

**241-C WASTE MANAGEMENT AREA
INVENTORY DATA PACKAGE**

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LIST OF TERMS

CWP2	PUREX cladding waste
DOE	U.S. Department of Energy
HDW	Hanford defined waste
PSN	PUREX supernate waste
PSS	PUREX sludge supernate
PUREX	Plutonium-Uranium Extraction Plant
REDOX	Reduction-Oxidation
TBP	Tributyl phosphate (or low-level non-TRU liquid waste)
UPR	unplanned release
UR	Uranium Recovery
WIDS	Waste Information Database System
WMA	Waste Management Area

1.0 Introduction

The C tank farm*[*Note – all Hanford tank farms carry a “241-” designation that is generally ignored in this data package], along with the B, T, and U farms, were the first underground high-level waste storage tanks constructed at the Hanford Site. Initial plans included the construction of four facilities for the recovery of plutonium using the bismuth phosphate process. B Plant and C Plant were to be constructed in 200 East and T Plant and U Plant in 200 West. Only three facilities were constructed and only two of these (B and T Plants) were used for plutonium recovery. The unused U Plant was later used for uranium recovery from the so-called “metal waste”. Later, a pilot plant facility (generally referred to as the “Hot-Semiworks”) was constructed near the C tank farm. Over the time the C farm tanks were used for active waste management, these tanks received wastes from the B Plant bismuth phosphate process, Hot-Semiworks pilot plant operations supporting Reduction-Oxidation (REDOX) and Plutonium-Uranium Extraction Plant (PUREX) startup, and isotope recovery process development, uranium recovery wastes from U Plant, low-level wastes from PUREX, aged PUREX high-level waste supernatant (PSN), PUREX sludge supernatant (PSS), aged REDOX high-level supernatant, and some B Plant isotope recovery process waste streams. A number of tanks in the C farm were designated as “process vessels” for PUREX/B Plant operations. Because of its location, the C farm tanks did not receive evaporator bottoms from either the 242-B-Evaporator or the BY farm in-tank solidification operations.

Over the time (1946 ~ 1980) the C farm was actively used in waste management functions, there were a number of known or suspected waste loss events. These included suspected tank leaks and known waste losses from piping systems. This data package provides current estimates for waste loss events in the WMA C. It also provides inventory estimates for the current contents of the 16 C farm tanks and projected inventories for wastes expected to be left in the tanks after retrieval. This data package also provides a brief description of the tank farm infrastructure, operational history, and methodology used in the development of inventory estimates. Detailed discussions of tank farm construction and operations are available elsewhere (Williams 2001, Wood et al 2003, Brevick 1994, Agnew 1993, DOE-GJO 1998, DOE-GJO 2000, Randall and Price 2001).

2.0 C Farm Facilities

The C Tank Farm is located in the east central portion of the 200 East Area and contains twelve single-shell 100 series and four single-shell 200 series tanks constructed in 1943 and 1944 (Figure 2-1). The 100 series tanks are 75 ft (22.9 m) in diameter, have a 15 ft (4.6 m) operating depth, and have an operating capacity of 530,000 gal (1,892,500 L) each. The 200 series tanks are 20 ft (6.1 m) in diameter with a 17 ft (5.2 m) operating depth and a capacity of 55,000 gal (208,000 L) each. Tank configuration and dimensions are shown in Figure 2-2. The tanks sit below grade with at least 7 ft (2.1 m) of soil cover to provide shielding from radiation exposure to operating personnel. The inlet and outlet lines are located near the top of the liners

(Figure 2-3). Although the C farm tanks were removed from service between 1970 and 1980 (Hanlon 2002), all tanks still contain wastes.

The waste transfer system in the C tank farm includes the 244-CR vault and eight diversion boxes. The 244-CR Vault is located in the C tank farm, south of the tanks (Figure 1). The vault is a two level, multi-cell, reinforced concrete structure constructed below grade (DOE 1993). The 244-CR Vault contains four underground tanks along with overhead piping and equipment. Two tanks (244-CR-001 and 244-CR-011) have diameters of 19.7 ft (6 m), are 19 ft (6 m) tall, and have a capacity of 45,000 gal (170,343 L) each. The other two tanks (244-CR-002 and 244-CR-003) are 14 ft (4 m) in diameter, 12 ft (3.7 m) tall, and have capacities of 14,700 gal (55,494 L) each. This vault was constructed in 1946 to support metal waste recovery from stored in six of the 100 series tanks in C farm. The vault ceased operating in 1988. It was used to transfer waste solutions from processing and decontamination operations (Williams 2001). A schematic of the 244-CR vault is shown in Figure 2-4.

There is a complex network of piping systems within the C tank farm that were constructed over the operational life of the farm. The initial set of waste transfer pipes was installed at the time of tank construction. A new set of waste transfer pipes was installed with each new mission. The final set of waste transfer pipes was installed at ground level and covered with soil for shielding. Schematic drawings for each of the piping systems are available in Williams (2001).

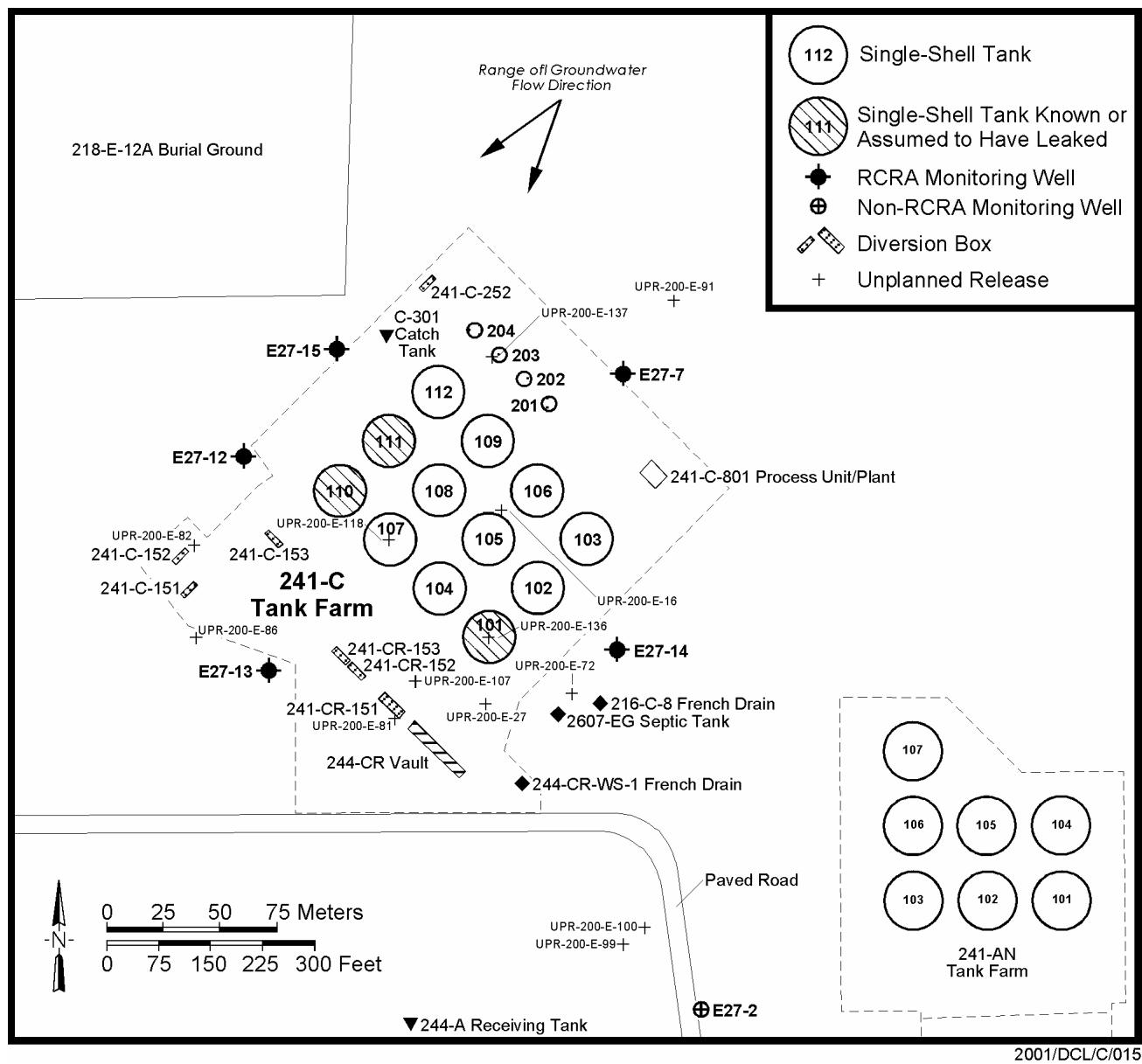
Figure 2-1. Plan Map of WMA C and Surrounding Facilities.

Figure 2-2. Typical Configuration and Dimensions of Single-Shell Tanks in C WMA (from Williams 2001).

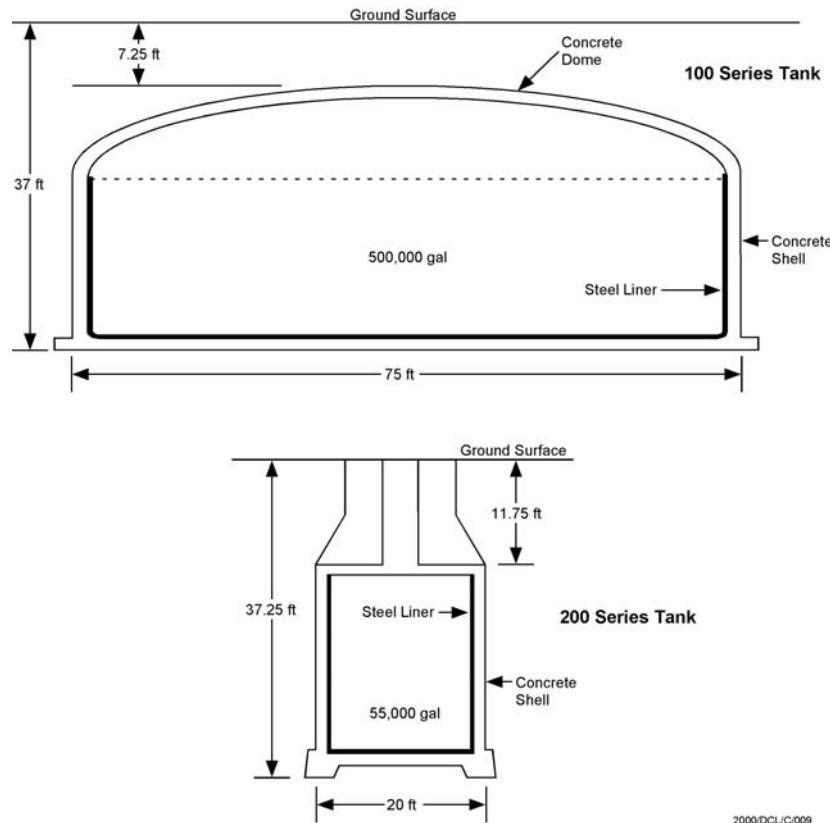


Figure 2-3. Typical Single-Shell Tank Instrumentation Configuration at C WMA (From Williams 2001).

