

1 **B.3 HSW EIS Waste Processing Assumptions**  
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3 Planning for the management of LLW, MLLW, TRU waste, and WTP waste at the Hanford Site has  
4 been ongoing for several years and has been documented in Anderson and Konynenbelt (1995), Sederburg  
5 (1997), and the Hanford Waste Management Strategic Plan (DOE-RL 2001). These documents formed  
6 the bases for the waste processing assumptions used to develop annual and life-cycle waste flows through  
7 facilities for each alternative. These assumptions specify the processing requirements for a particular  
8 waste stream, how much waste is sent, when the waste is sent, and what happens to the waste as it is  
9 processed. It should be noted that these assumptions were developed for the first draft of the EIS and  
10 cover the time period 2002 through 2046. Although the first year covered by these assumptions has  
11 passed, the environmental impacts would not change significantly by removing the information associated  
12 with 2002.  
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14 The assumptions for management of LLW, MLLW, TRU waste, and WTP wastes are contained in  
15 Tables B.1 through B.4. These assumptions describe how the waste is processed but do not necessarily  
16 specify the facilities at which the waste is managed. The facilities may change depending on the alter-  
17 native. Information about facilities used in each alternative is contained in Section 3.3 of this EIS  
18 (Section 3, Volume I).

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**Table B.1.** Assumptions for Management of Low-Level Waste

Stream Number	Description	Assumptions
NA	General Comments	All waste received after 2032 is assumed to be verified and packaged for disposal. Disposal activities such as Repackage into HICs and In-Trench Grouting will continue through 2046.
1	Category 1 LLW	<p>The majority of Cat 1 LLW will be sent directly to disposal.</p> <p>Disposal of RH Cat 1 LLW results in a 3 to 1 volume increase due to handling criteria.</p> <p>A 5% fraction of the CH Cat 1 LLW in drums and boxes will be selected for verification at WRAP. Large boxes are assumed to be verified at the generating facility. Of the waste selected for verification, 10% is assumed to require glovebox processing. Drums will be processed in WRAP; boxes in the T Plant Complex. Drum processing results in a 60% volume decrease due mainly to compaction. Boxes would not be compacted and therefore processing results in a 50% volume increase.</p> <p>175 m<sup>3</sup> of CH MLLW is assumed to be reclassified as CH Cat 1 LLW and disposed of in FY 2002 (80 m<sup>3</sup>) and FY 2003 (95 m<sup>3</sup>). These volumes have been included in the disposal estimates.</p>
2	Category 3 LLW	<p>Cat 3 LLW requires either Repackaging in HICs or In-Trench Grouting to provide additional stabilization prior to disposal. These options are considered equally viable for CH waste and rather than limit the amount of waste that can be sent to either option, the impacts will be analyzed assuming 100% of the CH Cat 3 LLW will undergo each operation. It is assumed that In-Trench Grouting would not be appropriate for RH Cat 3 LLW. Repackaging in HICs and Trench Grouting are assumed to result in a 3 to 1 increase for CH waste and a 5 to 1 increase for RH waste.</p> <p>A 5% fraction of the CH Cat 3 LLW in drums and boxes will be selected for verification at WRAP. Large boxes are assumed to be verified at the generating facility. Of the waste selected for verification, 10% is assumed to require glovebox processing. Drums will be processed in WRAP; boxes in the T-Plant Complex. Drum processing results in a 60% volume decrease due mainly to compaction. Boxes would not be compacted and therefore processing results in a 50% volume increase.</p>
3	GTC3	This waste stream would be managed in a manner similar to the Cat 3 LLW.
6	Non-Conforming LLW	Non-Conforming LLW currently stored in CWC will be treated in 2008, which is assumed to double the waste volume. The treated waste will be sent directly to disposal.
20	Previously Disposed of Waste in the LLBGs	The current inventory of waste disposed of in the LLBGs is assumed to remain in the LLBGs.

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**Table B.2.** Assumptions for Management of Mixed Low-Level Waste

