

ANNEX B to ATTACHMENT F
COMPARISON OF 2003 UPDATE DATA TO TWBIR REVISION 2

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1

Table of Contents

2 DATA-F-B-1.0 VOLUME DATA 1
 3 DATA-F-B-1.1 Waste Inventory Volume Comparison.....1
 4 DATA-F-B-1.2 Waste Inventory Comparison by Final Waste Form.....5
 5 DATA-F-B-1.3 Analysis of CH-TRU Waste Volume Differences by Site.....5
 6 DATA-F-B-1.4 CH-TRU Waste Volumes by Final Waste Form by Site6
 7 DATA-F-B-1.5 Analysis of RH-TRU Waste Volume Differences by Site.....28
 8 DATA-F-B-1.6 RH-TRU Waste Volumes by Final Waste Form by Site28
 9 DATA-F-B-2.0 WASTE MATERIAL PARAMETERS AND CONTAINER MATERIALS ... 29
 10 DATA-F-B-2.1 Analysis of CH-TRU Waste Material Parameter Differences30
 11 DATA-F-B-2.2 Analysis of RH-TRU Waste Material Parameter Differences31
 12 DATA-F-B-2.3 Analysis of CH-TRU Waste Container Materials32
 13 DATA-F-B-2.4 Analysis of RH-TRU Waste Container Materials33
 14 DATA-F-B-3.0 RADIONUCLIDES 33
 15 REFERENCES 46

16

List of Tables

17 Table DATA-F-B-1. Comparison of Stored, Projected, and Anticipated CH-TRU Waste
 18 Volumes Between the 2003 Update and TWBIR Revision 2 (m³).....2
 19 Table DATA-F-B-2. Comparison of Stored, Projected, and Anticipated RH-TRU Waste
 20 Volumes Between the 2003 Update and TWBIR Revision 2 (m³).....3
 21 Table DATA-F-B-3. Comparison of Stored, Projected, and Anticipated Total TRU Waste
 22 Volumes Between the 2003 Update and TWBIR Revision 2 (m³).....4
 23 Table DATA-F-B-4. WIPP CH-TRU Waste Profile Differences Between TWBIR Rev. 2
 24 and 2003 Update Report — Combustible Material7
 25 Table DATA-F-B-5. WIPP CH-TRU Waste Profile Differences Between TWBIR Rev. 2
 26 and 2003 Update — Filter Material8
 27 Table DATA-F-B-6. WIPP CH-TRU Waste Profile Differences Between TWBIR Rev. 2
 28 and 2003 Update — Graphite9
 29 Table DATA-F-B-7. WIPP CH-TRU Waste Profile Differences Between TWBIR Rev. 2
 30 and 2003 Update — Heterogeneous Debris10
 31 Table DATA-F-B-8. WIPP CH-TRU Waste Profile Differences Between TWBIR Rev. 2
 32 and 2003 Update — Inorganic Non-Metal11
 33 Table DATA-F-B-9. WIPP CH-TRU Waste Profile Differences Between TWBIR Rev. 2
 34 and 2003 Update — Lead/Cadmium Metal12
 35 Table DATA-F-B-10. WIPP CH-TRU Waste Profile Differences Between TWBIR Rev.
 36 2 and 2003 Update — Salt13
 37 Table DATA-F-B-11. WIPP CH-TRU Waste Profile Differences Between TWBIR Rev.
 38 2 and 2003 Update — Soil.....14
 39 Table DATA-F-B-12. WIPP CH-TRU Waste Profile Differences Between TWBIR Rev.
 40 2 and 2003 Update — Solidified Inorganic Material15
 41 Table DATA-F-B-13. WIPP CH-TRU Waste Profile Differences Between TWBIR Rev.
 42 2 and 2003 Update — Solidified Organic Material16

| | | |
|----|---|----|
| 1 | Table DATA-F-B-14. WIPP CH-TRU Waste Profile Differences Between TWBIR Rev. | |
| 2 | 2 and 2003 Update — Uncategorized Metal | 17 |
| 3 | Table DATA-F-B-15. WIPP RH-TRU Waste Profile Differences Between TWBIR Rev. | |
| 4 | 2 and 2003 Update — Combustible Material | 17 |
| 5 | Table DATA-F-B-16. WIPP RH-TRU Waste Profile Differences Between TWBIR Rev. | |
| 6 | 2 and 2003 Update — Filter Material | 19 |
| 7 | Table DATA-F-B-17. WIPP RH-TRU Waste Profile Differences Between TWBIR Rev. | |
| 8 | 2 and 2003 Update — Heterogeneous Debris | 20 |
| 9 | Table DATA-F-B-18. WIPP RH-TRU Waste Profile Differences Between TWBIR Rev. | |
| 10 | 2 and 2003 Update — Inorganic Non-Metal | 21 |
| 11 | Table DATA-F-B-19. WIPP RH-TRU Waste Profile Differences Between TWBIR Rev. | |
| 12 | 2 and 2003 Update — Lead/Cadmium Metal | 22 |
| 13 | Table DATA-F-B-20. WIPP RH-TRU Waste Profile Differences Between TWBIR Rev. | |
| 14 | 2 and 2003 Update — Soil..... | 23 |
| 15 | Table DATA-F-B-21. WIPP RH-TRU Waste Profile Differences Between TWBIR Rev. | |
| 16 | 2 and 2003 Update — Solidified Inorganic Material | 24 |
| 17 | Table DATA-F-B-22. WIPP RH-TRU Waste Profile Differences Between TWBIR Rev. | |
| 18 | 2 and 2003 Update — Solidified Organic Material | 25 |
| 19 | Table DATA-F-B-23. WIPP RH-TRU Waste Profile Differences Between TWBIR Rev. | |
| 20 | 2 and 2003 Update — Uncategorized Metal | 26 |
| 21 | Table DATA-F-B-24. Differences in Waste Material Parameter Average Densities | |
| 22 | (kg/m ³) for CH-TRU Waste Between TWBIR Rev. 2 and 2003 Update | |
| 23 | Report..... | 30 |
| 24 | Table DATA-F-B-25. Difference on Waste Material Parameter Average Densities | |
| 25 | (kg/m ³) for RH-TRU Waste Between TWBIR Rev. 2 and 2003 Update | |
| 26 | Report..... | 31 |
| 27 | Table DATA-F-B-26. Waste Streams Shipped and to be Shipped in POCs to the WIPP..... | 34 |
| 28 | Table DATA-F-B-27. WIPP Disposal Radionuclide Inventory Comparison, 1995 to | |
| 29 | 2001, CH-TRU Waste..... | 35 |
| 30 | Table DATA-F-B-28. WIPP Disposal Radionuclide Inventory Comparison, 1995 to | |
| 31 | 2001, RH-TRU Waste..... | 41 |

DATA-F-B-1.0 VOLUME DATA

DATA-F-B-1.1 Waste Inventory Volume Comparison

This explanation applies to Tables DATA-F-B-1 through DATA-F-B-3. Tables DATA-F-B-1 and DATA-F-B-2 contain the volume data comparisons for contact handled- (CH-) and remote handled- (RH-) TRU waste, respectively. Table DATA-F-B-3 contains the volume data comparisons for the total CH TRU -, total RH- TRU, and emplaced waste. The current data for the 2003 Update Report are stored in the Transuranic Waste Baseline Inventory Database Revision 2.1 (TWBID Revision 2.1, LANL 2003). The previous data are from the Transuranic Waste Baseline Inventory Report, Revision 2 (TWBIR Revision 2, DOE 1995). The site name is given in the first column of the table. Data for the 2003 Update Report, the TWBIR Revision 2, and for the difference between the 2003 Update Report and TWBIR Revision 2 stored volumes for each site are given in the next three columns, respectively (columns 2, 3, and 4). Data for the 2003 Update Report, TWBIR Revision 2, and for the difference between the 2003 Update Report and TWBIR Revision 2 projected volumes for each site are given in columns 5, 6, and 7, respectively. Finally, data for the 2003 Update Report, TWBIR Revision 2, and for the difference between the 2003 Update and TWBIR Revision 2 anticipated volumes for each site are given in the last three columns, respectively (columns 8, 9, and 10). The total volumes for columns 2-10 are then given near the bottom of Table DATA-F-B-1. Table DATA-F-B-1 then gives the emplaced waste volumes, with the WIPP identified as the site, for the 2003 Update Report and TWBIR Revision 2 inventory, and the difference between the two for stored, projected, and anticipated CH-TRU wastes.

Table DATA-F-B-2 is similar to Table DATA-F-B-1 except that it contains data for the comparison of stored (columns 2–4), projected (columns 5–7), and anticipated (columns 8–10) RH-TRU waste volumes by site (column 1) and gives the total volumes of RH-TRU waste. There was no RH-TRU waste emplaced as of the inventory date, September 30, 2002. Table DATA-F-B-3 has the same column structure as Tables DATA-F-B-1 and DATA-F-B-2, but contains the total volumes for the comparison of stored, projected, and anticipated CH-TRU and RH-TRU waste volumes and provides the total waste volume. The emplaced CH-TRU waste volume, $7.72 \times 10^3 \text{ m}^3$, is added to the anticipated volumes for a current total TRU waste volume of $1.58 \times 10^5 \text{ m}^3$. This is an increase from the TWBIR Revision 2 total volume of $1.39 \times 10^5 \text{ m}^3$.

The 2003 Update Report and TWBIR Revision 2 data in Tables DATA-F-B-1 through DATA-F-B-3 were analyzed for differences in stored, projected, and anticipated volumes. The CH-TRU waste volume data will be discussed first (Section DATA-F-B-1.3), followed by a discussion of the RH-TRU waste volume data (Section DATA-F-B-1.5).

Table DATA-F-B-1. Comparison of Stored, Projected, and Anticipated CH-TRU Waste Volumes Between the 2003 Update and TWBIR Revision 2 (m³)¹

| TRU Waste Site | 2003 Update Stored | TWBIR Rev. 2 Stored | Difference in Stored | 2003 Update Projected | TWBIR Rev. 2 Projected | Difference in Projected | 2003 Update Anticipated | TWBIR Rev. 2 Anticipated | Difference in Anticipated |
|---|--------------------|-----------------------|------------------------|-----------------------|------------------------|-------------------------|-------------------------|--------------------------|---------------------------|
| Argonne National Laboratory - East | 1.10×10^2 | 1.10×10^1 | 9.90×10^1 | 7.95×10^1 | 1.30×10^2 | -5.05×10^1 | 1.89×10^2 | 1.40×10^2 | 4.95×10^1 |
| Argonne National Laboratory - West | 6.03×10^0 | 6.50×10^0 | -4.68×10^{-1} | 3.81×10^1 | 7.40×10^2 | -7.02×10^2 | 4.41×10^1 | 7.50×10^2 | -7.06×10^2 |
| Battelle Columbus Laboratories | 5.24×10^0 | 0.00×10^0 | 5.24×10^0 | 0.00×10^0 | 0.00×10^0 | 0.00×10^0 | 5.24×10^0 | 0.00×10^0 | 5.24×10^0 |
| Bettis Atomic Power Laboratory | 1.86×10^1 | 0.00×10^0 | 1.86×10^1 | 0.00×10^0 | 1.20×10^2 | -1.20×10^2 | 1.86×10^1 | 1.20×10^2 | -1.01×10^2 |
| Energy Technology Engineering Center | 2.30×10^0 | 1.70×10^0 | 5.96×10^{-1} | 0.00×10^0 | 0.00×10^0 | 0.00×10^0 | 2.30×10^0 | 1.70×10^0 | 5.96×10^{-1} |
| Hanford (Richland-RL) | 1.30×10^4 | 1.20×10^4 | 1.00×10^3 | 1.28×10^4 | 3.30×10^4 | -2.02×10^4 | 2.58×10^4 | 4.60×10^4 | -2.02×10^4 |
| Hanford (River Protection-RP) | 3.93×10^3 | 0.00×10^0 | 3.93×10^3 | 0.00×10^0 | 0.00×10^0 | 0.00×10^0 | 3.93×10^3 | 0.00×10^0 | 3.93×10^3 |
| Idaho National Engineering and Environmental Laboratory | 6.10×10^4 | 2.90×10^4 | 3.20×10^4 | 1.20×10^2 | 0.00×10^0 | 1.20×10^2 | 6.11×10^4 | 2.90×10^4 | 3.21×10^4 |
| Knolls Atomic Power Laboratory - Nuclear Fuel Services | 5.49×10^1 | 0.00×10^0 | 5.49×10^1 | 1.70×10^2 | 0.00×10^0 | 1.70×10^2 | 2.25×10^2 | 0.00×10^0 | 2.25×10^2 |
| Lawrence Livermore National Laboratory | 3.50×10^2 | 2.30×10^2 | 1.20×10^2 | 2.10×10^3 | 7.10×10^2 | 1.39×10^3 | 2.45×10^3 | 9.40×10^2 | 1.51×10^3 |
| Los Alamos National Laboratory | 1.20×10^4 | 1.10×10^4 | 1.00×10^3 | 3.29×10^3 | 7.40×10^3 | -4.11×10^3 | 1.53×10^4 | 1.80×10^4 | -2.71×10^3 |
| Nevada Test Site | 6.19×10^2 | 6.20×10^2 | -1.07×10^0 | 4.63×10^2 | 9.00×10^0 | 4.54×10^2 | 1.08×10^3 | 6.30×10^2 | 4.52×10^2 |
| Oak Ridge National Laboratory | 0.00×10^0 | 1.30×10^3 | -1.30×10^3 | 4.49×10^2 | 2.60×10^2 | 1.89×10^2 | 4.49×10^2 | 1.60×10^3 | -1.15×10^3 |
| Paducah Gaseous Diffusion Plant | 5.70×10^0 | 0.00×10^0 | 5.70×10^0 | 5.70×10^0 | 1.90×10^0 | 3.80×10^0 | 1.14×10^1 | 1.90×10^0 | 9.50×10^0 |
| Rocky Flats Environmental Technology Site | 5.35×10^3 | 7.10×10^2 | 4.64×10^3 | 2.75×10^3 | 4.40×10^3 | -1.65×10^3 | 8.10×10^3 | 5.10×10^3 | 3.00×10^3 |
| Sandia National Laboratories - Albuquerque | 2.35×10^1 | 6.70×10^0 | 1.68×10^1 | 0.00×10^0 | 7.50×10^0 | -7.50×10^0 | 2.35×10^1 | 1.40×10^1 | 9.50×10^0 |
| Savannah River Site/Mound | 1.30×10^4 | 3.20×10^3 | 9.80×10^3 | 2.44×10^3 | 6.80×10^3 | -4.36×10^3 | 1.54×10^4 | 9.87×10^3 | 5.57×10^3 |
| U.S. Army Material Command | 2.50×10^0 | 2.50×10^0 | -4.00×10^{-3} | 0.00×10^0 | 0.00×10^0 | 0.00×10^0 | 2.50×10^0 | 2.50×10^0 | -4.00×10^{-3} |
| University of Missouri Research Reactor | 1.46×10^0 | 2.10×10^{-1} | 1.25×10^0 | 0.00×10^0 | 8.30×10^{-1} | -8.30×10^{-1} | 1.46×10^0 | 1.00×10^0 | 4.56×10^{-1} |
| Totals | 1.09×10^5 | 5.81×10^4 | 5.14×10^4 | 2.47×10^4 | 5.36×10^4 | -2.89×10^4 | 1.34×10^5 | 1.12×10^5 | 2.20×10^4 |

¹ See Pages 1, 5 and 6 for discussion.

Table DATA-F-B-2. Comparison of Stored, Projected, and Anticipated RH-TRU Waste Volumes Between the 2003 Update and TWBIR Revision 2 (m³)¹

| TRU Waste Site | 2003 Update Stored | TWBIR Rev. 2 Stored | Difference in Stored | 2003 Update Projected | TWBIR Rev. 2 Projected | Difference in Projected | 2003 Update Anticipated | TWBIR Rev. 2 Anticipated | Difference in Anticipated |
|---|------------------------|-------------------------|-------------------------|------------------------|------------------------|-------------------------|-------------------------|--------------------------|---------------------------|
| Argonne National Laboratory - East | 1.50 × 10 ¹ | 0.00 × 10 ⁰ | 1.50 × 10 ¹ | 1.00 × 10 ² | 0.00 × 10 ⁰ | 1.00 × 10 ² | 1.15 × 10 ² | 0.00 × 10 ⁰ | 1.15 × 10 ² |
| Argonne National Laboratory - West | 2.40 × 10 ¹ | 1.90 × 10 ¹ | 5.00 × 10 ⁰ | 6.90 × 10 ¹ | 1.30 × 10 ³ | -1.23 × 10 ³ | 9.30 × 10 ¹ | 1.30 × 10 ³ | -1.21 × 10 ³ |
| Battelle Columbus Laboratories | 4.40 × 10 ¹ | 5.80 × 10 ² | -5.36 × 10 ² | 1.80 × 10 ⁰ | 0.00 × 10 ⁰ | 1.80 × 10 ⁰ | 4.58 × 10 ¹ | 5.80 × 10 ² | -5.34 × 10 ² |
| Bettis Atomic Power Laboratory | 2.00 × 10 ⁰ | 0.00 × 10 ⁰ | 2.00 × 10 ⁰ | 0.00 × 10 ⁰ | 6.70 × 10 ⁰ | -6.70 × 10 ⁰ | 2.00 × 10 ⁰ | 6.70 × 10 ⁰ | -4.70 × 10 ⁰ |
| Energy Technology Engineering Center | 5.00 × 10 ⁰ | 8.90 × 10 ⁻¹ | 4.11 × 10 ⁰ | 0.00 × 10 ⁰ | 0.00 × 10 ⁰ | 0.00 × 10 ⁰ | 5.00 × 10 ⁰ | 8.90 × 10 ⁻¹ | 4.11 × 10 ⁰ |
| Hanford (Richland-RL) | 3.80 × 10 ² | 2.00 × 10 ² | 1.80 × 10 ² | 9.40 × 10 ³ | 2.20 × 10 ⁴ | -1.26 × 10 ⁴ | 9.78 × 10 ³ | 2.20 × 10 ⁴ | -1.22 × 10 ⁴ |
| Hanford (River Protection-RP) | 4.50 × 10 ³ | 0.00 × 10 ⁰ | 4.50 × 10 ³ | 0.00 × 10 ⁰ | 0.00 × 10 ⁰ | 0.00 × 10 ⁰ | 4.50 × 10 ³ | 0.00 × 10 ⁰ | 4.50 × 10 ³ |
| Idaho National Engineering and Environmental Laboratory | 2.20 × 10 ² | 2.20 × 10 ² | 0.00 × 10 ⁰ | 0.00 × 10 ⁰ | 0.00 × 10 ⁰ | 0.00 × 10 ⁰ | 2.20 × 10 ² | 2.20 × 10 ² | 0.00 × 10 ⁰ |
| Knolls Atomic Power Laboratory - Nuclear Fuel Services | 0.00 × 10 ⁰ | 0.00 × 10 ⁰ | 0.00 × 10 ⁰ | 1.40 × 10 ² | 0.00 × 10 ⁰ | 1.40 × 10 ² | 1.40 × 10 ² | 0.00 × 10 ⁰ | 1.40 × 10 ² |
| Los Alamos National Laboratory | 1.20 × 10 ² | 9.40 × 10 ¹ | 2.60 × 10 ¹ | 0.00 × 10 ⁰ | 9.90 × 10 ¹ | -9.90 × 10 ¹ | 1.20 × 10 ² | 1.90 × 10 ² | -7.00 × 10 ¹ |
| Oak Ridge National Laboratory | 0.00 × 10 ⁰ | 2.50 × 10 ³ | -2.50 × 10 ³ | 6.60 × 10 ² | 4.50 × 10 ² | 2.10 × 10 ² | 6.60 × 10 ² | 2.90 × 10 ³ | -2.24 × 10 ³ |
| Sandia National Laboratories - Albuquerque | 4.58 × 10 ⁰ | 0.00 × 10 ⁰ | 4.58 × 10 ⁰ | 0.00 × 10 ⁰ | 0.00 × 10 ⁰ | 0.00 × 10 ⁰ | 4.58 × 10 ⁰ | 0.00 × 10 ⁰ | 4.58 × 10 ⁰ |
| Savannah River Site/Mound | 0.00 × 10 ⁰ | 0.00 × 10 ⁰ | 0.00 × 10 ⁰ | 2.26 × 10 ¹ | 0.00 × 10 ⁰ | 2.26 × 10 ¹ | 2.26 × 10 ¹ | 0.00 × 10 ⁰ | 2.26 × 10 ¹ |
| Totals | 5.31 × 10 ³ | 3.61 × 10 ³ | 1.70 × 10 ³ | 1.04 × 10 ⁴ | 2.39 × 10 ⁴ | -1.35 × 10 ⁴ | 1.57 × 10 ⁴ | 2.72 × 10 ⁴ | -1.15 × 10 ⁴ |

¹ See Pages 1 and 28 for discussion.

Table DATA-F-B-3. Comparison of Stored, Projected, and Anticipated Total TRU Waste Volumes Between the 2003 Update and TWBIR Revision 2 (m³)¹

| TRU Waste Site | 2003 Update Stored | TWBIR Rev. 2 Stored | Difference in Stored | 2003 Update Projected | TWBIR Rev. 2 Projected | Difference in Projected | 2003 Update Anticipated | TWBIR Rev. 2 Anticipated | Difference in Anticipated |
|-------------------------------|--------------------|---------------------|----------------------|-----------------------|------------------------|-------------------------|-------------------------|--------------------------|---------------------------|
| CH TRU Waste Volumes | 1.09×10^5 | 5.81×10^4 | 5.14×10^4 | 2.47×10^4 | 5.36×10^4 | -2.89×10^4 | 1.34×10^5 | 1.12×10^5 | 2.20×10^4 |
| CH Emplaced TRU Waste Volumes | 7.72×10^3 | 0.00×10^0 | 7.72×10^3 | 0.00×10^0 | 0.00×10^0 | 0.00×10^0 | 7.72×10^3 | 0.00×10^0 | 7.72×10^3 |
| Total CH TRU Waste Volumes | 1.17×10^5 | 5.81×10^4 | 5.91×10^4 | 2.47×10^4 | 5.36×10^4 | -2.89×10^4 | 1.42×10^5 | 1.12×10^5 | 2.97×10^4 |
| Total RH TRU Waste Volumes | 5.31×10^3 | 3.61×10^3 | 1.70×10^3 | 1.04×10^4 | 2.30×10^4 | -1.35×10^4 | 1.57×10^4 | 2.72×10^4 | -1.15×10^4 |
| | | | | | | | | | |
| Total TRU Waste Volumes | 1.23×10^5 | 6.17×10^4 | 6.08×10^4 | 3.51×10^4 | 7.74×10^4 | -4.23×10^4 | 1.58×10^5 | 1.39×10^5 | 1.82×10^4 |

¹ See Pages 1, 5, 6 and 28 for discussion.