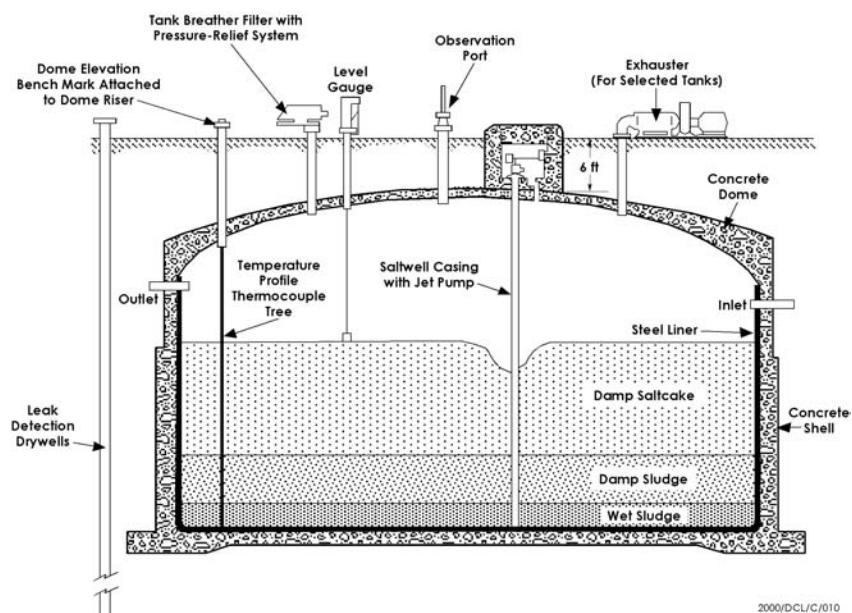
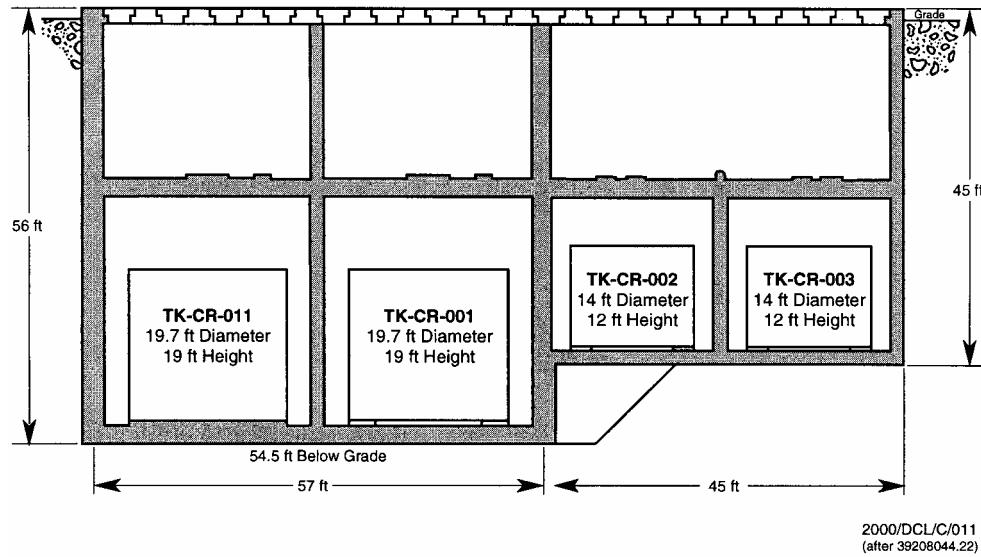


Figure 2-4. Schematic of the 244-CR Vault in WMA C (from DOE/RL-88-21).

3.0 C Farm Operational History

The C farm tanks began receiving wastes from the B Plant bismuth phosphate process in 1946. The high activity waste stream coming from the bismuth phosphate process contained essentially all of the uranium by-product and the vast majority of the fission products (GE 1944). This stream was called “metal waste” because “metal” was the code name for uranium during the Manhattan Project. The first six tanks in the C farm were filled with metal waste. The metal wastes were later sluiced from the tanks (Rodenhizer 1987), transferred to the CR vault, dissolved in acid, and transferred to the U Plant in 200 West Area for uranium recovery. The other six tanks in the C farm tanks were filled with so-called 1st Cycle waste, a much more dilute waste stream coming from the first plutonium dissolution/re-precipitation purification step. The 1st Cycle waste carried approximately 10% of the beta activity (mostly Zr/Nb-95 [GE 1944]) but a much lower fraction of fission products. Cladding wastes were commingled with the 1st Cycle wastes in these tanks. The cladding waste stream originated from the dissolution of the aluminum cladding from the fuel rods with a caustic nitrate solution and was a low activity stream. The cladding waste would have been a high aluminum, high hydroxide stream with low activity levels.

The uranium recovery process produced a waste stream at twice the volume of the metal waste recovery processed. This waste stream, called TBP or UR waste, was transferred back to a number of the C farm tanks. To free up tank space for TBP wastes, the 1st Cycle waste from C tanks was processed through the B Evaporator. The TBP wastes stored in C farm tanks were processed through the CR Vault for reduction of Cs-137 using the ferrocyanide scavenging process. The scavenged TBP wastes were transferred back to C farm tanks to allow precipitation of resulting solids. The scavenged TBP waste was then sent to the BC cribs and specific

retention trenches. Inventory estimates for scavenged TBP wastes sent to BC cribs and specific retention trenches are available (Simpson et al 2001).

As C farm tank space became available, it was used to support pilot-plant studies at the Hot-Semiworks and for low activity waste streams from PUREX. By the mid 1960s, C farm tanks were being used to store aged PUREX high-level supernatants (Agnew et al 1997). As the B Plant isotope recovery process came online in 1968, several C farm tanks were used as feeder tanks supporting specific B Plant operations. Thus, many of the C farm tanks had very large volumes of wastes moved through them (Agnew et al 1997). The A tank farm, constructed in 1955, was used primarily to store PUREX high-level wastes. It was operated as a “boiling waste” tank farm. After 3 to 5 years ageing in the “boiling waste” tanks, the PUREX high-level wastes were transferred to other (non-boiling waste) single-shell tanks, including several in the C tank farm. Beginning in 1968, the aged PUREX and REDOX high-level waste supernatants were processed through B Plant for Cs-137 recovery (Buckingham 1967). All of the supernatants feeding the B Plant Cs-137 recovery process were routed through the C farm tank C-105.

The important point here is that C farm tanks received both very high activity and low activity waste streams. The correct identification of specific waste streams involved in waste loss events is critical in developing waste loss inventories.

4.0 C Tank Farm Waste Loss Events

4.1 C Farm Tank Leak History

Three of the twelve primary tanks in C tank farm (C-101, C-110 and C-111) and all four secondary tanks (C-201 through C-204) are listed in Hanlon (2002) as “known or suspected” leakers. Of these, reliable leak estimates are available for none of the tanks. Evidence of tank waste losses to the vadose zone in these locations and other locations indicated by spectral gamma data are summarized below.

As discussed in detail elsewhere (Wood et al 2003, Knepp 2002, Knepp 2003), the baseline spectral gamma logging data provide the best general survey of gamma-emitting radionuclide contamination in the single-shell tank farms. Cesium-137 is generally the most abundant radionuclide reported in these data. It was present in significant quantities in most process waste streams stored in single-shell tanks, has a 30 yr half-life, and binds strongly with the Hanford soils (Knepp 2002). Thus, Cs-137 activity data provide an excellent marker for past losses of tank waste to the soil column. The spectral gamma logging system has a Cs-137 detection limit of about 0.1 pCi/g and activities levels up to 10^8 or 10^9 pCi/g are reported for some soils contaminated with high-level waste. The spectral gamma logging data were used along with waste transfer records and historical records to reassess the C farm tank leaks (Wood et al 2003).

An overall assessment of the spectral gamma logging data from C farm drywells indicates that most vadose zone contamination originated from surface or near surface sources. This is demonstrated by relatively high concentrations of Cs-137 near surface and a general decrease in Cs-137 activity with depth. Cobalt-60 is found near the bottom of many of the drywell with near surface Cs-137 contamination. This likely indicates that “mobile” Co-60 was driven down from recharge.

Hanlon (2002) lists tank C-101 as a “known or suspected leaker” with a leak volume estimate of 20,000 gallons. Decreases in waste levels were documented in the late 1960s, a time when this tank contained aged PUREX high-level supernatant. A 20,000-gallon loss of this waste type would have released ~127,000 curies of Cs-137 (Simpson 2001), more than all of the Cs-137 projected to have been lost from all of the SX tank farm leaks (Jones et al 2000a). The spectral gamma logging data from drywells around tank C-101 show little evidence of any leaks and certainly nothing of that order of magnitude. The lack of high levels of Cs-137 activity in nearby drywells provides strong evidence that the leak information from Hanlon (2002) is incorrect. A far more likely scenario is the liquid level drops in the late 1960s were associated with evaporation caused by the continuing high heat load of the aged PUREX high-level waste supernatants.

Hanlon (2002) lists tank C-110 as a known or suspected leaker. However, a detailed analysis of the history of the C tank farm (Agnew 1993) attributed liquid level decreases in 1969 to measurement errors and recommended the “leak statue” of this tank be revisited. The current analysis reaches similar conclusions. The spectral gamma logging data and historical waste transfer records provide no definitive evidence of leaks from this tank. The simplest explanation of spectral gamma logging in drywells around this tank is that the widespread surface contamination found its way down the inside or outside of well casings, likely from additions of water to control airborne transport of radionuclides. At tank C-110, small concentrations of Cs-137 are found almost continuously in drywell 30-10-02 between the surface and 63 ft (19 m) bgs. The shallow contamination likely represents surface spills or shallow pipeline leaks (the cascade line between tanks C-110 and C-111 plugged in 1952 [Brevick 1994]), but the contamination between 44 and 63 ft (13 and 19 m) bgs may indicate the occurrence of a small leak. Cs-137 contamination was measured when the drywell was constructed in 1974, indicating the occurrence of a leak prior to this date.

There are no spectral gamma data or well-documented historical record data suggesting leaks occurred at primary tank C-111 and secondary tanks C-201 through C-204. Welty (1988) reported a liquid level drop in 1968 as the basis for questioning the integrity of tank C-111. However, the reliability of this claim was not well-documented (DOE-GJO 2001) and no spectral gamma data from drywells around the tank indicate loss of tank waste. No drywells are present near the 200-series secondary tanks and therefore no means of identifying leaked tank waste is available. In addition, no clear indication of tank leakage has been reported. However, given their small volume, it is concluded that no significant tank waste loss from this tanks has occurred.

Neither tank C-104 nor tank C-105 is listed as a known or suspected leaker (Hanlon 2002). However, the contamination in the region between tanks C-104 and C-105 has been of interest

(Brodeur 1993, Agnew 1993). Both cascade line and spare inlet port waste loss events have been suggested as sources of contamination in this region. The most concentrated contamination occurs at drywell 30-05-07 where two high Cs-137 concentration zones occur at and below the tank bottom. Between 34 and 44 ft (10 and 13 m) bgs and 48 and 62 ft (15 and 19 m), maximum Cs-137 values (10^7 pCi/g and 10^5 pCi/g, respectively) were recorded (DOE-GJO 2000). The general location and profile of the spectral gamma logging data indicate that tank C-105 likely leaked near the bottom on the southwest side very near drywell 30-05-07. The gamma contamination was encountered when drywell 30-05-07 was drilled in 1974. The historical gross gamma data analysis indicates no changes in location or intensity of Cs-137 activity. Thus, if tank C-105 did leak then the leak occurred prior to 1974 and apparently self-sealed because tank C-105 was used as an active Cs-137 recovery feeder tank until 1978. A leak inventory estimate was provided in Table 4-1 for an assumed leak from tank C-105. A nominal leak volume of 1kgal was used for this estimate because there is no basis for establishing an actual leak volume. The aged PUREX high-level waste supernatant template used in this calculation came from Simpson et al (2001).

4.2 C Farm Near-Surface Leak History

Williams (2001) identifies a number of near-surface losses and windblown contamination events in the C tank farm. These events are discussed in unplanned release reports (UPR) (Maxfield 1979). Two of the UPRs involved PUREX high-level waste supernatant and contributed significant inventory to the soil column. A third UPR involved the loss of 136,000 gallons of PUREX aluminum cladding waste. The main interest in including the cladding waste inventory estimate was to highlight the importance of “waste type” in actual inventory lost during waste loss events.

Information about near-surface waste loss events is available on the Waste Information Data Base System (WIDS). The waste loss events are described in WIDS reports URP-200-E-81, UPR-200-E-82, and UPR-200-E-86. Report UPR-200-E-81 describes a 1969 waste loss event that occurred near the 241-CR-151 Diversion Box and involved the loss of 36 kgal (137,000 L) of PUREX cladding waste (Williams 2001, Maxfield 1979). A puddle of contaminated liquid measuring 6 ft by 40 ft was formed. The puddle was backfilled with clean dirt in 1969. The PUREX cladding waste was a reasonably low activity waste stream produced from the caustic dissolution of the aluminum fuel rod cladding. The origin of the radioactive contamination in this waste stream was congruent dissolution of the uranium fuel during the de-cladding operation. It was estimated that 720 Ci of Cs-137 were lost to the soil. Inventory estimates for the waste loss event use the PUREX cladding waste composition used in the Hanford Defined Waste (HDW) Model for PUREX cladding waste (CWP2) (Agnew 1997). These inventory estimates are given in Table 4-1.

WIDS report UPR-200-E-82 describes the loss of Cs-137 Recovery Process feed solution being pumped from tank C-105 to the B Plant. The leak occurred near the 241-C-152 Diversion Box and involved the loss of approximately 2,600 gallons of liquids (Tanaka 1971). Approximately 100 gallons of this fluid surfaced. Surface contamination was covered with clean gravel in 1969. This waste loss event was thoroughly investigated and results are available (Tanaka 1971). It

was estimated that 11,300 Ci of Cs-137 were lost to the soil. The inventory estimate was developed assuming a PUREX high-level waste supernatant template adapted from Simpson et al (2001). These results are listed in Table 4-1.