Stream Number	Description	Assumptions
NA	General Comments	All waste received after 2032 is assumed to be treated, verified, and packaged for disposal.
11	Treated and Ready for Disposal	<p>A 10% fraction of the CH MLLW currently stored or received in a form suitable for disposal will be sent to WRAP for verification. Of the current inventory selected for verification, 20% is assumed to be verified each year from FY 2002 to FY 2006. Newly generated waste will be verified in the year it is received.</p> <p>20% of the current inventory will be disposed of each year from FY 2002 to FY 2006. Newly generated waste will be disposed in the year it is received.</p> <p>175 m<sup>3</sup> of currently stored MLLW is expected to be reclassified as LLW and disposed in the LLBGs in FY 2002 (80 m<sup>3</sup>) and FY 2003 (95 m<sup>3</sup>).</p> <p>Existing MLLW Trench capacity is assumed to be 22,900 m<sup>3</sup> of CH waste per trench. One cubic meter of RH waste is assumed to displace 5.725 m<sup>3</sup> of CH waste.</p>
12	RH & Non-Standard Packages	RH & Non-Standard Packages will be treated beginning in 2016. The processing rate will be a constant quantity (171 m <sup>3</sup> /yr) sufficient to process all waste by 2032.
13A	CH Inorganic Solids and Debris	<p>10% of the waste will be verified at WRAP. Inventory waste will be verified over a 5-year period at a constant rate starting in 2002; newly generated waste and waste returning from Commercial Treatment Facilities will be verified in the year received or treated.</p> <p>CH Inorganic Solids and Debris will undergo non-thermal treatment beginning in 2003. The treatment rates will be a constant quantity (813 m<sup>3</sup>/yr) sufficient to reduce the storage inventory to zero by 2012. (Note: At the time these assumptions were developed, the target was to reduce the CH MLLW inventory to zero by 2014; however, a constant treatment rate through 2014 results in a negative inventory for this waste stream. Therefore, the rate has been set to reduce the inventory to zero in 2012.) After 2012, wastes will be treated as generated. Treatment is assumed to double the waste volume for disposal.</p>

**Table B.2. (contd)**

Stream Number	Description	Assumptions
13B	CH Organic Solids and Debris	<p>10% of the waste will be verified at WRAP. Inventory waste will be verified over a 5-year period at a constant rate starting in 2002; newly generated waste and waste returning from Commercial Treatment Facilities will be verified in the year received or treated.</p> <p>CH Organic Solids and Debris will undergo thermal treatment beginning in 2003. The treatment rates will be a constant quantity (417 m<sup>3</sup>/yr) sufficient to reduce the storage inventory to zero by 2014. After 2014, wastes will be treated as generated. Treatment is not expected to change the waste volume for disposal.</p> <p>(Note: The Hanford Site has an existing contract for thermal treatment requiring 120 m<sup>3</sup> of waste to be treated each year from 2003 to 2005. In all alternatives, this contract is assumed to be fulfilled.)</p>
14	Elemental Lead	<p>Elemental Lead will undergo non-thermal treatment beginning in 2003. The treatment rates will be a constant quantity (46 m<sup>3</sup>/yr) sufficient to reduce the storage inventory to zero by 2014. After 2014, wastes will be treated as generated. Treatment is assumed to double the waste volume for disposal.</p>
15	Elemental Mercury	<p>Elemental Mercury will undergo non-thermal treatment beginning in 2003. The treatment rates will be a constant quantity (2 m<sup>3</sup>/yr) sufficient to reduce the storage inventory to zero by 2014. After 2014, wastes will be treated as generated. Treatment is assumed to result in a 15 to 1 increase in the waste volume for disposal.</p>
18	MLLW Trench Leachate	<p>Leachate from the MLLW trenches will be collected and sent to the Effluent Treatment Facility for treatment and disposal through 2025. After 2025, pulse driers will be used to treat the leachate.</p>

**Table B.3.** Assumptions for Management of Transuranic Waste

Stream Number	Description	Assumptions
NA	General Comments	All waste received after 2032 is assumed to be verified, certified, and packaged for shipment.
4	Waste in Trenches	<p>TRU waste retrievably stored in the LLBG trenches is assumed to be retrieved from the LLBGs. Waste in drums will be moved to CWC for storage while waste in boxes and RH waste will be sent directly to the treatment facility as capacity becomes available. All waste will be shipped to WIPP for disposal.</p> <p><b>Retrieval</b> Waste retrieval was analyzed as part of the Hanford Defense Waste EIS (DOE 1987) and is not reanalyzed in this HSW EIS; however, some assumptions were made regarding retrieval to estimate subsequent storage, processing, and disposition impacts.</p> <p>From 2002 to 2006, the retrieval rate is assumed to be 732 m<sup>3</sup> per year. From 2007 to 2014, the rate will increase to 1,361 m<sup>3</sup> per year. Although some boxes and RH waste are likely to be encountered throughout the retrieval efforts, to simplify the analysis it has been assumed that all CH drums are retrieved followed by all CH boxes and finally RH waste. CH drums will be moved to CWC for storage prior to processing. CH boxes and RH waste is assumed to be overpacked and stored in the retrieval trench until processing capacity is available.</p> <p>During retrieval the contents of the CH drums will be determined to be either LLW or TRU waste. 50% of this waste is expected to be reclassified as LLW and remain in the trench as disposed waste.</p> <p><b>Processing</b> Retrievably stored CH drums will be processed at a rate (338 m<sup>3</sup>/yr) sufficient to work off the inventory by the startup of processing of non-standard TRU wastes in 2013. Drum processing will result in a LLW Cat 1 volume equal to 10% of the TRU volume.</p> <p>RH and non-standard TRU waste processing is expected to reduce the volume of TRU by approximately 10% and generate volumes of LLW and MLLW roughly 30% and 2% of the original volume respectively. A portion (approximately 30%) of the LLW generated during RH waste processing is assumed to be LLW Cat 3. RH and non-standard TRU waste will be processed starting in 2015 and waste in 2013 respectively. The processing rate will be a constant quantity (366 m<sup>3</sup>/yr CH and 10 m<sup>3</sup>/yr RH) sufficient to process all waste by 2032. A ramp up in capacity of one-third the first year and two-thirds the second was assumed for CH processing. No ramp up is assumed for RH as the facility will have experience with RH waste from processing the K Basins Sludge.</p> <p><b>Shipment to WIPP</b> Waste is assumed to be shipped to WIPP in the year it is processed.</p>