1 **DATA-F-B-1.2 Waste Inventory Comparison by Final Waste Form**

2 Tables DATA-F-B-4 through DATA-F-B-23 contain two parts. The top portion of each table
3 shows the volume data, and the lower portion of each table shows the waste material parameter
4 (WMP) data. These tables compare the 2003 Update Report and TWBIR Revision 2 volume and
5 WMP data for the roll-ups by final waste form. There is one table for each final waste form for
6 each CH-TRU or RH-TRU waste type.

7 The first part of Tables DATA-F-B-4 through DATA-F-B-23 contains rolled up final waste form
8 volume data by site, and were compiled using the TWBID Revision 2.1 (LANL 2003). In the
9 upper portion of each table, there are eight columns. The first column contains the site
10 identification. Column 2 contains the volume of emplaced waste for the sites listed. Columns 3
11 and 4 contain the 2003 Update Report and TWBIR Revision 2 stored volumes, respectively.
12 Columns 5 and 6 contain the 2003 Update Report and TWBIR Revision 2 projected volumes,
13 respectively. Columns 7 and 8 contain the 2003 Update Report and TWBIR Revision 2 total
14 volumes, respectively. The 9th and last column contains the volume difference between the total
15 (anticipated) 2003 Update Report and TWBIR Revision 2 volumes (columns 7 and 8,
16 respectively). This volume difference is the result of subtracting TWBIR Revision 2 volumes
17 from 2003 Update volumes. The sum of each column is shown in the “TRU Waste Site Total”
18 row.

19 The 2003 Update Report and TWBIR Revision 2 stored and projected waste volumes by site
20 which contributed to the final waste form are given for the applicable sites and for emplaced
21 waste. No waste was emplaced at the time of the TWBIR Revision 2 (DOE 1995), resulting in
22 zero values for those columns (2, 4, and 6) for the WIPP. Sections DATA-F-B-1.4 and DATA-
23 F-B-1.6 explain the volume data in these tables.

24 The second part of Tables DATA-F-B-4 through DATA-F-B-23, contains the WMP average
25 densities in units of kilograms per cubic meter (kg/m^3) and shows the comparison of the 2003
26 Update Report and TWBIR Revision 2 WMP data for the roll-ups by final waste form. The last
27 column of the WMP data table gives the result of subtracting the TWBIR Revision 2 average
28 density from the 2003 Update Report average density. The 2003 Update Report WMP data were
29 compiled using TWBID Revision 2.1 (LANL 2003). Sections DATA-F-B-2.1 and DATA-F-B-
30 2.2 explain the WMP data in these tables. Section DATA-F-B-2.3 discusses the waste container
31 (packaging) materials.

32 **DATA-F-B-1.3 Analysis of CH-TRU Waste Volume Differences by Site**

33 Table DATA-F-B-1 compares the stored, projected, and anticipated CH-TRU waste volumes
34 between the TWBIR Revision 2 (DOE 1995) and 2003 Update Report inventories by site and
35 gives the total CH-TRU waste and emplaced waste volumes.

36 The total difference in stored CH-TRU waste at the sites is $5.14 \times 10^4 \text{ m}^3$, or an 88 percent
37 increase from the TWBIR Revision 2 inventory. The bulk of this additional stored volume came
38 from the Idaho National Engineering and Environmental Laboratory (INEEL; $3.20 \times 10^4 \text{ m}^3$), the
39 Savannah River Site (SRS; $9.80 \times 10^3 \text{ m}^3$), Los Alamos National Laboratory (LANL; 1.00×10^3
40 m^3), and the Rocky Flats Environmental Technology Site (RFETS); ($4.64 \times 10^3 \text{ m}^3$). The sites

1 adjusted their existing inventory data based on new information (since the TWBIR Revision 2
2 inventory) about the waste and/or increased accessibility to the waste. The Hanford River
3 Protection (RP) stored waste ($3.93 \times 10^3 \text{ m}^3$) is a new addition to the inventory. Several small-
4 quantity generator sites have also added small volumes of CH-TRU stored waste to the inventory
5 that were not previously reported (Battelle Columbus Laboratories (BCL), Bettis Atomic Power
6 Laboratory (BAPL), Knolls Atomic Power Laboratory Nuclear Fuels Services (KAPL-NFS), and
7 Paducah Gaseous Diffusion Plant (PGDP)).

8 The total projected CH-TRU waste volume has decreased by $2.89 \times 10^4 \text{ m}^3$, or a 54 percent
9 decrease from the TWBIR Revision 2 inventory. The largest decrease in projected CH-TRU
10 waste volume is $2.02 \times 10^4 \text{ m}^3$ reported by Hanford Richland (RL). This was most likely
11 prompted by changes in future forecast planning volumes based on better knowledge about the
12 waste by on-site burial of non-TRU waste or by redesignation into the stored waste category as a
13 result of waste operations.

14 The anticipated CH-TRU waste is simply the sum of the stored and projected wastes. It follows
15 that the overall change is an increase of $2.20 \times 10^4 \text{ m}^3$, or a 20 percent increase for the
16 anticipated volumes.

17 The emplaced waste volume as of the inventory date (September 30, 2002) is $7.72 \times 10^3 \text{ m}^3$. As
18 of the inventory date, only CH-TRU waste has been emplaced. Table DATA-F-B-3 shows the
19 sum of the current anticipated and emplaced CH-TRU waste volumes as $1.42 \times 10^5 \text{ m}^3$. The total
20 CH-TRU waste volume from the TWBIR Revision 2 was $1.12 \times 10^5 \text{ m}^3$, giving a difference of
21 $2.97 \times 10^4 \text{ m}^3$.

22 **DATA-F-B-1.4 CH-TRU Waste Volumes by Final Waste Form by Site**

23 Tables DATA-F-B-4 through DATA-F-B-14 show that 5 of the 11 CH-TRU waste final waste
24 form total volumes increased (filter material, heterogeneous debris, inorganic non-metal,
25 solidified inorganic material, and solidified organic material). These increases were all greater
26 than 800 m^3 . Of these, the heterogeneous debris and solidified inorganic material volumes had
27 the largest increases of $2.9 \times 10^4 \text{ m}^3$ and $2.2 \times 10^4 \text{ m}^3$, respectively. The solidified organic
28 material increased by $4.6 \times 10^3 \text{ m}^3$ and the inorganic non-metal increased by $7.2 \times 10^3 \text{ m}^3$. The
29 filter material and final waste form volumes increased by $8.5 \times 10^2 \text{ m}^3$. (See Section DATA-F-
30 3.2.1.4 for additional information regarding solidified inorganic material and solidified organic
31 material received after TWBID Revision 2.1 Version 3.12, Data Version 4.09 was configured for
32 performance assessment calculation.)

33 Six of the 11 CH-TRU waste final waste form total volumes decreased (combustible material,
34 graphite, lead/cadmium metal, salt, soil, and uncategorized metal). These decreases ranged from
35 less than $5.0 \times 10^2 \text{ m}^3$ for graphite, lead/cadmium metal, salt, and soil, to $4.2 \times 10^3 \text{ m}^3$ for
36 combustible and $2.7 \times 10^4 \text{ m}^3$ for uncategorized metal.

1 **Table DATA-F-B-4. WIPP CH-TRU Waste Profile Differences Between TWBIR Rev. 2**
 2 **and 2003 Update Report — Combustible Material¹**

Final Waste Form: Combustible Material

| TRU Waste Site Volumes (m ³) | | | | | | | | |
|---|---|-----------------------|--|-----------------------|--------------------------------------|-----------------------|-----------------------|------------------------|
| Site | Emplaced Waste Volume | 2003 Stored | Rev. 2 Stored | 2003 Proj. | Rev. 2 Proj. | 2003 Total | Rev. 2 Total | Total Diff. |
| Argonne National Laboratory - East | 0.0 × 10 ⁰ | 9.0 × 10 ¹ | 0.0 × 10 ⁰ | 6.6 × 10 ¹ | 0.0 × 10 ⁰ | 1.6 × 10 ² | 0.0 × 10 ⁰ | 1.6 × 10 ² |
| Argonne National Laboratory - West | 0.0 × 10 ⁰ | 5.4 × 10 ⁰ | 0.0 × 10 ⁰ | 4.4 × 10 ⁰ | 1.0 × 10 ² | 9.8 × 10 ⁰ | 1.0 × 10 ² | -9.2 × 10 ¹ |
| Battelle Columbus Laboratories | 0.0 × 10 ⁰ | 5.2 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 5.2 × 10 ⁰ | 0.0 × 10 ⁰ | 5.2 × 10 ⁰ |
| Hanford (Richland-RL) | 0.0 × 10 ⁰ | 9.8 × 10 ¹ | 4.6 × 10 ² | 0.0 × 10 ⁰ | 1.2 × 10 ³ | 9.8 × 10 ¹ | 1.7 × 10 ³ | -1.6 × 10 ³ |
| Idaho National Engineering and Environmental Laboratory | 6.2 × 10 ¹ | 0.0 × 10 ⁰ | 3.3 × 10 ³ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 3.3 × 10 ³ | -3.3 × 10 ³ |
| Los Alamos National Laboratory | 5.9 × 10 ⁰ | 2.9 × 10 ³ | 1.8 × 10 ³ | 1.4 × 10 ³ | 2.4 × 10 ³ | 4.3 × 10 ³ | 4.2 × 10 ³ | 6.5 × 10 ¹ |
| Mound Plant | 6.2 × 10 ¹ | 0.0 × 10 ⁰ | 7.1 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 7.1 × 10 ⁰ | -7.1 × 10 ⁰ |
| Rocky Flats Environmental Technology Site | 4.8 × 10 ² | 1.2 × 10 ³ | 1.9 × 10 ² | 4.5 × 10 ² | 8.6 × 10 ² | 1.6 × 10 ³ | 1.0 × 10 ³ | 6.0 × 10 ² |
| TRU Waste Site Total | 6.1 × 10 ² | 4.3 × 10 ³ | 5.8 × 10 ³ | 1.9 × 10 ³ | 4.6 × 10 ³ | 6.2 × 10 ³ | 1.0 × 10 ⁴ | -4.2 × 10 ³ |
| Waste Material Parameters | | | | | | | | |
| | 2003 Update Average Density (kg/m³) | | TWBIR Rev. 2 Average Density (kg/m³) | | Difference (kg/m³) | | | |
| Fe-Base Metal/Alloys | 1.5 × 10 ¹ | | 1.1 × 10 ² | | -9.4 × 10 ¹ | | | |
| Al-Base Metal/Alloys | 8.4 × 10 ⁻¹ | | 2.0 × 10 ⁻¹ | | 6.4 × 10 ⁻¹ | | | |
| Other Metal/Alloys | 7.9 × 10 ⁰ | | 1.0 × 10 ¹ | | -2.5 × 10 ⁰ | | | |
| Other Inorganic Material | 1.0 × 10 ¹ | | 8.7 × 10 ⁰ | | 1.3 × 10 ⁰ | | | |
| Cellulosic Material | 2.0 × 10 ¹ | | 1.9 × 10 ² | | -1.7 × 10 ² | | | |
| Rubber Material | 1.3 × 10 ¹ | | 3.0 × 10 ¹ | | -1.7 × 10 ¹ | | | |
| Plastic Material | 4.9 × 10 ¹ | | 6.0 × 10 ¹ | | -1.1 × 10 ¹ | | | |
| Solidified Inorganic Material | 9.4 × 10 ⁻¹ | | 0.0 × 10 ⁰ | | 9.4 × 10 ⁻¹ | | | |
| Cement (Solidified) | 4.8 × 10 ⁻² | | 0.0 × 10 ⁰ | | 4.8 × 10 ⁻² | | | |
| Vitrified Material | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | | |
| Solidified Organic Material | 1.2 × 10 ¹ | | 0.0 × 10 ⁰ | | 1.2 × 10 ¹ | | | |
| Soil | 8.8 × 10 ⁻¹ | | 0.0 × 10 ⁰ | | 8.8 × 10 ⁻¹ | | | |

¹ See Page 6, 27, and 28 for discussion.

1 **Table DATA-F-B-5. WIPP CH-TRU Waste Profile Differences Between TWBIR Rev. 2**
 2 **and 2003 Update — Filter Material¹**

Final Waste Form: Filter Material

| TRU Waste Site Volumes (m ³) | | | | | | | | |
|---|--|-------------------|---|-------------------|---------------------------------|-------------------|----------------------|-----------------------|
| Site | Emplaced Waste Volume | 2003 Stored | Rev. 2 Stored | 2003 Proj. | Rev. 2 Proj. | 2003 Total | Rev. 2 Total | Total Diff. |
| Hanford (Richland-RL) | 0.0×10^0 | 2.2×10^1 | 0.0×10^0 | 0.0×10^0 | 0.0×10^0 | 2.2×10^1 | 0.0×10^0 | 2.2×10^1 |
| Idaho National Engineering and Environmental Laboratory | 2.9×10^2 | 0.0×10^0 | 1.3×10^2 | 0.0×10^0 | 0.0×10^0 | 0.0×10^0 | 1.3×10^2 | -1.3×10^2 |
| Lawrence Livermore National Laboratory | 0.0×10^0 | 1.9×10^2 | 1.6×10^1 | 4.5×10^2 | 3.2×10^1 | 6.4×10^2 | 4.8×10^1 | 6.0×10^2 |
| Los Alamos National Laboratory | 0.0×10^0 | 3.3×10^2 | 0.0×10^0 | 0.0×10^0 | 0.0×10^0 | 3.3×10^2 | 0.0×10^0 | 3.3×10^2 |
| Mound Plant | 0.0×10^0 | 0.0×10^0 | 8.3×10^{-1} | 0.0×10^0 | 0.0×10^0 | 0.0×10^0 | 8.3×10^{-1} | -8.3×10^{-1} |
| Rocky Flats Environmental Technology Site | 5.6×10^1 | 4.5×10^2 | 7.2×10^1 | 1.4×10^2 | 4.8×10^2 | 5.8×10^2 | 5.5×10^2 | 3.4×10^1 |
| TRU Waste Site Total | 3.4×10^2 | 9.9×10^2 | 2.2×10^2 | 5.9×10^2 | 5.1×10^2 | 1.6×10^3 | 7.3×10^2 | 8.5×10^2 |
| Waste Material Parameters | 2003 Update Average Density (kg/m ³) | | TWBIR Rev. 2 Average Density (kg/m ³) | | Difference (kg/m ³) | | | |
| Fe-Base Metal/Alloys | 4.5×10^1 | | 5.3×10^0 | | 4.0×10^1 | | | |
| Al-Base Metal/Alloys | 1.8×10^1 | | 1.3×10^1 | | 5.3×10^0 | | | |
| Other Metal/Alloys | 5.7×10^0 | | 8.0×10^{-1} | | 4.9×10^0 | | | |
| Other Inorganic Material | 1.6×10^1 | | 1.5×10^1 | | 8.9×10^{-1} | | | |
| Cellulosic Material | 4.6×10^1 | | 5.6×10^1 | | -9.8×10^0 | | | |
| Rubber Material | 6.2×10^0 | | 3.3×10^0 | | 2.9×10^0 | | | |
| Plastic Material | 1.6×10^1 | | 4.6×10^0 | | 1.1×10^1 | | | |
| Solidified Inorganic Material | 6.0×10^{-1} | | 0.0×10^0 | | 6.0×10^{-1} | | | |
| Cement (Solidified) | 0.0×10^0 | | 0.0×10^0 | | 0.0×10^0 | | | |
| Vitrified Material | 0.0×10^0 | | 0.0×10^0 | | 0.0×10^0 | | | |
| Solidified Organic Material | 3.5×10^{-1} | | 0.0×10^0 | | 3.5×10^{-1} | | | |
| Soil | 4.8×10^0 | | 0.0×10^0 | | 4.8×10^0 | | | |

3 ¹ See Page 6, 27, and 28 for discussion.

1 **Table DATA-F-B-6. WIPP CH-TRU Waste Profile Differences Between TWBIR Rev. 2**
 2 **and 2003 Update — Graphite¹**

Final Waste Form: Graphite

| TRU Waste Site Volumes (m ³) | | | | | | | |
|---|--|-----------------------|---|-----------------------|---------------------------------|-----------------------|------------------------|
| Site | 2003 Stored | Rev. 2 Stored | 2003 Proj. | Rev. 2 Proj. | 2003 Total | Rev. 2 Total | Total Diff. |
| Idaho National Engineering and Environmental Laboratory | 0.0 × 10 ⁰ | 5.0 × 10 ² | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 5.0 × 10 ² | -5.0 × 10 ² |
| Rocky Flats Environmental Technology Site | 1.2 × 10 ² | 1.4 × 10 ¹ | 1.3 × 10 ⁰ | 4.8 × 10 ¹ | 1.3 × 10 ² | 6.1 × 10 ¹ | 6.4 × 10 ¹ |
| TRU Waste Site Total | 1.2 × 10 ² | 5.1 × 10 ² | 1.3 × 10 ⁰ | 4.8 × 10 ¹ | 1.3 × 10 ² | 5.6 × 10 ² | -4.3 × 10 ² |
| Waste Material Parameters | 2003 Update Average Density (kg/m ³) | | TWBIR Rev. 2 Average Density (kg/m ³) | | Difference (kg/m ³) | | |
| Fe-Base Metal/Alloys | 1.9 × 10 ¹ | | 1.4 × 10 ⁰ | | 1.8 × 10 ¹ | | |
| Al-Base Metal/Alloys | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Other Metal/Alloys | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Other Inorganic Material | 1.7 × 10 ² | | 3.0 × 10 ² | | -1.3 × 10 ² | | |
| Cellulosic Material | 8.6 × 10 ¹ | | 4.8 × 10 ⁰ | | 8.2 × 10 ¹ | | |
| Rubber Material | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Plastic Material | 2.3 × 10 ¹ | | 5.6 × 10 ⁰ | | 1.8 × 10 ¹ | | |
| Solidified Inorganic Material | 7.1 × 10 ⁰ | | 0.0 × 10 ⁰ | | 7.1 × 10 ⁰ | | |
| Cement (Solidified) | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Vitrified Material | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Solidified Organic Material | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Soil | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |

3 ¹ See Page 6, 27, and 28 for discussion.

1 **Table DATA-F-B-7. WIPP CH-TRU Waste Profile Differences Between TWBIR Rev. 2**
 2 **and 2003 Update — Heterogeneous Debris¹**

Final Waste Form: Heterogeneous Debris

| TRU Waste Site Volumes (m ³) | | | | | | | | |
|---|-----------------------|------------------------|------------------------|-----------------------|------------------------|-----------------------|------------------------|-------------------------|
| Site | Emplaced Waste Volume | 2003 Stored | Rev. 2 Stored | 2003 Proj. | Rev. 2 Proj. | 2003 Total | Rev. 2 Total | Total Diff. |
| Argonne National Laboratory - West | 0.0 × 10 ⁰ | 6.2 × 10 ⁻¹ | 6.5 × 10 ⁰ | 3.4 × 10 ¹ | 3.5 × 10 ² | 3.4 × 10 ¹ | 3.5 × 10 ² | -3.2 × 10 ² |
| Bettis Atomic Power Laboratory | 0.0 × 10 ⁰ | 1.9 × 10 ¹ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 1.2 × 10 ² | 1.9 × 10 ¹ | 1.2 × 10 ² | -1.0 × 10 ² |
| Energy Technology Engineering Center | 0.0 × 10 ⁰ | 1.5 × 10 ⁰ | 1.7 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 1.5 × 10 ⁰ | 1.7 × 10 ⁰ | -2.2 × 10 ⁻¹ |
| Framatome | 0.0 × 10 ⁰ | 7.3 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 7.3 × 10 ⁰ | 0.0 × 10 ⁰ | 7.3 × 10 ⁰ |
| Hanford (Richland-RL) | 9.8 × 10 ¹ | 1.2 × 10 ⁴ | 1.1 × 10 ⁴ | 2.1 × 10 ³ | 6.3 × 10 ³ | 1.4 × 10 ⁴ | 1.7 × 10 ⁴ | -3.3 × 10 ³ |
| Idaho National Engineering and Environmental Laboratory | 0.0 × 10 ⁰ | 2.0 × 10 ⁴ | 1.1 × 10 ⁴ | 2.3 × 10 ¹ | 0.0 × 10 ⁰ | 2.0 × 10 ⁴ | 1.7 × 10 ⁰ | 2.0 × 10 ⁴ |
| Knolls Atomic Power Laboratory - Nuclear Fuel Services | 0.0 × 10 ⁰ | 5.5 × 10 ¹ | 0.0 × 10 ⁰ | 1.7 × 10 ² | 0.0 × 10 ⁰ | 2.3 × 10 ² | 0.0 × 10 ⁰ | 2.3 × 10 ² |
| Lawrence Livermore National Laboratory | 0.0 × 10 ⁰ | 1.3 × 10 ² | 2.0 × 10 ² | 1.4 × 10 ³ | 6.6 × 10 ² | 1.6 × 10 ³ | 8.6 × 10 ² | 7.1 × 10 ² |
| Los Alamos National Laboratory | 2.7 × 10 ² | 2.1 × 10 ³ | 1.6 × 10 ¹ | 1.4 × 10 ³ | 2.9 × 10 ¹ | 3.5 × 10 ³ | 4.5 × 10 ¹ | 3.5 × 10 ³ |
| Mound Plant | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 6.2 × 10 ⁻¹ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 6.2 × 10 ⁻¹ | -6.2 × 10 ⁻¹ |
| Nevada Test Site | 0.0 × 10 ⁰ | 6.1 × 10 ² | 6.1 × 10 ² | 4.6 × 10 ² | 9.0 × 10 ⁰ | 1.1 × 10 ³ | 6.2 × 10 ² | 4.5 × 10 ² |
| Oak Ridge National Laboratory | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 1.3 × 10 ³ | 4.5 × 10 ² | 2.6 × 10 ² | 4.5 × 10 ² | 1.6 × 10 ³ | -1.1 × 10 ³ |
| Pantex Plant | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 6.2 × 10 ⁻¹ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 6.2 × 10 ⁻¹ | -6.2 × 10 ⁻¹ |
| Rocky Flats Environmental Technology Site | 6.8 × 10 ¹ | 1.0 × 10 ³ | 3.9 × 10 ⁰ | 1.2 × 10 ³ | 0.0 × 10 ⁰ | 2.2 × 10 ³ | 3.9 × 10 ⁰ | 2.2 × 10 ³ |
| Sandia National Laboratories - Albuquerque | 0.0 × 10 ⁰ | 2.4 × 10 ¹ | 6.7 × 10 ⁰ | 0.0 × 10 ⁰ | 7.5 × 10 ⁰ | 2.4 × 10 ¹ | 1.4 × 10 ¹ | 9.4 × 10 ⁰ |
| Savannah River Site | 1.4 × 10 ² | 1.3 × 10 ⁴ | 2.6 × 10 ³ | 2.4 × 10 ³ | 5.5 × 10 ³ | 1.5 × 10 ⁴ | 8.1 × 10 ³ | 7.3 × 10 ³ |
| U.S. Army Material Command | 0.0 × 10 ⁰ | 2.5 × 10 ⁰ | 2.5 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 2.5 × 10 ⁰ | 2.5 × 10 ⁰ | -4.0 × 10 ⁻³ |
| University of Missouri Research Reactor | 0.0 × 10 ⁰ | 1.5 × 10 ⁰ | 2.1 × 10 ⁻¹ | 0.0 × 10 ⁰ | 8.3 × 10 ⁻¹ | 1.5 × 10 ⁰ | 1.0 × 10 ⁰ | 4.2 × 10 ⁻¹ |
| TRU Waste Site Total | 5.7 × 10 ² | 4.9 × 10 ⁴ | 2.7 × 10 ⁴ | 9.7 × 10 ³ | 1.3 × 10 ⁴ | 5.9 × 10 ⁴ | 2.9 × 10 ⁴ | 2.9 × 10 ⁴ |

| Waste Material Parameters | 2003 Update Average Density (kg/m ³) | TWBIR Rev. 2 Average Density (kg/m ³) | Difference (kg/m ³) |
|-------------------------------|--|---|---------------------------------|
| Fe-Base Metal/Alloys | 2.4 × 10 ² | 2.5 × 10 ² | -2.9 × 10 ⁰ |
| Al-Base Metal/Alloys | 3.3 × 10 ¹ | 4.6 × 10 ¹ | -1.3 × 10 ¹ |
| Other Metal/Alloys | 5.7 × 10 ¹ | 5.7 × 10 ⁰ | 5.1 × 10 ¹ |
| Other Inorganic Material | 5.6 × 10 ¹ | 2.6 × 10 ¹ | 2.9 × 10 ¹ |
| Cellulosic Material | 1.2 × 10 ² | 8.6 × 10 ¹ | 3.5 × 10 ¹ |
| Rubber Material | 3.2 × 10 ¹ | 1.9 × 10 ¹ | 1.3 × 10 ¹ |
| Plastic Material | 9.0 × 10 ¹ | 7.2 × 10 ¹ | 1.8 × 10 ¹ |
| Solidified Inorganic Material | 3.6 × 10 ⁰ | 3.8 × 10 ⁰ | -2.0 × 10 ⁻¹ |
| Cement (Solidified) | 1.8 × 10 ⁻² | 0.0 × 10 ⁰ | 1.8 × 10 ⁻² |
| Vitrified Material | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ |
| Solidified Organic Material | 1.8 × 10 ⁰ | 4.0 × 10 ⁻¹ | 1.4 × 10 ⁰ |
| Soil | 4.2 × 10 ⁰ | 2.9 × 10 ⁰ | 1.3 × 10 ⁰ |

3 ¹ See Page 6, 27, and 28 for discussion.

