0074305

Department of Energy

Office of River Protection
P.O. Box 550
Richland, Washington 99352

99-OPD-065

SEP 30 1999

Mr. Mike Wilson, Program Manager
Nuclear Waste Program
State of Washington
Department of Ecology
P.O. Box 47600
Olympia, Washington 98504

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Dear Mr. Wilson:

COMPLETION OF HANFORD FEDERAL FACILITY AGREEMENT AND CONSENT ORDER (TRI-PARTY AGREEMENT) MILESTONES M-46-00F AND M-46-01F

This letter provides notification of the completion of Tri-Party Agreement Milestones M-46-00F, "Double-Shell Tank Space Evaluation," and M-46-01F, "Concurrence of Additional Tank Acquisition." Milestone M-46-00F requires that tank volume projections be submitted on an annual basis. Milestone M-46-01F requires a recommendation to be made by the U.S. Department of Energy, Richland Operations Office on an annual basis, regarding whether additional double-shell storage tanks are to be acquired.

Attached is the annual Operational Waste Volume Projection (OWVP), Revision 25, dated July 1999. This document comprises the required double-shell tank space evaluation. The document also includes recommendations regarding additional tank acquisition.

The OWVP is based upon out-year program assumptions formulated from the most current information available at the time of revision. The information in this report is current up to June 19, 1999. Information received since June 19, 1999, that will be included in the next revision is as follows:

- In Revision 25, it was assumed that 6.2 million gallons of Saltwell Liquid (SWL) remained to be pumped from single-shell tanks. New information indicates the remaining SWL is 4.1 million gallons.

- The waste retrieval schedule for Privatization, in Revision 25, does not reflect the Fiscal Year (FY) 1999 baseline. The document instead, reflects a proposed FY 2000 baseline retrieval schedule that has recently been rejected. Formulation of an accurate baseline retrieval schedule is underway.

The point-of-contact for the OWVP is Mark Ramsay. (509) 376-7924.

Sincerely,

George H. Sanders, Administrator
Hanford Tri-Party Agreement

OPD:MLR

Attachment

cc w/attach:
D. Hagen, Ecology
TPA Administrative Record, FDH

cc w/o attach:
T. B. Veneziano, FDH
B. G. Erlandson, LMHC

OPERATIONAL WASTE VOLUME PROJECTION

JULY 1999

Prepared by

J. N. Strode
V. C. Boyles

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1.0 SUMMARY

The Operational Waste Volume Projection (OWVP) presents a basis for evaluating future Double-Shell Tank (DST) space needs through FY 2018. This report presents a projected range of tank needs which is used to generate recommendations regarding site activities, waste management activities, facility requirements, and the need to build additional double-shell tanks. This document presents the results of three distinct projection cases. Operating assumptions for the three cases were established in June 1999. Operating assumptions and results are summarized below:

- Case 1 presents projected DST needs based on Tri-Party Agreement (TPA) milestones, River Protection Project (RPP) project planning guidance received in April 1999 (Taylor, 1999), and the current operational assumptions. With the TPA compliant single-shell tank (SST) solids retrieval schedule added, tank space requirements significantly exceeds available space by the end of FY 2004. Options to reduce the tank space shortage would include adjusting the SST solids retrieval schedule to match available space, increasing the waste processing rates, and/or building additional double-shell tank space. Projected space requirements for Case 1 with only SST solids retrieved to meet Phase 1B High-Level Waste (HLW) processing needs fits within available space through FY 2018. Please see Section 5.1 for more details.

- Case 2 presents projected DST needs based on the project planning guidance received in April 1999 (Taylor, 1999) with a reduced SST solids retrieval rate (Kirkbride, 1999b). The projected space requirements for Case 2 with SST solids retrieval exceeds available space by one tank in FY 2011 and again in FY 2014. This tank space shortage could be easily eliminated by shifting some of the SST solids retrieval volume in these two years to the period FY 2012-2013 when excess tank space is available. This projection was designed to identify the space available for SST solids retrieval. Please see Section 5.2 for more details.

- Case 3 presents projected DST space needs based on a British Nuclear Fuels Limited (BNFL) processing schedule that starts at a slower rate initially but ramps up to twice the processing rate used in projection Cases 1 and 2. Case 3 also incorporates a reduced SST solids retrieval rate (Kirkbride, 1999a). The projected tank needs with only the SST solids retrieved to meet Phase 1B HLW processing needs, fits within available space. With the SST solids retrieval volume added, tank space needs exceed available space starting in FY 2011. Options to reduce the tank space shortage would include adjusting the SST solids retrieval schedule to match available space, increasing the waste processing rates, and/or building additional double-shell tank space.

A comparison of the projected tank space needs required for the three projection cases is depicted in Figure 1. Key assumptions for the three projection cases are summarized in Table 1. Differences in assumptions have been highlighted. Detailed assumptions and space saving alternatives are presented later in this document. A brief summary of the risks associated with these projections is provided in Table 2. Additional information and references for Table 2 can be found later in this document by referring to the section listed under comments. At a minimum, this DST space forecast will be updated annually with the latest information available regarding the estimated volume of waste requiring storage in the DSTs.

Facility waste minimization requirements initiated by the Tank Space Management Board (TSMB) helped to guarantee tank space availability prior to the 242-A Evaporator restart in FY 1994. However, due to the possibility of future tank space shortages, Terminal Clean-out (TCO) and monthly waste generations need to be continually minimized. The DST Waste Inventory Control Group was chartered to control the inventory of the DSTs and meets on a monthly basis to review projected waste generations and waste transfers. Voting members of this group consist of representatives from Operations, Process Engineering, Environmental, and Tank Waste Retrieval. Issues that cannot be resolved by this group will be elevated to the TWRS Waste Modeling Key Assumptions Control Board.

Approximately 6-8 years are required to build additional DSTs. The Case 1 projection with only the SST solids retrieved to meet HLW feed needs, predicts that the available tank space will meet the needs for the RPP planning waste processing assumptions. The Case 1 projection with TPA compliant solids retrieval volumes added will be at or exceed the available space by FY 2004 because the volume of solids retrieved to meet the TPA milestones for SST solids retrieval will grossly exceed the space made available by the waste processing schedule. Building additional tanks alone to meet this excess space requirement does not appear to be a realistic option due to the excessive amount of tanks required--approximately 25 additional tanks by FY 2012 or up to 79 additional tanks by FY 2018. Accelerating the waste processing schedule and rate alone to meet the storage requirements of the TPA compliant SST solids retrieval schedule would require unrealistic high processing rates and expense. Avoiding the projected tank space shortage would require a combination of the following options (see Section 6.0 for a more complete listing):

- delay retrieval of SST solids
- accelerate the processing and vitrification of waste
- establish Phase 2 contract terms for privatization to require rates of retrieval and processing equivalent to TPA rates
- delay the Single-Shell Tank (SST) interim stabilization effort
- construct new double-shell tanks

A DST space trade study (Garfield, 1999) has been completed which addresses some of the space saving alternatives mentioned in Section 6 of this document. The DST space trade study states that sufficient DST is available to support waste feed delivery and that no action is necessary at this time to build new double-shell tanks. The study also assumes a reduced retrieval of SST solids.

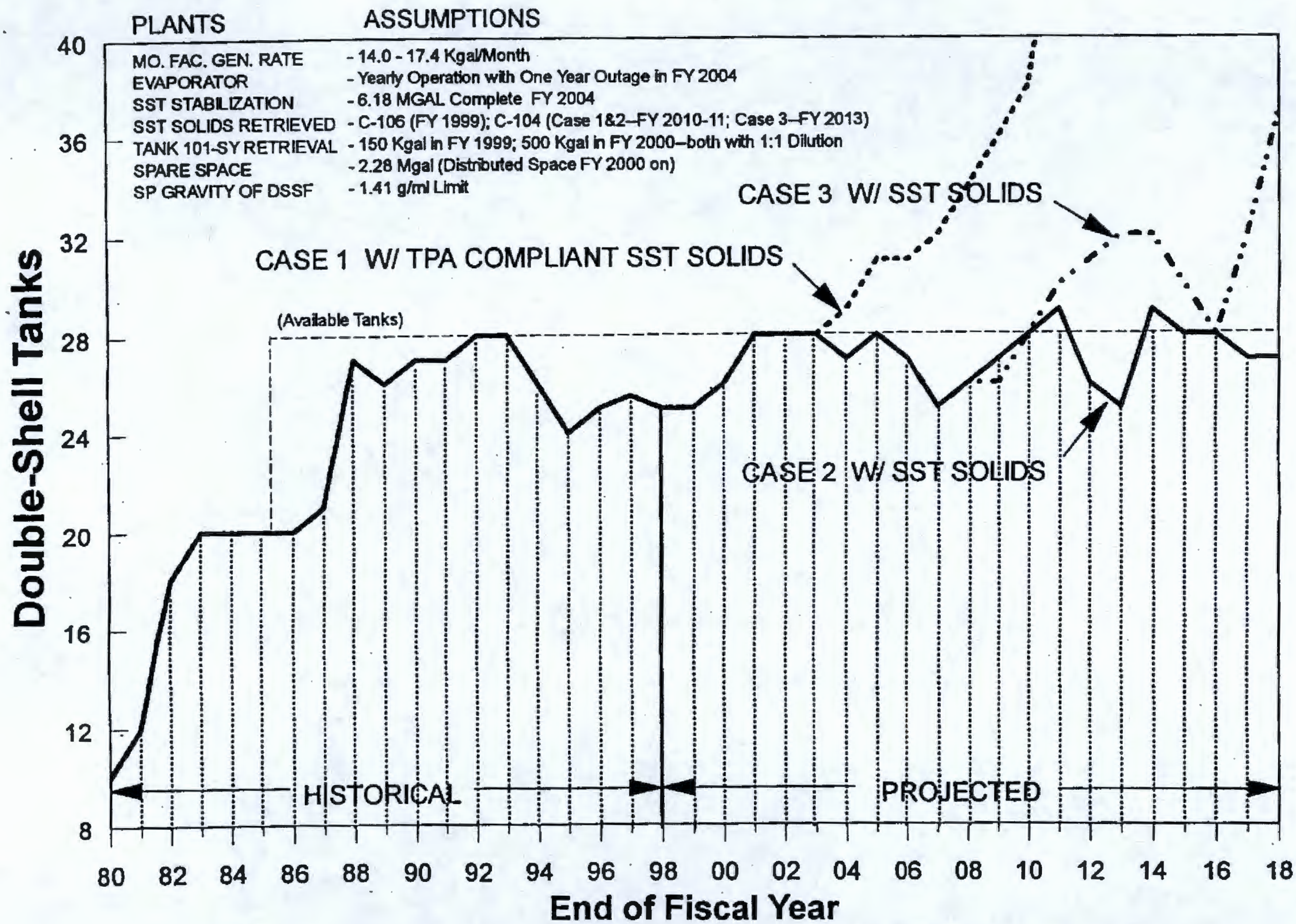

Figure 1. Comparison of Tank Requirements for 7/99 Projection Cases

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Table 1. Summary of Assumptions For the 1999 Projection Cases (references in Sect. 3)