WIDS report UPR-200-E-86 describes a waste loss event associated with a pipeline break near the southwest corner of the C tank farm. Fluids were being pumped from the 244-AR Vault to the C tank farm. Approximately 17,400 gallons of fluid that contained approximately 25,000 Ci of Cs-137 were lost to the soil (Maxfield 1979). Based on the ratio of Tc-99 to Cs-137 in the irradiated fuel ($\sim 3 \times 10^{-4}$ Ci Tc-99/Ci Cs-137), approximately 7.5 Ci of Tc-99 were lost. This waste stream most likely originated from the water washing of PUREX sludge intended to remove Cs-137 (and other waste soluble components) from the sludge prior to acidification and Sr-90 recovery. Composition estimates for the PUREX sludge supernatant are given in Larson (1967) and in Agnew (1997). The inventory estimate was developed using the “AR waste type” template (Agnew 1997). These results are listed in Table 4-1.

There is generalized near-surface contamination across the C tank farm. About a dozen of the drywells in the farm have Cs-137 gamma activity that peaks at or above 100 pCi/g in the upper 15 feet of the soil column; however, most contaminated drywells are around 10 pCi/g. An inventory estimate based on this level of Cs-137 contamination is insignificant when compared to other Cs-137 inventory estimates in this tank farm. For example, if one assumes a surface area of 400 ft by 400 ft down to a depth of 15 ft with a soil density of 1.7 g/ml and a Cs-137 contamination level of 10 pCi/g, the estimated inventory of Cs-137 is 1.1 Ci. Even if this Cs-137 inventory estimate increased by 2 or 3 orders of magnitude it would still be insignificant. Based on these calculations it is clear that near-surface contamination inventories will be dominated by high activity waste loss events.

Table 4-1. Inventory Estimates for C Farm Waste Loss Events (2 sheets)

Tank	C-105	UPR-200-E-81	UPR-200-E-82	UPR-200-E-86
Leak Vol.	1 kgal	36 Kgal	2,600 gal	17,400 gal
Analyte	kg	kg	kg	Kg
Na	4.49E+02	5.10E+03	1.17E+03	2.14E+03
Al	1.52E+01	2.32E+03	3.96E+01	3.93E+01
Fe	2.69E+00	1.53E+01	6.99E+00	7.41E+00
Cr	9.82E+00	2.18E+01	2.55E+01	5.88E+01
Bi	9.66E-02	0.00E+00	2.51E-01	1.60E-01
La	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hg	1.85E-03	2.75E-01	4.82E-03	4.84E-03
Zr	7.57E-04	0.00E+00	1.97E-03	4.27E-04
Pb	2.94E-01	4.54E+01	7.65E-01	8.14E-01
Ni	2.53E+00	1.23E+01	6.59E+00	6.99E+00
Sr	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mn	2.72E-01	0.00E+00	7.06E-01	9.67E+00
Ca	8.70E+00	4.93E+01	2.26E+01	2.38E+01
K	2.97E+00	1.34E+01	7.72E+00	1.98E+01
NO3	3.15E+02	5.79E+03	8.18E+02	1.21E+03
NO2	2.69E+02	1.82E+03	6.98E+02	1.45E+03
CO3	6.46E+01	7.40E+01	1.68E+02	5.79E+02
PO4	1.64E+00	0.00E+00	4.25E+00	1.48E+02
SO4	8.64E+01	1.66E+02	2.25E+02	5.19E+02
Si	1.84E+01	0.00E+00	4.79E+01	1.71E+02
F	4.41E-01	0.00E+00	1.15E+00	4.89E-01
Cl	1.14E+01	5.59E+01	2.95E+01	4.46E+01
DBP	4.33E+01	0.00E+00	1.12E+02	0.00E+00
Butanol	1.52E+01	0.00E+00	3.96E+01	0.00E+00
TBP	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NPH	0.00E+00	0.00E+00	0.00E+00	0.00E+00
U-Total	7.06E+00	1.30E+02	1.83E+01	3.73E+01
Radionuclides				
Analyte	Ci	Ci	Ci	Ci
H-3	6.62E-01	9.95E-02	1.72E+00	3.89E-01
C-14	2.76E-01	1.40E-02	7.17E-01	8.86E-01
Ni-59	3.50E-02	3.93E-03	9.11E-02	9.59E-02
Ni-63	3.39E+00	3.96E-01	8.81E+00	9.39E+00
Co-60	1.95E-01	2.03E-02	5.08E-01	8.99E-01
Se-79	3.84E-02	3.10E-03	9.99E-02	1.32E-01
Sr-90	6.55E+02	3.29E+02	1.70E+03	2.25E+03
Y-90	6.53E+02	3.29E+02	1.70E+03	2.25E+03
Zr-93	1.91E-01	1.45E-02	4.97E-01	6.61E-01
Nb-93m	1.34E-01	1.06E-02	3.48E-01	4.63E-01
Radionuclides				

Table 4-1. Inventory Estimates for C Farm Waste Loss Events (2 sheets)

Tank	C-105	UPR-200-E-81	UPR-200-E-82	UPR-200-E-86
Analyte	Ci	Ci	Ci	Ci
Tc-99	1.93E+00	1.02E-01	5.01E+00	6.22E+00
Ru-106	6.76E-06	3.36E-05	1.76E-05	3.31E-04
Cd-113m	1.05E+00	7.07E-02	2.74E+00	3.97E+00
Sb-125	4.94E-01	1.11E-01	1.28E+00	3.37E+00
Sn-126	5.76E-02	4.74E-03	1.50E-01	1.98E-01
I-129	3.73E-03	1.97E-04	9.69E-03	1.20E-02
Cs-134	1.54E-02	7.34E-03	3.99E-02	1.53E-01
Cs-137	6.33E+03	3.79E+02	1.65E+04	2.08E+04
Ba-137m	5.97E+03	3.58E+02	1.55E+04	1.96E+04
Sm-151	1.34E+02	1.12E+01	3.48E+02	4.63E+02
Eu-152	3.03E-02	2.56E-03	7.89E-02	1.49E-01
Eu-154	4.29E+00	4.01E-01	1.12E+01	1.92E+01
Eu-155	1.71E+00	1.84E-01	4.46E+00	9.79E+00
Ra-226	1.19E-06	2.01E-07	3.10E-06	1.32E-06
Ra-228	1.34E-06	2.11E-04	3.48E-06	1.67E-06
Ac-227	7.22E-06	4.93E-05	1.88E-05	2.38E-05
Pa-231	4.00E-05	2.74E-04	1.04E-04	1.32E-04
Th-229	6.09E-07	9.51E-05	1.58E-06	7.74E-07
Th-232	2.87E-06	4.51E-04	7.46E-06	7.14E-06
U-232	9.18E-05	8.82E-03	2.39E-04	4.19E-03
U-233	3.59E-04	3.43E-02	9.33E-04	1.62E-02
U-234	2.33E-03	4.62E-02	6.06E-03	1.29E-02
U-235	9.90E-05	1.89E-03	2.57E-04	5.35E-04
U-236	4.55E-05	1.38E-03	1.18E-04	3.55E-04
U-238	2.36E-03	4.36E-02	6.13E-03	1.24E-02
Np-237	7.70E-03	7.63E-04	2.00E-02	1.94E-02
Pu-238	2.80E-03	2.88E-02	7.28E-03	1.24E-01
Pu-239	1.77E-01	1.20E+00	4.61E-01	5.24E+00
Pu-240	2.68E-02	2.14E-01	6.97E-02	8.60E-01
Pu-241	2.08E-01	2.30E+00	5.41E-01	8.93E+00
Pu-242	7.69E-07	6.49E-06	2.00E-06	4.37E-05
Am-241	5.75E-01	8.70E-02	1.50E+00	1.98E+00
Am-243	5.81E-06	9.18E-07	1.51E-05	4.36E-05
Cm-242	6.06E-04	3.70E-05	1.58E-03	3.56E-03
Cm-243	1.61E-05	1.02E-06	4.19E-05	2.00E-04
Cm-244	5.00E-04	3.49E-05	1.30E-03	6.61E-03

5.0 Development of Waste Loss Inventory Estimates

Inventory estimates included in Table 4-1 were based on the Hanford Defined Waste (HDW) Model (Agnew 1997). This model combines waste transfer records and process flow sheet data to develop waste compositions for each tank over its operating lifetime. The HDW Model provides representative compositions for specific waste types such as PUREX high-level supernatant (PSN), PUREX sludge supernatant (PSS), and PUREX cladding waste (CWP2). The approach used in developing quantitative leak inventory estimates for C farm waste loss events is the same as that used in previous tank leak inventory estimates (Jones et al 2000a, 2000b, Jones et al 2001, Simpson et al 2001). The best estimates of actual leak volumes were combined with waste composition estimates at the suspected time of the waste loss events using either the HDW Model (Agnew 1997) or by combining waste-type templates with volumes.

6.0 Inventory Estimates for Wastes Currently Stored in C Farm Tanks

Best-basis inventory estimates for waste currently stored in C farm tanks were compiled for inclusion in the “Inventory and Source Term Data Package” (DOE/ORP-2003-02 2003). These results are provided in Table 6-1.

7.0 Inventory Estimates for Wastes Remaining After Retrieval

Inventory estimates were developed for the wastes assumed to remain in the tank after retrieval (DOE/ORP-2003-02 2003). Three sets of data were developed. The simplest approach was to assume that 360 cubic feet of the waste currently in the tank remained after retrieval. A second set of inventory estimates were developed assuming that the sludge fraction of the current waste preferentially remained in the tank. The third set of data was based on an HTOWS Model output combined with retrieval assumptions. The three sets of data are listed in Table 7-1, 7-2, and 7-3.

8.0 Inventory Estimates for CR Vault

As previously described, there are four tanks within the CR Vault each of which contains waste materials. Tanks within the CR Vault were used to support metal waste recovery from the C farm single-shell tanks and later to support the B Plant isotope recovery program. One of the tanks was later used to support C farm saltwell pumping activities. There is considerable uncertainty about the volume of wastes currently in the CR Vault tanks and their compositions.

However, as part of a hazards evaluation for the CR Vaults, limited inventory estimates were developed for the contents of each of the CR Vault tanks (Grams et al 1999). These estimates were developed by evaluating waste transfer records (Anderson 1990) to identify the last documented transfers into the vault tanks and best-basis inventory composition estimates for the transferred wastes. Inventory estimates were generally limited to a few gamma-emitting radionuclides.

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Table 6-1. Best Basis Inventory (2 sheets)

