In this scenario for the WTP, DOE would not have the ability to dispose of the ILAW at the Hanford Site. Because of limited storage space for ILAW, tank waste retrieval and operations at the WTP would be jeopardized.

Waste generators (onsite or offsite) would not be able to dispose of waste at Hanford and would have to make other arrangements. The majority of the wastes would require storage at the generator sites. However, storage at multiple sites would not allow DOE to take advantage of the economies of scale possible by consolidating waste management activities. Lastly, most generators are not permitted to store MLLW longer than 90 days. Most onsite and offsite generators do not have onsite storage available, and the need to increase storage capacity could impact cleanup and closure activities and increase environmental impacts at Hanford and other DOE sites.

3.3 Volumes of Waste Considered in Each Alternative

The environmental impacts of the alternatives considered in this EIS will depend in part on the volumes of each waste type managed at the Hanford Site. In order to assess the impacts of different amounts of waste, alternative waste volume scenarios have been analyzed: Hanford Only, Lower Bound, and Upper Bound.

- The **Hanford Only** waste volume consists of 1) the forecast volumes of LLW, MLLW, and TRU waste from Hanford Site generators, 2) the forecast ILAW and melter volumes from treatment of Hanford tank waste, and 3) existing onsite inventories of waste that are already in storage. The analysis also includes waste that has previously been disposed of.

- The **Lower Bound** waste volume consists of 1) the Hanford Only volume, and 2) additional volumes of LLW and MLLW that are currently forecast for shipment to Hanford from offsite facilities. The Lower Bound volume for TRU waste is not substantially greater than the Hanford Only volume, and is not analyzed separately in all cases.

- The **Upper Bound** waste volume consists of 1) the Lower Bound volume, and 2) estimates of additional LLW, MLLW, and TRU waste volumes that may be received from offsite generators as a result of the WM PEIS decisions.

A comparison of the waste volumes used for the HSW EIS analyses is shown in Figure 3.3.

The summary volumes used for each waste type are presented in the following sections. Annual volumes corresponding to the total volumes shown in the tables in this section are listed in Section B.4 of Appendix B (Volume II). These volumes represent the "as-received" volume of waste. As the wastes are treated and prepared for disposal their volumes may change. The changes in volume can be noted in the processing assumptions in Section B.4 of Appendix B (Volume II) and in the flowsheets in Section B.6. A more detailed description of the development of the waste volumes for each type of waste is included in Appendix C (Volume II). The number of significant figures shown in the volume tables can exceed the accuracy of the forecasts but are maintained in the document for consistency of calculations. The radiological and chemical profiles for these waste volumes are in Section B.5 of Appendix B and Appendix F (Volume II), respectively.

3.3.1 LLW Volumes

The alternatives for management of LLW have been analyzed using all three sets of volumes. Table 3.3 shows the volumes of each LLW stream included in each data set. The total LLW in the Hanford Only waste volume is 411,000 m^3. The Lower Bound and Upper Bound waste volumes represent increases of approximately 21,000 m^3 and 220,000 m^3, respectively, compared with the Hanford Only waste volume. The only additional LLW expected to be managed in the Lower Bound and Upper Bound cases are LLW Cat 1 and Cat 3.

Table 3.3. Estimated Volumes of LLW Waste Streams

Waste Streams	Hanford Only (cubic meters)[(a)]	Lower Bound (cubic meters)[(a)]	Upper Bound (cubic meters)[(a)]
Cat 1	88,792	107,883	287,130
Cat 3	39,607	41,334	60,933
GTC3	<1	<1	<1
Non-conforming	299	299	299
Previously disposed waste in LLBG	283,067	283,067	283,067
Total[(b)]	411,765	432,584	631,429

(a) To convert to cubic feet, multiply by 35.3.
(b) Totals may not equal the sum of the waste stream volumes due to rounding.

3.3.2 MLLW Volumes

As with LLW, the alternatives for management of MLLW have been analyzed using all three sets of waste volumes. The MLLW stream volumes included in each data set are shown in Table 3.4. Slightly over 58,400 m^3 is expected to be managed in the Hanford Only case. Only a small amount of additional waste, approximately 100 m^3, is expected to be managed in the Lower Bound case. The additional volume of waste that would be managed under the Upper Bound case is approximately 140,000 m^3. It is assumed in this EIS that the additional MLLW received in the Upper Bound case would be treated prior to receipt at Hanford and that the waste would be disposed of directly. Therefore, this additional MLLW is included in the Treated and Ready for Disposal waste stream.