Facility or Project	Case 1 Assumptions	Case 2 Assumptions	Case 3 Assumptions
Total Monthly Facility Generations	14.0-17.4 Kgal/month	14.0-17.4 Kgal/month	14.0-17.4 Kgal/month
PUREX Misc After TCO Completed	5 Kgal/year DN	5 Kgal/year DN	5 Kgal/year DN
B Plant TCO Completed	No additional waste	No additional waste	No additional waste
100N Area TCO	Wastes sent to ERDF	Wastes sent to ERDF	Wastes sent to ERDF
100K Area TCO	TCO FY 2004-05 (0.43 Mgal DN)	TCO FY 2004-05 (0.43 Mgal DN)	TCO FY 2004-05 (0.43 Mgal DN)
105 F & H Basin Cleanout	TCO FY01-08 (0.24 Mgal DN)	TCO FY01-08 (0.24 Mgal DN)	TCO FY01-08 (0.24 Mgal DN)
Evaporator Operation Outage	Operates as required through 2018 except for one year outage in FY 2004	Operates as required through 2018 except for one year outage in FY 2004	Operates as required through 2018 except for one year outage in FY 2004
Liquid Effluent Treatment Facility Rate (Mgal/Year)	50	50	50
SST Stabilization Porosity Saltcake/Sludge Complexed SWL Volume Pumped	50%/21% ~1 Mgal ~6.18 Mgal (1999-2004)	50%/21% ~1 Mgal ~6.18 Mgal (1999-2004)	50%/21% ~1 Mgal ~6.18 Mgal (1999-2004)
PFP Stabilization	33 Kgal (FY 1998-2012)	33 Kgal (FY 1998-2012)	33 Kgal (FY 1998-2012)
Tank 101-SY Retrieval/Dilution (150 Kgal) Tank 101-SY Retrieval/Dilution (500 Kgal)	September 1999 March 2000	September 1999 March 2000	September 1999 March 2000
Tank 103-SY Processing Dilution	No Dilution until 4/2010	No Dilution until 4/2010	No Dilution until 12/2010
SST Solids Retrieval 106-C solids (start; receiver tank) SST Solids Retrieval Start Rate--retrieved vol. 2004-2005 (Mgal) SST Waste Retrieval Complete	TPA Compliant SST Retrieval 9/1998; Tank 102-AY 12/2003 2.8 3.6 FY 2018	Disposal Case 3s3 SST Retrieval 9/1998; Tank 102-AY 1/2004 ~0.2 ~0.2 FY 2033	Disposal Case 6b SST Retrieval 9/1998; Tank 102-AY 9/2009 0 0 FY 2026
Phase 1B Privatization Processing			
LAW Vitrification start LAW Processing Schedule Phase 1 Extension	03/2007 Disposal Case 3s3 Schedule Yes	03/2007 Disposal Case 3s3 Schedule Yes	03/2007 Disposal Case 6b Schedule Yes
LAW Intermediate Feed Staging Tanks LAW Vendor Feed Tanks Sr/TRU & Entrained Solids Receipt Tank Aging Waste Supernate Receipt Tank	101-AN, 104-AN, 105-AN, 106-AN BNFL Space BNFL Space BNFL Space	101-AN, 104-AN, 105-AN, 106-AN BNFL Space BNFL Space BNFL Space	101-AN, 104-AN, 105-AN, 106-AN BNFL Space BNFL Space BNFL Space
HLW Vitrification start	4/2006	4/2006	4/2006
In-Tank Washing	Not included. Vendor washes NCAW solids	Not included. Vendor washes NCAW solids.	Not included. Vendor washes NCAW solids.
Evaporation Limit for Wastes--SpG	1.41	1.41	1.41
Spare Space	2.28	2.28	2.28
Contingency Tank	None	None	None
Loss of DST Space	None	None	None

Table 2. Risk Assessment Summary for Waste Volume Projections

RISK ASSESSMENT SUMMARY FOR WASTE VOLUME PROJECTIONS									
Technical/Program Basis for Waste Volume Projections	Confidence of Basis Being Accurate			Waste Volume Impact if Wrong			Consequence if Assumption Wrong		COMMENTS
	HIGH	MED	LO	MAJOR	MINOR	QUANTITY	MAJOR	MINIMAL	
Remaining SWL pumping volume is ~6.12 Mgal without flush or dilution		X		X		Dependent on magnitude of change	X		Could delay Consent Decree milestones; Large concentrated volume; see Section 3.8; Could prevent initial feed staging for Phase 1 LAW Privatization
CC waste will not solubilize the TRU sludge in Tank 102-SY	X			X		Dependent on magnitude of change	X		Could delay SWL pumping TPA milestones and/or site cleanup; see Section 3.8
242-A Evaporator available with one outage in FY 2004	X			X		Dependent on magnitude of change	X		Tank Space Projections based on concentrated volumes; see Section 3.2
Evaporation limit for new DSSF will be SpG of 1.41		X		X		Dependent on magnitude of change	X		Reduction in SpG could be required by safety;Section 3.2
Facility generations will not exceed TPA Compliant Case levels		X			X	Dependent on magnitude of change		X	Small concentrated volume; could delay site cleanup; see Section 3.0
Facility TCO volumes: 100 Areas <0.7 Mgal		X			X	Dependent on magnitude of change		X	Could delay site cleanup; see Section 3.0
No loss of DST space	X			X		1 mgal/tank	X		see Section 3.22
LAW Phase 1 vitrification starts FY 2007		X		X		Dependent on magnitude of change	X		Could delay SST solids retrieval (TPA); Section 3.17
Cross-site transfer lines are available	X			X		Dependent on magnitude of change	X		Could delay SWL pumping TPA milestones and/or site cleanup; see Section 3.11
No volume set aside for upsets or new streams		X			X	Dependent on magnitude of change	X		Consequences depend on volume, composition, and timing see Section 3.20

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2.0 INTRODUCTION

2.1 PURPOSE

The purpose of the OWVP is to present a basis for evaluating future DST needs to meet TPA Milestones M-46-00 and M-46-01. Milestone M-46-00 states that an OWVP report shall be prepared and issued annually evaluating DST needs. Milestone M-46-01 requires RPP, to review and recommend whether or not to build additional DSTs on an annual basis.

This report presents a projected range of tank needs which is used to generate recommendations regarding site activities, waste management activities, facility requirements, and the need to build additional DSTs. This document presents the results of three projected cases which represent varying degrees of tank space demands. All projected cases incorporate the "privatization" of waste treatment and disposal. The term "privatization" refers to the DOE strategy for phased retrieval and treatment of Hanford tank wastes which would use private contractors to design, permit, build, operate, and deactivate the facilities for waste treatment and immobilization (DOE, 1995). Case 1 is intended to present tank space needs based on all TPA milestones, RPP program planning, and current operational assumptions. Cases 2 is based on the same operational and processing assumptions as Case 1 but incorporates a lower SST solids retrieval schedule. Case 3 presents a different waste processing schedule and SST retrieval schedule than that used in either Case 1 or 2. Operating assumptions for the three cases were established in June 1999. Need dates for new DST construction, tank retrievals, facility schedules, waste generation reductions, conflicts in meeting TPA milestones (WDOE, 1994; WHC, 1996a; WHC, 1996b), and funding priorities can then be reviewed in relation to tank space availability.

2.2 METHODOLOGY

The process followed in preparing an OWVP is shown in Figure 2, below.

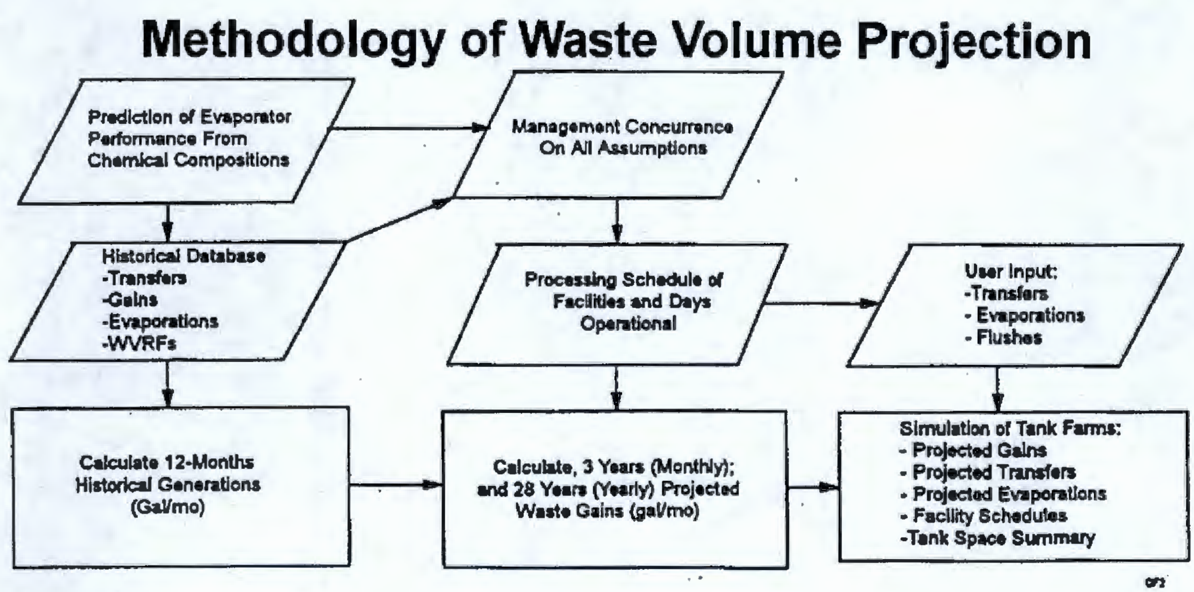


Figure 2. Methodology of the OWVP

The process of updating the OWVP begins with the request for updated facility or project "assumptions" from each of the operating facilities and projects that will contribute waste to DST inventory. The term "assumption" in this document refers to engineering inputs or bases supplied by the facilities based on their future operational plans (determined by budget, DOE directive, TPA milestones, etc.). Typical assumptions include operating schedules, waste generation rates, stream compositions, modes of operation, etc. The operating facilities and projects provide estimates of volume, composition, and radionuclide content data for each distinct waste stream exiting the facility. In addition to the projected facility waste generation rates, the processing schedules of each of the plants are factored into the projection. For the Plutonium Finishing Plant (PFP) and 100 Area facilities the projected volumes of waste generated from TCO are estimated and entered. For the 300 Area, 400 Area, and Tank Farms, monthly waste generations are entered from facility inputs and/or actual generation rates. These projected waste generation rates and plant schedules are used to project waste volumes that each plant will be producing per month or year. The composition data is used to calculate Waste Volume Reduction Factors (WVRFs) and to determine waste segregation requirements (due to chemical, radionuclide, or heat content). The WVRF (Riley, 1988) is defined as the percent of water (by volume) that can be removed from a waste stream to achieve a certain interim waste form such as double-shell slurry feed. From the facility assumptions, a matrix of basic assumptions for the three cases to be incorporated into the OWVP projections were prepared and presented to Hanford contractor management and program office for approval. RL has requested that the OWVP document should provide a list of all transfers for the next fiscal year (Kinzer, 1999). Appendix B in this document lists all the gains (GA), losses (LO), and transfers (TR) for projection Cases 1 and 2 through FY 2000.