1 **Table DATA-F-B-8. WIPP CH-TRU Waste Profile Differences Between TWBIR Rev. 2**
 2 **and 2003 Update — Inorganic Non-Metal¹**

Final Waste Form: Inorganic Non-Metal

| TRU Waste Site Volumes (m ³) | | | | | | | | |
|---|--|-------------------|---|-------------------|---------------------------------|-------------------|----------------------|-----------------------|
| Site | Emplaced Waste Volume | 2003 Stored | Rev. 2 Stored | 2003 Proj. | Rev. 2 Proj. | 2003 Total | Rev. 2 Total | Total Diff. |
| Hanford (Richland-RL) | 0.0×10^0 | 1.1×10^1 | 3.5×10^1 | 3.0×10^1 | 6.9×10^1 | 4.2×10^1 | 1.0×10^2 | -6.2×10^1 |
| Idaho National Engineering and Environmental Laboratory | 4.3×10^2 | 1.1×10^4 | 3.0×10^3 | 0.0×10^0 | 0.0×10^0 | 1.1×10^4 | 3.0×10^3 | 7.5×10^3 |
| Paducah Gaseous Diffusion Plant | 0.0×10^0 | 5.7×10^0 | 0.0×10^0 | 5.7×10^0 | 1.9×10^0 | 1.1×10^1 | 1.9×10^0 | 9.5×10^0 |
| Rocky Flats Environmental Technology Site | 5.4×10^2 | 6.5×10^2 | 5.8×10^1 | 3.2×10^1 | 8.7×10^2 | 6.8×10^2 | 9.3×10^2 | -2.5×10^2 |
| Teledyne Brown Engineering | 0.0×10^0 | 0.0×10^0 | 2.1×10^{-1} | 0.0×10^0 | 0.0×10^0 | 0.0×10^0 | 2.1×10^{-1} | -2.1×10^{-1} |
| TRU Waste Site Total | 9.7×10^2 | 1.1×10^4 | 3.1×10^3 | 6.8×10^1 | 9.4×10^2 | 1.1×10^4 | 4.1×10^3 | 7.2×10^3 |
| Waste Material Parameters | 2003 Update Average Density (kg/m ³) | | TWBIR Rev. 2 Average Density (kg/m ³) | | Difference (kg/m ³) | | | |
| Fe-Base Metal/Alloys | 4.2×10^0 | | 2.8×10^0 | | 1.4×10^0 | | | |
| Al-Base Metal/Alloys | 1.2×10^{-2} | | 0.0×10^0 | | 1.2×10^{-2} | | | |
| Other Metal/Alloys | 5.0×10^0 | | 2.0×10^{-1} | | 4.8×10^0 | | | |
| Other Inorganic Material | 5.5×10^1 | | 1.0×10^2 | | -4.5×10^1 | | | |
| Cellulosic Material | 1.9×10^1 | | 1.6×10^1 | | 3.2×10^0 | | | |
| Rubber Material | 1.1×10^{-1} | | 4.0×10^{-1} | | -2.9×10^{-1} | | | |
| Plastic Material | 2.7×10^0 | | 6.7×10^0 | | -4.0×10^0 | | | |
| Solidified Inorganic Material | 9.0×10^{-1} | | 1.4×10^0 | | -5.0×10^{-1} | | | |
| Cement (Solidified) | 0.0×10^0 | | 0.0×10^0 | | 0.0×10^0 | | | |
| Vitrified Material | 7.1×10^1 | | 1.4×10^3 | | -1.3×10^3 | | | |
| Solidified Organic Material | 2.7×10^{-5} | | 0.0×10^0 | | 2.7×10^{-5} | | | |
| Soil | 1.8×10^{-3} | | 0.0×10^0 | | 1.8×10^{-3} | | | |

3 ¹ See Page 6, 27, and 28 for discussion.

1 **Table DATA-F-B-9. WIPP CH-TRU Waste Profile Differences Between TWBIR Rev. 2**
 2 **and 2003 Update — Lead/Cadmium Metal¹**

Final Waste Form: Lead/Cadmium Metal

| TRU Waste Site Volumes (m ³) | | | | | | | | |
|---|---|-----------------------|--|-----------------------|--------------------------------------|-----------------------|-----------------------|------------------------|
| Site | Emplaced Waste Volume | 2003 Stored | Rev. 2 Stored | 2003 Proj. | Rev. 2 Proj. | 2003 Total | Rev. 2 Total | Total Diff. |
| Argonne National Laboratory - East | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 1.1 × 10 ⁰ | 0.0 × 10 ⁰ | 1.3 × 10 ⁰ | 0.0 × 10 ⁰ | 2.4 × 10 ⁰ | -2.4 × 10 ⁰ |
| Hanford (Richland-RL) | 0.0 × 10 ⁰ | 1.7 × 10 ¹ | 1.4 × 10 ¹ | 1.4 × 10 ¹ | 3.5 × 10 ¹ | 3.1 × 10 ¹ | 4.9 × 10 ¹ | -1.8 × 10 ¹ |
| Idaho National Engineering and Environmental Laboratory | 8.1 × 10 ¹ | 0.0 × 10 ⁰ | 1.4 × 10 ¹ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 1.4 × 10 ¹ | -1.4 × 10 ¹ |
| Los Alamos National Laboratory | 0.0 × 10 ⁰ | 3.7 × 10 ⁰ | 1.9 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 3.7 × 10 ⁰ | 1.9 × 10 ⁰ | 1.9 × 10 ⁰ |
| Rocky Flats Environmental Technology Site | 0.0 × 10 ⁰ | 1.2 × 10 ² | 4.0 × 10 ⁰ | 1.8 × 10 ¹ | 3.0 × 10 ² | 1.4 × 10 ² | 3.0 × 10 ² | -1.6 × 10 ² |
| TRU Waste Site Total | 8.1 × 10 ¹ | 1.4 × 10 ² | 3.5 × 10 ¹ | 3.2 × 10 ¹ | 3.3 × 10 ² | 1.8 × 10 ² | 3.7 × 10 ² | -1.9 × 10 ² |
| Waste Material Parameters | | | | | | | | |
| | 2003 Update Average Density (kg/m³) | | TWBIR Rev. 2 Average Density (kg/m³) | | Difference (kg/m³) | | | |
| Fe-Base Metal/Alloys | 9.2 × 10 ² | | 1.3 × 10 ² | | 7.9 × 10 ² | | | |
| Al-Base Metal/Alloys | 1.8 × 10 ¹ | | 1.7 × 10 ¹ | | 1.5 × 10 ⁰ | | | |
| Other Metal/Alloys | 1.5 × 10 ² | | 5.2 × 10 ¹ | | 1.0 × 10 ² | | | |
| Other Inorganic Material | 1.8 × 10 ¹ | | 1.2 × 10 ¹ | | 6.2 × 10 ⁰ | | | |
| Cellulosic Material | 5.0 × 10 ⁰ | | 4.0 × 10 ⁰ | | 1.0 × 10 ⁰ | | | |
| Rubber Material | 3.3 × 10 ⁰ | | 1.6 × 10 ¹ | | -1.2 × 10 ¹ | | | |
| Plastic Material | 9.3 × 10 ⁰ | | 2.2 × 10 ¹ | | -1.3 × 10 ¹ | | | |
| Solidified Inorganic Material | 8.2 × 10 ⁻¹ | | 0.0 × 10 ⁰ | | 8.2 × 10 ⁻¹ | | | |
| Cement (Solidified) | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | | |
| Vitrified Material | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | | |
| Solidified Organic Material | 1.1 × 10 ⁻² | | 0.0 × 10 ⁰ | | 1.1 × 10 ⁻² | | | |
| Soil | 1.6 × 10 ⁻¹ | | 0.0 × 10 ⁰ | | 1.6 × 10 ⁻¹ | | | |

3 ¹ See Page 6, 27, and 28 for discussion.

1 **Table DATA-F-B-10. WIPP CH-TRU Waste Profile Differences Between TWBIR Rev. 2**
 2 **and 2003 Update — Salt¹**

Final Waste Form: Salt

| TRU Waste Site Volumes (m ³) | | | | | | | | |
|---|--|-----------------------|---|-----------------------|---------------------------------|-----------------------|-----------------------|------------------------|
| Site | Emplaced Waste Volume | 2003 Stored | Rev. 2 Stored | 2003 Proj. | Rev. 2 Proj. | 2003 Total | Rev. 2 Total | Total Diff. |
| Idaho National Engineering and Environmental Laboratory | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 2.1 × 10 ¹ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 2.1 × 10 ¹ | -2.1 × 10 ¹ |
| Lawrence Livermore National Laboratory | 0.0 × 10 ⁰ | 1.2 × 10 ⁰ | 6.2 × 10 ⁻¹ | 1.5 × 10 ¹ | 3.0 × 10 ⁰ | 1.6 × 10 ¹ | 3.6 × 10 ⁰ | 1.2 × 10 ¹ |
| Los Alamos National Laboratory | 0.0 × 10 ⁰ | 1.3 × 10 ² | 0.0 × 10 ⁰ | 1.7 × 10 ² | 0.0 × 10 ⁰ | 3.0 × 10 ² | 0.0 × 10 ⁰ | 3.0 × 10 ² |
| Rocky Flats Environmental Technology Site | 1.5 × 10 ³ | 2.5 × 10 ¹ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 3.3 × 10 ² | 2.5 × 10 ¹ | 3.3 × 10 ² | -3.0 × 10 ² |
| TRU Waste Site Total | 1.5 × 10 ³ | 1.5 × 10 ² | 2.1 × 10 ¹ | 1.9 × 10 ² | 3.3 × 10 ² | 3.4 × 10 ² | 3.5 × 10 ² | -1.2 × 10 ¹ |
| Waste Material Parameters | 2003 Update Average Density (kg/m ³) | | TWBIR Rev. 2 Average Density (kg/m ³) | | Difference (kg/m ³) | | | |
| Fe-Base Metal/Alloys | 9.3 × 10 ⁰ | | 1.8 × 10 ² | | -1.7 × 10 ² | | | |
| Al-Base Metal/Alloys | 5.7 × 10 ⁻² | | 1.0 × 10 ⁻¹ | | -4.3 × 10 ⁻² | | | |
| Other Metal/Alloys | 3.1 × 10 ⁰ | | 2.3 × 10 ⁰ | | 8.1 × 10 ⁻¹ | | | |
| Other Inorganic Material | 2.1 × 10 ² | | 1.7 × 10 ² | | 4.1 × 10 ¹ | | | |
| Cellulosic Material | 1.4 × 10 ² | | 1.6 × 10 ² | | -2.6 × 10 ¹ | | | |
| Rubber Material | 4.1 × 10 ⁻² | | 0.0 × 10 ⁰ | | 4.1 × 10 ⁻² | | | |
| Plastic Material | 8.9 × 10 ⁻¹ | | 6.0 × 10 ⁻¹ | | 2.9 × 10 ⁻¹ | | | |
| Solidified Inorganic Material | 1.3 × 10 ¹ | | 0.0 × 10 ⁰ | | 1.3 × 10 ¹ | | | |
| Cement (Solidified) | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | | |
| Vitrified Material | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | | |
| Solidified Organic Material | 1.2 × 10 ¹ | | 0.0 × 10 ⁰ | | 1.2 × 10 ¹ | | | |
| Soil | 1.5 × 10 ⁰ | | 0.0 × 10 ⁰ | | 1.5 × 10 ⁰ | | | |

3 ¹ See Page 6, 27, and 28 for discussion.

1 **Table DATA-F-B-11. WIPP CH-TRU Waste Profile Differences Between TWBIR Rev. 2**
 2 **and 2003 Update — Soil¹**

Final Waste Form: Soil

| TRU Waste Site Volumes (m ³) | | | | | | | |
|---|--|-----------------------|---|-----------------------|---------------------------------|-----------------------|------------------------|
| Site | 2003 Stored | Rev. 2 Stored | 2003 Proj. | Rev. 2 Proj. | 2003 Total | Rev. 2 Total | Total Diff. |
| Hanford (Richland-RL) | 1.1 × 10 ² | 1.2 × 10 ² | 5.9 × 10 ³ | 6.0 × 10 ³ | 6.0 × 10 ³ | 6.1 × 10 ³ | -3.5 × 10 ¹ |
| Idaho National Engineering and Environmental Laboratory | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 9.7 × 10 ¹ | 0.0 × 10 ⁰ | 9.7 × 10 ¹ | 0.0 × 10 ⁰ | 9.7 × 10 ¹ |
| Los Alamos National Laboratory | 1.9 × 10 ² | 1.1 × 10 ² | 0.0 × 10 ⁰ | 2.9 × 10 ¹ | 1.9 × 10 ² | 1.4 × 10 ² | 4.8 × 10 ¹ |
| Mound Plant | 0.0 × 10 ⁰ | 1.8 × 10 ² | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 1.8 × 10 ² | -1.8 × 10 ² |
| TRU Waste Site Total | 3.0 × 10 ² | 4.1 × 10 ² | 6.0 × 10 ³ | 6.0 × 10 ³ | 6.3 × 10 ³ | 6.4 × 10 ³ | -6.7 × 10 ¹ |
| Waste Material Parameters | 2003 Update Average Density (kg/m ³) | | TWBIR Rev. 2 Average Density (kg/m ³) | | Difference (kg/m ³) | | |
| Fe-Base Metal/Alloys | 2.4 × 10 ⁻² | | 1.7 × 10 ⁰ | | -1.7 × 10 ⁰ | | |
| Al-Base Metal/Alloys | 9.1 × 10 ⁻³ | | 0.0 × 10 ⁰ | | 9.1 × 10 ⁻³ | | |
| Other Metal/Alloys | 6.4 × 10 ⁻² | | 0.0 × 10 ⁰ | | 6.4 × 10 ⁻² | | |
| Other Inorganic Material | 9.1 × 10 ⁻¹ | | 1.0 × 10 ⁰ | | -8.6 × 10 ⁻² | | |
| Cellulosic Material | 1.5 × 10 ⁻¹ | | 3.7 × 10 ⁰ | | -3.5 × 10 ⁰ | | |
| Rubber Material | 2.7 × 10 ⁻² | | 1.7 × 10 ⁰ | | -1.7 × 10 ⁰ | | |
| Plastic Material | 1.4 × 10 ⁻¹ | | 3.2 × 10 ⁰ | | -3.1 × 10 ⁰ | | |
| Solidified Inorganic Material | 1.8 × 10 ⁰ | | 0.0 × 10 ⁰ | | 1.8 × 10 ⁰ | | |
| Cement (Solidified) | 1.8 × 10 ⁰ | | 0.0 × 10 ⁰ | | 1.8 × 10 ⁰ | | |
| Vitrified Material | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Solidified Organic Material | 5.0 × 10 ⁰ | | 1.0 × 10 ⁻¹ | | 4.9 × 10 ⁰ | | |
| Soil | 3.2 × 10 ² | | 7.6 × 10 ² | | -4.3 × 10 ² | | |

3 ¹ See Page 6, 27, and 28 for discussion.

1 **Table DATA-F-B-12. WIPP CH-TRU Waste Profile Differences Between TWBIR Rev. 2**
 2 **and 2003 Update — Solidified Inorganic Material¹**

Final Waste Form: Solidified Inorganic Material

| TRU Waste Site Volumes (m ³) | | | | | | | | |
|---|---|-----------------------|--|-----------------------|--------------------------------------|-----------------------|------------------------|-------------------------|
| Site | Emplaced Waste Volume | 2003 Stored | Rev. 2 Stored | 2003 Proj. | Rev. 2 Proj. | 2003 Total | Rev. 2 Total | Total Diff. |
| Ames Laboratory - Iowa State University | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 4.2 × 10 ⁻¹ | 0.0 × 10 ⁰ | 4.2 × 10 ⁻¹ | -4.2 × 10 ⁻¹ |
| Argonne National Laboratory - East | 0.0 × 10 ⁰ | 2.4 × 10 ¹ | 5.2 × 10 ⁰ | 1.3 × 10 ¹ | 0.0 × 10 ⁰ | 3.7 × 10 ¹ | 5.2 × 10 ⁰ | 3.2 × 10 ¹ |
| Hanford (Richland-RL) | 0.0 × 10 ⁰ | 1.9 × 10 ² | 1.3 × 10 ¹ | 3.0 × 10 ¹ | 7.1 × 10 ⁰ | 2.2 × 10 ² | 2.0 × 10 ¹ | 2.0 × 10 ² |
| Hanford (River Protection-RP) | 0.0 × 10 ⁰ | 3.9 × 10 ³ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 3.9 × 10 ³ | 0.0 × 10 ⁰ | 3.9 × 10 ³ |
| Idaho National Engineering and Environmental Laboratory | 2.0 × 10 ³ | 2.9 × 10 ⁴ | 4.3 × 10 ³ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 2.9 × 10 ⁴ | 4.3 × 10 ³ | 2.5 × 10 ⁴ |
| Lawrence Livermore National Laboratory | 0.0 × 10 ⁰ | 1.4 × 10 ¹ | 1.4 × 10 ¹ | 1.8 × 10 ² | 5.8 × 10 ⁰ | 1.9 × 10 ² | 2.0 × 10 ¹ | 1.7 × 10 ² |
| Los Alamos National Laboratory | 0.0 × 10 ⁰ | 6.5 × 10 ² | 4.9 × 10 ³ | 2.4 × 10 ² | 2.0 × 10 ³ | 8.9 × 10 ² | 6.9 × 10 ³ | -6.0 × 10 ³ |
| Mound Plant | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 6.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 6.0 × 10 ⁰ | -6.0 × 10 ⁰ |
| Nevada Test Site | 0.0 × 10 ⁰ | 5.7 × 10 ⁰ | 5.7 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 5.7 × 10 ⁰ | 5.7 × 10 ⁰ | 7.6 × 10 ⁻⁸ |
| Rocky Flats Environmental Technology Site | 1.3 × 10 ³ | 8.1 × 10 ² | 1.7 × 10 ² | 2.7 × 10 ² | 1.3 × 10 ³ | 1.1 × 10 ³ | 1.4 × 10 ³ | -3.5 × 10 ² |
| Savannah River Site | 0.0 × 10 ⁰ | 2.4 × 10 ¹ | 2.0 × 10 ² | 0.0 × 10 ⁰ | 1.2 × 10 ³ | 2.4 × 10 ¹ | 1.4 × 10 ³ | -1.3 × 10 ³ |
| TRU Waste Site Total | 3.3 × 10 ³ | 3.5 × 10 ⁴ | 9.6 × 10 ³ | 7.3 × 10 ² | 4.5 × 10 ³ | 3.6 × 10 ⁴ | 1.4 × 10 ⁴ | 2.2 × 10 ⁴ |
| Waste Material Parameters | | | | | | | | |
| | 2003 Update Average Density (kg/m³) | | TWBIR Rev. 2 Average Density (kg/m³) | | Difference (kg/m³) | | | |
| Fe-Base Metal/Alloys | 9.5 × 10 ⁻¹ | | 1.8 × 10 ² | | -1.8 × 10 ² | | | |
| Al-Base Metal/Alloys | 2.9 × 10 ⁻² | | 0.0 × 10 ⁰ | | 2.9 × 10 ⁻² | | | |
| Other Metal/Alloys | 1.4 × 10 ⁰ | | 8.0 × 10 ⁻¹ | | 6.2 × 10 ⁻¹ | | | |
| Other Inorganic Material | 3.3 × 10 ¹ | | 8.1 × 10 ¹ | | -4.8 × 10 ¹ | | | |
| Cellulosic Material | 7.6 × 10 ⁰ | | 4.0 × 10 ⁻¹ | | 7.2 × 10 ⁰ | | | |
| Rubber Material | 1.3 × 10 ⁻² | | 0.0 × 10 ⁰ | | 1.3 × 10 ⁻² | | | |
| Plastic Material | 3.8 × 10 ⁰ | | 2.2 × 10 ⁰ | | 1.6 × 10 ⁰ | | | |
| Solidified Inorganic Material | 2.5 × 10 ² | | 4.2 × 10 ² | | -1.6 × 10 ² | | | |
| Cement (Solidified) | 9.8 × 10 ¹ | | 3.9 × 10 ² | | -2.9 × 10 ² | | | |
| Vitrified Material | 4.6 × 10 ⁻² | | 3.2 × 10 ¹ | | -3.2 × 10 ¹ | | | |
| Solidified Organic Material | 2.7 × 10 ⁰ | | 1.0 × 10 ⁻¹ | | 2.6 × 10 ⁰ | | | |
| Soil | 4.2 × 10 ⁰ | | 6.0 × 10 ⁻¹ | | 3.6 × 10 ⁰ | | | |

3 ¹ See Page 6, 27, and 28 for discussion.