Analyte	Standard Units of Measure	C-101	C-102	C-103	C-104	C-105	C-106	C-107	C-108	C-109	C-110	C-111	C-112	C-201	C-202	C-203	C-204
Baseline Status	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baseline Status
106Ru	Ci	4.08E-09	6.27E-06	4.15E-05	1.81E-04	7.41E-09	1.69E-05	1.13E-02	7.62E-11	5.98E-07	5.88E-11	4.66E-07	9.51E-10	1.36E-07	1.42E-07	2.71E-07	1.75E-07
113mCd	Ci	2.27E-01	5.90E-01	4.23E+01	1.93E+01	3.13E-01	1.77E+01	1.19E+03	1.76E-01	5.81E-01	1.46E-01	5.14E-01	5.81E-01	7.20E-02	7.50E-02	1.44E-01	9.24E-02
125Sb	Ci	1.49E-02	2.21E-01	9.70E+00	1.77E+02	2.51E-02	2.83E+00	7.42E+00	3.65E-03	1.46E-02	2.90E-03	1.25E-02	3.89E-01	1.41E-03	1.47E-03	2.81E-03	1.81E-03
126Sn	Ci	1.30E-02	2.63E-02	1.15E+01	1.72E+00	1.63E-02	2.14E+00	6.37E+01	1.28E-02	4.29E-02	1.07E-02	3.79E-02	4.15E-02	5.61E-03	5.85E-03	1.12E-02	7.21E-03
129I	Ci	1.34E-03	2.74E-03	6.62E-02	7.54E-01	9.30E-02	1.70E-02	4.83E-02	1.32E-03	2.00E-03	1.10E-03	2.01E-03	4.26E-03	2.74E-05	2.85E-05	5.46E-05	3.52E-05
134Cs	Ci	2.03E-04	1.07E-02	2.06E-01	4.50E-02	3.56E-04	7.07E-02	4.90E-01	6.61E-04	1.39E-03	6.43E-05	1.45E-03	2.65E-01	7.46E-07	7.78E-07	1.49E-06	9.59E-07
137Cs	Ci	3.64E+04	2.98E+04	9.61E+04	9.55E+04	8.18E+04	1.75E+04	6.35E+04	8.15E+04	1.71E+05	1.44E+04	1.96E+04	2.85E+05	7.87E+01	8.22E+01	1.57E+02	1.01E+02
137mBa	Ci	3.44E+04	2.82E+04	9.09E+04	9.03E+04	7.74E+04	1.66E+04	6.01E+04	7.71E+04	1.62E+05	1.37E+04	1.85E+04	2.69E+05	7.45E+01	7.77E+01	1.48E+02	9.59E+01
14C	Ci	1.00E-01	2.83E-01	4.89E+00	1.85E+00	5.07E-01	5.73E-02	3.80E+00	1.31E-01	1.63E-02	3.33E-01	1.62E-01	3.61E+00	2.01E-03	2.09E-03	4.00E-03	2.58E-03
151Sm	Ci	7.29E+01	1.32E+02	6.40E+04	9.40E+03	8.99E+01	1.19E+04	6.36E+05	7.51E+01	2.43E+02	6.29E+01	2.16E+02	2.42E+02	3.12E+01	3.25E+01	6.22E+01	4.01E+01
152Eu	Ci	1.29E-01	7.72E-01	1.86E+01	2.43E+00	1.42E-01	3.28E+00	1.17E+02	1.31E-01	1.99E+00	1.63E-02	1.61E+00	5.12E-01	4.05E-01	4.22E-01	8.08E-01	5.20E-01
154Eu	Ci	5.70E-01	3.30E+01	5.49E+03	1.10E+03	9.06E-01	2.67E+02	1.60E+03	5.78E-01	1.34E+00	1.43E+00	1.17E+00	2.21E+02	1.91E-01	1.99E-01	3.80E-01	2.45E-01
155Eu	Ci	4.41E+00	2.61E+01	3.29E+03	8.05E+02	4.28E+00	1.89E+02	1.04E+03	2.84E+00	1.90E+01	1.08E+00	5.73E+01	1.53E+02	1.42E+01	1.48E+01	2.83E+01	1.82E+01
226Ra	Ci	3.38E-06	7.47E-04	2.47E-03	6.27E-03	2.82E-06	4.10E-04	2.16E-02	5.86E-06	2.94E-04	5.13E-06	2.31E-04	1.83E-05	6.52E-05	6.79E-05	1.30E-04	8.37E-05
227Ac	Ci	2.19E-05	2.01E+01	1.39E-02	1.09E+02	1.89E-05	2.31E-03	1.41E-01	3.70E-05	1.17E-03	3.22E-05	9.25E-04	1.16E-04	2.56E-04	2.66E-04	5.10E-04	3.28E-04
228Ra	Ci	2.18E-10	2.63E+00	1.54E-04	2.26E+01	1.41E-10	3.15E-05	4.85E-02	3.62E-10	1.33E-09	5.99E-11	1.19E-09	1.38E-09	1.78E-10	1.85E-10	3.54E-10	2.28E-10
229Th	Ci	8.22E-08	1.62E-01	1.32E-04	9.41E-01	5.11E-08	2.43E-05	2.43E-03	1.39E-07	5.05E-07	1.90E-08	4.51E-07	5.32E-07	6.63E-08	6.91E-08	1.32E-07	8.52E-08
231Pa	Ci	3.98E-05	2.96E+01	1.79E-02	2.39E+02	3.55E-05	3.37E-03	1.92E-01	6.50E-05	1.23E-04	5.66E-05	1.18E-04	2.04E-04	8.65E-06	9.01E-06	1.73E-05	1.11E-05
232Th	Ci	2.50E-11	3.24E-02	3.07E-05	5.58E+00	2.91E-11	2.54E-03	7.28E-02	2.88E-11	4.19E-11	2.43E-11	4.28E-11	9.24E-11	4.78E-13	4.98E-13	9.54E-13	6.14E-13
232U	Ci	1.19E-04	2.28E-01	5.35E-02	1.93E+01	1.58E-04	5.30E-04	5.45E-03	5.59E-07	5.64E-05	7.21E-06	4.71E-05	1.44E-01	4.15E-09	2.60E-08	8.27E-09	5.35E-09
233U	Ci	4.62E-06	9.58E-01	2.20E-01	4.13E+02	5.65E-06	2.18E-03	2.26E-02	3.58E-08	2.52E-06	4.62E-07	1.84E-06	5.99E-01	2.66E-10	7.31E-10	5.30E-10	3.42E-10
234U	Ci	3.14E+00	2.72E+00	1.95E+00	2.08E+01	3.21E+00	4.31E-02	5.63E-01	5.03E-02	1.44E+00	6.51E-01	1.40E+00	7.98E+00	3.75E-04	3.99E-04	7.47E-04	4.82E-04
235U	Ci	1.36E-01	1.17E-01	8.32E-02	6.03E-01	1.37E-01	1.84E-03	1.37E-01	2.26E-03	5.75E-02	2.93E-02	6.10E-02	3.50E-01	1.69E-05	1.68E-05	3.36E-05	2.17E-05
236U	Ci	4.48E-02	4.45E-02	3.48E-02	6.84E-01	5.56E-02	7.66E-04	8.92E-02	3.22E-04	2.09E-02	4.16E-03	1.85E-02	9.88E-02	2.39E-06	9.28E-06	4.77E-06	3.08E-06
237Np	Ci	4.44E-03	9.38E-03	1.08E-01	4.39E+00	5.61E-03	2.62E-01	8.07E-02	4.32E-03	9.78E-02	3.61E-03	6.46E-03	7.51E-01	4.28E-05	4.46E-05	8.53E-05	5.49E-05
238Pu	Ci	1.04E+01	9.19E+01	6.79E+01	2.27E+02	3.05E+01	3.50E+00	6.81E+01	1.18E-02	1.55E+00	2.05E-01	1.38E+00	8.03E+00	1.45E+00	7.62E-01	3.81E-01	7.76E-03
238U	Ci	3.21E+00	2.72E+00	1.99E+00	1.17E+01	3.29E+00	4.40E-02	3.10E+00	5.09E-02	1.36E+00	6.59E-01	1.42E+00	8.06E+00	3.80E-04	3.96E-04	7.56E-04	4.89E-04
239Pu	Ci	5.35E+02	3.38E+03	4.21E+03	5.47E+03	2.06E+03	7.56E+01	2.16E+03	3.19E+00	6.07E+01	6.78E+01	1.31E+02	8.19E+01	6.48E+01	3.39E+01	1.70E+01	3.47E-01
240Pu	Ci	8.95E+01	6.20E+02	6.49E+02	1.08E+03	3.14E+02	1.54E+01	3.93E+02	2.06E-01	1.03E+01	4.00E+00	1.44E+01	1.30E+01	1.07E+01	5.57E+00	2.79E+00	5.69E-02
241Am	Ci	8.30E+00	1.16E+03	3.13E+03	6.34E+0												

Table 6-1. Best Basis Inventory (2 sheets)

Analyte	Standard Units of Measure	C-101	C-102	C-103	C-104	C-105	C-106	C-107	C-108	C-109	C-110	C-111	C-112	C-201	C-202	C-203	C-204
Baseline Status	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baselined 2001	Baseline Status
99Tc	Ci	6.97E-01	1.32E+00	3.42E+01	5.80E+01	8.14E+01	3.14E+00	3.79E+01	6.19E+00	3.23E+01	3.18E+01	2.70E+00	6.11E+01	1.41E-02	1.47E-02	2.82E-02	1.81E-02
Al	kg	6.53E+04	8.25E+04	1.36E+05	9.01E+04	1.72E+05	2.06E+03	5.86E+04	1.89E+04	2.34E+04	1.31E+04	2.86E+04	1.24E+04	2.74E+01	2.86E+01	5.46E+01	3.53E+01
Bi	kg	6.24E+02	2.63E+03	3.63E+02	4.80E+01	3.72E+02	7.79E-01	1.04E+04	4.41E+03	1.14E+03	1.48E+04	1.69E+03	2.04E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ca	kg	3.71E+03	6.82E+03	2.60E+03	2.99E+03	1.97E+03	8.23E+01	1.24E+03	4.59E+03	5.65E+03	1.05E+03	4.00E+03	1.17E+04	1.24E+02	1.30E+02	2.48E+02	1.60E+02
Cl	kg	5.37E+02	1.85E+03	6.09E+02	8.00E+02	3.73E+02	3.21E+01	8.70E+02	2.64E+02	2.78E+02	9.91E+02	2.70E+02	5.32E+02	3.49E+00	9.91E+00	1.29E+01	8.34E+00
Cr	kg	2.99E+02	7.35E+02	6.90E+02	1.46E+03	4.13E+02	6.18E+01	9.30E+02	2.32E+02	1.18E+02	4.20E+02	8.52E+01	1.39E+02	2.29E+00	2.39E+00	4.57E+00	2.95E+00
F	kg	4.76E+02	4.10E+03	1.19E+03	3.46E+04	8.70E+02	1.67E+01	6.39E+03	1.54E+03	6.46E+02	6.75E+03	8.63E+02	4.26E+02	1.25E+01	2.30E+01	3.44E+01	2.22E+01
Fe	kg	1.60E+04	2.02E+04	1.11E+04	2.76E+04	2.82E+03	3.06E+03	1.03E+05	2.60E+03	6.53E+03	9.84E+03	1.33E+04	1.37E+04	1.06E+03	1.11E+03	2.12E+03	1.37E+03
Hg	kg	4.12E+01	1.23E+01	1.61E+02	6.73E+01	1.39E+01	4.46E+00	6.70E+01	2.06E+01	2.15E+00	3.98E-01	0.00E+00	2.77E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
K	kg	5.71E+02	1.43E+03	5.73E+02	1.33E+03	8.60E+02	1.08E+02	4.47E+02	1.37E+02	1.76E+02	5.11E+02	2.88E+02	3.00E+02	6.85E+00	7.15E+00	1.36E+01	8.82E+00
La	kg	1.99E+02	1.99E+02	1.44E+02	4.87E+01	3.65E+02	1.23E+01	2.70E+02	4.41E+00	2.52E+00	1.28E+00	1.05E+02	4.51E+01	1.20E+01	1.25E+01	2.39E+01	1.54E+01
Mn	kg	4.57E+02	1.63E+03	3.38E+02	7.01E+03	1.90E+03	7.59E+02	5.02E+03	5.70E+01	7.21E+01	4.76E+01	8.01E+01	1.23E+02	1.71E-01	1.79E-01	3.41E-01	2.20E-01
Na	kg	5.70E+04	1.06E+05	2.95E+04	1.78E+05	3.29E+04	1.20E+04	9.52E+04	3.41E+04	3.48E+04	7.53E+04	1.27E+04	5.01E+04	4.62E+02	4.82E+02	9.21E+02	5.95E+02
Ni	kg	8.53E+02	6.73E+03	3.42E+03	2.63E+03	1.66E+03	1.06E+02	3.09E+03	3.05E+03	4.57E+03	2.17E+01	4.89E+03	7.78E+03	1.37E+02	1.43E+02	2.73E+02	1.76E+02
NO2	kg	9.18E+03	1.69E+04	1.63E+04	3.65E+04	8.42E+03	1.53E+03	3.53E+04	8.74E+03	1.22E+04	6.53E+03	9.49E+03	2.78E+04	4.18E+01	2.14E+02	2.45E+02	1.58E+02
NO3	kg	6.14E+04	7.32E+04	1.38E+03	1.96E+04	8.14E+03	7.69E+01	4.78E+04	1.57E+04	1.80E+04	9.80E+04	1.73E+04	3.72E+04	2.27E+02	6.39E+02	8.38E+02	5.41E+02
Pb	kg	7.77E+02	1.11E+03	4.46E+02	8.37E+02	3.59E+02	1.61E+02	1.01E+04	3.12E+02	8.27E+02	2.20E+02	1.40E+03	1.48E+03	9.71E+02	1.01E+03	1.93E+03	1.25E+03
PO4	kg	3.37E+04	1.41E+04	3.67E+03	3.21E+03	6.01E+03	9.39E+02	5.88E+04	2.97E+04	2.51E+04	5.68E+04	1.81E+04	3.90E+04	1.00E+01	1.10E+01	2.04E+01	1.32E+01
Si	kg	8.02E+03	3.67E+04	2.75E+04	1.02E+04	3.09E+04	6.78E+01	1.87E+03	2.04E+03	2.14E+03	6.33E+03	2.31E+03	1.55E+03	6.56E+01	6.85E+01	1.31E+02	8.45E+01
SO4	kg	6.38E+03	5.75E+03	2.82E+03	3.42E+03	3.54E+03	4.82E+02	8.43E+03	2.43E+03	2.94E+03	1.11E+04	1.49E+03	7.01E+03	1.14E+01	3.02E+01	4.02E+01	2.59E+01
Sr	kg	2.75E+02	1.58E+02	4.40E+01	8.74E+01	1.43E+02	6.50E+00	2.57E+02	1.49E+02	1.24E+02	1.12E+02	5.74E+01	1.93E+02	2.79E+01	2.91E+01	5.56E+01	3.59E+01
TIC as CO3	kg	1.16E+04	7.60E+04	2.84E+04	4.85E+04	1.65E+04	1.32E+04	1.14E+04	3.79E+03	9.25E+03	9.42E+03	6.75E+03	1.46E+04	6.52E+02	6.66E+02	1.30E+03	8.51E+02
TOC	kg	1.19E+03	1.57E+03	7.74E+03	1.42E+04	4.74E+03	5.25E+02	7.36E+02	3.43E+02	7.60E+02	5.22E+02	2.44E+02	2.42E+03	2.50E+02	2.15E+02	4.54E+02	2.93E+02
UTOTAL	kg	9.61E+03	8.15E+03	5.96E+03	3.53E+04	9.84E+03	1.32E+02	9.29E+03	1.53E+02	4.06E+03	1.97E+03	4.25E+03	2.41E+04	1.14E+00	1.19E+00	2.26E+00	1.46E+00
Zr	kg	1.99E+02	5.15E+03	8.20E+03	6.49E+04	1.80E+02	2.66E+00	7.39E+01	3.11E+01	1.02E+01	1.50E+02	5.31E+01	9.65E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 7-1. Summary of Final Inventory Estimates (post retrieval) Based on Selected Phase Retention following Retrieval with 10.2 kL (360 ft³) remaining (30 ft³ in 200 series tanks) (2 sheets)