Once the projection cases have been approved, the database of past waste gains, transfers, and evaporations is updated with data from the most recent months of Tank Farm operations. The early years of the projection are simulated in more detail than the later years. In the first period of the projection, monthly waste volumes are predicted. For the last years of the projection, yearly waste volumes are predicted.

The processing sequence in the simulation is designed to model the actual activities in the tank farms. After a dilute receiver tank is filled with waste, the contents are transferred to an available holding tank, sampled (sampling and analysis require four months), and transferred to the 242-A Evaporator feed tank (Tank 241-AW-102[1]) for evaporation. After dilute waste is concentrated in the 242-A Evaporator, it is sent to a slurry receiver tank (Tank 106-AW) as Double-Shell Slurry Feed (DSSF) which will eventually be disposed of through the Low-Activity Waste (LAW) processing and vitrification facility.

The Neutralized Current Acid Waste (NCAW) and transuranic (TRU) solids will be processed at BNFL and the HLW solids will be immobilized in the High-Level Waste (HLW) vitrification plant into a glass matrix for disposal. It is anticipated that the HLW pretreatment at BNFL would generate a LAW supernate stream that would be stored at BNFL and later sent to LAW vitrification for final disposal.

[1] Waste tanks are hereafter referred to in an abbreviated form; for example, Tank 102-AW.

3.0 GENERAL FACILITY DESCRIPTIONS AND ASSUMPTIONS

A brief description of the facilities and projects pertinent to the Case 1 projection are listed in the following section. Facility operating dates, waste generation volumes, WVRFs, flushes, and other pertinent assumptions are also described in this section. Assumptions unique to the Case 2 and Case 3 projections are described in Section 4. This information has been summarized for each of the three cases in Table 9, which is included at the end of this section. The spreadsheet for the Case 1 projection (Section 5.1) lists the waste generations for each year for facilities that presented a range of waste generation rates (e.g., T Plant varied from 1.4 to 2.7 Kgal/month during the period FY 1999-2018). Some waste additions to DSTs require a flush after the transfer has been completed. If a flush is required it is reported in the following sections and in Table 9.

This year, there has been an attempt to totally integrate the OWVP and Disposal Engineering assumptions and the integration is good through the end of Phase 1 (circa FY 2013). Phase 1 processing assumptions, tank usage, and the order of processing were furnished by Disposal Engineering (Kirkbride, 1999a) and are consistent between the two projects. The Case I projection uses the waste processing schedule from Disposal Engineering Case 3s3 with a Tri-Party Agreement Compliant SST solids retrieval schedule. The Case 2 projection uses the same assumptions as Case 1 but uses a SST solids retrieval schedule from Disposal Engineering Case 3s3. Case 3 uses waste processing and the SST solids retrieval schedule from Disposal Engineering Case 6b. This year's projections use primarily AN farm tanks for intermediate waste staging. It is assumed BNFL will supply the space necessary for vendor feed staging and that no entrained solids stream or pretreated NCAW supernate stream will be returned to tank farms. The OWVP and Disposal Engineering assumptions will be further integrated in next year's OWVP document.

3.1 B PLANT/WESF

B Plant was constructed in 1945 to recover plutonium by the bismuth phosphate process. The facility was refurbished in 1967 to recover cesium and strontium byproducts from the high level waste tanks (Simmons, 1998). In 1974, the Waste Encapsulation and Storage Facility (WESF), was constructed on the west end of B Plant to support B Plant's mission. B Plant deactivation was completed in FY 1998 and B Plant will not be sending any future waste to tank farms (Lueck, 1999).

WESF's current mission is to receive and store the cesium and strontium capsules that were manufactured at WESF in a safe manner and in compliance with all applicable rules and regulations (Brist, 1999). Waste projection estimates for WESF varied from 0 to 20 Kgal/year. If the integrity of a capsule is lost, up to 90 Kgal could be transferred to tank farms. For all three projection cases, it was assumed that WESF would generate 5 Kgal/year. No flushes were anticipated. The WVRF used to evaporate either B Plant or WESF waste to DSSF is 99% (Sederburg, 1995).

3.2 242-A EVAPORATOR and LERF

The 242-A Evaporator was restarted on April 15, 1994. To understand the projection model for the 242-A Evaporator, it is necessary to understand the waste flow during evaporator operation and the simulation model. Waste from the dilute holding tanks are transferred into the evaporator feed tank (Tank 102-AW). Waste in the feed tank is then transferred to the 242-A Evaporator for boil-down. Major assumptions for the evaporator operation are listed below:

- This projection model assumed that the 242-A Evaporator would operate in a "Linked Run" process mode (Guthrie, 1993). A "Linked Run" is a continuous operation of the 242-A Evaporator, made possible by simultaneously transferring from the DST's to the Evaporator feed tank (Tank 102-AW).

- A period of four months is required from the time a holding tank is filled with dilute wastes before the waste can be evaporated (Von Bargen, 1995). This period allows time for sampling, analysis per the Evaporator DQO, documentation, and facility preparation (Bloom, 1999).

- All projection cases scheduled evaporator campaigns eight months apart to minimize operational costs and to allow the evaporator and Effluent Treatment Facility to minimize staff requirements. Scheduling campaigns eight months apart required the use of two evaporator staging tanks. If one of the staging tanks is not available, campaigns may have to be scheduled closer together. Several of the projected evaporator campaigns included two tanks of dilute waste for evaporation in a single campaign. Evaporator engineers have recommended that campaigns be limited to a maximum of three dilute tanks per campaign (Bloom, 1999).

- The desired WVR for each 242-A Evaporator campaign is determined by boil-down studies, computer simulation, and/or process control sampling. The concentration of waste increases after each pass through the Evaporator until it reaches a concentration level consistent with engineering studies. The waste volume projection model of the 242-A Evaporator operation used in these projections cases produced DSSF with a specific gravity of 1.41. Upon reaching the desired concentration level, the concentrated waste is transferred to the evaporator receiver tank (Tank 106-AW). At the end of a campaign or when Tank 106-AW has been filled, DSSF is transferred to another DST holding tank.

- The Liquid Effluent Retention Facility (LERF) has a 7.8 million gallon storage capacity (Basin 42) for evaporator process condensate (Guthrie, 1997a).

- The ratio of process condensate sent to LERF for every gallon of Waste Volume Reduction (WVR) for Evaporator Campaigns 94-1, 94-2, and 95-1 was 1.29, 1.24, and 1.26, respectively (Guthrie, 1996). The evaporator seal water and demister spray upgrade could reduce future process condensate production to 1.15 gallon of condensate/gallon of WVR which would lower the value used for future projections. This projection used a value of 1.20 gallon of condensate/gallon of WVR (Bloom, 1999). Since the

Effluent Treatment Facility has a capacity of approximately 50 Mgal/year (Wagner, 1996), it was assumed that LERF capacity would not limit future evaporator operations.

- The maximum monthly WVR during Evaporator operation should be approximately 1500 kgal/month based on a near optimum Campaign 94-2 and 96-1 performance with approximately a 50% initial WVR per pass through the evaporator (Guthrie, 1997b).

- An average evaporation rate of 500 Kgal/month (Bloom, 1999) was used in this simulation taking in to consideration:
  - the 242-A Evaporator historical processing rates
  - downtime between campaigns
  - waste characterization
  - staging and tank transfers

- The simulation used in this projection evaporates all dilute wastes to a concentrated interim storage form in the same year that a tank has been filled. This assumption is valid if the evaporator is operating and the yearly waste generation rate has not exceeded the annual WVR limit of the evaporator. Historically, dilute wastes were concentrated to near the aluminate boundary which would produce concentrated wastes with a specific gravity which could range from 1.3 to 1.67. However, it has been noted that all of the DSTs currently on the Flammable Gas Watch List (i.e., tanks with safety concerns related to hydrogen build-up) have specific gravities greater than 1.4 (Reynolds, 1994). To avoid production of future Flammable Gas Watch List tanks, it has been proposed that all future waste concentrations should be limited to a specific gravity of 1.41 unless additional technical evaluation shows flammable gas will not build-up (Fowler, 1999 and Mulkey, 1997).

  The waste volume projection model of the 242-A Evaporator operation used in projections thru 1994, typically produced DSSF with a specific gravity of 1.50-1.55. Reducing these wastes to a specific gravity of 1.41 increases waste storage volumes by approximately 22%-35%, depending on the chemical composition of the waste. Although the evaporation limit for concentrated wastes is a specific gravity of 1.41, the first five evaporator campaigns in Table 3 (94-1 thru 97-1) produced concentrated wastes with a specific gravity close to 1.3 (Guthrie, 1997a). Evaporator campaign 97-2 did evaporate waste to a specific gravity of approximately 1.4. This document projects DST needs based on the evaporation of wastes to a specific gravity limit of 1.41.

- The waste volume reductions achieved by the 242-A Evaporator since its restart in 1994 are summarized in Table 3.

- No evaporator campaigns were completed in FY 1998. A cold run was completed in FY 1998 and added approximately 79 Kgal of water to DSTs.

Table 3. Historical Evaporator Campaigns Since the 1994 Restart

Campaign	Start Date	Waste Source	Waste Feed Type	Approximate WVR, Mgal
94-1	4/94	102-AW, 106-AW, & 103-AP	DN	2.42
94-2	9/94	102-AW, 106-AW, 101-AP, 107-AP, & 108-AP	DN	2.79
95-1	6/95	102-AW, 106-AW, 107-AP, & 108-AP	DN	2.16
96-1	5/96	102-SY, 105-AW, & 102-AY	DN	1.12
97-1	3/97	101-AN	DN-SWL	0.4
97-2	9/97	101-AY and 106-AN	DC	0.7
98	No evaporator campaign in FY 1998 (cold run completed)			

o The next evaporator campaign (99-1) was started in July 1999, to evaporate dilute waste from Tanks 102-AY, 106-AP, and 108-AP.

o All projection cases assumed that evaporation capability would be available annually to evaporate all dilute wastes except for the one year outage in FY 2004. The annual evaporation of dilute waste minimizes tank space requirements and allows site cleanup activities to continue unabated. The life of the 242-A Evaporator will be extended through the end of Phase 1 (2018). Evaporator upgrades will be completed by 2005. It is assumed that the Phase 2 waste processing contractor will provide evaporator capability during Phase 2 Operations. (O'Toole, 1998).

o Previous projections assumed that the 242-A Evaporator would require a one year outage for maintenance and or upgrades every ten years based on a 10 year design life of the 242-A Evaporator (Miskho, 1990). All three projection cases assumed a one year outage in FY 2004 (Bloom, 1999).

o Evaporator certification training runs prior to evaporator operation will add approximately 50 Kgal to tank farms and 50 Kgal to the LERF and will occur on a bi-yearly basis (Guthrie, 1997b). The training run in April 1995, added 57 Kgal to DSTs.

o Evaporator flushing after each campaign was previously projected to add 35 Kgal/campaign (Haigh, 1992). Actual flushes for the first three campaigns completed since April 1995 have varied from 27 to 58 kgal/campaign.

o For the years 1999-2004, it was estimated that 1 to 2 campaigns would be required each year based on waste generations, segregation requirements, and tank space availability. The additional yearly campaigns would be needed to evaporate the anticipated increased SWL (complexed and non-complexed) and TCO wastes. The WVR for evaporation of these flushes to DSSF was 99 (Sederburg, 1995).