1 **Table DATA-F-B-13. WIPP CH-TRU Waste Profile Differences Between TWBIR Rev. 2**
 2 **and 2003 Update — Solidified Organic Material¹**

Final Waste Form: Solidified Organic Material

| TRU Waste Site Volumes (m ³) | | | | | | | |
|---|--|----------------------|---|-------------------|---------------------------------|----------------------|-----------------------|
| Site | 2003 Stored | Rev. 2 Stored | 2003 Proj. | Rev. 2 Proj. | 2003 Total | Rev. 2 Total | Total Diff. |
| Argonne National Laboratory - East | 0.0×10^0 | 2.1×10^{-1} | 0.0×10^0 | 0.0×10^0 | 0.0×10^0 | 2.1×10^{-1} | -2.1×10^{-1} |
| Energy Technology Engineering Center | 8.4×10^{-1} | 0.0×10^0 | 0.0×10^0 | 0.0×10^0 | 8.4×10^{-1} | 0.0×10^0 | 8.4×10^{-1} |
| Hanford (Richland-RL) | 2.3×10^0 | 7.4×10^0 | 3.4×10^2 | 9.4×10^0 | 3.4×10^2 | 1.7×10^1 | 3.2×10^2 |
| Idaho National Engineering and Environmental Laboratory | 1.1×10^3 | 7.9×10^2 | 0.0×10^0 | 0.0×10^0 | 1.1×10^3 | 7.9×10^2 | 3.6×10^2 |
| Lawrence Livermore National Laboratory | 8.1×10^0 | 1.0×10^0 | 4.8×10^0 | 5.8×10^0 | 1.3×10^1 | 6.9×10^0 | 6.0×10^0 |
| Los Alamos National Laboratory | 3.9×10^3 | 1.5×10^0 | 2.7×10^1 | 2.9×10^1 | 3.9×10^3 | 3.1×10^1 | 3.9×10^3 |
| Rocky Flats Environmental Technology Site | 1.4×10^2 | 1.1×10^2 | 4.4×10^0 | 3.1×10^1 | 1.4×10^2 | 1.4×10^2 | 3.9×10^0 |
| TRU Waste Site Total | 5.2×10^3 | 9.1×10^2 | 3.8×10^2 | 7.5×10^1 | 5.5×10^3 | 9.8×10^2 | 4.6×10^3 |
| Waste Material Parameters | | | | | | | |
| Waste Material Parameters | 2003 Update Average Density (kg/m ³) | | TWBIR Rev. 2 Average Density (kg/m ³) | | Difference (kg/m ³) | | |
| Fe-Base Metal/Alloys | 3.9×10^{-1} | | 3.0×10^{-1} | | 9.0×10^{-2} | | |
| Al-Base Metal/Alloys | 1.9×10^{-1} | | 0.0×10^0 | | 1.9×10^{-1} | | |
| Other Metal/Alloys | 2.8×10^{-1} | | 0.0×10^0 | | 2.8×10^{-1} | | |
| Other Inorganic Material | 2.7×10^1 | | 1.2×10^2 | | -8.8×10^1 | | |
| Cellulosic Material | 3.7×10^{-1} | | 3.0×10^{-1} | | 7.0×10^{-2} | | |
| Rubber Material | 2.5×10^{-1} | | 0.0×10^0 | | 2.5×10^{-1} | | |
| Plastic Material | 7.1×10^0 | | 6.7×10^0 | | 3.6×10^{-1} | | |
| Solidified Inorganic Material | 1.4×10^2 | | 2.1×10^1 | | 1.2×10^2 | | |
| Cement (Solidified) | 3.8×10^1 | | 1.3×10^2 | | -9.2×10^1 | | |
| Vitrified Material | 0.0×10^0 | | 0.0×10^0 | | 0.0×10^0 | | |
| Solidified Organic Material | 3.3×10^2 | | 6.1×10^2 | | -2.8×10^2 | | |
| Soil | 3.6×10^1 | | 2.0×10^{-1} | | 3.6×10^1 | | |

3 ¹ See Page 6, 27, and 28 for discussion.

1 **Table DATA-F-B-14. WIPP CH-TRU Waste Profile Differences Between TWBIR Rev. 2**
 2 **and 2003 Update — Uncategorized Metal¹**

Final Waste Form: Uncategorized Metal

| TRU Waste Site Volumes (m ³) | | | | | | | | |
|---|---|-----------------------|--|-----------------------|--------------------------------------|-----------------------|-----------------------|------------------------|
| Site | Emplaced Waste Volume | 2003 Stored | Rev. 2 Stored | 2003 Proj. | Rev. 2 Proj. | 2003 Total | Rev. 2 Total | Total Diff. |
| Argonne National Laboratory – East | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 5.0 × 10 ⁰ | 0.0 × 10 ⁰ | 1.3 × 10 ² | 0.0 × 10 ⁰ | 1.3 × 10 ² | -1.3 × 10 ² |
| Argonne National Laboratory - West | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 2.9 × 10 ² | 0.0 × 10 ⁰ | 2.9 × 10 ² | -2.9 × 10 ² |
| Hanford (Richland-RL) | 0.0 × 10 ⁰ | 1.1 × 10 ² | 4.4 × 10 ² | 4.4 × 10 ³ | 2.0 × 10 ⁴ | 4.5 × 10 ³ | 2.0 × 10 ⁴ | -1.6 × 10 ⁴ |
| Idaho National Engineering and Environmental Laboratory | 1.1 × 10 ¹ | 9.4 × 10 ⁰ | 5.9 × 10 ³ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 9.4 × 10 ⁰ | 5.9 × 10 ³ | -5.9 × 10 ³ |
| Los Alamos National Laboratory | 0.0 × 10 ⁰ | 1.5 × 10 ³ | 4.2 × 10 ³ | 3.2 × 10 ¹ | 2.9 × 10 ³ | 1.5 × 10 ³ | 7.1 × 10 ³ | -5.5 × 10 ³ |
| Mound Plant | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 8.2 × 10 ¹ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 8.2 × 10 ¹ | -8.2 × 10 ¹ |
| Rocky Flats Environmental Technology Site | 3.5 × 10 ² | 7.9 × 10 ² | 9.3 × 10 ¹ | 6.7 × 10 ² | 2.4 × 10 ² | 1.5 × 10 ³ | 3.3 × 10 ² | 1.1 × 10 ³ |
| Savannah River Site | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 7.0 × 10 ¹ | 0.0 × 10 ⁰ | 1.2 × 10 ² | 0.0 × 10 ⁰ | 1.9 × 10 ² | -1.9 × 10 ² |
| TRU Waste Site Total | 3.6 × 10 ² | 2.4 × 10 ³ | 1.1 × 10 ⁴ | 5.1 × 10 ³ | 2.3 × 10 ⁴ | 7.5 × 10 ³ | 3.4 × 10 ⁴ | -2.7 × 10 ⁴ |
| Waste Material Parameters | | | | | | | | |
| | 2003 Update Average Density (kg/m³) | | TWBIR Rev. 2 Average Density (kg/m³) | | Difference (kg/m³) | | | |
| Fe-Base Metal/Alloys | 8.8 × 10 ¹ | | 1.5 × 10 ² | | -6.5 × 10 ¹ | | | |
| Al-Base Metal/Alloys | 5.3 × 10 ⁰ | | 3.5 × 10 ⁰ | | 1.8 × 10 ⁰ | | | |
| Other Metal/Alloys | 8.5 × 10 ¹ | | 2.1 × 10 ² | | -1.3 × 10 ² | | | |
| Other Inorganic Material | 1.2 × 10 ⁰ | | 1.4 × 10 ¹ | | -1.3 × 10 ¹ | | | |
| Cellulosic Material | 2.3 × 10 ⁰ | | 1.2 × 10 ¹ | | -9.9 × 10 ⁰ | | | |
| Rubber Material | 1.5 × 10 ⁰ | | 7.0 × 10 ⁻¹ | | 8.3 × 10 ⁻¹ | | | |
| Plastic Material | 7.5 × 10 ⁰ | | 7.9 × 10 ⁰ | | -3.7 × 10 ⁻¹ | | | |
| Solidified Inorganic Material | 7.7 × 10 ⁰ | | 0.0 × 10 ⁰ | | 7.7 × 10 ⁰ | | | |
| Cement (Solidified) | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | | |
| Vitrified Material | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | | |
| Solidified Organic Material | 6.7 × 10 ⁻¹ | | 0.0 × 10 ⁰ | | 6.7 × 10 ⁻¹ | | | |
| Soil | 6.1 × 10 ⁻² | | 0.0 × 10 ⁰ | | 6.1 × 10 ⁻² | | | |

3 ¹ See Page 6, 27, and 28 for discussion.

1 **Table DATA-F-B-15. WIPP RH-TRU Waste Profile Differences Between TWBIR Rev. 2**
 2 **and 2003 Update — Combustible Material¹**

Final Waste Form: Combustible Material

| TRU Waste Site Volumes (m ³) | | | | | | | |
|---|--|-------------------|---|-------------------|---------------------------------|-------------------|----------------------|
| Site | 2003 Stored | Rev. 2 Stored | 2003 Proj. | Rev. 2 Proj. | 2003 Total | Rev. 2 Total | Total Diff. |
| Battelle Columbus Laboratories | 1.7×10^1 | 0.0×10^0 | 8.9×10^{-1} | 0.0×10^0 | 1.8×10^1 | 0.0×10^0 | 1.8×10^1 |
| Hanford (Richland-RL) | 8.9×10^{-1} | 0.0×10^0 | 0.0×10^0 | 0.0×10^0 | 8.9×10^{-1} | 0.0×10^0 | 8.9×10^{-1} |
| Idaho National Engineering and Environmental Laboratory | 0.0×10^0 | 2.1×10^1 | 0.0×10^0 | 0.0×10^0 | 0.0×10^0 | 2.1×10^1 | -2.1×10^1 |
| Los Alamos National Laboratory | 0.0×10^0 | 1.5×10^1 | 0.0×10^0 | 4.9×10^1 | 0.0×10^0 | 6.4×10^1 | -6.4×10^1 |
| TRU Waste Site Total | 1.8×10^1 | 3.6×10^1 | 8.9×10^{-1} | 4.9×10^1 | 1.9×10^1 | 8.5×10^1 | -6.7×10^1 |
| Waste Material Parameters | 2003 Update Average Density (kg/m ³) | | TWBIR Rev. 2 Average Density (kg/m ³) | | Difference (kg/m ³) | | |
| Fe-Base Metal/Alloys | 8.7×10^0 | | 1.9×10^2 | | -1.8×10^2 | | |
| Al-Base Metal/Alloys | 7.6×10^0 | | 3.0×10^{-1} | | 7.3×10^0 | | |
| Other Metal/Alloys | 6.3×10^0 | | 1.7×10^1 | | -1.0×10^1 | | |
| Other Inorganic Material | 9.2×10^0 | | 8.6×10^0 | | 5.7×10^{-1} | | |
| Cellulosic Material | 3.9×10^1 | | 4.9×10^1 | | -1.0×10^1 | | |
| Rubber Material | 2.3×10^1 | | 6.4×10^1 | | -4.1×10^1 | | |
| Plastic Material | 9.2×10^1 | | 7.0×10^0 | | 8.5×10^1 | | |
| Solidified Inorganic Material | 0.0×10^0 | | 0.0×10^0 | | 0.0×10^0 | | |
| Cement (Solidified) | 1.7×10^1 | | 0.0×10^0 | | 1.7×10^1 | | |
| Vitrified Material | 0.0×10^0 | | 0.0×10^0 | | 0.0×10^0 | | |
| Solidified Organic Material | 1.5×10^0 | | 0.0×10^0 | | 1.5×10^0 | | |
| Soil | 1.4×10^0 | | 0.0×10^0 | | 1.4×10^0 | | |

¹ See Pages 28 and 29 for discussion.

3

1 **Table DATA-F-B-16. WIPP RH-TRU Waste Profile Differences Between TWBIR Rev. 2**
 2 **and 2003 Update — Filter Material¹**

Final Waste Form: Filter Material

| TRU Waste Site Volumes (m ³) | | | | | | | |
|--|--|-----------------------|---|-----------------------|---------------------------------|-----------------------|-----------------------|
| Site | 2003 Stored | Rev. 2 Stored | 2003 Proj. | Rev. 2 Proj. | 2003 Total | Rev. 2 Total | Total Diff. |
| Argonne National Laboratory - West | 1.8 × 10 ⁰ | 0.0 × 10 ⁰ | 8.9 × 10 ⁰ | 0.0 × 10 ⁰ | 1.1 × 10 ¹ | 0.0 × 10 ⁰ | 1.1 × 10 ¹ |
| Battelle Columbus Laboratories | 5.3 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 5.3 × 10 ⁰ | 0.0 × 10 ⁰ | 5.3 × 10 ⁰ |
| Hanford (Richland-RL) | 1.8 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 1.8 × 10 ⁰ | 0.0 × 10 ⁰ | 1.8 × 10 ⁰ |
| TRU Waste Site Total | 8.9 × 10 ⁰ | 0.0 × 10 ⁰ | 8.9 × 10 ⁰ | 0.0 × 10 ⁰ | 1.8 × 10 ¹ | 0.0 × 10 ⁰ | 1.8 × 10 ¹ |
| Waste Material Parameters | 2003 Update Average Density (kg/m ³) | | TWBIR Rev. 2 Average Density (kg/m ³) | | Difference (kg/m ³) | | |
| Fe-Base Metal/Alloys | 3.3 × 10 ¹ | | 0.0 × 10 ⁰ | | 3.3 × 10 ¹ | | |
| Al-Base Metal/Alloys | 1.7 × 10 ¹ | | 0.0 × 10 ⁰ | | 1.7 × 10 ¹ | | |
| Other Metal/Alloys | 4.3 × 10 ¹ | | 0.0 × 10 ⁰ | | 4.3 × 10 ¹ | | |
| Other Inorganic Material | 1.1 × 10 ² | | 0.0 × 10 ⁰ | | 1.1 × 10 ² | | |
| Cellulosic Material | 7.3 × 10 ¹ | | 0.0 × 10 ⁰ | | 7.3 × 10 ¹ | | |
| Rubber Material | 1.9 × 10 ¹ | | 0.0 × 10 ⁰ | | 1.9 × 10 ¹ | | |
| Plastic Material | 6.3 × 10 ⁰ | | 0.0 × 10 ⁰ | | 6.3 × 10 ⁰ | | |
| Solidified Inorganic Material | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Cement (Solidified) | 7.7 × 10 ⁰ | | 0.0 × 10 ⁰ | | 7.7 × 10 ⁰ | | |
| Vitrified Material | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Solidified Organic Material | 1.2 × 10 ¹ | | 0.0 × 10 ⁰ | | 1.2 × 10 ¹ | | |
| Soil | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |

3 ¹ See Pages 28 and 29 for discussion.

1 **Table DATA-F-B-17. WIPP RH-TRU Waste Profile Differences Between TWBIR Rev. 2**
 2 **and 2003 Update — Heterogeneous Debris¹**

Final Waste Form: Heterogeneous Debris

| TRU Waste Site Volumes (m ³) | | | | | | | |
|---|--|---|---------------------------------|-----------------------|------------------------|-----------------------|------------------------|
| Site | 2003 Stored | Rev. 2 Stored | 2003 Proj. | Rev. 2 Proj. | 2003 Total | Rev. 2 Total | Total Diff. |
| Argonne National Laboratory - East | 1.5 × 10 ¹ | 0.0 × 10 ⁰ | 1.0 × 10 ² | 0.0 × 10 ⁰ | 1.2 × 10 ² | 0.0 × 10 ⁰ | 1.2 × 10 ² |
| Argonne National Laboratory - West | 6.2 × 10 ⁰ | 0.0 × 10 ⁰ | 3.6 × 10 ¹ | 1.2 × 10 ³ | 4.3 × 10 ¹ | 1.2 × 10 ³ | -1.2 × 10 ³ |
| Battelle Columbus Laboratories | 0.0 × 10 ⁰ | 5.8 × 10 ² | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 5.8 × 10 ² | -5.8 × 10 ² |
| Bettis Atomic Power Laboratory | 2.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 6.7 × 10 ⁰ | 2.0 × 10 ⁰ | 6.7 × 10 ⁰ | -4.7 × 10 ⁰ |
| Energy Technology Engineering Center | 8.9 × 10 ⁻¹ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 8.9 × 10 ⁻¹ | 0.0 × 10 ⁰ | 8.9 × 10 ⁻¹ |
| Hanford (Richland-RL) | 2.6 × 10 ² | 2.0 × 10 ² | 3.2 × 10 ³ | 4.1 × 10 ³ | 3.5 × 10 ³ | 4.3 × 10 ³ | -7.9 × 10 ² |
| Idaho National Engineering and Environmental Laboratory | 2.0 × 10 ² | 5.0 × 10 ¹ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 2.0 × 10 ² | 5.0 × 10 ¹ | 1.5 × 10 ² |
| Knolls Atomic Power Laboratory - Schenectady | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 1.4 × 10 ² | 0.0 × 10 ⁰ | 1.4 × 10 ² | 0.0 × 10 ⁰ | 1.4 × 10 ² |
| Los Alamos National Laboratory | 1.2 × 10 ² | 1.2 × 10 ¹ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 1.2 × 10 ² | 1.2 × 10 ¹ | 1.1 × 10 ² |
| Oak Ridge National Laboratory | 0.0 × 10 ⁰ | 1.4 × 10 ³ | 2.7 × 10 ² | 2.4 × 10 ² | 2.7 × 10 ² | 1.7 × 10 ³ | -1.4 × 10 ³ |
| Sandia National Laboratories - Albuquerque | 4.6 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 4.6 × 10 ⁰ | 0.0 × 10 ⁰ | 4.6 × 10 ⁰ |
| Savannah River Site | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 2.3 × 10 ¹ | 0.0 × 10 ⁰ | 2.3 × 10 ¹ | 0.0 × 10 ⁰ | 2.3 × 10 ¹ |
| TRU Waste Site Total | 6.1 × 10 ² | 2.3 × 10 ³ | 3.8 × 10 ³ | 5.5 × 10 ³ | 4.4 × 10 ³ | 7.8 × 10 ³ | -3.4 × 10 ³ |
| Waste Material Parameters | 2003 Update Average Density (kg/m ³) | TWBIR Rev. 2 Average Density (kg/m ³) | Difference (kg/m ³) | | | | |
| Fe-Base Metal/Alloys | 1.2 × 10 ² | 1.8 × 10 ² | -5.9 × 10 ¹ | | | | |
| Al-Base Metal/Alloys | 8.0 × 10 ⁰ | 2.4 × 10 ¹ | -1.6 × 10 ¹ | | | | |
| Other Metal/Alloys | 3.5 × 10 ¹ | 1.4 × 10 ¹ | 2.1 × 10 ¹ | | | | |
| Other Inorganic Material | 4.7 × 10 ¹ | 1.9 × 10 ² | -1.4 × 10 ² | | | | |
| Cellulosic Material | 1.6 × 10 ¹ | 5.7 × 10 ¹ | -4.2 × 10 ¹ | | | | |
| Rubber Material | 1.1 × 10 ¹ | 1.0 × 10 ¹ | 3.6 × 10 ⁻¹ | | | | |
| Plastic Material | 1.6 × 10 ¹ | 4.9 × 10 ¹ | -3.3 × 10 ¹ | | | | |
| Solidified Inorganic Material | 3.6 × 10 ¹ | 9.0 × 10 ⁰ | 2.7 × 10 ¹ | | | | |
| Cement (Solidified) | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | | | | |
| Vitrified Material | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | | | | |
| Solidified Organic Material | 1.4 × 10 ¹ | 2.9 × 10 ⁰ | 1.1 × 10 ¹ | | | | |
| Soil | 3.5 × 10 ¹ | 3.5 × 10 ⁰ | 3.1 × 10 ¹ | | | | |

¹ See Pages 28 and 29 for discussion.

