaminated Articles, including Electrical Equipment (≥ 50 ppm; < 500 ppm)
- ☐ Drained PCB Containers (previously contained PCBs at concentrations < 500 ppm)
- ☒ PCB Bulk Remediation Waste, as defined in 40 CFR 761.3:
  - ☒ Non-liquid cleaning materials and personal protective equipment waste at any concentration, as described in 40 CFR 761.61(a)(5)(v)(A)
    - ☒ PCB concentrations < 50 ppm or PCB surface contamination < 100 µg/100 cm^2
    - ☐ *PCB concentrations ≥ 50 ppm or PCB surface contamination ≥ 100 µg/100 cm^2
- ☒ PCB Bulk Product Waste, as defined in 40 CFR 761.3
  - ☒ Plastics (such as plastic insulation from wire or cable; radio, television and computer casings; vehicle parts; or furniture laminates); preformed or molded rubber parts and components; applied dried paints, varnishes, waxes or other similar coatings or sealants; caulking; Galbestos; non-liquid building demolition debris; or non-liquid PCB bulk product waste from the shredding of automobiles or household appliances from which PCB small capacitors have been removed (shredder fluff). PCB Bulk Product waste in this category is presumed or known to leach < 10 µg/L PCBs (40 CFR 761.62(b)(1)(i)).
  - ☐ *Leaches ≥ 10 µg/L PCBs
- ☐ PCB Waste from Research & Development

* Any waste in groups marked with an asterisk must be disposed at Envirocare's Mixed Waste disposal embankment and requires the use of a Uniform Hazardous Waste Manifest.

** Each drained PCB Transformer with PCB concentrations ≥ 500 ppm and each drained PCB Hydraulic Machine with PCB concentrations ≥ 1,000 ppm **must be accompanied by a certification** that the flush requirements of 40 CFR 761.60(b)(1)(i)(B) have been met. Flush Certifications must include, at a minimum:

- A unique identification number for each PCB Item that was flushed;
- The date that the flush was performed;
- A statement that the flush was performed in accordance with regulation; and
- A certified signature and date signed.

Provide a description of the PCB waste including information to support the groups identified above.
(use attachments as necessary)
Includes but not limited to PCB electrical equipment/components contaminated with PCBs less than 500 ppm, PCB articles contaminated with PCBs less than 500 ppm such as vacuum pumps, painted surfaces that may constituent PCB Bulk Product known to leach less than 10 ug/L PCB, and PPE from handling and/or clean up of PCBs contaminated with less than 500 ppm.

GENERATOR CERTIFICATION

I certify that the waste described on this form and accompanying documents were or shall be obtained using state and EPA-approved sampling methods, as applicable. I certify that the PCB/radioactive waste or PCB/mixed waste described on this form has not been diluted from a higher concentration in order to avoid any provision of specifying a PCB concentration in accordance with 40 CFR 761. I certify that the waste does not contain any free-standing liquids. I certify that the information provided on this form is complete, true and correct and is accurately supported

and documented by any laboratory testing as required by Envirocare of Utah, Inc. I certify that the results of any said testing have been submitted to Envirocare of Utah, Inc.

Authorized Signature _____ Title Battelle Risk Management Team Lead Date 8/18/04