3.3 GROUT

No additional Grout Vaults are scheduled to be poured at the Hanford site. RPP program planning requires that all tank wastes be separated into low-activity and high-activity fractions and each fraction be immobilized into suitable waste forms for ultimate disposal. Tanks that were originally designated and set aside as grout feed tanks were used for other purposes.

3.4 EFFLUENT TREATMENT FACILITY

The Effluent Treatment Facility (ETF) started operation in November 1995 to process the stored evaporator condensate from the LERF, newly generated evaporator condensate, and aqueous waste water containing low specific radioactivity (Wagner, 1996). Treated effluent is discharged to the State Approved Land Disposal Site (SALDS), north of the 200 West Area. This site was chosen to allow tritium to decay away before the groundwater migration reaches the Columbia River. The ETF does not remove tritium because no feasible production-scale tritium removal technology presently exists. The ETF has a capacity to treat 50 Mgal/year. The ETF should not send any streams to DSTs.

3.5 PFP

The Plutonium Finishing Plant (PFP) is a facility in the 200 West Area which houses the processes and supporting operations for (Hirzel, 1999):

1) stabilization of reactive solid residues by muffle furnace calcination (OPERATIONAL);
2) shipping, receiving and storage of special nuclear materials (OPERATIONAL);
3) analytical and development laboratories (OPERATIONAL);
4) treatment and handling of PFP liquid wastes destined for tank farms and the ETF (OPERATIONAL).

An Environmental Impact Statement (EIS) was issued for public comment in November 1995 covering the PFP facility stabilization and clean out. The PFP EIS and Record of Decision (ROD) was published in May 1996. The waste volume projections are based on the preferred alternatives identified in the EIS for facility cleanout and stabilization. The volume of waste anticipated to be produced for the TPA Compliant Case is developed from the existing waste generation rate at PFP (100 untreated gallons/month), and the anticipated use of a direct denitration vertical calciner coupled with an ion exchange processing system currently planned for FY 2000 startup. The vertical calciner is the most promising technology for plutonium residue stabilization and facility clean out. All projection cases projected that PFP stabilization and clean out would generate a total of 33 Kgal of additional waste from 1999 through 2012 (Hirzel, 1999). The WVRF to evaporate PFP wastes to DSSF is 81% (Sederburg, 1995). Flush volumes for PFP stabilization waste streams is 22% (flushes of waste transfer lines from PFP to 244-TX and from 244-TX to Tank 102-SY).

The percent solids experienced in past PFP waste generations are listed below (Barrington, 1991):

% Solids in PRF waste	3.5%
% Solids in RMC waste	4.4%
% Solids in lab waste	4.5%

3.6 PUREX

The Plutonium Uranium Extraction (PUREX) Facility was used to separate irradiated N Reactor fuel into plutonium nitrate, uranyl nitrate hexahydrate (UNH), neptunium nitrate, and waste products. The main processing operations involved dissolution of cladding and irradiated fuel, solvent extraction and conversion of plutonium nitrate to plutonium oxide. Acid recovery, solvent treatment systems, and off-gas treatment supported the major processes.

The deactivation of PUREX was completed in FY 1997 and the waste transfer system has been deactivated. However, condensate is collected in the PUREX main stack catch tank (216-A-TK-2) and the #2 Filter catch tank (V11-1). This accumulation could result in approximately 5 Kgal of dilute waste being transferred to tank farms once per year (Eiholzer, 1997).

All three projection cases projected 5 Kgal/year of waste additions from PUREX. Based on the average waste composition presented for PUREX TCO wastes, the WVRF for evaporation of PUREX TCO wastes to DSSF is 99% (Sederburg, 1995). Flush volumes for PUREX TCO waste streams are 10%.

3.7 S PLANT

S Plant (or 222-S Labs) is a dedicated laboratory facility. The Laboratory currently provides analytical chemistry services in support of Hanford processing plants and tank characterization. Emphasis is on waste management processing plants, environmental monitoring programs, Tank Farms, 242-A Evaporator, Waste Encapsulation Storage Facility (WESF), Plutonium Finishing Plant (PFP), research support activities, and essential materials. Most of the radioactive liquid waste generated at the laboratory complex originates from analytical activities performed within the 222-S Laboratory in support of tank characterization (Westcott, 1999). Radioactive and radioactive hazardous (mixed) wastes generated by the 222-S Laboratory are discharged to the 219-S Waste Handling Facility. Dilute, non-complexed wastes are currently being transferred via pipeline to Tank 102-SY. Projected S Plant monthly waste generations rates (Westcott, 1999) were approximately 0.83 to 1.0 Kgal/month for FY 1999 through 2028 for all projection cases. Based on the waste composition presented for 222-S Laboratory wastes, the WVRF for evaporation of 222-S miscellaneous wastes to DSSF is 99% (Sederburg, 1995). Flush volumes for 222-S waste streams is 22%.

3.8 SALT WELL LIQUID PUMPING

Salt Well Liquid (SWL) pumping will occur for single-shell tanks (SSTs) which have 50,000 gallons or more of drainable interstitial liquid. Pumping is scheduled to stop when the output rate decreases to 0.05 gallons per minute. SWL pumping assumptions for all three projection cases are listed below:

- A 50 percent saltcake porosity/21 percent sludge porosity were used to estimate the remaining SWL volume, resulting in a remaining volume of ~6.2 million gallons (Schreiber, 1998) without flush and dilution. The pumping schedule (Vladimiroff, 1999) used for all projections is covered later in this section. The WVRF for evaporation of dilute non-complexed (DN) SWL to DSSF is 47% (Sederburg, 1995). The WVRF for evaporation of dilute complexed (DC) SWL to Complexant Concentrate (CC) is 10% (Sederburg, 1995). [Late Note: New estimates being prepared in August 1999 may decrease the amount of remaining SWL by over one million gallons.]

- It was projected that dilution and flushing of the salt well liquid and transfer lines would generate approximately 1.73 Mgal (28%) of water. The WVRF used for this flush is 99% (Sederburg, 1995).

- Approximately 1 Mgal (30%) of the total SWL volume is complexed based on available analytical information.

- Based on the latest SWL pumping project plan, Tanks 101-AN, 106-AP, and 108-AP were used as the 200 East Area receiver tanks.

- Pumping SWL in West Area presents special problems due both to the limited tank space available and due to the transuranic (TRU) heel in Tank 102-SY. Tanks 101-SY and 103-SY contain complexed waste and are also designated as Watch List Tanks. Addition of waste to Watch List tanks is prohibited unless a safer alternative cannot be found.

  Therefore, Tank 102-SY was designated as the West Area SWL receiver for both non-complexed and complexed SWL. Tank 102-SY contains approximately 88 Kgal of TRU solids (Table 8) that are not scheduled to be retrieved until after the completion of SWL pumping. Historically, complexed waste and TRU wastes have been segregated to minimize the amount of waste requiring more expensive disposal and to comply with U.S. Department of Energy (DOE) Order 5820.2A. The Hanford Site has implemented this order by segregating waste that was considered complexed (greater than 10 grams/liter total organic carbon) from TRU waste sludge (Reynolds, 1995). The schedule presented in Table 4 would require pumping complexed SWL over the sludge in Tank 102-SY in order to meet TPA milestones for the years 2000-2003. Commingling studies completed in FY 1999 (Kirch, 1999), indicate that no TRU will be solubilized by commingling complexed SWL with the TRU solids in Tank 102-SY. Furthermore, the U. S. Department of Energy, Richland Operations Office (RL) has allowed the commingling of non-complexed and complexed SWL as necessary to allow the stabilization of single-shell tanks (Kinzer, 1998).

In this projection, the complexed wastes are shown being pumped to Tank 102-SY to meet the current TPA schedule.

- For all projection cases, it was assumed that all SWL would be pumped from FY 1999 through the end of FY 2004 to meet the Consent Decree milestones. Projected SWL pumping volumes are based on the pumping sequence obtained from the latest SWL project plan (Vladimiroff, 1999). Historical pumping volumes and the projected SWL pumping volumes for all projection cases are presented in Table 4.

Table 4. Salt Well Pumping Schedule for All Projections

Salt Well Pumping Schedule for 50% Saltcake/21% Sludge Porosity (Schreiber, 1998)					
FISCAL YEAR	EAST AREA		WEST AREA		TOTALS
	DN	DC	DN	DC	
Historical SWL Pumping 1989-1997					
1989	55 KGAL	0 KGAL	0 KGAL	17 KGAL	72 KGAL
1990	44 KGAL	0 KGAL	0 KGAL	0 KGAL	44 KGAL
1991	227 KGAL	0 KGAL	0 KGAL	0 KGAL	227 KGAL
1992	121 KGAL	0 KGAL	0 KGAL	0 KGAL	121 KGAL
1993	0 KGAL	0 KGAL	37 KGAL	0 KGAL	37 KGAL
1994	189 KGAL	0 KGAL	32 KGAL	0 KGAL	221 KGAL
1995	194 KGAL	105 KGAL	18 KGAL	0 KGAL	317 KGAL
1996	22 KGAL	0 KGAL	218 KGAL	0 KGAL	240 KGAL
1997	23 KGAL	0 KGAL	140 KGAL	0 KGAL	163 KGAL
1998	0 KGAL	0 KGAL	97 KGAL	0 KGAL	97 KGAL
Projected SWL Pumping 1999-2000 (without flush)					
1999	0 KGAL	0 KGAL	717 KGAL	0 KGAL	717 KGAL
2000	184 KGAL	0 KGAL	517 KGAL	526 KGAL	1227 KGAL
2001	824 KGAL	0 KGAL	680 KGAL	365 KGAL	1869 KGAL
2002	539 KGAL	39 KGAL	1138 KGAL	14 KGAL	1730 KGAL
2003	107 KGAL	49 KGAL	423 KGAL	0 KGAL	579 KGAL
2004	0 KGAL	0 KGAL	0 KGAL	0 KGAL	0 KGAL
TOTAL 1999-2000	1654 KGAL	88 KGAL	3475 KGAL	905 KGAL	6122 KGAL

3.9 SINGLE-SHELL TANK SOLIDS RETRIEVAL

This projection assumed that the retrieval of Tank 106-C solids would be started in October 1998 and completed by approximately June 1999 (Kirch, 1997). Initially, approximately 170 Kgal of solids would be retrieved. Retrieval of Tank 106-C solids will require approximately a 3:1 ratio of dilution water to solids (Estey, 1994). Solids retrieved from Tank 106-C will be stored in Tank 102-AY.

Approximately 11.9 Mgal of sludge and 22.9 Mgal of saltcake will be retrieved from SSTs (Hanlon, 1999). Dilution of these solids for retrieval and processing results in a total retrieved volume of approximately 108 Mgal (Penwell, 1998a). Saltcake would be diluted to 5 M Na and sludge will be diluted to 10 weight percent solids (Kirkbride, 1999a). Approximately a 3:1 ratio of dilution water to solids will be required for the retrieval of the remaining SST solids. It is further assumed that all solids will be removed from the SSTs.