3

1 **Table DATA-F-B-18. WIPP RH-TRU Waste Profile Differences Between TWBIR Rev. 2**
 2 **and 2003 Update — Inorganic Non-Metal¹**

Final Waste Form: Inorganic Non-Metal

| TRU Waste Site Volumes (m ³) | | | | | | | |
|---|--|-----------------------|---|-----------------------|---------------------------------|-----------------------|------------------------|
| Site | 2003 Stored | Rev. 2 Stored | 2003 Proj. | Rev. 2 Proj. | 2003 Total | Rev. 2 Total | Total Diff. |
| Argonne National Laboratory - West | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 2.1 × 10 ¹ | 0.0 × 10 ⁰ | 2.1 × 10 ¹ | -2.1 × 10 ¹ |
| Battelle Columbus Laboratories | 1.4 × 10 ¹ | 0.0 × 10 ⁰ | 8.9 × 10 ⁻¹ | 0.0 × 10 ⁰ | 1.5 × 10 ¹ | 0.0 × 10 ⁰ | 1.5 × 10 ¹ |
| Hanford (Richland-RL) | 2.8 × 10 ¹ | 0.0 × 10 ⁰ | 4.3 × 10 ¹ | 0.0 × 10 ⁰ | 7.1 × 10 ¹ | 0.0 × 10 ⁰ | 7.1 × 10 ¹ |
| Idaho National Engineering and Environmental Laboratory | 0.0 × 10 ⁰ | 4.6 × 10 ¹ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 4.6 × 10 ¹ | -4.6 × 10 ¹ |
| TRU Waste Site Total | 4.3 × 10 ¹ | 4.6 × 10 ¹ | 4.4 × 10 ¹ | 2.1 × 10 ¹ | 8.6 × 10 ¹ | 6.8 × 10 ¹ | 1.9 × 10 ¹ |
| Waste Material Parameters | 2003 Update Average Density (kg/m ³) | | TWBIR Rev. 2 Average Density (kg/m ³) | | Difference (kg/m ³) | | |
| Fe-Base Metal/Alloys | 1.6 × 10 ² | | 9.0 × 10 ⁻¹ | | 1.6 × 10 ² | | |
| Al-Base Metal/Alloys | 2.1 × 10 ¹ | | 0.0 × 10 ⁰ | | 2.1 × 10 ¹ | | |
| Other Metal/Alloys | 4.8 × 10 ¹ | | 1.0 × 10 ⁻¹ | | 4.8 × 10 ¹ | | |
| Other Inorganic Material | 9.9 × 10 ² | | 5.6 × 10 ¹ | | 9.3 × 10 ² | | |
| Cellulosic Material | 3.9 × 10 ⁰ | | 6.1 × 10 ⁰ | | -2.2 × 10 ⁰ | | |
| Rubber Material | 1.8 × 10 ⁰ | | 2.0 × 10 ⁻¹ | | 1.6 × 10 ⁰ | | |
| Plastic Material | 2.4 × 10 ¹ | | 3.8 × 10 ⁰ | | 2.0 × 10 ¹ | | |
| Solidified Inorganic Material | 1.5 × 10 ¹ | | 4.0 × 10 ⁻¹ | | 1.4 × 10 ¹ | | |
| Cement (Solidified) | 3.1 × 10 ⁰ | | 0.0 × 10 ⁰ | | 3.1 × 10 ⁰ | | |
| Vitrified Material | 0.0 × 10 ⁰ | | 1.9 × 10 ³ | | -1.9 × 10 ³ | | |
| Solidified Organic Material | 2.8 × 10 ⁻¹ | | 0.0 × 10 ⁰ | | 2.8 × 10 ⁻¹ | | |
| Soil | 7.1 × 10 ⁰ | | 0.0 × 10 ⁰ | | 7.1 × 10 ⁰ | | |

3 ¹ See Pages 28 and 29 for discussion.

1 **Table DATA-F-B-19. WIPP RH-TRU Waste Profile Differences Between TWBIR Rev. 2**
 2 **and 2003 Update — Lead/Cadmium Metal¹**

Final Waste Form: Lead/Cadmium Metal

| TRU Waste Site Volumes (m ³) | | | | | | | |
|---|--|------------------------|---|-----------------------|---------------------------------|------------------------|-------------------------|
| Site | 2003 Stored | Rev. 2 Stored | 2003 Proj. | Rev. 2 Proj. | 2003 Total | Rev. 2 Total | Total Diff. |
| Argonne National Laboratory - West | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 6.2 × 10 ⁰ | 0.0 × 10 ⁰ | 6.2 × 10 ⁰ | -6.2 × 10 ⁰ |
| Energy Technology Engineering Center | 0.0 × 10 ⁰ | 8.9 × 10 ⁻¹ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 8.9 × 10 ⁻¹ | -8.9 × 10 ⁻¹ |
| Hanford (Richland-RL) | 1.2 × 10 ¹ | 2.7 × 10 ⁰ | 7.1 × 10 ⁰ | 6.1 × 10 ¹ | 1.9 × 10 ¹ | 6.3 × 10 ¹ | -4.4 × 10 ¹ |
| Idaho National Engineering and Environmental Laboratory | 0.0 × 10 ⁰ | 3.6 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 3.6 × 10 ⁰ | -3.6 × 10 ⁰ |
| TRU Waste Site Total | 1.2 × 10 ¹ | 7.1 × 10 ⁰ | 7.1 × 10 ⁰ | 6.7 × 10 ¹ | 1.9 × 10 ¹ | 7.4 × 10 ¹ | -5.5 × 10 ¹ |
| Waste Material Parameters | 2003 Update Average Density (kg/m ³) | | TWBIR Rev. 2 Average Density (kg/m ³) | | Difference (kg/m ³) | | |
| Fe-Base Metal/Alloys | 5.4 × 10 ³ | | 2.4 × 10 ¹ | | 5.4 × 10 ³ | | |
| Al-Base Metal/Alloys | 0.0 × 10 ⁰ | | 2.1 × 10 ⁰ | | -2.1 × 10 ⁰ | | |
| Other Metal/Alloys | 7.4 × 10 ¹ | | 5.1 × 10 ² | | -4.4 × 10 ² | | |
| Other Inorganic Material | 0.0 × 10 ⁰ | | 1.4 × 10 ⁰ | | -1.4 × 10 ⁰ | | |
| Cellulosic Material | 0.0 × 10 ⁰ | | 5.0 × 10 ⁻¹ | | -5.0 × 10 ⁻¹ | | |
| Rubber Material | 0.0 × 10 ⁰ | | 1.9 × 10 ⁰ | | -1.9 × 10 ⁰ | | |
| Plastic Material | 0.0 × 10 ⁰ | | 2.8 × 10 ⁰ | | -2.8 × 10 ⁰ | | |
| Solidified Inorganic Material | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Cement (Solidified) | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Vitrified Material | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Solidified Organic Material | 0.0 × 10 ⁰ | | 5.0 × 10 ⁰ | | -5.0 × 10 ⁰ | | |
| Soil | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |

3 ¹ See Pages 28 and 29 for discussion.

1 **Table DATA-F-B-20. WIPP RH-TRU Waste Profile Differences Between TWBIR Rev. 2**
 2 **and 2003 Update — Soil¹**

Final Waste Form: Soil

| TRU Waste Site Volumes (m ³) | | | | | | | |
|--|--|-----------------------|---|-----------------------|---------------------------------|-----------------------|-----------------------|
| Site | 2003 Stored | Rev. 2 Stored | 2003 Proj. | Rev. 2 Proj. | 2003 Total | Rev. 2 Total | Total Diff. |
| Oak Ridge National Laboratory | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 2.0 × 10 ² | 0.0 × 10 ⁰ | 2.0 × 10 ² | 0.0 × 10 ⁰ | 2.0 × 10 ² |
| TRU Waste Site Total | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 2.0 × 10 ² | 0.0 × 10 ⁰ | 2.0 × 10 ² | 0.0 × 10 ⁰ | 2.0 × 10 ² |
| Waste Material Parameters | 2003 Update Average Density (kg/m ³) | | TWBIR Rev. 2 Average Density (kg/m ³) | | Difference (kg/m ³) | | |
| Fe-Base Metal/Alloys | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Al-Base Metal/Alloys | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Other Metal/Alloys | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Other Inorganic Material | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Cellulosic Material | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Rubber Material | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Plastic Material | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Solidified Inorganic Material | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Cement (Solidified) | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Vitrified Material | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Solidified Organic Material | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Soil | 1.3 × 10 ³ | | 0.0 × 10 ⁰ | | 1.3 × 10 ³ | | |

3 ¹ See Pages 28 and 29 for discussion.

1 **Table DATA-F-B-21. WIPP RH-TRU Waste Profile Differences Between TWBIR Rev. 2**
 2 **and 2003 Update — Solidified Inorganic Material¹**

Final Waste Form: Solidified Inorganic Material

| TRU Waste Site Volumes (m ³) | | | | | | | |
|---|--|-----------------------|---|-----------------------|---------------------------------|-----------------------|------------------------|
| Site | 2003 Stored | Rev. 2 Stored | 2003 Proj. | Rev. 2 Proj. | 2003 Total | Rev. 2 Total | Total Diff. |
| Argonne National Laboratory - West | 1.6 × 10 ¹ | 1.8 × 10 ⁰ | 2.3 × 10 ¹ | 2.8 × 10 ¹ | 3.9 × 10 ¹ | 3.0 × 10 ¹ | 8.9 × 10 ⁰ |
| Battelle Columbus Laboratories | 1.8 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 1.8 × 10 ⁰ | 0.0 × 10 ⁰ | 1.8 × 10 ⁰ |
| Hanford (Richland-RL) | 1.5 × 10 ¹ | 0.0 × 10 ⁰ | 1.2 × 10 ² | 0.0 × 10 ⁰ | 1.3 × 10 ² | 0.0 × 10 ⁰ | 1.3 × 10 ² |
| Hanford (River Protection-RP) | 4.5 × 10 ³ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 4.5 × 10 ³ | 0.0 × 10 ⁰ | 4.5 × 10 ³ |
| Idaho National Engineering and Environmental Laboratory | 8.9 × 10 ⁻¹ | 6.5 × 10 ¹ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 8.9 × 10 ⁻¹ | 6.5 × 10 ¹ | -6.4 × 10 ¹ |
| Oak Ridge National Laboratory | 0.0 × 10 ⁰ | 1.0 × 10 ³ | 1.9 × 10 ² | 2.1 × 10 ² | 1.9 × 10 ² | 1.2 × 10 ³ | -1.1 × 10 ³ |
| TRU Waste Site Total | 4.5 × 10 ³ | 1.1 × 10 ³ | 3.3 × 10 ² | 2.3 × 10 ² | 4.8 × 10 ³ | 1.3 × 10 ³ | 3.5 × 10 ³ |
| Waste Material Parameters | 2003 Update Average Density (kg/m ³) | | TWBIR Rev. 2 Average Density (kg/m ³) | | Difference (kg/m ³) | | |
| Fe-Base Metal/Alloys | 6.8 × 10 ⁰ | | 3.8 × 10 ⁰ | | 3.0 × 10 ⁰ | | |
| Al-Base Metal/Alloys | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Other Metal/Alloys | 3.4 × 10 ⁻² | | 1.0 × 10 ⁻¹ | | -6.6 × 10 ⁻² | | |
| Other Inorganic Material | 6.9 × 10 ⁻¹ | | 2.7 × 10 ⁰ | | -2.0 × 10 ⁰ | | |
| Cellulosic Material | 3.5 × 10 ⁻³ | | 0.0 × 10 ⁰ | | 3.5 × 10 ⁻³ | | |
| Rubber Material | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Plastic Material | 1.6 × 10 ⁻² | | 3.0 × 10 ⁻¹ | | -2.8 × 10 ⁻¹ | | |
| Solidified Inorganic Material | 9.2 × 10 ¹ | | 3.9 × 10 ² | | -3.0 × 10 ² | | |
| Cement (Solidified) | 2.4 × 10 ⁰ | | 3.9 × 10 ² | | -3.8 × 10 ² | | |
| Vitrified Material | 1.8 × 10 ⁻¹ | | 7.0 × 10 ⁻¹ | | -5.2 × 10 ⁻¹ | | |
| Solidified Organic Material | 3.1 × 10 ⁻² | | 0.0 × 10 ⁰ | | 3.1 × 10 ⁻² | | |
| Soil | 4.1 × 10 ⁻³ | | 0.0 × 10 ⁰ | | 4.1 × 10 ⁻³ | | |

3 ¹ See Pages 28 and 29 for discussion.

1 **Table DATA-F-B-22. WIPP RH-TRU Waste Profile Differences Between TWBIR Rev. 2**
 2 **and 2003 Update — Solidified Organic Material¹**

Final Waste Form: Solidified Organic Material

| TRU Waste Site Volumes (m ³) | | | | | | | |
|---|--|---|-----------------------|---------------------------------|-----------------------|-----------------------|------------------------|
| Site | 2003 Stored | Rev. 2 Stored | 2003 Proj. | Rev. 2 Proj. | 2003 Total | Rev. 2 Total | Total Diff. |
| Battelle Columbus Laboratories | 5.3 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 5.3 × 10 ⁰ | 0.0 × 10 ⁰ | 5.3 × 10 ⁰ |
| Energy Technology Engineering Center | 4.1 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 4.1 × 10 ⁰ | 0.0 × 10 ⁰ | 4.1 × 10 ⁰ |
| Idaho National Engineering and Environmental Laboratory | 0.0 × 10 ⁰ | 3.6 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 3.6 × 10 ⁰ | -3.6 × 10 ⁰ |
| TRU Waste Site Total | 9.5 × 10 ⁰ | 3.6 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 9.5 × 10 ⁰ | 3.6 × 10 ⁰ | 5.9 × 10 ⁰ |
| Waste Material Parameters | 2003 Update Average Density (kg/m ³) | TWBIR Rev. 2 Average Density (kg/m ³) | | Difference (kg/m ³) | | | |
| Fe-Base Metal/Alloys | 4.9 × 10 ¹ | 3.0 × 10 ⁻¹ | | 4.9 × 10 ¹ | | | |
| Al-Base Metal/Alloys | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | | |
| Other Metal/Alloys | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | | |
| Other Inorganic Material | 1.2 × 10 ¹ | 1.2 × 10 ² | | -1.0 × 10 ² | | | |
| Cellulosic Material | 2.0 × 10 ¹ | 3.0 × 10 ⁻¹ | | 2.0 × 10 ¹ | | | |
| Rubber Material | 4.2 × 10 ⁰ | 0.0 × 10 ⁰ | | 4.2 × 10 ⁰ | | | |
| Plastic Material | 2.0 × 10 ¹ | 6.7 × 10 ⁰ | | 1.3 × 10 ¹ | | | |
| Solidified Inorganic Material | 0.0 × 10 ⁰ | 2.1 × 10 ¹ | | -2.1 × 10 ¹ | | | |
| Cement (Solidified) | 1.4 × 10 ² | 1.3 × 10 ² | | 6.4 × 10 ⁰ | | | |
| Vitrified Material | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | | |
| Solidified Organic Material | 1.7 × 10 ² | 6.1 × 10 ² | | -4.4 × 10 ² | | | |
| Soil | 0.0 × 10 ⁰ | 2.0 × 10 ⁻¹ | | -2.0 × 10 ⁻¹ | | | |

3

¹ See Pages 28 and 29 for discussion.

1 **Table DATA-F-B-23. WIPP RH-TRU Waste Profile Differences Between TWBIR Rev. 2**
 2 **and 2003 Update — Uncategorized Metal¹**

Final Waste Form: Uncategorized Metal

| TRU Waste Site Volumes (m ³) | | | | | | | |
|---|--|-----------------------|---|-----------------------|---------------------------------|-----------------------|------------------------|
| Site | 2003 Stored | Rev. 2 Stored | 2003 Proj. | Rev. 2 Proj. | 2003 Total | Rev. 2 Total | Total Diff. |
| Argonne National Laboratory - West | 0.0 × 10 ⁰ | 1.8 × 10 ¹ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 1.8 × 10 ¹ | -1.8 × 10 ¹ |
| Battelle Columbus Laboratories | 8.9 × 10 ⁻¹ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 8.9 × 10 ⁻¹ | 0.0 × 10 ⁰ | 8.9 × 10 ⁻¹ |
| Hanford (Richland-RL) | 6.1 × 10 ¹ | 0.0 × 10 ⁰ | 6.1 × 10 ³ | 1.7 × 10 ⁴ | 6.1 × 10 ³ | 1.7 × 10 ⁴ | -1.1 × 10 ⁴ |
| Idaho National Engineering and Environmental Laboratory | 2.2 × 10 ¹ | 3.1 × 10 ¹ | 0.0 × 10 ⁰ | 0.0 × 10 ⁰ | 2.2 × 10 ¹ | 3.1 × 10 ¹ | -9.3 × 10 ⁰ |
| Los Alamos National Laboratory | 0.0 × 10 ⁰ | 6.8 × 10 ¹ | 0.0 × 10 ⁰ | 5.0 × 10 ¹ | 0.0 × 10 ⁰ | 1.2 × 10 ² | -1.2 × 10 ² |
| TRU Waste Site Total | 8.4 × 10 ¹ | 1.2 × 10 ² | 6.1 × 10 ³ | 1.7 × 10 ⁴ | 6.1 × 10 ³ | 1.8 × 10 ⁴ | -1.1 × 10 ⁴ |
| Waste Material Parameters | 2003 Update Average Density (kg/m ³) | | TWBIR Rev. 2 Average Density (kg/m ³) | | Difference (kg/m ³) | | |
| Fe-Base Metal/Alloys | 1.8 × 10 ² | | 7.5 × 10 ¹ | | 1.1 × 10 ² | | |
| Al-Base Metal/Alloys | 4.5 × 10 ⁻¹ | | 4.0 × 10 ⁻¹ | | 5.4 × 10 ⁻² | | |
| Other Metal/Alloys | 5.6 × 10 ¹ | | 3.8 × 10 ² | | -3.2 × 10 ² | | |
| Other Inorganic Material | 4.0 × 10 ¹ | | 1.5 × 10 ¹ | | 2.5 × 10 ¹ | | |
| Cellulosic Material | 7.5 × 10 ⁻² | | 8.0 × 10 ⁻¹ | | -7.3 × 10 ⁻¹ | | |
| Rubber Material | 5.2 × 10 ⁻² | | 0.0 × 10 ⁰ | | 5.2 × 10 ⁻² | | |
| Plastic Material | 7.8 × 10 ⁻² | | 5.0 × 10 ⁻¹ | | -4.2 × 10 ⁻¹ | | |
| Solidified Inorganic Material | 3.1 × 10 ⁻³ | | 0.0 × 10 ⁰ | | 3.1 × 10 ⁻³ | | |
| Cement (Solidified) | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Vitrified Material | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Solidified Organic Material | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | 0.0 × 10 ⁰ | | |
| Soil | 6.2 × 10 ⁻² | | 0.0 × 10 ⁰ | | 6.2 × 10 ⁻² | | |

¹ See Pages 28 and 29 for discussion.

3
 4 The largest increase, 2.9 × 10⁴ m³ for heterogeneous debris, is due to contributions from several
 5 sites (see Table DATA-F-B-7). Those with the largest increase in volumes are INEEL with 2.0
 6 × 10⁴ m³, SRS with 7.3 × 10³ m³, LANL with 3.5 × 10³ m³, RFETS with 2.2 × 10³ m³, and
 7 Lawrence Livermore National Laboratory (LLNL) with 7.1 × 10² m³. The increased volume of
 8 heterogeneous debris from INEEL is due to the anticipated start-up of the Advanced Mixed
 9 Waste Treatment Facility (AMWTF). INEEL combined many waste streams into one new waste
 10 stream called IN-BN-510. The final waste form of this waste stream is heterogeneous debris.
 11 This new waste stream will be compacted so that an average of four 55-gallon drums will fit into
 12 one 100-gallon drum. This process has had an impact on the WMPs, as well. The remaining
 13 sites listed in Table DATA-F-B-7 with positive overall changes contributed additional volumes

1 of less than $5.0 \times 10^2 \text{ m}^3$ each. The large volume of heterogeneous debris waste from SRS
2 originates from the “FB” and “HB” process lines (CCP 2003a, 2003b, 2003c, and 2003d). The
3 LANL waste streams that contribute to the increased heterogeneous debris waste volume
4 originate primarily from waste generated during facility and equipment operations and
5 maintenance. RFETS added heterogeneous debris waste consisting of construction rubble,
6 blacktop, concrete, dirt, and sand due primarily to decontamination and decommissioning
7 operations. The emplaced volume for heterogeneous debris was $5.7 \times 10^2 \text{ m}^3$ as of the inventory
8 date. The sites that subtracted significant heterogeneous debris volume are Hanford RL with a
9 difference of $3.3 \times 10^3 \text{ m}^3$ and Oak Ridge National Laboratory (ORNL) with a difference of 1.1
10 $\times 10^3 \text{ m}^3$.

11 The overall increase in volume for solidified inorganic material is $2.2 \times 10^4 \text{ m}^3$. Some sites
12 added volume and some removed volume (see Table DATA-F-B-12). The sites that added
13 solidified inorganic material volume are INEEL ($2.5 \times 10^4 \text{ m}^3$) and Hanford RP ($3.9 \times 10^3 \text{ m}^3$).
14 The increased volume of solidified inorganic material from INEEL is due primarily to solidified
15 sludges from treatment plants and other processes, such as ion exchange. The increased volume
16 of solidified inorganic material from Hanford RP is due to the addition of tank sludges to the
17 inventory for the first time. The sites that removed significant solidified inorganics volume are
18 LANL ($6.0 \times 10^3 \text{ m}^3$) and SRS ($1.3 \times 10^3 \text{ m}^3$). The emplaced volume for this solidified
19 inorganic material was $3.3 \times 10^3 \text{ m}^3$ as of the inventory date, September 30, 2002.

20 The overall increase in volume for solidified organic material is $4.6 \times 10^3 \text{ m}^3$. LANL added
21 significant solidified organic material volume, with $3.9 \times 10^3 \text{ m}^3$ (see Table DATA-F-B-13).
22 This increased volume is primarily due to waste streams containing solidified waste from facility
23 and equipment operations and maintenance. There was no emplaced volume for solidified
24 organic material as of the inventory date.

25 The overall increase in volume for inorganic non-metal is $7.2 \times 10^3 \text{ m}^3$. The site that added
26 significant inorganic non-metal volume is INEEL, with $7.5 \times 10^3 \text{ m}^3$ (see Table DATA-F-B-8).
27 The emplaced volume for inorganic non-metal was $9.7 \times 10^2 \text{ m}^3$ as of the inventory date.

28 The overall increase in volume for filter material is $8.5 \times 10^2 \text{ m}^3$. The site adding significant
29 filter material volume is LLNL, with $6.0 \times 10^2 \text{ m}^3$ (see Table DATA-F-B-5). The emplaced
30 volume for filter material was $3.4 \times 10^2 \text{ m}^3$ as of the inventory date.

31 The overall decrease in volume for salt is $-1.2 \times 10^1 \text{ m}^3$. RFETS removed significant salt
32 volume, with $3.0 \times 10^2 \text{ m}^3$ (see Table DATA-F-B-10). The emplaced volume for salt was $1.5 \times$
33 10^3 m^3 as of the inventory date.

34 The overall decrease in volume for uncategorized metal is $2.7 \times 10^4 \text{ m}^3$. The sites that removed
35 significant uncategorized metal volume were Hanford RL with $1.6 \times 10^4 \text{ m}^3$, LANL with $5.5 \times$
36 10^3 m^3 , and INEEL with $5.9 \times 10^3 \text{ m}^3$ (see Table DATA-F-B-14). The emplaced volume for
37 uncategorized metal was $3.6 \times 10^2 \text{ m}^3$ as of the inventory date.

38 The overall decrease in volume for combustible material is $4.2 \times 10^3 \text{ m}^3$. The sites that removed
39 significant volume were Hanford RL with $1.6 \times 10^3 \text{ m}^3$, and INEEL with $3.3 \times 10^3 \text{ m}^3$ (see Table

1 DATA-F-B-4). The emplaced volume for combustible material was $6.1 \times 10^2 \text{ m}^3$ as of the
2 inventory date.