Tank	Units	241-C-101	241-C-102	241-C-103	241-C-104	241-C-105	241-C-106	241-C-107	241-C-108	241-C-109	241-C-110	241-C-111	241-C-112	241-C-201	241-C-202	241-C-203	241-C-204	All Tanks
Current Tank Radionuclide Inventory Based on BBI	Ci	6.44E+05	1.26E+06	6.30E+06	1.19E+06	1.12E+06	6.12E+05	5.29E+06	1.76E+05	8.36E+05	3.58E+04	1.82E+06	1.85E+06	1.28E+03	1.24E+03	2.23E+03	1.41E+03	2.11E+07
Current Tank Radionuclide Inventory Based on BBI	Kg	2.88E+05	4.74E+05	2.89E+05	5.83E+05	3.05E+05	3.54E+04	4.70E+05	1.33E+05	1.53E+05	3.14E+05	1.28E+05	2.55E+05	4.11E+03	4.83E+03	8.72E+03	5.65E+03	3.45E+06
Estimate at Closure Total	Ci	1.97E+04	1.07E+04	1.35E+05	1.24E+04	2.28E+04	2.65E+05	5.75E+04	7.17E+03	3.55E+04	5.43E+02	8.55E+04	4.81E+04	2.71E+02	2.63E+02	1.90E+02	1.20E+02	7.01E+05
Estimate at Closure Total	Kg	8.83E+03	4.04E+03	5.53E+03	6.07E+03	6.23E+03	5.57E+03	5.09E+03	5.44E+03	6.49E+03	4.77E+03	6.03E+03	6.60E+03	8.72E+02	1.03E+03	7.41E+02	4.80E+02	7.38E+04
106Ru	Ci	1.25E-10	5.34E-08	7.77E-07	1.88E-06	1.51E-10	2.56E-06	1.23E-04	3.11E-12	2.54E-08	8.93E-13	2.19E-08	2.47E-11	2.89E-08	3.02E-08	2.30E-08	1.49E-08	1.28E-04
113mCd	Ci	6.94E-03	5.03E-03	7.88E-01	2.01E-01	6.39E-03	2.59E+00	1.29E+01	7.19E-03	2.47E-02	2.21E-03	2.41E-02	1.51E-02	1.53E-02	1.59E-02	1.22E-02	7.85E-03	1.66E+01
125Sb	Ci	4.57E-04	1.88E-03	5.42E-02	1.84E+00	5.11E-04	1.78E-01	8.05E-02	1.49E-04	6.19E-04	4.40E-05	5.89E-04	1.01E-02	2.99E-04	3.12E-04	2.39E-04	1.54E-04	2.17E+00
126Sn	Ci	3.97E-04	2.25E-04	2.43E-01	1.79E-02	3.32E-04	8.02E-01	6.91E-01	5.22E-04	1.82E-03	1.61E-04	1.78E-03	1.08E-03	1.19E-03	1.24E-03	9.52E-04	6.13E-04	1.76E+00
129I	Ci	4.09E-05	2.34E-05	1.13E-03	7.84E-03	1.90E-03	3.67E-03	5.24E-04	5.37E-05	8.46E-05	1.67E-05	9.47E-05	1.11E-04	5.82E-06	6.05E-06	4.64E-06	2.99E-06	1.55E-02
134Cs	Ci	6.21E-06	9.09E-05	1.36E-03	4.68E-04	7.27E-06	4.43E-03	5.32E-03	2.69E-05	5.91E-05	9.77E-07	6.80E-05	6.86E-03	1.58E-07	1.65E-07	1.27E-07	8.15E-08	1.87E-02
137Cs	Ci	1.11E+03	2.54E+02	1.79E+03	9.93E+02	1.67E+03	5.05E+03	6.89E+02	3.33E+03	7.26E+03	2.19E+02	9.20E+02	7.39E+03	1.67E+01	1.75E+01	1.33E+01	8.58E+00	3.07E+04
137mBa	Ci	1.05E+03	2.40E+02	1.70E+03	9.39E+02	1.58E+03	4.79E+03	6.52E+02	3.14E+03	6.87E+03	2.07E+02	8.71E+02	6.98E+03	1.58E+01	1.65E+01	1.26E+01	8.15E+00	2.91E+04
14C	Ci	3.07E-03	2.41E-03	8.27E-02	1.93E-02	1.03E-02	3.67E-03	4.12E-02	5.35E-03	6.91E-04	5.05E-03	7.63E-03	9.37E-02	4.27E-04	4.44E-04	3.40E-04	2.19E-04	2.77E-01
151Sm	Ci	2.23E+00	1.13E+00	1.36E+03	9.77E+01	1.83E+00	4.48E+03	6.90E+03	3.06E+00	1.03E+01	9.51E-01	1.01E+01	6.29E+00	6.63E+00	6.90E+00	5.28E+00	3.41E+00	1.29E+04
152Eu	Ci	3.95E-03	6.58E-03	3.84E-01	2.53E-02	2.90E-03	1.26E+00	1.27E+00	5.33E-03	8.48E-02	2.48E-04	7.53E-02	1.33E-02	8.60E-02	8.96E-02	6.86E-02	4.42E-02	3.42E+00
154Eu	Ci	1.74E-02	2.82E-01	1.18E+02	1.14E+01	1.85E-02	1.17E+02	1.74E+01	2.36E-02	5.71E-02	2.18E-02	5.49E-02	5.73E+00	4.06E-02	4.23E-02	3.23E-02	2.08E-02	2.70E+02
155Eu	Ci	1.35E-01	2.23E-01	7.05E+01	8.37E+00	8.74E-02	8.07E+01	1.13E+01	1.16E-01	8.05E-01	1.64E-02	2.69E+00	3.97E+00	3.02E+00	3.14E+00	2.40E+00	1.55E+00	1.89E+02
226Ra	Ci	1.03E-07	6.37E-06	5.29E-05	6.53E-05	5.74E-08	1.74E-04	2.34E-04	2.39E-07	1.25E-05	7.73E-08	1.09E-05	4.75E-07	1.38E-05	1.44E-05	1.10E-05	7.11E-06	6.04E-04
227Ac	Ci	6.71E-07	1.71E-01	2.97E-04	1.13E+00	3.85E-07	9.80E-04	1.53E-03	1.51E-06	4.96E-05	4.87E-07	4.34E-05	3.02E-06	5.44E-05	5.65E-05	4.33E-05	2.79E-05	1.31E+00
228Ra	Ci	6.66E-12	2.24E-02	3.31E-06	2.35E-01	2.89E-12	1.09E-05	5.25E-04	1.48E-11	5.67E-11	9.10E-13	5.59E-11	3.57E-11	3.78E-11	3.93E-11	3.01E-11	1.94E-11	2.58E-01
229Th	Ci	2.52E-09	1.38E-03	2.84E-06	9.79E-03	1.04E-09	9.31E-06	2.63E-05	5.65E-09	2.14E-08	2.89E-10	2.12E-08	1.38E-08	1.41E-08	1.47E-08	1.12E-08	7.24E-09	1.12E-02
231Pa	Ci	1.22E-06	2.53E-01	3.81E-04	2.49E+00	7.22E-07	1.25E-03	2.08E-03	2.65E-06	5.21E-06	8.54E-07	5.56E-06	5.28E-06	1.84E-06	1.91E-06	1.47E-06	9.43E-07	2.75E+00
232Th	Ci	7.68E-13	2.76E-04	6.60E-07	5.80E-02	5.93E-13	1.12E-03	7.90E-04	1.17E-12	1.78E-12	3.68E-13	2.01E-12	2.39E-12	1.02E-13	1.06E-13	8.11E-14	5.22E-14	6.02E-02
232U	Ci	3.65E-06	1.94E-03	3.65E-04	2.01E-01	3.22E-06	7.31E-05	5.91E-05	2.28E-08	2.40E-06	1.10E-07	2.21E-06	3.74E-03	8.81E-10	5.52E-09	7.03E-10	4.55E-10	2.07E-01
233U	Ci	1.41E-07	8.17E-03	1.50E-03	4.30E+00	1.15E-07	3.02E-04	2.45E-04	1.46E-09	1.07E-07	7.03E-09	8.65E-08	1.55E-02	5.65E-11	1.55E-10	4.50E-11	2.91E-11	4.32E+00
234U	Ci	9.61E-02	2.32E-02	3.26E-02	2.16E-01	6.55E-02	5.94E-03	6.11E-03	2.05E-03	6.13E-02	9.89E-03	6.56E-02	2.07E-01	7.97E-05	8.47E-05	6.35E-05	4.10E-05	7.92E-01
235U	Ci	4.17E-03	1.00E-03	1.39E-03	6.27E-03	2.79E-03	2.54E-04	1.48E-03	9.23E-05	2.44E-03	4.46E-04	2.87E-03	9.07E-03	3.59E-06	3.57E-06	2.85E-06	1.84E-06	3.23E-02
236U	Ci	1.37E-03	3.80E-04	5.79E-04	7.12E-03	1.13E-03	1.06E-04	9.67E-04	1.31E-05	8.87E-04	6.31E-05	8.68E-04	2.56E-03	5.08E-07	1.97E-06			

Table 7-1. Summary of Final Inventory Estimates (post retrieval) Based on Selected Phase Retention following Retrieval with 10.2 kL (360 ft³) remaining (30 ft³ in 200 series tanks) (2 sheets)