For projection Case 1, a TPA compliant SST solids retrieval schedule received from Disposal Engineering (Penwell, 1998a) was incorporated. The TPA compliant SST retrieval schedule would start retrieval in December 2003 (M-45-03-T1) and be completed by the end of FY 2018 (TPA milestone). The as retrieved volume of waste for this case is approximately 2.8 Mgal for FY 2004-2005 and an additional 3.6 Mgal for FY 2006-2007. The as retrieved volumes for the remaining SST solids are shown in the spreadsheet for the TPA Compliant Case (Section 5.1) and are based on retrieval at 5 M Na. Projection Case 2 used the same operational and processing assumptions as Case 1 but incorporated the lower single-shell tank (SST) solids retrieval schedule used in Disposal Engineering Case 3s3. Case 3 used the SST solids retrieval schedule from Disposal Engineering Case 6b.

3.10 T PLANT

T Plant's primary mission is decontamination and treatment of radiologically and chemically contaminated waste and equipment located throughout the Hanford site (McDonald, 1997). T Plant also provides inspection and repackaging services to various Hanford facilities. The 2706-T Low-Level Decontamination Facility (where low-level equipment decontamination is performed) is an approved decontamination facility that commenced operation in September 1994. Limited 221-T canyon decontamination activities (primarily Tank Farms long-length contaminated equipment) were initiated in 1995.

T Plant is currently testing new decontamination techniques (ice blasting and CO_2 decontamination systems) which have reduced liquid waste generations from those reported previously. Dilute, non-complexed wastes collected at T Plant during decontamination, repackaging, or condensate collection, are currently being transported to 204-AR vault via tanker truck. These wastes contain approximately 5 volume percent solids (McDonald, 1997). Projected T Plant monthly waste generations (McDonald, 1997) were based on a combination of anticipated work loads and actual observed generation rates. The projected volumes supplied by T Plant engineers ranged from 2.1 Kgal/month to 2.7 Kgal/month (Haas, 1999 and McDonald, 1997). The exact waste volume generation projected for each year is shown in the spreadsheet for the Case 1 in Section 5.1. All three projection cases used the same generation rates. The WVRF for evaporation of T Plant miscellaneous wastes to DSSF is 99% (Sederburg, 1995). Flush volumes for T Plant waste streams are 22%.

3.11 TANK FARMS

There are currently 28 double-shell tanks (DSTs) used to receive, store, and evaporate the liquid wastes generated at the Hanford facilities to an interim waste form. The interim waste form (e.g., DSSF) is currently stored in tank farms awaiting processing and vitrification for final disposal. Tank farm waste generation sources and operational considerations are listed below for the aging and non-aging waste tanks. Tank Farm waste generations are primarily from line, cross-site, and air-lift circulator flushes.

Double-Shell Tanks for Aging Waste

Four of the DSTs (AY and AZ farms) are designated as aging waste tanks and were designed to store high-heat wastes (e.g., NCAW wastes or wastes containing high-heat loads due to the presence of ^{90}Sr or ^{137}Cs). The aging waste tanks are equipped with condensers and air-lift circulators. The purpose of the condensers is to handle the vapors from primary tank vent systems when hot liquid is present. Condensates are collected in catch tanks (e.g., 151-AZ) and returned either to an aging waste tank or to a dilute receiver tank. The air-lift circulators aid in suspending NCAW solids and in heat removal. Air-lift circulators require periodic flushing (approximately once/week) to prevent clogging when they are operating. When the air-lift circulators are not operating, flushing is less frequent.

Aging waste tank operation assumptions used in all three projections follow:

- Aging waste tanks can be used for storage of dilute non-aging waste.
- It is assumed that there will be no additional aging waste produced by the Hanford facilities. However, certain wastes containing high ^{90}Sr or ^{137}Cs contents may require storage in aging waste tanks due to their radioactivity. HLW returns to DSTs during Phase 2 processing will be stored in three aging waste tanks (see section 3.18 for more detail).
- Single-shell tank (SST) solids retrieved from Tank 106-C will be stored in an aging DST (Tank 102-AY) due to the high heat content of the solids.
- One million gallons of aging tank space is kept available for receiving the contents of an aging waste tank, in the unlikely event of a tank leak (Department of Energy order 5820.2A).

- Tank 102-AY was designated as the 200 East Area dilute receiver for non-complexed wastes through mid FY 1996. Tank 102-AY is currently being used to store the solids retrieved from Tank 106-C. Tank 108-AP is currently receiving direct transfers of wastes from B Plant and tanker truck shipments via 204-AR vault from S Plant, T Plant, 100 Area, 300 Area, and 400 Area. Tank 108-AP and 101-AN are projected to receive non-complexed SWL.

Double-Shell Tanks for Non-Aging Waste

The remaining 24 DSTs are called non-aging waste tanks and are used to store wastes that do not contain high-heat loads in accordance with applicable operational and waste segregation policies. Non-aging waste tank operation assumptions are as follows:

- Approximately 66 Kgal of caustic will be added to Tank 107-AN in FY 2001 to mitigate the low caustic condition in the tank for all projection cases (Carothers, 1999).

- Current operational tank usage for this projection are summarized in Table 5. Projected Tank usage will be covered in Section 5.

Table 5. Current Operational Tanks and Usage

Operation	Designated Tank
Evaporator Feed Tank	Tank 102-AW
Evaporator Receiver Tank	Tank 106-AW (tank level varies)
200 East Dilute Receiver Tank	Tank 105-AW (PUREX direct transfers; 100 Area wastes)
200 East Dilute Receiver Tank	Tank 108-AP (FY 1999-2000)
200 West Dilute Receiver Tank	Tank 102-SY (FY 1999-2018)
200 East SWL Receiver (DN)	Tank 101-AN and 108-AP (FY 1999-2000)
200 East SWL Receiver (DC)	Tank 106-AP (FY 1999-2000)
200 West SWL Receiver (DN)	Tank 102-SY
200 West SWL Receiver (DC)	Tank 102-SY
Private Contractor Feed Tanks	BNFL supplies feed tanks
Intermediate Staging Tanks	Tanks 101-AN, 106-AN, 104-AN, 105-AN
Sr/TRU/Entrained Solids Return Waste	BNFL supplies space
Dilute Feed Staging	Tanks 104-AP, 107-AP; Tank 106-AN (~FY 2003)
Spare Tank Space	Distributed space from mid FY 1999 on

- Starting in FY 1999, 0.72 Mgal of operational space in the evaporator Feed and Receipt Tanks (Tanks 102-AW and 106-AW) was used as spare space (Awadalla, 1995) in all three projection cases.

- o It was assumed that the TRU solids in Tank 102-SY would be retrieved to Tank 105-AW starting in July 2009. The NCRW solids in Tank 105-AW were not combined with the solids in Tank 103-AW in this projection.

- o Flushes are generated during the receipt of waste transfers either from tanker trucks or after tank to tank transfers. Percent flushes are included with a description of each of the facility generations in Section 3.

- o Tank 108-AP is currently receiving direct transfers of wastes from B Plant and tanker truck shipments via 204-AR vault from S Plant, T Plant, 100 Area, 300 Area, and 400 Area.

- o Tank 106-AP will be used as the complexed SWL receiver and Tanks 101-AN and 108-AP as the non-complexed SWL receivers in 200 East Area (Vladimiroff, 1999).

Projected waste generations for Tank Farms were based on a combination of previously observed waste generation rates, anticipated operational needs, and chemical additions that are explained below:

- o <u>Tank Farm water additions to DSTs</u>. Tank Farms waste generation rates and flushing activities generally increase with the restart of the 242-A Evaporator due to the additional waste transfers. The 242-A Evaporator was restarted in April 1994. During the period April 1994 through May 1995, the average monthly waste generation rate for Tank Farms was 10.92 Kgal/month. The average monthly waste generation for Tank Farms during FY 1998 was ~3.7 Kgal/month. The target rate set for Tank Farms waste generations was 10 Kgal/month. All three projection cases estimated that Tank Farms would generate 10 Kgal/month or 120 Kgal/year to cover transfer line and air-lift circulator flushes and chemical additions. The WVR for evaporation of these flushes to DSSF was 99% (Sederburg, 1995).

- o <u>Cross-site Transfers</u>. All projection cases assumed that either the existing cross-site transfer line or the new cross-site transfer line (Project W-058, operational in FY 1998) would be available to allow cross-site transfer of SWL, facility generations, DST solids from Tank 102-SY and/or SST solids. It was assumed that all wastes containing solids would be cross-sited via the new line which has inline pumps to Tank 104-AN. Without operable cross-site lines many of the TPA (and/or Consent Decree) milestones involving West area wastes could not be achieved.

  All three projection cases assumed that approximately 35 Kgal of water would be needed to flush after each cross-site transfer. During the period 1999-2003, approximately two to four cross-sites would be needed each year due to the volume of SWL being pumped. Based on the projected cross-site testing and transfers anticipated, 70 Kgal/year was projected for the period FY 1999-2003. All three projection cases used the same volumes for cross-site transfer line tests and flushes. The WVR for evaporation of these flushes to DSSF was 99% (Sederburg, 1995).

- Tank Fill Limits (except for special tank fill considerations):
  - AY, AZ Tanks: 980 Kgals
  - All other DSTs: 1140 Kgals

- The special tank fill considerations used to simulate tank transfers in this projection are listed below:

  - Tank 102-SY: 1082 Kgal maximum operational fill limit; minimum drawdown level is 358 Kgal until TRU solids have been removed.
  - Tank 102-AY: Start transfer at 900 Kgal.
  - dilute receivers are projected to be pumped down to 28 Kgal above solids.

3.12 UO_3 FACILITY

Deactivation of the UO_3 Facility is complete and therefore, no waste will be sent to DSTs.

3.13 WASTE SAMPLING AND CHARACTERIZATION FACILITY (WSCF)

The Waste Sampling and Characterization Facility (WSCF) was started in FY 1994. This projection assumed that WSCF would send its waste to ETF and not to DSTs (Collins, 1996).

3.14 100 AREA

<u>100-N Basin</u>
The 100-N Basin was constructed in 1963 to receive irradiated fuel assemblies discharged from the N Reactor for the purpose of inspection, storage, and preparation for shipment. In 1988 the N Reactor was placed in a "cold standby" status (shutdown but capable of restarting). In 1989 all nuclear fuel was removed from N Basin and transferred to K Basin. In 1991, RL directed Westinghouse to begin deactivation activities. A significant quantity of radioactively contaminated equipment, hardware, debris, and sediment have accumulated in 100-N Basin that will need to be removed. It was assumed that deactivation of the N Basin would not send any wastes to DSTs but wastes would instead be transferred to the Environmental Restoration Disposal Facility (ERDF) (Logan, 1998).

<u>100-K Basin</u>
Fuel handling operations have resulted in some cladding damage to N-Reactor fuel. Subsequent fuel oxidation resulted in fuel and fission products accumulating in fuel canisters and in K Basin where the fuel handling occurred. Aluminum oxide, iron oxide, concrete grit, and other debris has accumulated and mixed with the fuel corrosion products to form a sludge on the basin floor. Approximately 430 Kgal of water and sediment (approximately 98 Kgal of sediment) will be transferred to DSTs (Rutherford, 1999). New schedules project that these wastes will be transferred to Tank 105-AW in FY 2004 to 2005. The above generations for 100-K Basin cleanout were used in all three projection cases.