3 **DATA-F-B-1.5 Analysis of RH-TRU Waste Volume Differences by Site**

4 Table DATA-F-B-2 compares the stored, projected, and anticipated RH-TRU waste volumes
5 between the 2003 Update Report and TWBIR Revision 2 inventories by site and gives the total
6 RH-TRU waste volumes.

7 The total difference in stored RH-TRU waste at the sites is $1.70 \times 10^3 \text{ m}^3$, or a 47 percent
8 increase from the TWBIR Revision 2 inventory. The bulk of this additional stored volume came
9 from Hanford RP ($4.50 \times 10^3 \text{ m}^3$) and Hanford RL ($1.80 \times 10^2 \text{ m}^3$). As with CH-TRU waste, the
10 sites adjusted their existing inventory data for RH-TRU waste volumes based on new
11 information (since the TWBIR Revision 2 inventory) about the waste and/or increased
12 accessibility to the waste. Again, the Hanford RP waste is a new addition and was not addressed
13 in the TWBIR Revision 2 inventory. Argonne National Laboratory - East, (ANL-E), BAPL, and
14 Sandia National Laboratories (SNL) have added small volumes of stored RH-TRU waste to the
15 inventory that were not previously reported. ORNL removed all RH-TRU waste stored volume
16 and put it in projected waste volume because they plan to process the waste using segregation,
17 compaction, size reduction, and evaporative drying for sludge (see Appendix DATA,
18 Attachment F, Annex C).

19 The total projected RH-TRU waste volume has decreased by $1.35 \times 10^4 \text{ m}^3$, or a 56 percent
20 decrease from the TWBIR Revision 2 inventory. The largest decrease in projected RH-TRU
21 waste volume is $1.26 \times 10^4 \text{ m}^3$ reported by Hanford RL. This change is based on the site gaining
22 better knowledge of the waste streams and thus managing the waste differently.

23 The anticipated RH-TRU waste is simply the sum of the stored and projected wastes. It follows
24 that the overall change is a decrease of $1.15 \times 10^4 \text{ m}^3$, or a 42 percent decrease for the anticipated
25 volumes. There was no emplaced waste volume as of the inventory date (September 30, 2002).

26 **DATA-F-B-1.6 RH-TRU Waste Volumes by Final Waste Form by Site**

27 Five of the nine RH-TRU waste final waste form total volumes increased (filter material,
28 inorganic non-metal, soil, solidified inorganic material, and solidified organic material). Of
29 these, the solidified inorganic material volume had the largest increase of $3.5 \times 10^3 \text{ m}^3$. The
30 filter material, soil, and solidified organic material increased by $2.0 \times 10^2 \text{ m}^3$ or less.

31 Four of the nine RH-TRU waste final waste form total volumes decreased (heterogeneous debris,
32 combustible material, lead/cadmium metal, and uncategorized metal). These decreases ranged
33 from $6.7 \times 10^1 \text{ m}^3$ or less for combustible material and lead/cadmium metal to $1.1 \times 10^4 \text{ m}^3$ for
34 uncategorized metal.

35 The overall increase in volume for RH-TRU waste solidified inorganic material is $3.5 \times 10^3 \text{ m}^3$.
36 Some sites added volume and some removed volume (see Table DATA-F-B-21). The sites that

1 added significant volume were Hanford RP ($4.5 \times 10^3 \text{ m}^3$) and Hanford RL ($1.3 \times 10^2 \text{ m}^3$). The
2 site that removed significant volume was ORNL ($1.1 \times 10^3 \text{ m}^3$).

3 The overall decrease in volume for RH-TRU waste uncategorized metal is $1.1 \times 10^4 \text{ m}^3$. The site
4 that removed significant uncategorized metal volume is Hanford RL with $1.1 \times 10^4 \text{ m}^3$ (see
5 Table DATA-F-B-23). The decreased volume from Hanford RL is primarily due to
6 reassignment of the waste to more appropriate final waste forms based on new characterization
7 information.

8 **DATA-F-B-2.0 WASTE MATERIAL PARAMETERS AND CONTAINER MATERIALS**

9 Tables DATA-F-B-24 and DATA-F-B-25 compare WMP data for the WIPP roll-ups from the
10 TWBIR Revision 2 (DOE 1995) with the 2003 Update Report data from TWBID Revision 2.1
11 (LANL 2003) for CH-TRU and RH-TRU waste, respectively. These tables also show, in the last
12 column, the result of subtracting the 2003 Update Report value from the TWBIR Revision 2
13 value. These tables, unlike Tables DATA-F-B-4 through DATA-F-B-23, contain the rolled-up
14 values for the container (also referred to as packaging) materials. One of the container materials
15 given in Table DATA-F-B-25 is "Steel Plug." The term "N/A," indicating "not applicable," has
16 been entered for the 2003 Update container material value and the difference value. The steel
17 plugs are added by WIPP Waste Handling Operations at the WIPP facility and are addressed in
18 Appendix DATA, Attachment F, Section DATA-F-3.5.

19 A detailed comparison of the 2003 Update Report and TWBIR Revision 2 volume data is
20 provided in Section DATA-F-B-1.0. However, because volume is a factor in the comparison of
21 2003 Update Report and TWBIR Revision 2 WMP average densities, it is also considered here.

22 The 2003 Update Report and TWBIR Revision 2 data in Tables DATA-F-B-4 through DATA-F-
23 B-23 and Tables DATA-F-B-24 and DATA-F-B-25 were analyzed for differences in volume and
24 WMP average densities, as applicable. The volume data for each final waste form for CH-TRU
25 waste (Tables DATA-F-B-4 through DATA-F-B-14) and the volume data for each final waste
26 form for RH-TRU waste (from Tables DATA-F-B-15 through DATA-F-B-23) are discussed in
27 Section DATA-F-B-1.0. The WMP data for each final waste form and for the WIPP roll-up
28 (Tables DATA-F-B-24 and DATA-F-B-25) are discussed here. Finally, the differences in the
29 waste container material average densities are addressed.

30 The Fe-base metal/alloys, cellulosic, rubber, and plastic (CPR) materials, and cement
31 (solidified) WMPs impact gas generation within the WIPP. The EPA Compliance Certification
32 Decision (EPA 1998) therefore sets limits for these WMPs. The collective limit for CPR
33 materials in the WIPP is a maximum of 20,000,000 kg. Because of the maximum limit on the
34 CPR materials, particular attention is paid to the increases in these WMPs. The total CPR
35 materials average density for the TWBIR Revision 2 inventory was 98 kg/m^3 (DOE 1995) and
36 the 2003 Update Report total is 114 kg/m^3 . It is therefore important to understand the basis of
37 these increases. These are discussed in Section DATA-F-B-2.1 for CH-TRU waste and in
38 Section DATA-F-B-2.2 for RH-TRU waste.

39 The repository limit for the ferrous metals and non-ferrous metals is a minimum: 20,000,000 kg
40 for ferrous metals and 2,000 kg for nonferrous metals. According to the Contact Handled

1 Transuranic Acceptance Criteria for the Waste Isolation Pilot Plant (DOE 2002), these minimum
 2 limits are met in the total repository inventory by the metals that constitute the payload
 3 containers. Container materials are discussed in Sections DATA-F-B-2.3 and DATA-F-B-2.4.

4 **DATA-F-B-2.1 Analysis of CH-TRU Waste Material Parameter Differences**

5 Analysis of the TWBIR Revision 2 and 2003 Update Report for CH-TRU waste data show that
 6 half of the WMP average densities increased (see Table DATA-F-B-24). There are 12 WMPs,
 7 and 6 of them decreased in average density. Decreases were noted in Fe-base metal/alloys, Al-
 8 base metal/alloys, other metal/alloys, cement (solidified), vitrified material, and soil. The
 9 average densities of the other inorganic materials, CPR materials, solidified inorganic material,
 10 and solidified organic material all increased.

11 Of particular interest are the increases in the average densities of CPR materials of 4.1 kg/m³ for
 12 cellulosic material, 8.4 kg/m³ for plastic material, and 4.4 kg/m³ for rubber material. An analysis
 13 of the CPR materials in the roll-ups by final waste form (Tables DATA-F-B-4 through DATA-F-
 14 B-14) show that there are increases in the average densities of CPR materials for heterogeneous
 15 debris (35, 18, and 13 kg/m³, respectively). In addition, the average density of plastic material
 16 increased by 11.0 kg/m³ for filter material. Finally, the average density of cellulosic material
 17 increased by 82 kg/m³ and the average density of plastic material increased by 18 kg/m³ for
 18 graphite. There are other increases in the average densities of the CPR materials, but these
 19 increases are all less than 10 kg/m³, and will not be specifically addressed here.

20 Heterogeneous debris had the largest increases in the CPR materials average densities. The
 21 primary cause of these increases is the new waste stream at the INEEL, IN-BN-510,
 22 Supercompacted Debris Waste. The average densities for the CPR materials WMPs are 303,
 23 205, and 80 kg/m³ respectively for this waste stream (LANL 2003). The densities of CPR
 24 materials are high because of the nature of the treatment of this waste stream, and because
 25 INEEL combined approximately 200 debris waste streams to produce this single waste stream
 26 (see the waste stream crosswalk in Appendix DATA, Attachment F, Annex C). The INEEL is
 27 treating the waste at the AMWTF and has the capability of supercompacting 55-gallon drums
 28 containing CH-TRU waste. The compacted drums are then placed in one 100-gallon drum for
 29 shipment to the WIPP.

30 Graphite had the next largest increases in cellulosic and plastic material average densities (82
 31 and 18 kg/m³, respectively). The average density of rubber did not change for heterogeneous
 32 debris. The only new contributions to graphite came from RFETS. The RFETS reported six
 33 waste streams with graphite. The RFETS estimated approximately 166 kg/m³ of cellulosic
 34 material in two of these waste streams, and approximately 22 kg/m³ of plastic material in four of
 35 these waste streams (LANL 2003). The waste streams with high reported cellulosic material
 36 originated from the disposal of graphite molds and mechanical cleaning of the graphite molds.

Table DATA-F-B-24. Differences in Waste Material Parameter Average Densities (kg/m³) for CH-TRU Waste Between TWBIR Rev. 2 and 2003 Update Report¹

| Waste Material Parameters | 2003 Update (kg/m ³) | TWBIR Rev. 2 (kg/m ³) | Difference (kg/m ³) |
|---------------------------|----------------------------------|-----------------------------------|---------------------------------|
|---------------------------|----------------------------------|-----------------------------------|---------------------------------|

| | | | |
|-------------------------------|----------------------|-------------------|--------------------|
| Fe-Base Metal/Alloys | 1.1×10^2 | 1.7×10^2 | -5.9×10^1 |
| Al-Base Metal/Alloys | 1.4×10^1 | 1.8×10^1 | -3.7×10^0 |
| Other Metal/Alloys | 3.0×10^1 | 6.7×10^1 | -3.7×10^1 |
| Other Inorganic Material | 4.2×10^1 | 3.1×10^1 | 1.1×10^1 |
| Cellulosic Material | 5.8×10^1 | 5.4×10^1 | 4.1×10^0 |
| Rubber Material | 1.4×10^1 | 1.0×10^1 | 4.4×10^0 |
| Plastic Material | 4.2×10^1 | 3.4×10^1 | 8.4×10^0 |
| Solidified Inorganic Material | 7.7×10^1 | 5.4×10^1 | 2.3×10^1 |
| Cement (Solidified) | 2.9×10^1 | 5.0×10^1 | -2.1×10^1 |
| Vitrified | 6.2×10^0 | 5.5×10^1 | -4.9×10^1 |
| Solidified Organic Material | 1.6×10^1 | 5.6×10^0 | 1.0×10^1 |
| Soil | 1.9×10^1 | 4.4×10^1 | -2.5×10^1 |
| Container Materials | | | |
| Steel | 1.7×10^2 | 1.4×10^2 | 3.2×10^1 |
| Plastic | 1.6×10^1 | 2.6×10^1 | -1.0×10^1 |
| Lead | 1.4×10^{-2} | N/A | N/A |

¹ See Pages 29 and 30 for discussion.

1 **DATA-F-B-2.2 Analysis of RH-TRU Waste Material Parameter Differences**

2 Analysis of the TWBIR Revision 2 and 2003 Update Report RH-TRU waste data show that most
 3 of the WMP average densities decreased (see Table DATA-F-B-25). There are 12 WMPs, and 8
 4 of them decreased in average density. Decreases were noted in the Al-base metal/alloys, other
 5 metal/alloys, other inorganic materials, CPR materials, cement (solidified), and vitrified. The
 6 average densities of the Fe-base metal/alloys, solidified inorganic material, solidified organic
 7 material, and soil increased.

8 The largest WMP increases were for soil (25 kg/m^3), solidified inorganic material (17 kg/m^3),
 9 and Fe -base metal/alloys (12 kg/m^3). The average density of solidified organic material
 10 increased by only 3.0 kg/m^3 .

11 Although the average densities of RH-TRU waste CPR materials decreased overall (Table
 12 DATA-F-B-25), an analysis of the CPR materials in the roll-ups by final waste form (Tables
 13 DATA-F-B-15 through DATA-F-B-23) show that there are increases in the average densities of
 14 CPR materials in some of the final waste forms. The average densities of cellulosic material
 15 increased in the filter material and solidified organic material (by 73 and 20 kg/m^3 , respectively).
 16 There is an increase in the rubber material for filter material (19 kg/m^3).

17 **Table DATA-F-B-25. Difference on Waste Material Parameter Average Densities (kg/m^3)**
 18 **for RH-TRU Waste Between TWBIR Rev. 2 and 2003 Update Report¹**

| Waste Material Parameters | 2003 Update (kg/m^3) | TWBIR Rev. 2 (kg/m^3) | Difference (kg/m^3) |
|---------------------------|------------------------------------|-------------------------------------|-----------------------------------|
|---------------------------|------------------------------------|-------------------------------------|-----------------------------------|

| | | | |
|--------------------------------|----------------------|----------------------|-----------------------|
| Fe-Base Metal/Alloys | 1.1×10^2 | 1.0×10^2 | 1.2×10^1 |
| Al-Base Metal/Alloys | 2.5×10^0 | 7.1×10^0 | -4.6×10^0 |
| Other Metal/Alloys | 3.2×10^1 | 2.5×10^2 | -2.2×10^2 |
| Other Inorganic Material | 3.5×10^1 | 6.4×10^1 | -2.9×10^1 |
| Cellulosic Material | 4.5×10^0 | 1.7×10^1 | -1.2×10^1 |
| Rubber Material | 3.1×10^0 | 3.3×10^0 | -2.1×10^{-1} |
| Plastic Material | 4.9×10^0 | 1.5×10^1 | -1.0×10^1 |
| Solidified, Inorganic Material | 3.9×10^1 | 2.2×10^1 | 1.7×10^1 |
| Cement (Solidified) | 8.7×10^{-1} | 1.9×10^1 | -1.8×10^1 |
| Vitrified | 5.7×10^{-2} | 4.7×10^0 | -4.6×10^0 |
| Solidified, Organic Material | 4.0×10^0 | 9.3×10^{-1} | 3.0×10^0 |
| Soil | 2.6×10^1 | 1.0×10^0 | 2.5×10^1 |
| | | | |
| Container Materials | | | |
| Steel | 4.8×10^2 | 4.5×10^2 | 3.7×10^1 |
| Plastic | 1.4×10^0 | 3.1×10^0 | -1.7×10^0 |
| Lead | 4.4×10^2 | 4.7×10^2 | -2.2×10^1 |
| Steel Plug | N/A | 2.1×10^3 | N/A |

¹ See Pages 31 and 32 for discussion.

1 Finally, the average density of plastic increased in the combustible material, inorganic non-
 2 metal, and solidified organic material (by 85, 20, and 13 kg/m³, respectively). The remaining
 3 increases in the average densities of the CPR materials are less than 10 kg/m³ each.

4 **DATA-F-B-2.3 Analysis of CH-TRU Waste Container Materials**

5 The container materials for CH-TRU waste are steel, plastic, and lead. Table DATA-F-B-24
 6 indicates that the average density of steel increased from 140 kg/m³ to 170 kg/m³ and the
 7 average density of plastic decreased from 26 kg/m³ to 16 kg/m³.

8 Two significant changes in the inventory contributed to the increase in the average density of
 9 steel container materials. First, a review of the TWBIR Rev. 2 database (DOE 1995) reveals that
 10 the sites did not intend to use pipe overpack components (POCs) at that time, and hence none
 11 were reported in the database. The supporting database for the 2003 Update Report, the TWBID
 12 Revision 2.1 (LANL 2003), indicates that LANL, RFETS, and Hanford RL will use the POC. In
 13 fact, RFETS has shipped waste from seven waste streams using POCs, and these are now
 14 emplaced in the WIPP. The difference in the average density of steel between the 55-gallon
 15 drum (131 kg/m³; Attachment F, Table DATA-F-32) and the POCs (525 kg/m³, as reported by
 16 RFETS) is approximately 394 kg/m³. There are currently 56 waste streams for which the sites
 17 have indicated POCs will be used. These are shown below in Table DATA-F-B-26 along with
 18 seven waste streams that have already been shipped to and emplaced in the WIPP.

19 Second, the INEEL super-compacted debris waste stream (IN-BN-510) discussed above will
 20 have an average of four compacted 55-gallon drums in each 100-gallon drum. The steel
 21 comprising the 55-gallon drums falls into the Fe-base metal/alloys WMP and the steel

1 comprising the 100-gallon drums is steel container material for this waste stream. The typical
2 value for a 55-gallon drum is 131 kg/m³, and the typical value for a 100-gallon drum is 114
3 kg/m³, as provided in Attachment F, Table DATA-F-32. The container/packaging materials for
4 this waste stream are discussed in Appendix DATA, Attachment F, Annex D, Section DATA-F-
5 D-3.3.1.

6 The values for lead are marked “N/A” for “not applicable,” because lead is typically not a
7 component of CH-TRU waste containment.

8 **DATA-F-B-2.4 Analysis of RH-TRU Waste Container Materials**

9 The RH-TRU waste container materials are steel, plastic, lead, and steel plug. The steel waste
10 container material increased by 37 kg/m³. The plastic and lead waste container materials
11 decreased (by approximately 2 and 22 kg/m³, respectively). The steel plug is actually supplied
12 by the Waste Handling Operations group at the WIPP and is not reported by the sites in the
13 current inventory, as it is not part of the shipped package. The average density for the steel plug
14 was, however, reported in the TWBIR Revision 2 inventory.

15 **DATA-F-B-3.0 RADIONUCLIDES**

16 A comparison of Table 3-1 from TWBIR Revision 3 (DOE 1996) to the data reported in
17 Attachment F, Table DATA-F-37 is contained in Table DATA-F-B-27 for CH-TRU waste and
18 Table DATA-F-B-28 for RH-TRU waste. The radionuclide values from TWBIR Revision 3
19 were decayed through 1995 as the base year and have not been further decayed, but are reported
20 as they were in Revision 3. The values for short-lived radionuclides would have decreased over
21 the six-year interval if no change in the inventory occurred since the CCA. The values from
22 TWBID Revision 2.1 (LANL 2003) are decayed through 2001. A review of the results for CH-
23 TRU waste indicates that although there is a substantial change in some radionuclides from 1995
24 to 2001, with the exception of ²³⁹Pu and ²⁴⁰Pu, the activities for the dominant five radionuclides
25 have changed very little and the overall activity for all radionuclides has decreased by 17
26 percent. The results for RH-TRU waste are not as consistent, with substantial variations in
27 individual radionuclide activity, and an overall increase in activity of 30 percent. Based on total
28 curies, the five most abundant CH-TRU waste isotopes in the TWBIR Revision 3, ²⁴¹Am, ²³⁸Pu,
29 ²³⁹Pu, ²⁴⁰Pu, and ²⁴¹Pu, are the most abundant in the 2003 Update Report (see bottom of Table
30 DATA-F-B-27). For RH-TRU waste, the five most abundant isotopes in the TWBIR Revision 3,
31 ^{137m}Ba, ¹³⁷Cs, ²⁴¹Pu, ⁹⁰Sr, and ⁹⁰Y, are still the most abundant in the 2003 report (see bottom of
32 Table DATA-F-B-28).