Tank	Units	241-C-101	241-C-102	241-C-103	241-C-104	241-C-105	241-C-106	241-C-107	241-C-108	241-C-109	241-C-110	241-C-111	241-C-112	241-C-201	241-C-202	241-C-203	241-C-204	All Tanks
Cl	Kg	1.65E+01	1.57E+01	9.94E+00	8.32E+00	7.63E+00	1.68E+00	9.43E+00	1.07E+01	1.18E+01	1.50E+01	1.27E+01	1.38E+01	7.41E-01	2.10E+00	1.10E+00	7.09E-01	1.38E+02
Cr	Kg	9.15E+00	6.26E+00	1.47E+01	1.52E+01	8.43E+00	2.53E+01	1.01E+01	9.47E+00	5.02E+00	6.38E+00	4.00E+00	3.61E+00	4.86E-01	5.08E-01	3.88E-01	2.51E-01	1.19E+02
F	Kg	1.46E+01	3.50E+01	1.58E+01	3.60E+02	1.77E+01	1.05E+00	6.93E+01	6.28E+01	2.75E+01	1.03E+02	4.06E+01	1.11E+01	2.66E+00	4.89E+00	2.92E+00	1.89E+00	7.70E+02
Fe	Kg	4.91E+02	1.72E+02	2.39E+02	2.87E+02	5.75E+01	1.35E+03	1.11E+03	1.06E+02	2.77E+02	1.50E+02	6.26E+02	3.55E+02	2.25E+02	2.36E+02	1.80E+02	1.16E+02	5.98E+03
Hg	Kg	1.26E+00	1.05E-01	3.46E+00	7.00E-01	2.83E-01	1.95E+00	7.26E-01	8.40E-01	9.15E-02	6.06E-03	0.00E+00	7.17E-02	0.00E+00	0.00E+00	0.00E+00	9.49E+00	
K	Kg	1.75E+01	1.22E+01	1.01E+01	1.39E+01	1.75E+01	9.35E+00	4.85E+00	5.57E+00	7.46E+00	7.76E+00	1.35E+01	7.76E+00	1.45E+00	1.52E+00	1.16E+00	7.49E-01	1.32E+02
La	Kg	6.09E+00	1.69E+00	3.10E+00	5.07E-01	7.44E+00	5.45E+00	2.93E+00	1.80E-01	1.07E-01	1.95E-02	4.92E+00	1.17E+00	2.55E+00	2.66E+00	2.03E+00	1.31E+00	4.21E+01
Mn	Kg	1.40E+01	1.39E+01	7.26E+00	7.29E+01	3.87E+01	3.36E+02	5.44E+01	2.32E+00	3.06E+00	7.24E-01	3.76E+00	3.19E+00	3.63E-02	3.80E-02	2.90E-02	1.87E-02	5.51E+02
Na	Kg	1.75E+03	9.06E+02	4.00E+02	1.85E+03	6.73E+02	1.09E+03	1.03E+03	1.39E+03	1.48E+03	1.14E+03	5.97E+02	1.30E+03	9.81E+01	1.02E+02	7.82E+01	5.06E+01	1.39E+04
Ni	Kg	2.61E+01	5.73E+01	7.30E+01	2.74E+01	3.38E+01	4.70E+01	3.35E+01	1.24E+02	1.94E+02	3.30E-01	2.30E+02	2.02E+02	2.91E+01	3.04E+01	2.32E+01	1.50E+01	1.15E+03
NO2	Kg	2.81E+02	1.45E+02	2.44E+02	3.80E+02	1.72E+02	3.58E+01	3.84E+02	3.56E+02	5.19E+02	9.91E+01	4.46E+02	7.20E+02	8.88E+00	4.55E+01	2.08E+01	1.34E+01	3.87E+03
NO3	Kg	1.88E+03	6.23E+02	2.37E+01	2.04E+02	1.66E+02	5.23E+00	5.18E+02	6.41E+02	7.65E+02	1.49E+03	8.11E+02	9.63E+02	4.82E+01	1.36E+02	7.12E+01	4.60E+01	8.39E+03
Pb	Kg	2.38E+01	9.48E+00	9.58E+00	8.70E+00	7.32E+00	6.96E+01	1.10E+02	1.27E+01	3.51E+01	3.35E+00	6.57E+01	3.82E+01	2.06E+02	2.15E+02	1.64E+02	1.06E+02	1.08E+03
PO4	Kg	1.03E+03	1.21E+02	4.79E+01	3.34E+01	1.23E+02	1.66E+02	6.38E+02	1.21E+03	1.07E+03	8.63E+02	8.49E+02	1.01E+03	2.12E+00	2.34E+00	1.73E+00	1.12E+00	7.17E+03
Si	Kg	2.46E+02	3.13E+02	5.93E+02	1.07E+02	6.30E+02	1.84E+01	2.02E+01	8.33E+01	9.09E+01	9.63E+01	1.09E+02	4.01E+01	1.39E+01	1.45E+01	1.11E+01	7.18E+00	2.39E+03
SO4	Kg	1.95E+02	4.90E+01	4.00E+01	3.56E+01	7.22E+01	2.69E+01	9.14E+01	9.91E+01	1.25E+02	1.69E+02	7.02E+01	1.82E+02	2.42E+00	6.41E+00	3.42E+00	2.20E+00	1.17E+03
Sr	Kg	8.40E+00	1.35E+00	9.46E-01	9.10E-01	2.90E+00	2.88E+00	2.80E+00	6.08E+00	5.27E+00	1.70E+00	2.69E+00	5.02E+00	5.93E+00	6.18E+00	4.72E+00	3.05E+00	6.08E+01
TIC as CO3	Kg	3.55E+02	6.48E+02	4.00E+02	5.04E+02	3.38E+02	1.44E+03	1.24E+02	1.55E+02	3.93E+02	1.43E+02	3.18E+02	3.79E+02	1.38E+02	1.41E+02	1.10E+02	7.23E+01	5.66E+03
TOC	Kg	3.64E+01	1.34E+01	1.25E+02	1.47E+02	9.65E+01	7.40E+01	7.99E+00	1.40E+01	3.23E+01	7.91E+00	1.15E+01	6.26E+01	5.31E+01	4.57E+01	3.86E+01	2.49E+01	7.92E+02
UTOTAL	Kg	2.94E+02	6.95E+01	1.00E+02	3.68E+02	2.01E+02	1.82E+01	1.01E+02	6.22E+00	1.72E+02	3.00E+01	2.00E+02	6.26E+02	2.42E-01	2.53E-01	1.92E-01	1.24E-01	2.19E+03
Zr	Kg	6.09E+00	4.39E+01	1.73E+02	6.75E+02	3.67E+00	1.17E+00	8.02E-01	1.27E+00	4.35E-01	2.28E+00	2.49E+00	2.50E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.11E+02

Table 7-2. Summary of Final Inventory Estimates Based on Total Tank Volume Ratio with 10.2 kL (360 ft³) remaining (30 ft³ in 200 series tanks) (2 sheets)

Tank	Units	241-C-101	241-C-102	241-C-103	241-C-104	241-C-105	241-C-106	241-C-107	241-C-108	241-C-109	241-C-110	241-C-111	241-C-112	241-C-201	241-C-202	241-C-203	241-C-204	All Tanks
Current Tank Radionuclide Inventory Based on BBI	Ci	6.44E+05	1.26E+06	6.30E+06	1.19E+06	1.12E+06	6.12E+05	5.29E+06	1.76E+05	8.36E+05	3.58E+04	1.82E+06	1.85E+06	1.28E+03	1.24E+03	2.23E+03	1.41E+03	2.11E+07
Current Tank Radionuclide Inventory Based on BBI	Kg	2.88E+05	4.74E+05	2.89E+05	5.83E+05	3.05E+05	3.54E+04	4.70E+05	1.33E+05	1.53E+05	3.14E+05	1.28E+05	2.55E+05	4.11E+03	4.83E+03	8.72E+03	5.65E+03	3.45E+06
Estimate at Closure Total	Ci	1.97E+04	1.07E+04	8.40E+04	1.24E+04	2.28E+04	4.52E+04	5.74E+04	7.16E+03	3.55E+04	5.41E+02	8.55E+04	4.80E+04	2.71E+02	2.63E+02	1.90E+02	1.20E+02	4.30E+05
Estimate at Closure Total	Kg	8.83E+03	4.04E+03	3.86E+03	6.07E+03	6.22E+03	2.62E+03	5.09E+03	5.44E+03	6.49E+03	4.75E+03	6.03E+03	6.61E+03	8.72E+02	1.03E+03	7.41E+02	4.80E+02	6.92E+04
106Ru	Ci	1.25E-10	5.34E-08	5.54E-07	1.88E-06	1.51E-10	1.25E-06	1.23E-04	3.11E-12	2.54E-08	8.89E-13	2.19E-08	2.47E-11	2.89E-08	3.02E-08	2.30E-08	1.49E-08	1.26E-04
113mCd	Ci	6.95E-03	5.03E-03	5.64E-01	2.01E-01	6.38E-03	1.31E+00	1.29E+01	7.18E-03	2.47E-02	2.21E-03	2.41E-02	1.51E-02	1.53E-02	1.59E-02	1.22E-02	7.85E-03	1.51E+01
125Sb	Ci	4.56E-04	1.88E-03	1.29E-01	1.84E+00	5.12E-04	2.09E-01	8.05E-02	1.49E-04	6.20E-04	4.39E-05	5.87E-04	1.01E-02	2.99E-04	3.12E-04	2.39E-04	1.54E-04	2.28E+00
126Sn	Ci	3.98E-04	2.24E-04	1.53E-01	1.79E-02	3.32E-04	1.58E-01	6.91E-01	5.22E-04	1.82E-03	1.62E-04	1.78E-03	1.08E-03	1.19E-03	1.24E-03	9.52E-04	6.13E-04	1.03E+00
129I	Ci	4.10E-05	2.34E-05	8.83E-04	7.84E-03	1.90E-03	1.26E-03	5.24E-04	5.38E-05	8.50E-05	1.66E-05	9.44E-05	1.11E-04	5.82E-06	6.05E-06	4.64E-06	2.99E-06	1.28E-02
134Cs	Ci	6.22E-06	9.12E-05	2.75E-03	4.68E-04	7.26E-06	5.22E-03	5.31E-03	2.70E-05	5.90E-05	9.73E-07	6.81E-05	6.87E-03	1.58E-07	1.65E-07	1.27E-07	8.15E-08	2.09E-02
137Cs	Ci	1.11E+03	2.54E+02	1.28E+03	9.94E+02	1.67E+03	1.29E+03	6.89E+02	3.32E+03	7.26E+03	2.18E+02	9.21E+02	7.39E+03	1.67E+01	1.75E+01	1.33E+01	8.58E+00	2.65E+04
137mBa	Ci	1.05E+03	2.40E+02	1.21E+03	9.39E+02	1.58E+03	1.23E+03	6.52E+02	3.14E+03	6.88E+03	2.07E+02	8.69E+02	6.98E+03	1.58E+01	1.65E+01	1.26E+01	8.15E+00	2.50E+04
14C	Ci	3.06E-03	2.41E-03	6.53E-02	1.92E-02	1.03E-02	4.23E-03	4.12E-02	5.34E-03	6.92E-04	5.04E-03	7.61E-03	9.37E-02	4.27E-04	4.44E-04	3.40E-04	2.19E-04	2.60E-01
151Sm	Ci	2.23E+00	1.13E+00	8.54E+02	9.78E+01	1.83E+00	8.79E+02	6.90E+03	3.06E+00	1.03E+01	9.51E-01	1.01E+01	6.28E+00	6.63E+00	6.90E+00	5.28E+00	3.41E+00	8.79E+03
152Eu	Ci	3.95E-03	6.58E-03	2.48E-01	2.53E-02	2.90E-03	2.42E-01	1.27E+00	5.34E-03	8.45E-02	2.47E-04	7.56E-02	1.33E-02	8.60E-02	8.96E-02	8.68E-02	4.42E-02	2.27E+00
154Eu	Ci	1.75E-02	2.81E-01	7.33E+01	1.14E+01	1.85E-02	1.97E+01	1.74E+01	2.36E-02	5.69E-02	2.16E-02	5.50E-02	5.73E+00	4.06E-02	4.23E-02	3.23E-02	2.08E-02	1.28E+02
155Eu	Ci	1.35E-01	2.22E-01	4.39E+01	8.37E+00	8.73E-02	1.40E+01	1.13E+01	1.16E-01	8.07E-01	1.63E-02	2.69E+00	3.97E+00	3.02E+00	3.14E+00	2.40E+00	1.55E+00	9.57E+01
226Ra	Ci	1.03E-07	6.37E-06	3.30E-05	6.52E-05	5.75E-08	3.03E-05	2.34E-04	2.39E-07	1.25E-05	7.76E-08	1.09E-05	4.75E-07	1.38E-05	1.44E-05	1.10E-05	7.11E-06	4.40E-04
227Ac	Ci	6.70E-07	1.71E-01	1.85E-04	1.13E+00	3.85E-07	1.71E-04	1.53E-03	1.51E-06	4.97E-05	4.87E-07	4.35E-05	3.01E-06	5.44E-05	5.65E-05	4.33E-05	2.79E-05	1.31E+00
228Ra	Ci	6.67E-12	2.24E-02	2.06E-06	2.35E-01	2.88E-12	2.33E-06	5.26E-04	1.48E-11	5.65E-11	9.06E-13	5.59E-11	3.58E-11	3.78E-11	3.93E-11	3.01E-11	1.94E-11	2.58E-01
229Th	Ci	2.52E-09	1.38E-03	1.76E-06	9.79E-03	1.04E-09	1.80E-06	2.64E-05	5.67E-09	2.15E-08	2.87E-10	2.12E-08	1.38E-08	1.41E-08	1.47E-08	1.12E-08	7.24E-09	1.12E-02
231Pa	Ci	1.22E-06	2.52E-01	2.39E-04	2.49E+00	7.24E-07	2.49E-04	2.08E-03	2.65E-06	5.23E-06	8.56E-07	5.54E-06	5.29E-06	1.84E-06	1.91E-06	1.47E-06	9.43E-07	2.74E+00
232Th	Ci	7.65E-13	2.76E-04	4.10E-07	5.81E-02	5.93E-13	1.88E-04	7.90E-04	1.17E-12	1.78E-12	3.68E-13	2.01E-12	2.40E-12	1.02E-13	1.06E-13	8.11E-14	5.22E-14	5.93E-02
232U	Ci	3.64E-06	1.94E-03	7.14E-04	2.01E-01	3.22E-06	3.92E-05	5.91E-05	2.28E-08	2.40E-06	1.09E-07	2.21E-06	3.74E-03	8.81E-10	5.52E-09	7.03E-10	4.55E-10	2.07E-01
233U	Ci	1.41E-07	8.17E-03	2.94E-03	4.30E+00	1.15E-07	1.61E-04	2.45E-04	1.46E-09	1.07E-07	6.99E-09	8.64E-08	1.55E-02	5.65E-11	1.55E-10	4.50E-11	2.91E-11	4.32E+00
234U	Ci	9.61E-02	2.32E-02	2.60E-02	2.16E-01	6.55E-02	3.18E-03	6.11E-03	2.05E-03	6.12E-02	9.85E-03	6.58E-02	2.07E-01	7.97E-05	8.47E-05	6.35E-05	4.10E-05	7.83E-01
235U	Ci	4.16E-03	9.97E-04	1.11E-03	6.27E-03	2.79E-03	1.36E-04	1.49E-03	9.22E-05	2.44E-03	4.43E-04	2.87E-03	9.08E-03	3.59E-06	3.57E-06	2.85E-06	1.84E-06	3.19E-02
236U	Ci	1.37E-03	3.79E-04	4.64E-04	7.12E-03	1.13E-03	5.66E-05	9.67E-04	1.31E-05	8.88E-04	6.29E-05	8.69E-04	2.56E-03	5.08E-07	1.97E-06	4.05E-07	2.62E-07	1.59E-02
237Np	Ci	1.36E-04	8.00E-05	1.44E-03	4.57E-02	1.14E-04	1.94E-02	8.75E-04	1.76E-04	4.15E-03	5.46E-05	3.04E-04	1.95E-0					