105-F & 105-H Basins

Plans to cleanout the 105-F and 105-H Basins are still being reviewed and the date of cleanout is uncertain due to funding. The projected plan is to clean out the 40,000 gallons in 105-F in the year 2001 and the 200,000 gallons from 105-H in the year 2008 (Mihalic, 1997 and Griffin, 1999). These assumptions for 105-F and 105-H Basin cleanout were used for all three projection cases.

The WVRF for evaporation of all 100 Area Basin wastes to DSSF is 99% (Sederburg, 1995). Flush volume for 100 Area wastes is 44%.

3.15 300 AREA

Facilities in the 300 Area are used primarily for research and development activities or for analytical support. Some waste received in FY 1995 was generated by decon of facilities. As of October 1998, radioactive waste from 300 Area facilities will no longer be transferred to the 340 Facility. Liquid wastes collected in 300 Area will be shipped to the 204-AR vault via a tanker truck due to the cessation of rail service at Hanford (Halgren, 1999). In the future, a new facility will be installed for Pacific Northwest National Laboratory to transfer wastes from its 300 Area facilities to the DSTs.

The 320 Facility projected that it would send from 1 to 25 Kgal/year to tank farms during the period 1999 through 2006 (Halgren, 1999). The 324 Facility has estimated it would send 90,000 gallons of waste to tank farms during the period 2000 to 2005 (Hafla, 1999). Facilities in the 300 Area sent 15 Kgal of waste (includes flush) to DSTs (~1.3 Kgal/month) in FY 1998. Based on the facility inputs, all three projection cases projected that 0.11 to 3.4 Kgal/month of miscellaneous waste would be sent from 300 Area Facilities to Tank Farms. See the spreadsheet in Section 5.1 for a listing of the volume of waste projected for each year for 300 Area Facilities. Based on the chemical composition supplied for 300 Area waste streams, the WVRF for evaporation of 300 Area miscellaneous wastes to DSSF is 94% (Sederburg, 1995). Flush volume for 300 Area waste streams is 44%.

3.16 400 AREA

There are three major facilities in the 400 Area (Dillhoff, 1997). These include the Fast Flux Test Facility (FFTF), the Maintenance and Storage Facility (MASF), and the Fuel and Material Examination Facility (FMEF). Radioactive liquid waste is primarily generated in conjunction with the removal of residual sodium from reactor components or with decontamination activities. A phased process was begun in December 1993 to place the FFTF into a radiologically and industrially safe shutdown condition. Shutdown of the FFTF has increased the amount of liquid waste generated by the plant's Sodium Removal System. Approximately 11 Kgal of wastes were received from 400 Area in FY 1994-1995 (~0.5 Kgal/month). With the loss of the railroad system at Hanford, the 400 Area will be sending its radioactive wastes to the Effluent Treatment Facility in 200 Area (Dahl, 1999). All three projection cases projected no wastes would be sent from the 400 Area facilities to tank farms.

3.17 PHASE 1B PRIVATIZATION PROCESSING

Privatization Concept. The revised DOE strategy for treatment of Hanford tank wastes, termed "privatization," would use private contractors to design, permit, build, operate, and decommission the facilities for waste treatment and immobilization (DOE, 1995). Final details of the privatization work will not be developed until later in the process and the assumptions listed below are subject to change. As currently proposed, privatization would be divided into two phases. Phase 1B would include privatization of waste tank supernatant processing, Low-Activity Waste (LAW) immobilization, and High-Level Waste (HLW) immobilization (Washenfelder, 1996b) by a private contractor. The scale of processing during Phase 1B of privatization has been established to demonstrate the technical and commercial capability. Phase 2 of privatization would include additional tank waste retrieval, supernatant processing, sludge/solid processing, LAW immobilization, HLW immobilization, and interim storage of immobilized waste (Washenfelder, 1996a and Kirkbride, 1999a). The schedule and assumptions listed below were used for the Case 1 and 2 projections and were based on Disposal Engineering Case 3s3 (Kirkbride, 1999b and Harmsen, 1999a). Cases 3 used a different waste treatment schedule than the schedule used for Cases 1 and 2. The waste treatment schedule used for Case 3 is presented in Section 4.0 along with the other assumptions unique to this projection case.

Phase 1B Schedule. The facility startup schedule for Phase 1B is summarized below (used for all three projections):

-LAW and HLW Pretreatment start date	October 2005
-HLW vitrification start date	April 2006
-LAW vitrification start date	March 2007

Intermediate Feed Staging Tanks. Tanks 101-AN, 104-AN, 105-AN, and 106-AN were used for intermediate staging of wastes by the Project Hanford Management Contractor (PHMC) (Kirkbride, 1999a).

Privatization Contractor (BNFL) Feed Tanks. Wastes from the intermediate feed staging tanks will be transferred to feed tanks which will be built by BNFL (Taylor, 1999).

HLW Processing and Immobilization. Phase 1B processing of tank waste sludges would involve sludges in Tanks 101-AZ, 102-AZ, 102-AY (includes C-106 solids), 103-AW, 101-AY, and 102-SY. Phase 1B-Prime (extended order) would process sludges from C-104, 104-AW, C-107, and 105-AW (Kirkbride, 1999b). Blends of sludges were processed based on information received from Disposal Engineering (Kirkbride, 1999b). All cases assumed that no in-tank washing of solids would occur.

In Revision 21 of this document, it was assumed that all NCAW solids and the 106-C solids would be combined into one aging waste tank (Tank 102-AZ) and that all NCAW supernates would be concentrated into one aging waste tank (Tank 101-AZ). Since that document was published, studies have been completed which looked at numerous sludge washing/combination options (Powell, 1996a). The alternatives for consolidating high heat sludges have been reviewed by a decision board comprised of Hanford contractor management, a DOE/RL representative, and a WDOE representative. It was concluded that consolidating all the sludges into a single tank would require modifications to the tank farm safety basis. The preliminary decision reached was not to consolidate all the high heat sludges into a single tank.

HLW Processing Rate. The HLW processing rate used for projection Cases 1 and 2 is based on Disposal Engineering Case 3s3 (Kirkbride, 1999b) and is listed below by year:

Projection Cases 1 & 2	
Yr	Canisters/yr
1-2	100
3-12	120 (100%)
13on	480 (400%)

Low-Activity Waste (LAW) Treatment. The current DOE strategy calls for a demonstration of LAW treatment and immobilization by a private vendor at a rate dependent on the type of waste being processed. Envelope A feed is typically double-shell slurry feed (DSSF), double-shell slurry (DSS), or dilute non-complexed waste (DN). Envelope B feed is untreated NCAW supernate. Envelope C feed is typically complexant concentrate (CC). The processing schedule, sequence of waste processed, and the approximate sodium quantity processed for projection Cases 1 and 2 is listed in Table 6 (Harmsen, 1999a and Kirkbride, 1999b). The LAW processing rate used for Cases 1 and 2 is listed below by year:

Projection Cases 1 & 2	
Yr	units/yr
1-3	800 (73%)
4-11	1100 (100%)
12on	2200 (200%)

Storage of Separated TRU and Entrained Solids. For all projection cases, the entrained solids and transuranic (TRU) elements removed from LAW waste by the private contractor were not returned to tank farms.

Table 6. Projected LAW Processing Schedule for Projection Case I

Tank	Waste Type	Envelope	Volume with solids (Kgal)	Approximate Quantity of Na Delivered (MT Na)	Existing or Future Waste	Transfer Date to Intermediate Staging Tank	Processing Start Date
107-AN	CC	C	1044	~ 652	Existing	5/2005	3/2007
104-AN	DSSF	A	1052	~1098	Existing	9/2006	2/2008
102-AN	CC	C	1060	~1080	Existing	9/2007	7/2009
105-AN	DSSF	A	1128	~1053	Existing	10/2008	11/2010
101-SY	CC	A	~2169	~ 727	Existing	12/2009	7/2011
103-AN	DSS	A	957	~1249	Existing	3/2011	3/2012
BNFL	NCAW Supernate	A	~900	~ 637	Existing	N/A	4/2013
101-AW	DSSF	A	1125	~1031	Existing	10/2011	11/2013
Start of Phase 1B Prime (contract extension)							
104-AW	DSSF	A	1119	~ 475	Future	2/2012	11/2014
103-SY	CC	C	741	~ 586	Existing	12/2010	5/2015

3.18 PHASE 2 PRIVATIZATION PROCESSING

The scale of processing during Phase 1B of privatization has been established to demonstrate the technical and commercial capability. Phase 2 of privatization would include the remaining tank waste retrieval, supernatant processing, sludge/solid processing, LAW immobilization, HLW immobilization, disposition of encapsulated Cs/Sr, and interim storage of immobilized waste (Washenfelder, 1996b). The Phase 2 rates are "2X" starting in 2018 (Kirkbride, 1999a).

3.19 WATCH LIST/SAFETY

Due to recent increases in the level in Tank 101-SY, all three projection cases assumed that agitation using a mixer pump would no longer be sufficient for mitigation of the flammable gas buildup in Tank 101-SY. It was assumed that Tank 101-SY would require retrieval and dilution to mitigate the flammable gas buildup. In the Tank 101-SY remediation project plan (Raymond, 1999), it was recommended that a portion of the waste in Tank 101-SY be retrieved with 1:1 dilution to remediate the flammable gas buildup in Tank 101-SY in two stages defined as follows:

a. <u>Minor Dilution</u>. Approximately 100-150 Kgal of waste would be retrieved from Tank 101-SY to 102-SY with 1:1 dilution September 1999. To be conservative, all three projections assumed that 150 Kgal would be retrieved. Tank 101-SY would be refilled with water and the tank would be monitored to see if the flammable gas buildup had been solved--if so, the second stage mentioned below might not be necessary. Waste retrieved in the minor dilution would be cross-sited to AP farm for future evaporation.

b. Major Dilution. Assuming that the minor dilution above did not remediate Tank 101-SY, approximately 500 Kgal of waste would be retrieved from Tank 101-SY to Tank 102-SY with 1:1 dilution. This retrieval and dilution would occur in three stages beginning on March 8, 2000; April 26, 2000; and June 15, 2000. The diluted waste (along with commingled DN/DC SWL waste) would be cross-sited from Tank 102-SY to Tank 106-AP and held as Phase 1B feed without being re-evaporated. [Late Note--at the time the document was distributed, the revised plan would transfer the diluted waste to Tank 104-AP]. In all three projections, it was assumed that the minor dilution would be insufficient and that the major dilution would occur as described above.

Tank 103-SY was diluted to approximately 7 M Na and transferred via Tank 104-AN to Tank 106-AN. In projection Case 1, the transfer to Tank 104-AN occurred early in FY 2011.

All three projection cases assume that timely permission is obtained to remove waste from watch-list tanks used as LAW feed sources and to remove the watch-list designation from that tank immediately after retrieval/dilution.

All three cases assume that the authorization basis is amended to support all activities related to Phase 1B activities (for example, LAW feed staging and delivery, HLW feed staging and delivery, etc.

3.20 SPARE/CONTINGENCY SPACE

Spare space is space reserved in case of a leak in a double-shell tank per DOE Order 5820.2A. Contingency space has historically been set aside to account for possible inaccuracies in the WVP software when projecting waste generations and/or waste volume reduction factors.