Table DATA-F-B-26. Waste Streams Shipped and to be Shipped in POCs to the WIPP

| Site | Waste Stream | Site | Waste Stream | Site | Waste Stream |
|-------|--------------|-------|--------------|------------|--------------|
| LANL | LA-OS-00-01 | RFETS | RF-MT0532E | RFETS | RF-TT391P |
| RFETS | RF-MT0090 | RFETS | RF-MT0532F | RFETS | RF-TT391P |
| RFETS | RF-MT0091 | RFETS | RF-MT0541 | RFETS | RF-TT392P |
| RFETS | RF-MT0092 | RFETS | RF-MT0H61 | RFETS | RF-TT393R |
| RFETS | RF-MT0093 | RFETS | RF-MT3011 | RFETS | RF-TT394P |
| RFETS | RF-MT0097 | RFETS | RF-MT420P | RFETS | RF-TT395P |
| RFETS | RF-MT0290 | RFETS | RF-MT532A | RFETS | RF-TT398P |
| RFETS | RF-MT-0292 | RFETS | RF-MT532B | RFETS | RF-TT398R |
| RFETS | RF-MT0299 | RFETS | RF-MT532C | RFETS | RF-TT411R |
| RFETS | RF-MT0320 | RFETS | RF-MT532D | RFETS | RF-TT429R |
| RFETS | RF-MT0371 | RFETS | RF-TT0300 | RFETS | RF-TT433x |
| RFETS | RF-MT0373 | RFETS | RF-TT0310 | RFETS | RF-TT436R |
| RFETS | RF-MT0377 | RFETS | RF-TT0312 | RFETS | RF-TT454x |
| RFETS | RF-MT0419 | RFETS | RF-TT0340 | Hanford RL | RL-W756 |
| RFETS | RF-MT0423 | RFETS | RF-TT0368 | WIPP | WP-RF003.01 |
| RFETS | RF-MT0444 | RFETS | RF-TT0370 | WIPP | WP-RF005.01 |
| RFETS | RF-MT0523A | RFETS | RF-TT0440 | WIPP | WP-RF005.02 |
| RFETS | RF-MT0523B | RFETS | RF-TT0442 | WIPP | WP-RF006.01 |
| RFETS | RF-MT0523C | RFETS | RF-TT0601 | WIPP | WP-RF008.01 |
| RFETS | RF-MT0523D | RFETS | RF-TT310P | WIPP | WP-RF009.01 |
| RFETS | RF-MT0523E | RFETS | RF-TT390P | WIPP | WP-RF118.01 |

1

Table DATA-F-B-27. WIPP Disposal Radionuclide Inventory Comparison, 1995 to 2001, CH-TRU Waste¹

| Radionuclide | CH-TRU Waste Curies, Decayed through 2001 | CH-TRU Waste Curies, Decayed through 1995 | Delta (Ci) | Percent Change |
|--------------------|---|---|-------------------------|---------------------|
| ²²⁵ Ac | 1.55×10^0 | 2.88×10^0 | -1.33×10^0 | -4.62×10^1 |
| ²²⁷ Ac | 5.06×10^{-1} | 6.08×10^{-1} | -1.02×10^{-1} | -1.68×10^1 |
| ²²⁸ Ac | 4.79×10^0 | 7.47×10^{-1} | 4.04×10^0 | 5.41×10^2 |
| ^{109m} Ag | 1.26×10^{-4} | 1.57×10^1 | -1.57×10^1 | -1.00×10^2 |
| ¹¹⁰ Ag | 4.40×10^{-11} | 7.07×10^{-9} | -7.03×10^{-9} | -9.94×10^1 |
| ^{110m} Ag | 3.34×10^{-9} | 5.31×10^{-7} | -5.28×10^{-7} | -9.94×10^1 |
| ²⁴¹ Am | 4.01×10^5 | 4.42×10^5 | -4.10×10^4 | -9.28×10^0 |
| ²⁴² Am | 4.70×10^{-2} | 1.75×10^0 | -1.70×10^0 | -9.73×10^1 |
| ^{242m} Am | 4.78×10^{-2} | 1.75×10^0 | -1.70×10^0 | -9.73×10^1 |
| ²⁴³ Am | 2.10×10^1 | 3.26×10^1 | -1.16×10^1 | -3.56×10^1 |
| ²⁴⁵ Am | 1.31×10^{-10} | 1.33×10^{-9} | -1.20×10^{-9} | -9.02×10^1 |
| ²¹⁷ At | 1.55×10^0 | 2.88×10^0 | -1.33×10^0 | -4.62×10^1 |
| ^{137m} Ba | 9.06×10^3 | 7.63×10^3 | 1.43×10^3 | 1.87×10^1 |
| ²¹⁰ Bi | 2.58×10^0 | 2.55×10^0 | 3.00×10^{-2} | 1.18×10^0 |
| ²¹¹ Bi | 5.00×10^{-1} | 6.09×10^{-1} | -1.09×10^{-1} | -1.79×10^1 |
| ²¹² Bi | 5.84×10^0 | 2.71×10^1 | -2.13×10^1 | -7.85×10^1 |
| ²¹³ Bi | 1.55×10^0 | 2.88×10^0 | -1.33×10^0 | -4.62×10^1 |
| ²¹⁴ Bi | 6.29×10^0 | 1.16×10^1 | -5.31×10^0 | -4.58×10^1 |
| ²⁴⁹ Bk | 9.07×10^{-6} | 9.16×10^{-5} | -8.25×10^{-5} | -9.01×10^1 |
| ²⁵⁰ Bk | 3.65×10^{-12} | 4.37×10^{-11} | -4.01×10^{-11} | -9.16×10^1 |
| ¹⁴ C | 1.21×10^0 | 1.08×10^1 | -9.59×10^0 | -8.88×10^1 |
| ¹⁰⁹ Cd | 1.28×10^{-4} | 1.57×10^1 | -1.57×10^1 | -1.00×10^2 |
| ^{113m} Cd | NR | 1.82×10^{-6} | -1.82×10^{-6} | -1.00×10^2 |
| ¹⁴¹ Ce | NR | NR | 0.00×10^0 | 0.00×10^0 |
| ¹⁴⁴ Ce | 3.56×10^{-4} | 6.26×10^{-2} | -6.22×10^{-2} | -9.94×10^1 |
| ²⁴⁹ Cf | 7.64×10^{-2} | 6.42×10^{-2} | 1.22×10^{-2} | 1.90×10^1 |
| ²⁵⁰ Cf | 1.83×10^{-1} | 3.30×10^{-1} | -1.47×10^{-1} | -4.45×10^1 |
| ²⁵¹ Cf | 3.64×10^{-4} | 3.78×10^{-3} | -3.42×10^{-3} | -9.04×10^1 |
| ²⁵² Cf | 2.08×10^{-1} | 2.43×10^0 | -2.22×10^0 | -9.14×10^1 |
| ²⁴² Cm | 3.94×10^{-2} | 1.14×10^0 | -1.10×10^0 | -9.65×10^1 |
| ²⁴³ Cm | 3.97×10^{-1} | 2.72×10^0 | -2.32×10^0 | -8.54×10^1 |
| ²⁴⁴ Cm | 1.16×10^4 | 3.15×10^4 | -1.99×10^4 | -6.32×10^1 |
| ²⁴⁵ Cm | 8.42×10^{-3} | 1.15×10^{-2} | -3.08×10^{-3} | -2.68×10^1 |
| ²⁴⁶ Cm | 1.55×10^0 | 1.02×10^{-1} | 1.45×10^0 | 1.42×10^3 |
| ²⁴⁷ Cm | 2.77×10^{-10} | 3.21×10^{-9} | -2.93×10^{-9} | -9.14×10^1 |
| ²⁴⁸ Cm | 9.14×10^{-2} | 3.69×10^{-2} | 5.45×10^{-2} | 1.48×10^2 |
| ²⁵⁰ Cm | 6.64×10^{-11} | NR | 6.64×10^{-11} | 0.00×10^0 |

Table DATA-F-B-27. WIPP Disposal Radionuclide Inventory Comparison, 1995 to 2001, CH-TRU Waste¹

| Radionuclide | CH-TRU Waste Curies, Decayed through 2001 | CH-TRU Waste Curies, Decayed through 1995 | Delta (Ci) | Percent Change |
|------------------|---|---|-------------------------|---------------------|
| ⁵⁸ Co | NR | 3.05×10^{-13} | -3.05×10^{-13} | -1.00×10^2 |

1

Table DATA-F-B-27. WIPP Disposal Radionuclide Inventory Comparison, 1995 to 2001, CH-TRU Waste — Continued¹

| Radionuclide | CH-TRU Waste Curies, Decayed through 2001 | CH-TRU Waste Curies, Decayed through 1995 | Delta (Ci) | Percent Change |
|--------------------|---|---|-------------------------|---------------------|
| ⁶⁰ Co | 9.85×10^{-1} | 6.46×10^1 | -6.36×10^1 | -9.85×10^1 |
| ⁵¹ Cr | NR | NR | 0.00×10^0 | 0.00×10^0 |
| ¹³⁴ Cs | 2.05×10^{-2} | 1.34×10^{-2} | 7.10×10^{-3} | 5.30×10^1 |
| ¹³⁵ Cs | NR | 5.02×10^{-4} | -5.02×10^{-4} | -1.00×10^2 |
| ¹³⁷ Cs | 9.65×10^3 | 8.06×10^3 | 1.59×10^3 | 1.97×10^1 |
| ²⁵⁴ Es | NR | 4.24×10^{-11} | -4.24×10^{-11} | -1.00×10^2 |
| ¹⁵⁰ Eu | NR | 3.51×10^{-5} | -3.51×10^{-5} | -1.00×10^2 |
| ¹⁵² Eu | 1.95×10^0 | 1.26×10^0 | 6.90×10^{-1} | 5.48×10^1 |
| ¹⁵⁴ Eu | 1.65×10^0 | 1.15×10^0 | 5.00×10^{-1} | 4.35×10^1 |
| ¹⁵⁵ Eu | 6.73×10^{-2} | 9.46×10^{-1} | -8.79×10^{-1} | -9.29×10^1 |
| ⁵⁵ Fe | NR | 1.91×10^{-5} | -1.91×10^{-5} | -1.00×10^2 |
| ⁵⁹ Fe | NR | 2.64×10^{-7} | -2.64×10^{-7} | -1.00×10^2 |
| ²²¹ Fr | 1.55×10^0 | 2.88×10^0 | -1.33×10^0 | -4.62×10^1 |
| ²²³ Fr | 6.91×10^{-3} | 8.39×10^{-3} | -1.48×10^{-3} | -1.76×10^1 |
| ¹⁵² Gd | 4.40×10^{-14} | NR | 4.40×10^{-14} | 0.00×10^0 |
| ³ H | 2.17×10^2 | 8.69×10^{-1} | 2.16×10^2 | 2.49×10^4 |
| ¹²⁹ I | 5.12×10^{-4} | 7.05×10^{-7} | 5.11×10^{-4} | 7.25×10^4 |
| ⁸⁵ Kr | 4.62×10^{-1} | 2.02×10^{-1} | 2.60×10^{-1} | 1.29×10^2 |
| ⁵⁴ Mn | NR | 8.51×10^{-4} | -8.51×10^{-4} | -1.00×10^2 |
| ²² Na | 3.91×10^{-7} | NR | 3.91×10^{-7} | 0.00×10^0 |
| ^{93m} Nb | NR | NR | 0.00×10^0 | 0.00×10^0 |
| ⁹⁵ Nb | NR | 2.54×10^{-9} | -2.54×10^{-9} | -1.00×10^2 |
| ^{95m} Nb | NR | 8.50×10^{-12} | -8.50×10^{-12} | -1.00×10^2 |
| ⁵⁹ Ni | 7.64×10^{-2} | 7.52×10^{-3} | 6.89×10^{-2} | 9.16×10^2 |
| ⁶³ Ni | 3.72×10^0 | 9.19×10^{-1} | 2.80×10^0 | 3.05×10^2 |
| ²³⁷ Np | 4.80×10^0 | 5.61×10^1 | -5.13×10^1 | -9.14×10^1 |
| ²³⁸ Np | 2.36×10^{-4} | 8.77×10^{-3} | -8.53×10^{-3} | -9.73×10^1 |
| ²³⁹ Np | 2.08×10^1 | 3.26×10^1 | -1.18×10^1 | -3.62×10^1 |
| ^{240m} Np | 1.31×10^{-6} | 1.50×10^{-6} | -1.90×10^{-7} | -1.27×10^1 |
| ²³¹ Pa | 1.21×10^0 | 4.51×10^{-1} | 7.59×10^{-1} | 1.68×10^2 |
| ²³³ Pa | 4.75×10^0 | 5.61×10^1 | -5.14×10^1 | -9.15×10^1 |
| ²³⁴ Pa | 9.25×10^{-3} | 5.14×10^{-2} | -4.22×10^{-2} | -8.20×10^1 |
| ^{234m} Pa | 7.11×10^0 | 3.96×10^1 | -3.25×10^1 | -8.20×10^1 |
| ²⁰⁹ Pb | 1.55×10^0 | 2.88×10^0 | -1.33×10^0 | -4.62×10^1 |
| ²¹⁰ Pb | 2.61×10^0 | 2.55×10^0 | 6.00×10^{-2} | 2.35×10^0 |
| ²¹¹ Pb | 5.01×10^{-1} | 6.09×10^{-1} | -1.08×10^{-1} | -1.77×10^1 |
| ²¹² Pb | 5.82×10^0 | 2.71×10^1 | -2.13×10^1 | -7.85×10^1 |

Table DATA-F-B-27. WIPP Disposal Radionuclide Inventory Comparison, 1995 to 2001, CH-TRU Waste — Continued¹

| Radionuclide | CH-TRU Waste Curies, Decayed through 2001 | CH-TRU Waste Curies, Decayed through 1995 | Delta (Ci) | Percent Change |
|--------------------|---|---|------------------------|---------------------|
| ²¹⁴ Pb | 6.30×10^0 | 1.16×10^1 | -5.30×10^0 | -4.57×10^1 |
| ¹⁰⁷ Pd | NR | 7.41×10^{-5} | -7.41×10^{-5} | -1.00×10^2 |
| ¹⁴⁷ Pm | 1.82×10^0 | 7.87×10^0 | -6.05×10^0 | -7.69×10^1 |
| ²¹⁰ Po | 2.61×10^0 | 2.55×10^0 | 6.00×10^{-2} | 2.35×10^0 |
| ²¹¹ Po | 1.53×10^{-3} | 1.71×10^{-3} | -1.80×10^{-4} | -1.05×10^1 |
| ²¹² Po | 3.72×10^0 | 1.73×10^1 | -1.36×10^1 | -7.85×10^1 |
| ²¹³ Po | 1.52×10^0 | 2.82×10^0 | -1.30×10^0 | -4.61×10^1 |
| ²¹⁴ Po | 6.30×10^0 | 1.16×10^1 | -5.30×10^0 | -4.57×10^1 |
| ²¹⁵ Po | 5.00×10^{-1} | 6.09×10^{-1} | -1.09×10^{-1} | -1.79×10^1 |
| ²¹⁶ Po | 5.82×10^0 | 2.71×10^1 | -2.13×10^1 | -7.85×10^1 |
| ²¹⁸ Po | 6.19×10^0 | 1.16×10^1 | -5.41×10^0 | -4.66×10^1 |
| ¹⁴⁴ Pr | 3.49×10^{-4} | 6.18×10^{-2} | -6.15×10^{-2} | -9.94×10^1 |
| ²³⁶ Pu | 4.38×10^{-4} | 1.04×10^{-2} | -9.96×10^{-3} | -9.58×10^1 |
| ²³⁸ Pu | 1.61×10^6 | 2.61×10^6 | -1.00×10^6 | -3.83×10^1 |
| ²³⁹ Pu | 6.60×10^5 | 7.85×10^5 | -1.25×10^5 | -1.59×10^1 |
| ²⁴⁰ Pu | 1.07×10^5 | 2.10×10^5 | -1.03×10^5 | -4.90×10^1 |
| ²⁴¹ Pu | 2.40×10^6 | 2.31×10^6 | 9.00×10^4 | 3.90×10^0 |
| ²⁴² Pu | 2.67×10^1 | 1.17×10^3 | -1.14×10^3 | -9.77×10^1 |
| ²⁴³ Pu | 2.74×10^{-10} | 3.21×10^{-9} | -2.94×10^{-9} | -9.15×10^1 |
| ²⁴⁴ Pu | 1.29×10^{-6} | 1.50×10^{-6} | -2.10×10^{-7} | -1.40×10^1 |
| ²²³ Ra | 5.06×10^{-1} | 6.09×10^{-1} | -1.03×10^{-1} | -1.69×10^1 |
| ²²⁴ Ra | 5.81×10^0 | 2.71×10^1 | -2.13×10^1 | -7.86×10^1 |
| ²²⁵ Ra | 1.55×10^0 | 2.88×10^0 | -1.33×10^0 | -4.62×10^1 |
| ²²⁶ Ra | 6.37×10^0 | 1.16×10^1 | -5.23×10^0 | -4.51×10^1 |
| ²²⁸ Ra | 5.66×10^0 | 7.47×10^{-1} | 4.91×10^0 | 6.58×10^2 |
| ¹⁰⁶ Rh | 1.58×10^{-4} | 2.90×10^{-2} | -2.88×10^{-2} | -9.95×10^1 |
| ²¹⁹ Rn | 5.00×10^{-1} | 6.09×10^{-1} | -1.09×10^{-1} | -1.79×10^1 |
| ²²⁰ Rn | 5.82×10^0 | 2.71×10^1 | -2.13×10^1 | -7.85×10^1 |
| ²²² Rn | 6.31×10^0 | 1.16×10^1 | -5.29×10^0 | -4.56×10^1 |
| ¹⁰⁶ Ru | 1.59×10^{-4} | 2.90×10^{-2} | -2.88×10^{-2} | -9.95×10^1 |
| ¹²⁵ Sb | 5.04×10^{-3} | 1.21×10^{-1} | -1.16×10^{-1} | -9.58×10^1 |
| ¹²⁶ Sb | NR | 1.35×10^{-4} | -1.35×10^{-4} | -1.00×10^2 |
| ^{126m} Sb | NR | 9.65×10^{-4} | -9.65×10^{-4} | -1.00×10^2 |
| ⁷⁹ Se | 1.32×10^{-4} | 4.35×10^{-4} | -3.03×10^{-4} | -6.97×10^1 |
| ¹⁴⁷ Sm | 4.78×10^{-10} | NR | 4.78×10^{-10} | 0.00×10^0 |
| ¹⁵¹ Sm | 5.68×10^1 | 1.47×10^0 | 5.53×10^1 | 3.76×10^3 |
| ^{119m} Sn | NR | 4.14×10^{-6} | -4.14×10^{-6} | -1.00×10^2 |

Table DATA-F-B-27. WIPP Disposal Radionuclide Inventory Comparison, 1995 to 2001, CH-TRU Waste — Continued¹

| Radionuclide | CH-TRU Waste Curies, Decayed through 2001 | CH-TRU Waste Curies, Decayed through 1995 | Delta (Ci) | Percent Change |
|--------------------|---|---|------------------------|---------------------|
| ^{121m} Sn | NR | 2.66×10^{-2} | -2.66×10^{-2} | -1.00×10^2 |
| ¹²⁶ Sn | NR | 9.65×10^{-4} | -9.65×10^{-4} | -1.00×10^2 |
| ⁹⁰ Sr | 5.75×10^4 | 6.85×10^3 | 5.07×10^4 | 7.39×10^2 |
| ¹⁸² Ta | NR | NR | 0.00×10^0 | 0.00×10^0 |
| ⁹⁹ Tc | 1.67×10^2 | 2.52×10^1 | 1.42×10^2 | 5.63×10^2 |
| ¹²³ Te | 6.78×10^{-5} | NR | 6.78×10^{-5} | 0.00×10^0 |
| ^{123m} Te | 4.98×10^{-19} | NR | 4.98×10^{-19} | 0.00×10^0 |
| ^{125m} Te | 1.22×10^{-3} | 2.95×10^{-2} | -2.83×10^{-2} | -9.59×10^1 |
| ¹²⁷ Te | NR | 1.30×10^{-7} | -1.30×10^{-7} | -1.00×10^2 |
| ^{127m} Te | NR | 1.33×10^{-7} | -1.33×10^{-7} | -1.00×10^2 |
| ²²⁷ Th | 4.93×10^{-1} | 6.01×10^{-1} | -1.08×10^{-1} | -1.80×10^1 |
| ²²⁸ Th | 5.89×10^0 | 2.71×10^1 | -2.12×10^1 | -7.83×10^1 |
| ²²⁹ Th | 1.55×10^0 | 2.88×10^0 | -1.33×10^0 | -4.62×10^1 |
| ²³⁰ Th | 1.01×10^{-1} | 8.06×10^{-2} | 2.04×10^{-2} | 2.53×10^1 |
| ²³¹ Th | 3.53×10^{-1} | 1.28×10^1 | -1.24×10^1 | -9.72×10^1 |
| ²³² Th | 6.61×10^0 | 9.13×10^{-1} | 5.70×10^0 | 6.24×10^2 |
| ²³⁴ Th | 7.12×10^0 | 3.96×10^1 | -3.25×10^1 | -8.20×10^1 |
| ²⁰⁷ Tl | 4.98×10^{-1} | 6.07×10^{-1} | -1.09×10^{-1} | -1.80×10^1 |
| ²⁰⁸ Tl | 2.09×10^0 | 9.73×10^0 | -7.64×10^0 | -7.85×10^1 |
| ²⁰⁹ Tl | 3.41×10^{-2} | 6.22×10^{-2} | -2.81×10^{-2} | -4.52×10^1 |
| ²³² U | 1.64×10^0 | 2.58×10^1 | -2.42×10^1 | -9.36×10^1 |
| ²³³ U | 1.24×10^3 | 1.79×10^3 | -5.50×10^2 | -3.07×10^1 |
| ²³⁴ U | 1.68×10^2 | 4.65×10^2 | -2.97×10^2 | -6.39×10^1 |
| ²³⁵ U | 1.32×10^0 | 1.28×10^1 | -1.15×10^1 | -8.97×10^1 |
| ²³⁶ U | 1.30×10^{-1} | 3.33×10^{-1} | -2.03×10^{-1} | -6.10×10^1 |
| ²³⁷ U | 2.15×10^1 | 5.66×10^1 | -3.51×10^1 | -6.20×10^1 |
| ²³⁸ U | 2.44×10^1 | 3.96×10^1 | -1.52×10^1 | -3.84×10^1 |
| ²⁴⁰ U | 1.28×10^{-6} | 1.50×10^{-6} | -2.20×10^{-7} | -1.47×10^1 |
| ⁹⁰ Y | 5.74×10^4 | 6.85×10^3 | 5.06×10^4 | 7.38×10^2 |
| ⁹¹ Y | NR | NR | 0.00×10^0 | 0.00×10^0 |
| ⁶⁵ Zn | 2.32×10^{-10} | NR | 2.32×10^{-10} | 0.00×10^0 |
| ⁹³ Zr | 1.13×10^{-3} | 5.63×10^{-3} | -4.50×10^{-3} | -7.99×10^1 |
| ⁹⁵ Zr | NR | 1.15×10^{-9} | -1.15×10^{-9} | -1.00×10^2 |
| Total: | 5.33×10^6 | 6.42×10^6 | -1.10×10^6 | -1.71×10^1 |

NR – Not Reported

-2001 – Decayed through 12/31/01

-1995 – Decayed through 12/31/95

¹-Total curies estimated by assuming a volume of (168,485 m³) for CH-TRU waste and (7,079 m³) of RH-TRU waste

Table DATA-F-B-27. WIPP Disposal Radionuclide Inventory Comparison, 1995 to 2001, CH-TRU Waste — Continued¹

| Radionuclide | CH-TRU Waste Curies, Decayed through 2001 | CH-TRU Waste Curies, Decayed through 1995 | Delta (Ci) | Percent Change |
|-----------------------------|---|---|------------|----------------|
| Most Abundant Radionuclides | CH-TRU Waste Activity (Ci) | | | |
| ²⁴¹ Am | 4.01 × 10 ⁵ | | | |
| ²³⁸ Pu | 1.61 × 10 ⁶ | | | |
| ²³⁹ Pu | 6.60 × 10 ⁵ | | | |
| ²⁴⁰ Pu | 1.07 × 10 ⁵ | | | |
| ²⁴¹ Pu | 2.40 × 10 ⁶ | | | |
| Total | 5.18 × 10 ⁶ | | | |
| Percent of Total | 9.72 × 10 ¹ | | | |

¹ See Page 33 for discussion.