Table 7-2. Summary of Final Inventory Estimates Based on Total Tank Volume Ratio with 10.2 kL (360 ft³) remaining (30 ft³ in 200 series tanks) (2 sheets)

Tank	Units	241-C-101	241-C-102	241-C-103	241-C-104	241-C-105	241-C-106	241-C-107	241-C-108	241-C-109	241-C-110	241-C-111	241-C-112	241-C-201	241-C-202	241-C-203	241-C-204	All Tanks
Cl	Kg	1.64E+01	1.58E+01	8.13E+00	8.32E+00	7.61E+00	2.37E+00	9.44E+00	1.08E+01	1.18E+01	1.50E+01	1.27E+01	1.38E+01	7.41E-01	2.10E+00	1.10E+00	7.09E-01	1.37E+02
Cr	Kg	9.15E+00	6.27E+00	9.21E+00	1.52E+01	8.42E+00	4.57E+00	1.01E+01	9.46E+00	5.01E+00	6.35E+00	4.00E+00	3.61E+00	4.86E-01	5.08E-01	3.88E-01	2.51E-01	9.30E+01
F	Kg	1.46E+01	3.50E+01	1.59E+01	3.60E+02	1.77E+01	1.23E+00	6.93E+01	6.28E+01	2.74E+01	1.02E+02	4.05E+01	1.11E+01	2.66E+00	4.89E+00	2.92E+00	1.89E+00	7.70E+02
Fe	Kg	4.90E+02	1.72E+02	1.48E+02	2.87E+02	5.75E+01	2.26E+02	1.12E+03	1.06E+02	2.77E+02	1.49E+02	6.25E+02	3.55E+02	2.25E+02	2.36E+02	1.80E+02	1.16E+02	4.77E+03
Hg	Kg	1.26E+00	1.05E-01	2.15E+00	7.00E-01	2.83E-01	3.29E-01	7.27E-01	8.40E-01	9.13E-02	6.02E-03	0.00E+00	7.19E-02	0.00E+00	0.00E+00	0.00E+00	6.56E+00	
K	Kg	1.75E+01	1.22E+01	7.65E+00	1.38E+01	1.75E+01	7.98E+00	4.85E+00	5.59E+00	7.48E+00	7.73E+00	1.35E+01	7.78E+00	1.45E+00	1.52E+00	1.16E+00	7.49E-01	1.29E+02
La	Kg	6.09E+00	1.70E+00	1.92E+00	5.07E-01	7.44E+00	9.09E-01	2.93E+00	1.80E-01	1.07E-01	1.94E-02	4.93E+00	1.17E+00	2.55E+00	2.66E+00	2.03E+00	1.31E+00	3.64E+01
Mn	Kg	1.40E+01	1.39E+01	4.51E+00	7.29E+01	3.87E+01	5.61E+01	5.44E+01	2.32E+00	3.06E+00	7.20E-01	3.76E+00	3.19E+00	3.63E-02	3.80E-02	2.90E-02	1.87E-02	2.68E+02
Na	Kg	1.75E+03	9.04E+02	3.94E+02	1.85E+03	6.71E+02	8.87E+02	1.03E+03	1.39E+03	1.48E+03	1.14E+03	5.97E+02	1.30E+03	9.81E+01	1.02E+02	7.82E+01	5.06E+01	1.37E+04
Ni	Kg	2.61E+01	5.74E+01	4.56E+01	2.74E+01	3.38E+01	7.83E+00	3.35E+01	1.24E+02	1.94E+02	3.28E-01	2.30E+02	2.02E+02	2.91E+01	3.04E+01	2.32E+01	1.50E+01	1.08E+03
NO2	Kg	2.81E+02	1.44E+02	2.18E+02	3.80E+02	1.72E+02	1.13E+02	3.83E+02	3.56E+02	5.18E+02	9.88E+01	4.46E+02	7.21E+02	8.88E+00	4.55E+01	2.08E+01	1.34E+01	3.92E+03
NO3	Kg	1.88E+03	6.24E+02	1.84E+01	2.04E+02	1.66E+02	5.68E+00	5.18E+02	6.40E+02	7.65E+02	1.48E+03	8.13E+02	9.65E+02	4.82E+01	1.36E+02	7.12E+01	4.60E+01	8.38E+03
Pb	Kg	2.38E+01	9.46E+00	5.95E+00	8.71E+00	7.32E+00	1.19E+01	1.10E+02	1.27E+01	3.51E+01	3.33E+00	6.58E+01	3.84E+01	2.06E+02	2.15E+02	1.64E+02	1.06E+02	1.02E+03
PO4	Kg	1.03E+03	1.20E+02	4.90E+01	3.34E+01	1.23E+02	6.94E+01	6.38E+02	1.21E+03	1.07E+03	8.59E+02	8.50E+02	1.01E+03	2.12E+00	2.34E+00	1.73E+00	1.12E+00	7.07E+03
Si	Kg	2.46E+02	3.13E+02	3.67E+02	1.06E+02	6.30E+02	5.01E+00	2.03E+01	8.32E+01	9.09E+01	9.58E+01	1.09E+02	4.02E+01	1.39E+01	1.45E+01	1.11E+01	7.18E+00	2.15E+03
SO4	Kg	1.95E+02	4.90E+01	3.76E+01	3.56E+01	7.22E+01	3.56E+01	9.14E+01	9.91E+01	1.25E+02	1.68E+02	7.00E+01	1.82E+02	2.42E+00	6.41E+00	3.42E+00	2.20E+00	1.17E+03
Sr	Kg	8.42E+00	1.35E+00	5.87E-01	9.09E-01	2.92E+00	4.80E-01	2.79E+00	6.08E+00	5.27E+00	1.69E+00	2.70E+00	5.01E+00	5.93E+00	6.18E+00	4.72E+00	3.05E+00	5.81E+01
TIC as CO3	Kg	3.55E+02	6.48E+02	3.79E+02	5.05E+02	3.36E+02	9.75E+02	1.24E+02	1.55E+02	3.93E+02	1.42E+02	3.17E+02	3.79E+02	1.38E+02	1.41E+02	1.10E+02	7.23E+01	5.17E+03
TOC	Kg	3.64E+01	1.34E+01	1.03E+02	1.48E+02	9.67E+01	3.88E+01	7.98E+00	1.40E+01	3.23E+01	7.90E+00	1.15E+01	6.28E+01	5.31E+01	4.57E+01	3.86E+01	2.49E+01	7.35E+02
UTOTAL	Kg	2.94E+02	6.95E+01	7.95E+01	3.67E+02	2.01E+02	9.75E+00	1.01E+02	6.24E+00	1.72E+02	2.98E+01	2.00E+02	6.25E+02	2.42E-01	2.53E-01	1.92E-01	1.24E-01	2.16E+03
Zr	Kg	6.09E+00	4.39E+01	1.09E+02	6.75E+02	3.67E+00	1.97E-01	8.02E-01	1.27E+00	4.33E-01	2.27E+00	2.49E+00	2.50E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.46E+02

Table 7-3. Summary of Final Inventory Estimates (post retrieval) Based on HTWOS Modeling with 10.2 kL (360 ft³) remaining (30 ft³ in 200 series tanks) (2 sheets)