A total of 2.28 million gallons (one aging and one non-aging tank) of spare/contingency space was reserved for all three projection cases. The PHMC has been requested to provide the capability to receive up to one million gallons of BNFL waste returns on an emergency basis within the 2.28 million gallons of total spare space (Taylor, 1999).

From FY 1999 on, 0.72 million gallons of the operational space in Tanks 102-AW and 106-AW was designated as part of the 2.28 million gallons of spare space (Awadalla, 1995) in all three projection cases. The remaining 1.56 million gallons of space was distributed spare space.

3.21 WASTE SEGREGATION

Waste segregation and compatibility are requirements of DOE Order 5820.2A (DOE, 1990) and WAC 173-303-395 (Dangerous Waste Regulations). The overriding purpose of waste segregation and compatibility are to ensure the safety of waste storage and tank farms operations; to minimize future processing costs; and to comply with DOE Order 5820.2A and WAC 173-303-393. Wastes that are typically segregated include:

- Phosphate Wastes--dilute phosphate (DP) or concentrated phosphate (CP).

- Wastes Containing High Organic Concentrations--dilute complexed (DC) or complexant concentrate (CC).
- TRU containing wastes--Neutralized Cladding Removal Wastes (NCRW solids) or PFP solids (PT).
- Watch list tank wastes to prevent inadvertent commingling with other wastes.
- Pretreated waste streams.
- Washed NCAW solids, etc.
- Concentrated interim waste types--e.g., double-shell slurry feed (DSSF) or double-shell slurry (DSS) need to be separated from dilute wastes to prevent the need to reconcentrate.
- Wastes exhibiting exothermic reactions.

All three projections assume that current waste segregation practices are observed (if possible) with the exception of SWL pumping in 200 West Area as discussed in Section 3.8. Waste segregation practices are summarized in Table 7. For all projection cases, non-complexed and complexed SWL wastes in 200 East Area were mixed for evaporation purposes beginning in FY 2000. RL has allowed the commingling of non-complexed and complexed SWL as necessary to allow the stabilization of single-shell tanks (Kinzer, 1998).

Table 7. Waste Compatibility Matrix

		Receiver Waste Type							
		DN	DSSF	DC	CC	(PD) NCRW	PT	NCAW	CP
Source Waste Type	DN	X	X	X	X	X	X	X	X
	DSSF	X	X						
	DC			X	X*				
	CC			X*	X				
	(PD) NCRW SOLIDS	X				X	X		
	(PT) PFP SOLIDS	X				X	X		
	NCAW							X	
	CP								X

(*) Adding CC to DC is permitted but would not ordinarily be done. The volume of combined waste which would need to be evaporated would be increased, resulting in increased evaporation costs.

3.22 LOSS OF DST SPACE

Corrosion studies completed to date (Anantatmula and Ohl, 1996) show a 40%-60% chance of a pit corrosion failure occurring in a DST by FY 2028. Some of the corrosion potential could be mitigated by maintaining a corrosion control program for the DSTs. In all three projection cases, it was assumed that none of the DSTs would be removed from service by the end of FY 2018.

3.23 NEW DST CONSTRUCTION

All three projection cases assumed that no new DSTs would be constructed by 2018.

3.24 DST TANK SOLIDS LEVELS

Solids levels in the DSTs are shown in Table 8 (Hanlon, 1999; Estey and Guthrie, 1996; Stauffer, 1997; and Carothers, 1997b). Solids levels have been estimated for the tanks marked with an asterisk (*) based on the previous solids level measurement and the percent solids in facility generations that have been added to the tank since the last solids level measurement. Tanks with no solids level listed have either not been measured or have a minimal solids volume. The total DST solids used for this projection was approximately 4.1 Mgal. The solids level in Tank 102-AY does not reflect the addition of Tank C-106 solids in FY 1999 (total solids as of June 30, 1999 was approximately 137 Kgal).

Table 8. DST Solids Levels (Kgal)

TANK	SOLIDS	TANK	SOLIDS	TANK	SOLIDS	TANK	SOLIDS
101-AY	108	101-AN	33	101-AP		101-AW	306
102-AY	22	102-AN	89	102-AP		102-AW	40
101-AZ	47	103-AN	410	103-AP	1	103-AW*	348
102-AZ	104	104-AN	449	104-AP		104-AW*	231
101-SY	41	105-AN	489	105-AP	89	105-AW	280
102-SY	88	106-AN	17	106-AP		106-AW	228
103-SY	362	107-AN	247	107-AP			
				108-AP			

3.25 IMUST WASTES

Approximately 500 kilogallons of wastes are projected to be received from Inactive Miscellaneous Underground Storage Tanks (IMUSTs) between FY 2011 and 2015 (Wacek, 1996). This is a new waste type added to these projections.

3.26 ASSUMPTION SUMMARY

Assumptions used for all cases are presented in Table 9. Differences in assumptions between the three cases have been highlighted.

Table 9. Assumption Matrix
For the 1999 Operational Waste Volume Projection
(All Years are Fiscal Years)

	Case 1	Case 2	Case 3
Brief Description	Disposal Case 3s3 waste processing. TPA Compliant SST solids retrieval. retrieval. AN Feed Tanks. SWL complete 2004	Disposal Case 3s3 waste processing. Disposal Case 3s3 SST solids retrieval. AN Feed Tanks. SWL complete 2004	Disposal Case 6b waste processing Disposal Case 6b SST solids retrieval. AN Feed Tanks. SWL complete 2004
Meets TPA Milestones	Yes (Consent Decree for SWL Pumping)	No	No
Facility Generations			
Total Limit, Kgal/mo	14.0-17.4	14.0-17.4	14.0-17.4
PUREX			
Yearly Rate, Kgal/yr	5	5	5
TCO Scheduled	Completed	Completed	Completed
TCO Volume, Kgal	0	0	0
Flush for PUREX wastes	10%	10%	10%
WVRF for TCO (to DSSF)	99	99	99
B Plant			
Yearly Rate, Kgal/yr	0	0	0
TCO Scheduled	Completed	Completed	Completed
WESF			
Monthly Rate, Kgal/mo	0.42	0.42	0.42
Flush for misc. waste	0%	0%	0%
WVRF, misc. waste(to DSSF)	99	99	99
S Plant			
Monthly Rate, Kgal/mo	0.83 to 1.0	0.83 to 1.0	0.83 to 1.0
Flush for misc. waste	22%	22%	22%
WVRF, misc. waste(to DSSF)	99	99	99
T Plant			
Monthly Rate, Kgal/mo	2.1	2.1	2.1
Flush for misc. waste	22%	22%	22%
WVRF, misc. waste(to DSSF)	99	99	99
300 Area			
Monthly Rate, Kgal/mo	0.11 to 3.4	0.11 to 3.4	0.11 to 3.4
Flush for misc. waste	44%	44%	44%
WVRF, misc. waste(to DSSF)	94	94	94
400 Area			
Monthly Rate, Kgal/mo	0 (to ETF)	0 (to ETF)	0 (to ETF)
Flush for misc. waste	44%	44%	44%
WVRF, misc. waste(to DSSF)	94	94	94
WSCF			
Monthly Rate, Kgal/mo	0 (to ETF)	0 (to ETF)	0 (to ETF)

Table 9. Assumption Matrix
For the 1999 Operational Waste Volume Projection
(continued)

	Case 1	Case 2	Case 3
ank Farms			
Monthly Rate, Kgal/mo	10	10	10
WVRF, flushes (to DSSF)	99	99	99
MUST Wastes			
Tot. Volume, Kgal (2011-15)	500	500	500
00 Area			
100-N			
TCO Scheduled	Completed	Completed	Completed
TCO Waste Received	N/A-send to ERDF	N/A-send to ERDF	N/A-send to ERDF
TCO Volume, Kgal	0	0	0
100-K Basin Cleanout			
TCO Scheduled	2004-2005	2004-2005	2004-2005
TCO Total Volume, Kgal	430	430	430
Volume of Solids included	98	98	98
105-F & 105-H Basin			
TCO waste in 2001, Kgal	40	40	40
TCO waste in 2008, Kgal	200	200	200
Flush, ALL 100 Area Waste	44%	44%	44%
WVRF, ALL TCO waste(to DSSF)	99	99	99
ank 107-AN Caustic Addition			
Addition in FY 2001 (Kgal)	66	66	66
alt Well Liquid Pumping			
Volume remaining (Mgal)	6.18	6.18	6.18
Pumping estimate for 1999	0.95	0.95	0.95
West Area Receiver	Tank 102-SY	Tank 102-SY	Tank 102-SY
Start Complexed SWL in 200W	2000	2000	2000
Pumping Completion, FY	2004	2004	2004
Dilute Complexed SWL (Mgal)	~1	~1	~1
Porosity saltcake/sludge	50%/21%	50%/21%	50%/21%
Flush for SWL Pumping	28%	28%	28%
WVRF, non-complexed (to DSSF)	47	47	47
WVRF, complexed (to DSSF)	10	10	10
ingle-Shell Tank (SST) Solids			
Tank 106-C Retrieval	10/1998	10/1998	10/1998
Tank 104-C Retrieval	9/2010	9/2010	10/2012
Start Remaining SST Retvl	2004	2004	2009
Complete SST Retrieval	2018	2033	2026
Approximate Dilution Ratio	3:1	3:1	3:1
Retrieved Vol 2004-2005(Mgal)	2.8	~0.2	0
Retrieved Vol 2006-2007(Mgal)	3.6	~0.2	0
Meets TPA Milestones	Yes	No	No
No. SSTs Retrieved	149	149	149
Sludge Retrieved (Mgal)	12.2	12.2	12.2
Saltcake Retrieved (Mgal)	23.4	23.4	23.4

Table 9. Assumption Matrix
For the 1999 Operational Waste Volume Projection
(continued)

	Case 1	Case 2	Case 3
:P Stabilization			
)ates	1998-2012	1998-2012	1998-2012
/olume, Kgal	33	33	33
:lush	22%	22%	22%
IVRF	81	81	81
/aporator			
!42-A Shutdown	~2011	~2011	~2011
lew Evaporator Available	Phase 2	Phase 2	Phase 2
lext Outage Date	2004 (1 Yr)	2004 (1 Yr)	2004 (1 Yr)
[raining Vol. (bi-yearly)	50	50	50
Ave. Evap Rate, Kgal/mo	500	500	500
:vaporation Product	dilute DSSF	dilute DSSF	dilute DSSF
:vaporation Limit (g/ml)	1.41	1.41	1.41
.ERF capacity (Mgal)	13	13	13
;al. condensate/gal. WVR	1.20	1.20	1.20
Interval between campaigns(mos)	8	8	8
/early evaporation of DN (except for scheduled outage)	Yes	Yes	Yes
Effluent Treatment Facility			
Rate (Mgal/year)	50	50	50
atch List/Safety			
101-SY Dilution (150Kgal)	9/1999	9/1999	9/1999
101-SY Dilution (500Kgal)	3/2000	3/2000	3/2000
103-SY Processing Dilution	4/2010	4/2010	12/2010
pare/Contingency Space			
Spare Space, Mgal	2.28	2.28	2.28
Use 0.72 Mgal of Operational space in 106-AW as part of spare space from 1999 on	Yes	Yes	Yes
Contingency space, Mgal	None	None	None
-date	N/A	N/A	N/A
aste Segregation/DST Solids			
Total DST solids (Mgal)	~4	~4	~4
Store DSSF on NCRW solids	Yes	Yes	Yes
Store DSSF on NCAW solids	No	No	No
Segregate Complexed wastes	If Possible	If Possible	If Possible
oss of DST Space			
Number Tanks Removed from Service	None	None	None
ew DST Construction	None	None	None
Date Constructed	N/A	N/A	N/A
ew Cross-Site Transfer Line			
New line operational	Yes	Yes	Yes
Old line operational	Yes	Yes	Yes