Table DATA-F-B-28. WIPP Disposal Radionuclide Inventory Comparison, 1995 to 2001, RH-TRU Waste¹

| Radionuclide | RH-TRU Waste Curies, 2001 | RH-TRU Waste Curies, 1995 | delta | % change |
|--------------------|---------------------------|---------------------------|-------------------------|---------------------|
| ²²⁵ Ac | 3.68×10^{-2} | 1.17×10^{-1} | -8.02×10^{-2} | -6.85×10^1 |
| ²²⁷ Ac | 4.00×10^{-6} | 7.57×10^{-4} | -7.53×10^{-4} | -9.95×10^1 |
| ²²⁸ Ac | 1.43×10^{-1} | 7.77×10^{-2} | 6.53×10^{-2} | 8.40×10^1 |
| ^{109m} Ag | NR | NR | 0.00×10^0 | 0.00×10^0 |
| ¹¹⁰ Ag | 1.92×10^{-11} | 1.74×10^{-9} | -1.72×10^{-9} | -9.89×10^1 |
| ^{110m} Ag | 1.46×10^{-9} | 1.31×10^{-7} | -1.30×10^{-7} | -9.89×10^1 |
| ²⁴¹ Am | 1.36×10^4 | 5.96×10^3 | 7.64×10^3 | 1.28×10^2 |
| ²⁴² Am | 8.52×10^{-4} | NR | 8.52×10^{-4} | 0.00×10^0 |
| ^{242m} Am | 1.96×10^{-1} | NR | 1.96×10^{-1} | 0.00×10^0 |
| ²⁴³ Am | 7.15×10^{-1} | 2.28×10^{-4} | 7.15×10^{-1} | 3.13×10^5 |
| ²²⁵ Ac | 3.68×10^{-2} | 1.17×10^{-1} | -8.02×10^{-2} | -6.85×10^1 |
| ²²⁷ Ac | 4.00×10^{-6} | 7.57×10^{-4} | -7.53×10^{-4} | -9.95×10^1 |
| ²²⁸ Ac | 1.43×10^{-1} | 7.77×10^{-2} | 6.53×10^{-2} | 8.40×10^1 |
| ^{109m} Ag | NR | NR | 0.00×10^0 | 0.00×10^0 |
| ¹¹⁰ Ag | 1.92×10^{-11} | 1.74×10^{-9} | -1.72×10^{-9} | -9.89×10^1 |
| ^{110m} Ag | 1.46×10^{-9} | 1.31×10^{-7} | -1.30×10^{-7} | -9.89×10^1 |
| ²⁴¹ Am | 1.36×10^4 | 5.96×10^3 | 7.64×10^3 | 1.28×10^2 |
| ²⁴² Am | 8.52×10^{-4} | NR | 8.52×10^{-4} | 0.00×10^0 |
| ^{242m} Am | 1.96×10^{-1} | NR | 1.96×10^{-1} | 0.00×10^0 |
| ²⁴³ Am | 7.15×10^{-1} | 2.28×10^{-4} | 7.15×10^{-1} | 3.13×10^5 |
| ²⁴⁵ Am | NR | 2.87×10^{-16} | -2.87×10^{-16} | -1.00×10^2 |
| ²¹⁷ At | 3.69×10^{-2} | 1.17×10^{-1} | -8.01×10^{-2} | -6.85×10^1 |
| ^{137m} Ba | 3.36×10^5 | 2.04×10^5 | 1.32×10^5 | 6.47×10^1 |
| ²¹⁰ Bi | 2.11×10^{-7} | 7.16×10^{-6} | -6.95×10^{-6} | -9.71×10^1 |
| ²¹¹ Bi | 3.96×10^{-6} | 7.58×10^{-4} | -7.54×10^{-4} | -9.95×10^1 |
| ²¹² Bi | 2.70×10^0 | 7.36×10^{-2} | 2.63×10^0 | 3.57×10^3 |
| ²¹³ Bi | 3.68×10^{-2} | 1.17×10^{-1} | -8.02×10^{-2} | -6.85×10^1 |
| ²¹⁴ Bi | 1.36×10^{-6} | 3.58×10^{-5} | -3.44×10^{-5} | -9.62×10^1 |
| ²⁴⁹ Bk | NR | 1.98×10^{-11} | -1.98×10^{-11} | -1.00×10^2 |
| ²⁵⁰ Bk | NR | NR | 0.00×10^0 | 0.00×10^0 |
| ¹⁴ C | 2.05×10^0 | 2.05×10^0 | 0.00×10^0 | 0.00×10^0 |
| ¹⁰⁹ Cd | NR | NR | 0.00×10^0 | 0.00×10^0 |
| ^{113m} Cd | 1.64×10^{-1} | 5.46×10^{-7} | 1.64×10^{-1} | 3.00×10^7 |
| ¹⁴¹ Ce | 3.77×10^{-19} | NR | 3.77×10^{-19} | 0.00×10^0 |
| ¹⁴⁴ Ce | 1.82×10^0 | 5.13×10^0 | -3.31×10^0 | -6.45×10^1 |

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Table DATA-F-B-28. WIPP Disposal Radionuclide Inventory Comparison, 1995 to 2001, RH-TRU Waste — Continued¹

| Radionuclide | RH-TRU Waste Curies, 2001 | RH-TRU Waste Curies, 1995 | delta | % change |
|-------------------|---------------------------|---------------------------|-------------------------|---------------------|
| ²⁴⁹ Cf | 8.37×10^{-4} | 4.47×10^{-3} | -3.63×10^{-3} | -8.13×10^1 |
| ²⁵⁰ Cf | 1.50×10^{-2} | NR | 1.50×10^{-2} | 0.00×10^0 |
| ²⁵¹ Cf | 1.59×10^{-4} | NR | 1.59×10^{-4} | 0.00×10^0 |
| ²⁵² Cf | 1.77×10^{-2} | 1.29×10^0 | -1.27×10^0 | -9.86×10^1 |
| ²⁴² Cm | 7.15×10^{-4} | NR | 7.15×10^{-4} | 0.00×10^0 |
| ²⁴³ Cm | 4.90×10^{-1} | 4.95×10^1 | -4.90×10^1 | -9.90×10^1 |
| ²⁴⁴ Cm | 2.70×10^2 | 3.15×10^2 | -4.50×10^1 | -1.43×10^1 |
| ²⁴⁵ Cm | 1.06×10^{-2} | 1.46×10^{-6} | 1.06×10^{-2} | 7.26×10^5 |
| ²⁴⁶ Cm | 6.74×10^{-1} | NR | 6.74×10^{-1} | 0.00×10^0 |
| ²⁴⁷ Cm | 9.44×10^0 | NR | 9.44×10^0 | 0.00×10^0 |
| ²⁴⁸ Cm | 1.83×10^{-3} | 2.05×10^{-4} | 1.63×10^{-3} | 7.93×10^2 |
| ²⁵⁰ Cm | NR | NR | 0.00×10^0 | 0.00×10^0 |
| ⁵⁸ Co | NR | 1.24×10^{-11} | -1.24×10^{-11} | -1.00×10^2 |
| ⁶⁰ Co | 1.68×10^3 | 1.04×10^4 | -8.72×10^3 | -8.38×10^1 |
| ⁵¹ Cr | NR | 3.04×10^{-6} | -3.04×10^{-6} | -1.00×10^2 |
| ¹³⁴ Cs | 3.36×10^1 | 1.84×10^1 | 1.52×10^1 | 8.26×10^1 |
| ¹³⁵ Cs | 6.90×10^{-5} | 1.17×10^{-4} | -4.80×10^{-5} | -4.10×10^1 |
| ¹³⁷ Cs | 3.65×10^5 | 2.16×10^5 | 1.49×10^5 | 6.90×10^1 |
| ²⁵⁴ Es | NR | NR | 0.00×10^0 | 0.00×10^0 |
| ¹⁵⁰ Eu | NR | NR | 0.00×10^0 | 0.00×10^0 |
| ¹⁵² Eu | 6.95×10^2 | 1.22×10^3 | -5.25×10^2 | -4.30×10^1 |
| ¹⁵⁴ Eu | 4.23×10^2 | 5.91×10^2 | -1.68×10^2 | -2.84×10^1 |
| ¹⁵⁵ Eu | 1.85×10^1 | 1.18×10^2 | -9.95×10^1 | -8.43×10^1 |
| ⁵⁵ Fe | 4.20×10^{-2} | 1.69×10^{-1} | -1.27×10^{-1} | -7.51×10^1 |
| ⁵⁹ Fe | NR | NR | 0.00×10^0 | 0.00×10^0 |
| ²²¹ Fr | 3.68×10^{-2} | 1.17×10^{-1} | -8.02×10^{-2} | -6.85×10^1 |
| ²²³ Fr | 5.45×10^{-8} | 1.04×10^{-5} | -1.03×10^{-5} | -9.95×10^1 |
| ¹⁵² Gd | 1.95×10^{-11} | NR | 1.95×10^{-11} | 0.00×10^0 |
| ³ H | 1.15×10^0 | 6.60×10^{-2} | 1.08×10^0 | 1.64×10^3 |
| ¹²⁹ I | 8.20×10^{-2} | NR | 8.20×10^{-2} | 0.00×10^0 |
| ⁸⁵ Kr | 1.13×10^{-1} | 1.68×10^0 | -1.57×10^0 | -9.33×10^1 |
| ⁵⁴ Mn | 1.82×10^0 | 2.35×10^{-2} | 1.80×10^0 | 7.64×10^3 |
| ²² Na | 2.95×10^{-1} | NR | 2.95×10^{-1} | 0.00×10^0 |
| ^{93m} Nb | 2.75×10^{-4} | NR | 2.75×10^{-4} | 0.00×10^0 |
| ⁹⁵ Nb | 7.53×10^{-14} | 6.69×10^{-1} | -6.69×10^{-1} | -1.00×10^2 |
| ^{95m} Nb | 2.52×10^{-16} | 2.24×10^{-3} | -2.24×10^{-3} | -1.00×10^2 |

Table DATA-F-B-28. WIPP Disposal Radionuclide Inventory Comparison, 1995 to 2001, RH-TRU Waste — Continued¹

| Radionuclide | RH-TRU Waste Curies, 2001 | RH-TRU Waste Curies, 1995 | delta | % change |
|--------------------|---------------------------|---------------------------|------------------------|---------------------|
| ⁵⁹ Ni | 2.30×10^1 | NR | 2.30×10^1 | 0.00×10^0 |
| ⁶³ Ni | 1.12×10^3 | 9.88×10^{-1} | 1.12×10^3 | 1.13×10^5 |
| ²³⁷ Np | 6.66×10^{-1} | 2.85×10^0 | -2.18×10^0 | -7.66×10^1 |
| ²³⁸ Np | 4.28×10^{-6} | NR | 4.28×10^{-6} | 0.00×10^0 |
| ²³⁹ Np | 6.28×10^{-2} | 2.28×10^{-4} | 6.26×10^{-2} | 2.74×10^4 |
| ^{240m} Np | 1.11×10^{-3} | 2.21×10^{-11} | 1.11×10^{-3} | 5.02×10^9 |
| ²³¹ Pa | 1.79×10^{-5} | 1.91×10^{-3} | -1.89×10^{-3} | -9.91×10^1 |
| ²³³ Pa | 2.31×10^{-3} | 2.85×10^0 | -2.85×10^0 | -9.99×10^1 |
| ²³⁴ Pa | 2.82×10^{-3} | 1.36×10^{-2} | -1.08×10^{-2} | -7.93×10^1 |
| ^{234m} Pa | 2.17×10^0 | 1.05×10^1 | -8.33×10^0 | -7.93×10^1 |
| ²⁰⁹ Pb | 3.68×10^{-2} | 1.17×10^{-1} | -8.02×10^{-2} | -6.85×10^1 |
| ²¹⁰ Pb | 2.13×10^{-7} | 7.16×10^{-6} | -6.95×10^{-6} | -9.70×10^1 |
| ²¹¹ Pb | 3.95×10^{-6} | 7.58×10^{-4} | -7.54×10^{-4} | -9.95×10^1 |
| ²¹² Pb | 2.69×10^0 | 7.36×10^{-2} | 2.62×10^0 | 3.55×10^3 |
| ²¹⁴ Pb | 1.36×10^{-6} | 3.58×10^{-5} | -3.44×10^{-5} | -9.62×10^1 |
| ¹⁰⁷ Pd | 2.88×10^{-6} | 1.73×10^{-5} | -1.44×10^{-5} | -8.33×10^1 |
| ¹⁴⁷ Pm | 3.51×10^2 | 1.07×10^1 | 3.40×10^2 | 3.18×10^3 |
| ²¹⁰ Po | 2.13×10^{-7} | 7.16×10^{-6} | -6.95×10^{-6} | -9.70×10^1 |
| ²¹¹ Po | 1.20×10^{-8} | 2.12×10^{-6} | -2.11×10^{-6} | -9.94×10^1 |
| ²¹² Po | 1.72×10^0 | 4.72×10^{-2} | 1.67×10^0 | 3.54×10^3 |
| ²¹³ Po | 3.60×10^{-2} | 1.15×10^{-1} | -7.90×10^{-2} | -6.87×10^1 |
| ²¹⁴ Po | 1.36×10^{-6} | 3.57×10^{-5} | -3.43×10^{-5} | -9.62×10^1 |
| ²¹⁵ Po | 3.95×10^{-6} | 7.58×10^{-4} | -7.54×10^{-4} | -9.95×10^1 |
| ²¹⁶ Po | 2.69×10^0 | 7.36×10^{-2} | 2.62×10^0 | 3.55×10^3 |
| ²¹⁸ Po | 1.34×10^{-6} | 3.58×10^{-5} | -3.45×10^{-5} | -9.63×10^1 |
| ¹⁴⁴ Pr | 1.78×10^0 | 5.07×10^0 | -3.29×10^0 | -6.49×10^1 |
| ²³⁶ Pu | NR | NR | 0.00×10^0 | 0.00×10^0 |
| ²³⁸ Pu | 3.61×10^3 | 1.45×10^3 | 2.16×10^3 | 1.49×10^2 |
| ²³⁹ Pu | 5.38×10^3 | 1.03×10^4 | -4.92×10^3 | -4.78×10^1 |
| ²⁴⁰ Pu | 1.68×10^3 | 5.07×10^3 | -3.39×10^3 | -6.69×10^1 |
| ²⁴¹ Pu | 1.12×10^5 | 1.42×10^5 | -3.00×10^4 | -2.11×10^1 |
| ²⁴² Pu | 4.74×10^{-1} | 1.50×10^{-1} | 3.24×10^{-1} | 2.16×10^2 |
| ²⁴³ Pu | 9.33×10^0 | NR | 9.33×10^0 | 0.00×10^0 |
| ²⁴⁴ Pu | 1.10×10^{-3} | 2.21×10^{-11} | 1.10×10^{-3} | 4.98×10^9 |
| ²²³ Ra | 3.99×10^{-6} | 7.58×10^{-4} | -7.54×10^{-4} | -9.95×10^1 |
| ²²⁴ Ra | 2.69×10^0 | 7.36×10^{-2} | 2.62×10^0 | 3.55×10^3 |

Table DATA-F-B-28. WIPP Disposal Radionuclide Inventory Comparison, 1995 to 2001, RH-TRU Waste — Continued¹

| Radionuclide | RH-TRU Waste Curies, 2001 | RH-TRU Waste Curies, 1995 | delta | % change |
|--------------------|---------------------------|---------------------------|------------------------|---------------------|
| ²²⁵ Ra | 3.69×10^{-2} | 1.17×10^{-1} | -8.01×10^{-2} | -6.85×10^1 |
| ²²⁶ Ra | 1.38×10^{-6} | 3.58×10^{-5} | -3.44×10^{-5} | -9.61×10^1 |
| ²²⁸ Ra | 1.69×10^{-1} | 7.77×10^{-2} | 9.13×10^{-2} | 1.18×10^2 |
| ¹⁰⁶ Rh | 6.79×10^{-2} | 1.09×10^1 | -1.08×10^1 | -9.94×10^1 |
| ²¹⁹ Rn | 3.95×10^{-6} | 7.58×10^{-4} | -7.54×10^{-4} | -9.95×10^1 |
| ²²⁰ Rn | 2.69×10^0 | 7.36×10^{-2} | 2.62×10^0 | 3.55×10^3 |
| ²²² Rn | 1.36×10^{-6} | 3.58×10^{-5} | -3.44×10^{-5} | -9.62×10^1 |
| ¹⁰⁶ Ru | 6.79×10^{-2} | 1.09×10^1 | -1.08×10^1 | -9.94×10^1 |
| ¹²⁵ Sb | 4.38×10^0 | 1.89×10^0 | 2.49×10^0 | 1.32×10^2 |
| ¹²⁶ Sb | 4.17×10^{-5} | 3.16×10^{-5} | 1.01×10^{-5} | 3.20×10^1 |
| ^{126m} Sb | 2.98×10^{-4} | 2.25×10^{-4} | 7.30×10^{-5} | 3.24×10^1 |
| ⁷⁹ Se | 4.46×10^{-2} | 1.02×10^{-4} | 4.45×10^{-2} | 4.36×10^4 |
| ¹⁴⁷ Sm | 6.89×10^{-9} | NR | 6.89×10^{-9} | 0.00×10^0 |
| ¹⁵¹ Sm | 5.80×10^2 | 3.57×10^{-1} | 5.80×10^2 | 1.62×10^5 |
| ^{119m} Sn | NR | 9.59×10^{-7} | -9.59×10^{-7} | -1.00×10^2 |
| ^{121m} Sn | 5.15×10^{-4} | 6.69×10^{-3} | -6.18×10^{-3} | -9.23×10^1 |
| ¹²⁶ Sn | 2.98×10^{-4} | 2.25×10^{-4} | 7.30×10^{-5} | 3.24×10^1 |
| ⁹⁰ Sr | 2.46×10^5 | 2.09×10^5 | 3.70×10^4 | 1.77×10^1 |
| ¹⁸² Ta | NR | 4.21×10^{-8} | -4.21×10^{-8} | -1.00×10^2 |
| ⁹⁹ Tc | 1.59×10^2 | 5.85×10^{-3} | 1.59×10^2 | 2.72×10^6 |
| ¹²³ Te | NR | NR | 0.00×10^0 | 0.00×10^0 |
| ^{123m} Te | NR | NR | 0.00×10^0 | 0.00×10^0 |
| ^{125m} Te | 1.06×10^0 | 4.65×10^{-1} | 5.95×10^{-1} | 1.28×10^2 |
| ¹²⁷ Te | NR | 1.71×10^{-9} | -1.71×10^{-9} | -1.00×10^2 |
| ^{127m} Te | NR | 1.75×10^{-9} | -1.75×10^{-9} | -1.00×10^2 |
| ²²⁷ Th | 3.89×10^{-6} | 7.47×10^{-4} | -7.43×10^{-4} | -9.95×10^1 |
| ²²⁸ Th | 2.72×10^0 | 7.36×10^{-2} | 2.65×10^0 | 3.60×10^3 |
| ²²⁹ Th | 3.69×10^{-2} | 1.17×10^{-1} | -8.01×10^{-2} | -6.85×10^1 |
| ²³⁰ Th | 3.76×10^{-4} | 7.56×10^{-3} | -7.18×10^{-3} | -9.50×10^1 |
| ²³¹ Th | 5.23×10^{-2} | 4.63×10^0 | -4.58×10^0 | -9.89×10^1 |
| ²³² Th | 2.81×10^{-1} | 9.25×10^{-2} | 1.89×10^{-1} | 2.04×10^2 |
| ²³⁴ Th | 2.17×10^0 | 1.05×10^1 | -8.33×10^0 | -7.93×10^1 |
| ²⁰⁷ Tl | 3.93×10^{-6} | 7.56×10^{-4} | -7.52×10^{-4} | -9.95×10^1 |
| ²⁰⁸ Tl | 9.71×10^{-1} | 2.65×10^{-2} | 9.45×10^{-1} | 3.56×10^3 |
| ²⁰⁹ Tl | 8.10×10^{-4} | 2.53×10^{-3} | -1.72×10^{-3} | -6.80×10^1 |
| ²³² U | 2.53×10^0 | NR | 2.53×10^0 | 0.00×10^0 |

Table DATA-F-B-28. WIPP Disposal Radionuclide Inventory Comparison, 1995 to 2001, RH-TRU Waste — Continued¹

| Radionuclide | RH-TRU Waste Curies, 2001 | RH-TRU Waste Curies, 1995 | delta | % change |
|------------------|---------------------------|---------------------------|------------------------|---------------------|
| ²³³ U | 3.41×10^1 | 1.58×10^2 | -1.24×10^2 | -7.84×10^1 |
| ²³⁴ U | 2.17×10^1 | 4.27×10^1 | -2.10×10^1 | -4.92×10^1 |
| ²³⁵ U | 9.42×10^{-1} | 4.63×10^0 | -3.69×10^0 | -7.97×10^1 |
| ²³⁶ U | 1.42×10^0 | 9.68×10^{-2} | 1.32×10^0 | 1.37×10^3 |
| ²³⁷ U | 1.75×10^{-2} | 3.48×10^0 | -3.46×10^0 | -9.95×10^1 |
| ²³⁸ U | 1.30×10^2 | 1.05×10^1 | 1.20×10^2 | 1.14×10^3 |
| ²⁴⁰ U | 1.09×10^{-3} | 2.21×10^{-11} | 1.09×10^{-3} | 4.93×10^9 |
| ⁹⁰ Y | 2.43×10^5 | 2.09×10^5 | 3.40×10^4 | 1.63×10^1 |
| ⁹¹ Y | 8.11×10^{-13} | NR | 8.11×10^{-13} | 0.00×10^0 |
| ⁶⁵ Zn | NR | NR | 0.00×10^0 | 0.00×10^0 |
| ⁹³ Zr | 3.39×10^{-1} | 1.32×10^{-3} | 3.38×10^{-1} | 2.56×10^4 |
| ⁹⁵ Zr | 3.43×10^{-14} | 3.02×10^{-1} | -3.02×10^{-1} | -1.00×10^2 |
| Total: | 1.33×10^6 | 1.02×10^6 | 3.12×10^5 | 3.06×10^1 |

-NR Not Reported

-2001 Decayed through 12/31/01

-1995 Decayed through 12/31/95

-Total curies estimated by assuming a volume of (168,485 m³) for CH-TRU waste and (7,079 m³) of RH-TRU waste

| Most Abundant Radionuclides | RH-TRU Waste Activity (Ci) |
|-----------------------------|----------------------------|
| ^{137m} Ba | 3.36×10^5 |
| ¹³⁷ Cs | 3.65×10^5 |
| ²⁴¹ Pu | 1.12×10^5 |
| ⁹⁰ Sr | 2.46×10^5 |
| ⁹⁰ Y | 2.43×10^5 |
| Total | 1.30×10^6 |
| Percent of Total | 9.76×10^1 |

¹ See Page 33 for discussion.

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