**Table B.3. (contd)**

Stream Number	Description	Assumptions
5	Waste in Caissons	<p>TRU waste retrievably stored in Caissons is assumed to be retrieved and shipped directly to the processing facility.</p> <p><b>Retrieval</b> Waste retrieval was analyzed in the Hanford Defense Waste EIS (DOE 1987) and is not reanalyzed in this HSW EIS; however, some assumptions were made regarding retrieval to estimate subsequent storage, processing, and disposition impacts.</p> <p>Caisson retrieval is assumed to occur from 2015 to 2018 at a rate of 6 m<sup>3</sup> per year.</p> <p><b>Processing</b> Caisson wastes will be processed immediately after retrieval at a constant rate from 2015 to 2018. Processing will result in a 2 to 1 volume increase.</p> <p><b>Shipment to WIPP</b> Waste is assumed to be shipped to WIPP in the year it is processed.</p>
8	Commingled PCB Waste	<p>Commingled PCB waste will be processed beginning in 2013. The processing rate will be a constant quantity (5 m<sup>3</sup>/yr) sufficient to process all waste by 2032 with a ramp up in capacity of 1/3 the first year and 2/3 the second. Waste is assumed to be shipped to WIPP in the year it is processed.</p>
9	Newly Generated and Existing CH Standard Containers	<p>CH TRU waste in drums and SWBs will be stored in CWC awaiting certification and shipment to WIPP. Newly generated and existing drums in above ground storage will be processed at a constant rate through 2032 (197 m<sup>3</sup> NDE/NDA and 25 m<sup>3</sup> glovebox). SWBs will be processed as generated through 2007 (average 250 m<sup>3</sup>/yr). After 2007, the rate will be constant at 801 m<sup>3</sup>/yr. This rate will result in all TRU waste in SWBs being shipped to WIPP by 2032.</p> <p>5% of drums assayed are assumed to be reclassified as LLW.</p> <p>10% of newly generated drums and 35% of existing drums will require glovebox processing. Glovebox processing will result in a 10% volume increase.</p> <p>Waste is assumed to be shipped to WIPP in the year it is processed.</p>
10A	Newly Generated and Existing CH Non-Standard Containers	<p>CH waste in non-standard containers will be processed beginning in 2013. The processing rate will be a constant quantity (57 m<sup>3</sup>/yr) sufficient to process all waste by 2032 with a ramp up in capacity of one-third the first year and two-thirds the second. Processing will result in a 5% increase in the volume of TRU and generate a volume of LLW equal to 20% of the original waste volume. Waste is assumed to be shipped to WIPP in the year it is processed.</p>
10B	Newly Generated and Existing RH	<p>RH waste will be processed beginning in 2015. The processing rate will be a constant quantity (121 m<sup>3</sup>/yr) sufficient to process all waste by 2032. No ramp up is assumed as the facility will have experience with RH waste from processing the K Basins Sludge. Processing will result in a 5% increase in the volume of TRU and generate a volume of LLW equal to 20% of the original waste volume. Waste is assumed to be shipped to WIPP in the year it is processed.</p>
17	K Basins Sludge	<p>K Basins Sludge wastes will be treated in 2013 and 2014. One-third of the waste will be treated in 2013 and two-thirds in 2014. Processing will result in a 3 to 1 volume increase. Waste is assumed to be shipped to WIPP in the year it is processed.</p>

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**Table B.4.** Assumptions for Management of Waste Treatment Plant Wastes

<b>Stream Number</b>	<b>Description</b>	<b>Assumptions</b>
21	Immobilized Low-Activity Waste	ILAW will be disposed of in the year it is received.
22	WTP Melters	WTP Melters will be disposed of in the year they are received.

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