3.3.3 TRU Waste Volumes

The three sets of volumes developed for TRU waste are presented in Table 3.5. The Hanford Only waste volume is approximately 45,700 m^3. The Lower Bound waste volume is only slightly larger (by approximately 57 m^3). In the Upper Bound case, an additional 1,500 m^3 of TRU waste would be received

Table 3.4. Estimated Volumes of MLLW Waste Streams

Waste Streams[a]	Hanford Only (cubic meters)[b]	Lower Bound (cubic meters)[b]	Upper Bound (cubic meters)[b]
Treated and Ready for Disposal	28,054	28,082	168,419
RH and Non-Standard Packages	2904	2904	2904
CH Inorganic Solids and Debris	20,108	20,111	20,111
CH Organic Solids and Debris	6727	6790	6790
Elemental Lead	600	608	608
Elemental Mercury	21	21	21
Total[c]	58,414	58,515	198,852

(a) Leachate from MLLW trenches has not been included in this table because the volumes are dependent upon the selected alternative. The total volume of leachate from the MLLW trenches by alternative can be found in the flowcharts in Appendix B.
(b) To convert to cubic feet, multiply by 35.3.
(c) Totals may not equal the sum of the waste stream volumes due to rounding.

Table 3.5. Estimated Volumes of TRU Waste Streams

Waste Streams	Hanford Only (cubic meters)[a]	Lower Bound (cubic meters)[a]	Upper Bound (cubic meters)[a]
Waste from trenches	14,552	14,552	14,552
Waste from caissons	23	23	23
Commingled PCB waste	80	95	95
Newly generated and existing CH standard containers	27,719	27,727	28,897
Newly generated and existing CH non-standard containers	1077	1077	1357
Newly generated and existing RH	2157	2191	2241
K Basin sludge	139	139	139
Total TRU waste[b]	45,748	45,805	47,305

(a) Convert to cubic feet, multiply by 35.3.
(b) Totals may not equal the sum of the waste stream volumes due to rounding.

for temporary storage and eventual shipment to WIPP. Because the differences between the three sets of volumes are small, environmental impacts have been evaluated for the Hanford Only and Upper Bound cases only.

3.3.4 Waste Treatment Plant Waste Volumes

Waste volumes expected from the Waste Treatment Plant are shown in Table 3.6. Because these wastes would be generated at Hanford, the Lower Bound and Upper Bound cases are not applicable. The

Table 3.6. Estimated Volumes of WTP Waste Streams Through 2046

Waste Streams	No Action (cubic meters)[(a)]	Action Alternatives (cubic meters)[(a)]
ILAW	350,000	211,000
WTP Melters	6,825	6,825
Total WTP waste	356,825	217,825
(a) To convert to cubic feet, multiply by 35.3.		

volume of ILAW generated by the WTP, however, may vary depending on the waste form produced. For the No Action Alternative, ILAW would be produced in a cullet form and packaged in containers for retrievable disposal in vaults as outlined in the TWRS EIS for the preferred alternative (Phased Implementation). The EIS analysis assumed 140,000 containers would be required, or an equivalent volume of approximately 350,000 m^3. For the action alternatives, ILAW was assumed to be in a monolithic form, packaged in 2.6-m^3 containers for disposal in trenches. Approximately 81,000 containers would be required, or an equivalent volume of approximately 211,000 m^3 (Burbank 2002).

3.4 Comparison of Environmental Impacts Among the Alternatives

For purposes of comparison of impacts among the alternatives in this section, impacts associated with alternative treatment, storage, and disposal actions for each waste type have been combined to provide a consolidated analysis of HSW management operations. These consolidated analyses are referred to as alternative groups, which were described in Section 3.1. The No Action Alternative analysis consists of the No Action activities for each waste type. This approach facilitates comparative presentation of impacts for all Solid Waste Program operations evaluated in this EIS and is necessary where analyses are performed for facilities that are used to manage more than one type of waste. In the alternative group analyses, each of the waste types and activities necessary to manage those wastes are considered. In addition, within the analyses for each alternative group, three alternative waste volume scenarios were considered as described in Section 3.2, namely the Hanford Only, Lower Bound, and Upper Bound waste volumes.

Summary comparisons of impacts among the alternative groups during the operational period and during the long term (10,000 years) after disposal facility closure are presented in Tables 3.7 and 3.8, respectively. The environmental consequences presented in this section represent the incremental impacts from implementing the alternatives for solid waste management described in Section 3.1. The cumulative impacts described in Section 3.4.12 present the proposed action and alternatives in the context of other past, present, and reasonably foreseeable activities to which the waste management operations discussed in this EIS might contribute.

Potential environmental impacts resulting from implementing any of the alternatives are compared in somewhat more detail in the sections that follow. Further details and the supporting analyses for the material presented in this section are provided in Section 5 and its appendixes.