Tank		241-C-101	241-C-102	241-C-103	241-C-104	241-C-105	241-C-106	241-C-107	241-C-108	241-C-109	241-C-110	241-C-111	241-C-112	241-C-201	241-C-202	241-C-203	241-C-204	All Tanks
Current Tank Radionuclide Inventory Based on BBI	Ci	6.44E+05	1.26E+06	6.30E+06	1.19E+06	1.12E+06	6.12E+05	5.29E+06	1.76E+05	8.36E+05	3.58E+04	1.82E+06	1.85E+06	1.28E+03	1.24E+03	2.23E+03	1.41E+03	2.11E+07
Current Tank Radionuclide Inventory Based on BBI	Kg	2.88E+05	4.74E+05	2.89E+05	5.83E+05	3.05E+05	3.54E+04	4.70E+05	1.33E+05	1.53E+05	3.14E+05	1.28E+05	2.55E+05	4.11E+03	4.83E+03	8.72E+03	5.65E+03	3.45E+06
Estimate at Closure Total	Ci	2.49E+03	2.95E+03	1.15E+04	1.63E+03	1.71E+03	3.88E+04	1.04E+04	1.78E+03	6.63E+03	2.72E+02	1.33E+04	1.24E+04	2.86E+01	2.75E+01	2.58E+01	2.52E+01	1.04E+05
Estimate at Closure Total	Kg	1.08E+03	1.09E+03	4.55E+02	7.49E+02	4.53E+02	2.24E+03	8.64E+02	1.35E+03	1.18E+03	2.38E+03	9.07E+02	1.54E+03	9.21E+01	1.07E+02	1.01E+02	1.01E+02	1.47E+04
106Ru	Ci	1.58E-11	1.47E-08	5.73E-08	2.46E-07	1.14E-11	1.08E-06	1.84E-05	7.73E-13	4.74E-09	4.48E-13	3.40E-09	6.35E-12	3.05E-09	3.16E-09	3.13E-09	3.13E-09	1.99E-05
113mCd	Ci	8.78E-04	1.38E-03	5.82E-02	2.64E-02	4.80E-04	1.12E+00	1.94E+00	1.79E-03	4.61E-03	1.11E-03	3.76E-03	3.89E-03	1.62E-03	1.67E-03	1.66E-03	1.65E-03	3.17E+00
125Sb	Ci	5.78E-05	5.16E-04	3.83E-03	2.42E-01	3.84E-05	1.79E-01	1.22E-02	3.70E-05	1.15E-04	2.21E-05	9.16E-05	2.60E-03	3.17E-05	3.27E-05	3.25E-05	3.23E-05	4.41E-01
126Sn	Ci	5.02E-05	6.17E-05	1.81E-02	2.34E-03	2.49E-05	1.36E-01	1.88E-01	1.30E-04	3.39E-04	8.13E-05	2.77E-04	2.77E-04	1.26E-04	1.30E-04	1.29E-04	1.29E-04	3.46E-01
129I	Ci	5.17E-06	6.44E-06	8.29E-05	1.03E-03	1.43E-04	1.08E-03	7.95E-05	1.34E-05	1.58E-05	8.43E-06	1.47E-05	2.85E-05	6.15E-07	6.33E-07	6.31E-07	6.29E-07	2.51E-03
134Cs	Ci	7.85E-07	2.50E-05	8.76E-05	6.14E-05	5.46E-07	4.48E-03	8.01E-04	6.70E-06	1.10E-05	4.90E-07	1.06E-05	1.77E-03	1.67E-08	1.73E-08	1.72E-08	1.71E-08	7.25E-03
137Cs	Ci	1.33E+02	6.61E+01	1.43E+02	1.23E+02	1.19E+02	1.05E+03	8.19E+01	7.82E+02	1.28E+03	1.04E+02	1.35E+02	1.80E+03	1.67E+00	1.73E+00	1.71E+00	1.71E+00	5.83E+03
137mBa	Ci	1.41E+02	6.99E+01	1.51E+02	1.30E+02	1.25E+02	1.11E+03	8.64E+01	8.28E+02	1.35E+03	1.10E+02	1.43E+02	1.90E+03	1.77E+00	1.83E+00	1.82E+00	1.80E+00	6.16E+03
14C	Ci	3.88E-04	6.64E-04	6.07E-03	2.53E-03	7.77E-04	3.64E-03	6.31E-03	1.33E-03	1.29E-04	2.54E-03	1.19E-03	2.41E-02	4.51E-05	4.64E-05	4.62E-05	4.61E-05	4.99E-02
151Sm	Ci	2.83E-01	3.10E-01	1.01E+02	1.28E+01	1.38E-01	7.56E+02	1.04E+03	7.62E-01	1.93E+00	4.79E-01	1.58E+00	1.62E+00	7.00E-01	7.22E-01	7.19E-01	7.16E-01	1.92E+03
152Eu	Ci	5.00E-04	1.81E-03	2.86E-02	3.32E-03	2.18E-04	2.08E-01	1.92E-01	1.33E-03	1.58E-02	1.24E-04	1.17E-02	3.43E-03	9.09E-03	9.38E-03	9.34E-03	9.29E-03	5.04E-01
154Eu	Ci	2.21E-03	7.74E-02	1.01E+01	1.50E+00	1.39E-03	1.69E+01	3.19E+00	5.87E-03	1.07E-02	1.09E-02	8.53E-03	1.48E+00	4.29E-03	4.42E-03	4.39E-03	4.38E-03	3.33E+01
155Eu	Ci	1.71E-02	6.12E-02	6.01E+00	1.10E+00	6.57E-03	1.20E+01	2.08E+00	2.88E-02	1.50E-01	8.24E-03	4.19E-01	1.02E+00	3.19E-01	3.29E-01	3.27E-01	3.25E-01	2.42E+01
226Ra	Ci	1.31E-08	1.75E-06	3.94E-06	8.57E-06	4.32E-09	2.60E-05	3.54E-05	5.95E-08	2.33E-06	3.91E-08	1.69E-06	1.22E-07	1.46E-06	1.51E-06	1.50E-06	1.50E-06	8.58E-05
227Ac	Ci	8.48E-08	4.70E-02	2.22E-05	1.49E-01	2.89E-08	1.46E-04	1.82E-04	3.76E-07	9.25E-06	2.46E-07	6.75E-06	7.77E-07	5.75E-06	5.91E-06	5.90E-06	5.86E-06	1.96E-01
228Ra	Ci	8.42E-13	6.16E-03	2.46E-07	3.08E-02	2.17E-13	2.00E-06	5.38E-06	3.67E-12	1.06E-11	4.56E-13	8.69E-12	9.19E-12	4.00E-12	4.11E-12	4.09E-12	4.07E-12	3.70E-02
229Th	Ci	3.18E-10	3.80E-04	2.11E-07	1.28E-03	7.83E-11	1.53E-06	4.80E-06	1.41E-09	4.00E-09	1.45E-10	3.30E-09	3.56E-09	1.49E-09	1.54E-09	1.53E-09	1.52E-09	1.67E-03
231Pa	Ci	1.54E-07	6.95E-02	2.82E-05	3.27E-01	5.43E-08	2.14E-04	3.22E-04	6.60E-07	9.71E-07	4.31E-07	8.65E-07	1.36E-06	1.94E-07	2.00E-07	1.98E-07	3.97E-01	
232Th	Ci	9.72E-14	7.60E-05	4.93E-08	7.62E-03	4.45E-14	1.61E-04	4.94E-07	2.92E-13	3.32E-13	1.86E-13	3.13E-13	6.17E-13	1.07E-14	1.11E-14	1.10E-14	1.10E-14	7.85E-03
232U	Ci	4.62E-07	5.34E-04	2.71E-05	2.64E-02	2.42E-07	3.35E-05	8.51E-06	5.68E-09	4.47E-07	5.50E-08	3.44E-07	9.64E-04	9.32E-11	5.78E-10	9.56E-11	9.56E-11	2.80E-02
233U	Ci	1.79E-08	2.25E-03	1.12E-04	5.64E-01	8.67E-09	1.38E-04	3.32E-05	3.63E-10	2.00E-08	3.53E-09	1.35E-08	4.00E-03	5.97E-12	1.62E-11	6.13E-12	6.11E-12	5.71E-01
234U	Ci	1.22E-02	6.38E-03	2.77E-03	2.84E-02	4.92E-03	2.73E-03	3.49E-03	5.10E-04	1.14E-02	4.96E-03	1.02E-02	5.33E-02	8.42E-06	8.87E-06	8.64E-06	8.61E-06	1.41E-01
235U	Ci	5.28E-04	2.75E-04	1.18E-04	8.23E-04	2.09E-04	1.16E-04	1.44E-04	2.30E-05	4.55E-04	2.24E-04	4.46E-04	2.34E-03	3.79E-07	3.73E-07	3.88E-07	3.88E-07	5.70E-03
236U	Ci	1.73E-04	1.04E-04	4.90E-05	9.34E-04	8.51E-05	4.86E-05	1.56E-04	3.27E-06	1.65E-04	3.17E-05	1.35E-04	6.60E-04	5.36E-08	2.06E-07	5.51E-08	5.50E-08	2.55E-03
237Np	Ci	1.72E-05	2.20E-05	1.36E-04	6.00E-03	8.59E-06	1.66E-02	1.34E-04	4.39E-05	7.75E-04	2.75E-05	4.72E-05	5.02E-03	9.6				

Table 7-3. Summary of Final Inventory Estimates (post retrieval) Based on HTWOS Modeling with 10.2 kL (360 ft³) remaining (30 ft³ in 200 series tanks) (2 sheets)

Tank		241-C-101	241-C-102	241-C-103	241-C-104	241-C-105	241-C-106	241-C-107	241-C-108	241-C-109	241-C-110	241-C-111	241-C-112	241-C-201	241-C-202	241-C-203	241-C-204	All Tanks
Cl	Kg	2.08E+00	4.32E+00	8.38E-01	1.09E+00	5.73E-01	2.04E+00	1.88E+00	2.67E+00	2.20E+00	7.56E+00	1.98E+00	3.55E+00	7.83E-02	2.20E-01	1.49E-01	1.49E-01	3.14E+01
Cr	Kg	1.16E+00	1.72E+00	1.25E+00	1.99E+00	6.33E-01	3.91E+00	2.15E+00	2.36E+00	9.37E-01	3.20E+00	6.22E-01	9.29E-01	5.14E-02	5.31E-02	5.28E-02	5.27E-02	2.11E+01
F	Kg	1.84E+00	9.61E+00	1.32E+00	4.72E+01	1.33E+00	1.06E+00	1.91E+01	1.56E+01	5.12E+00	5.15E+01	6.31E+00	2.85E+00	2.81E-01	5.11E-01	3.98E-01	3.97E-01	1.64E+02
Fe	Kg	6.21E+01	4.73E+01	2.04E+01	3.77E+01	4.32E+00	1.93E+02	9.01E+01	2.63E+01	5.17E+01	7.50E+01	9.73E+01	9.14E+01	2.38E+01	2.47E+01	2.45E+01	2.45E+01	8.95E+02
Hg	Kg	1.59E-01	2.88E-02	2.57E-01	9.19E-02	2.13E-02	2.82E-01	0.00E+00	2.09E-01	1.71E-02	3.04E-03	0.00E+00	1.85E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E+00
K	Kg	2.21E+00	3.35E+00	8.38E-01	1.82E+00	1.32E+00	6.85E+00	1.11E+00	1.39E+00	1.39E+00	3.90E+00	2.11E+00	2.00E+00	1.54E-01	1.59E-01	1.57E-01	1.58E-01	2.89E+01
La	Kg	7.70E-01	4.65E-01	2.64E-01	6.65E-02	5.59E-01	7.80E-01	2.13E-01	4.48E-02	2.00E-02	9.81E-03	7.65E-01	3.01E-01	2.69E-01	2.78E-01	2.76E-01	2.75E-01	5.36E+00
Mn	Kg	1.77E+00	3.82E+00	6.10E-01	9.57E+00	2.91E+00	4.81E+01	3.29E+00	5.78E-01	5.71E-01	3.63E-01	5.85E-01	8.21E-01	3.84E-03	3.98E-03	3.94E-03	3.93E-03	7.30E+01
Na	Kg	2.21E+02	2.49E+02	3.32E+01	2.43E+02	5.06E+01	7.58E+02	2.45E+02	3.46E+02	2.76E+02	5.74E+02	9.29E+01	3.35E+02	1.04E+01	1.07E+01	1.06E+01	1.06E+01	3.47E+03
Ni	Kg	3.30E+00	1.58E+01	5.59E+00	3.60E+00	2.54E+00	6.76E+00	2.83E+00	3.09E+01	3.61E+01	1.65E-01	3.58E+01	5.21E+01	3.08E+00	3.18E+00	3.16E+00	3.14E+00	2.08E+02
NO2	Kg	3.55E+01	3.98E+01	2.03E+01	4.99E+01	1.29E+01	9.70E+01	7.67E+01	8.86E+01	9.68E+01	4.98E+01	6.93E+01	1.86E+02	9.38E-01	4.75E+00	2.83E+00	2.82E+00	8.34E+02
NO3	Kg	2.38E+02	1.71E+02	1.98E+00	2.67E+01	1.25E+01	4.87E+00	1.16E+02	1.60E+02	1.43E+02	7.47E+02	1.26E+02	2.48E+02	5.10E+00	1.42E+01	9.69E+00	9.67E+00	2.03E+03
Pb	Kg	3.01E+00	2.61E+00	8.16E-01	1.14E+00	5.50E-01	1.02E+01	4.38E+00	3.16E+00	6.55E+00	1.68E+00	1.02E+01	9.85E+00	2.18E+01	2.24E+01	2.23E+01	2.23E+01	1.43E+02
PO4	Kg	1.30E+02	3.31E+01	4.03E+00	4.38E+00	9.21E+00	5.95E+01	7.98E+01	3.02E+02	1.99E+02	4.32E+02	1.32E+02	2.61E+02	2.24E-01	2.44E-01	2.36E-01	2.36E-01	1.65E+03
Si	Kg	3.10E+01	8.60E+01	4.54E+01	1.40E+01	4.73E+01	4.30E+00	2.54E+01	2.07E+01	1.70E+01	4.83E+01	1.69E+01	1.03E+01	1.47E+00	1.52E+00	1.51E+00	1.51E+00	3.73E+02
SO4	Kg	2.47E+01	1.35E+01	3.34E+00	4.67E+00	5.42E+00	3.05E+01	1.74E+01	2.46E+01	2.33E+01	8.48E+01	1.09E+01	4.69E+01	2.56E-01	6.71E-01	4.65E-01	4.63E-01	2.92E+02
Sr	Kg	1.05E+00	3.60E-01	4.07E-02	1.15E-01	2.13E-01	2.82E-01	3.70E-01	1.51E+00	9.68E-01	8.54E-01	3.72E-01	1.26E+00	6.26E-01	6.47E-01	6.43E-01	6.41E-01	9.96E+00
TIC as CO3	Kg	4.49E+01	1.78E+02	3.33E+01	6.61E+01	2.54E+01	8.39E+02	2.57E+01	3.85E+01	7.33E+01	7.18E+01	4.94E+01	9.76E+01	1.46E+01	1.48E+01	1.50E+01	1.52E+01	1.60E+03
TOC	Kg	4.60E+00	3.68E+00	1.05E+01	1.93E+01	7.25E+00	3.33E+01	1.28E+00	3.48E+00	6.02E+00	3.98E+00	1.79E+00	1.61E+01	5.61E+00	4.78E+00	5.25E+00	5.23E+00	1.32E+02
UTOTAL	Kg	0.00E+00	0.00E+00	0.00E+00	1.67E-01	0.00E+00	0.00E+00	7.65E-03	0.00E+00	0.00E+00	3.25E-05	0.00E+00	0.00E+00	2.54E-05	7.66E-05	0.00E+00	0.00E+00	1.75E-01
Zr	Kg	7.70E-01	1.21E+01	1.48E+01	8.86E+01	2.76E-01	1.68E-01	3.25E+00	3.16E-01	8.11E-02	1.14E+00	3.88E-01	6.45E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.22E+02

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