Table 9. Assumption Matrix
For the 1999 Operational Waste Volume Projection
(continued)

	Case 1		Case 2		Case 3	
DST Retrieval						
102-SY solids retrieved to 200 East Area	~7/2009		~7/2009		4/2010	
Consolidation of NCRW solids in 103-AW & 105-AW	No		No		No	
Waste Processing	Disposal Case 3s3		Disposal Case 3s3		Disposal Case 6b	
LAW Vitrification start	3/2007		3/2007		3/2007	
LAW Phase 1B Processing by Year	Yr	units/yr	Yr	units/yr	Yr	MT ILAW/day
	1-3	800 (73%)	1-3	800 (73%)	1	6 (20%)
	4-11	1100 (100%)	4-11	1100 (100%)	2	18 (60%)
	12on	2200 (200%)	12on	2200 (200%)	3-4	30 (100%)
LAW Phase 2 Processing					5	60 (200%)
					6on	120 (400%)
Phase 1B minimum contract quantity processed by:	~ 2013		~ 2013		~ 2012	
Total Processed Quantities:						
Envelope A (MT Na)	TBD		TBD		TBD	
Envelope B (MT Na)	TBD		TBD		TBD	
Envelope C (MT Na)	TBD		TBD		TBD	
Staging/Characterization time per tank	100 days		100 days		100 days	
Approximate Concentration of retrieved DSSF, CC	7 M, Na		7 M, Na		7 M, Na	
LAW Retrieval Schedule (not processing dates)--First five waste sources:						
Source 1	107-AN(5/2005)		107-AN(5/2005)		Pr. NCAW(at BNFL)	
Source 2	104-AN(10/2006)		104-AN(10/2006)		107-AN(5/2005)	
Source 3	102-AN(8/2007)		102-AN(8/2007)		104-AN(8/2007)	
Source 4	105-AN(10/2008)		105-AN(10/2008)		102-AN(10/2009)	
Source 5	101-SY(3/2010)		101-SY(3/2010)		105-AN(4/2010)	
Interm. Feed Staging Tanks	(1AN,6AN,4AN,5AN)		(1AN,6AN,4AN,5AN)		(1AN,6AN,4AN,5AN)	
Vendor Feed Tanks	BNFL Space		BNFL Space		BNFL Space	
Pretreated NCAW Receipt Tank	BNFL Space		BNFL Space		BNFL Space	
Entr. Solid Receipt Tanks	BNFL Space		BNFL Space		BNFL Space	
HLW Vitrification start	4/2006		4/2006		4/2006	
HLW Phase 1 Processing by year	Yr	Canisters/yr	Yr	Canisters/yr	Yr	MT IHLW/day
	1-2	100	1-2	100	1	0.3
	3-12	120 (100%)	3-12	120 (100%)	2	0.9
	13on	480 (400%)	13on	480 (400%)	3-5	1.5 (100%)
HLW Phase 2 Processing					6	6. (400%)
					7on	12. (800%)
HLW wastes:	101-AZ,102-AZ,102-AY, 106-C,103-AW,101-AY, 102-SY		101-AZ,102-AZ,102-AY, 106-C,103-AW,101-AY, 102-SY		101-AZ,102-AZ,102-AY, 106-C,103-AW,101-AY, 102-SY	

4.0 ASSUMPTIONS FOR PROJECTION CASES 2 AND 3

Case 1 (TPA Compliant) is meant to project DST needs based on established TPA milestones (Consent Decree milestones for SWL pumping), RPP program planning, and the most realistic operational assumptions (described in Section 3). Case 1 used waste processing assumptions from Disposal Engineering's Case 3s3 (Kirkbride, 1999b) but added in a TPA Compliant SST solids retrieval schedule received from Disposal Engineering (Penwell, 1998). Case 1 presents a basis for evaluating future DST space needs for the TPA Compliant case through the end of FY 2018. The TPA compliant SST solids retrieval schedule would start retrieval in December 2003 (M-45-03-T1) and be completed by the end of FY 2018 (TPA milestone).

The Case 2 and Case 3 projections present a range of operational assumptions meant to determine the impact of changes in the SST solids retrieval schedule and processing schedule on DST needs. The Case 2 and Case 3 projections do not present a lower or an upper limit on double-shell tank needs which could vary significantly depending on the assumption changes. The following section will describe assumptions specific to the Case 2 and Case 3 projections. These assumptions are also summarized in Table 9.

Projection Case 2 presents projected DST space needs based on the same processing schedule used for Projection Case 1 with the SST solids retrieval schedule used in Disposal Engineering's Case 3s3. Projection Case 3 uses the processing schedule and SST solids retrieval schedule from Disposal Engineering's Case 6b. Projection Cases 2 and 3 project tank space needs with two different reduced SST solids retrieval schedules. Additional details of the assumptions for these projection cases are included in the following sections.

4.1 PROJECTION CASE 2 ASSUMPTIONS

Assumptions for projection Case 2 are the same as those for the projection Case 1 except for the use of the reduced SST Solids retrieval schedule from Disposal Engineering Case 3s3 (Penwell, 1999). This SST solids retrieval schedule would begin retrieving additional solids (solids beyond those needed as HLW feed in Phase 1B) in FY 2004 at a reduced rate as compared to the TPA Compliant schedule used in projection Case 1. The retrieved volume of waste for Case 2 is approximately 0.2 Mgal for FY 2004-2005 and an additional 0.2 Mgal for FY 2006-2007. The as retrieved volumes for the remaining SST solids are shown in the spreadsheet for the Case 2 projection (Section 5.2) and are based on retrieval at 5 M Na.

4.2 PROJECTION CASE 3 ASSUMPTIONS

Assumptions for the Case 3 projection are the same as those for Case 1 except for the use of different waste processing schedules and SST solids retrieval schedule from Disposal Engineering Case 6b (Harmsen, 1999b and Kirkbride, 1999a).

<u>LAW Processing</u>
The LAW processing for Case 3 also begins in March 2007 but at a lower processing schedule as compared to the schedule used in Case 1 but ramps up to a higher processing rate from year six on as shown below:

LAW Phase 1B processing by year

	Projection Cases 1 & 2		Projection Case 3	
	Yr	units/yr	Yr	MT ILAW/day
	1-3	800 (73%)	1	6 (20%)
	4-11	1100 (100%)	2	18 (60%)
	12on	2200 (200%)	3-4	30 (100%)
LAW Phase 2 Processing			5	60 (200%)
			6on	120 (400%)

The schedule used for the first ten LAW waste sources is summarized in Table 10.

Table 10. Projected Processing Schedule for Case 3

Tank	Waste Type	Envelope	Volume with solids (Kgal)	Approximate Quantity of Na Delivered (MT Na)	Existing or Future Waste	Transfer Date to Intermediate Staging Tank	Processing Start Date
BNFL	NCAW Supernate	A	~ 900	~ 637	Existing	N/A	3/2007
107-AN	CC	C	1044	~ 652	Existing	5/2005	12/2008
104-AN	DSSF	A	1052	~1098	Existing	8/2007	9/2009
102-AN	CC	C	1060	~1080	Existing	10/2009	12/2010
105-AN	DSSF	A	1128	~1053	Existing	4/2010	8/2011
101-SY	CC	A	~2169	~ 727	Existing	6/2011	3/2012
103-AN	DSS	A	957	~1249	Existing	8/2011	6/2012
101-AW	DSSF	A	1125	~1031	Existing	3/2012	10/2012
103-SY	CC	C	741	~ 586	Existing	6/2012	2/2013
101-AY	DSSF	A	~ 844	~ 699	Future	9/2012	4/2013

HLW Processing
The HLW processing for Case 3 also begins in April 2006 but at a lower processing schedule as compared to the schedule used in Case 1 but again ramps up to a higher rate from year six on as shown below:

HLW Phase 1 Processing by year

	Projection Cases 1 & 2		Projection Case 3	
	Yr	Canisters/yr	Yr	MT IHLW/day
	1-2	100	1	0.3
	3-12	120 (100%)	2	0.9
	13on	480 (400%)	3-5	1.5 (100%)
HLW Phase 2 Processing			6	6. (400%)
			7on	12. (800%)

SST Solids Retrieval Schedule
The SST solids retrieval schedule used for Projection Case 3 was based on the schedule used for for Disposal Engineering Case 6b (Penwell, 1999) which would start retrieval in FY 2009 and completed retrieval by the end of FY 2026. The retrieved volume of waste for this case is approximately 0.8 Mgal for FY 2009-2010 and an additional 6 Mgal for FY 2011-2012. The as retrieved volumes for the remaining SST solids are shown in the spreadsheet for the Case 3 projection (Section 5.3) and are based on retrieval at 5 M Na.

5.0 PROJECTION RESULTS

The results of a waste volume projection can be used to forecast tank space needs versus time, forecast evaporator operation, forecast needed LAW processing and disposal rates, HLW processing and storage, analyze tank space issues for aging and non-aging waste tanks, predict tank usage, or to determine the need and schedule for retrievals or cross-site transfers. To predict tank space needs, a graphic is produced showing tank count versus time as compared to the available space. Generations and evaporations for the near term (thru 2001) are modeled on a monthly basis whereas the remainder of the projection is typically modeled on an annual basis.

All projection cases assume that dilute waste will be evaporated to DSSF in the year they are produced, provided an evaporator is operational and the WVR limit of the evaporator has not been exceeded. In later parts of the projections when tank space becomes tight due to processing needs and/or the amount of SST solids being retrieved, the evaporator is assumed to operate yearly even if volumes are small in order to minimize waste storage needs. Long range projection graphics for the three projection cases are presented in Sections 5.1, 5.2, and 5.3. A tank space requirement graphic and a spreadsheet showing inputs/outputs have been included for all three projections. Short range graphics, tank usage graphics, evaporator WVR data, and a spreadsheet showing inputs/outputs have been included for the projection Cases 1 and 2 only.

This year's projection cases incorporate several space saving assumptions. These space saving alternatives reduce the need to build additional DSTs but add additional risks to the RPP program. These actions and some of the risks are listed below:

- o Waste generation rates and TCO volumes have been reduced compared to those used in Rev. 24.

- o In Revision 21 of this document, it was assumed that all NCRW and PFP solids could be consolidated into one DST (Awadalla, 1995). In Revs. 22 and 23 of this document, it was assumed that the solids in Tanks 103-AW and 105-AW would not be combined. However, the PFP solids from Tank 102-SY and the solids from the 100 Area TCO activities were combined into Tank 105-AW. To further minimize the impact of this non consolidation of solids compared to Revision 21, the projections in Revs. 24 and 25 assumed that slurry feed (DSSF) could be stored on top of the solids in Tanks 103-AW and 104-AW. The acceptability of this assumption is still being reviewed.

- o Spare space is space reserved in case of a leak in a double-shell tank per DOE Order 5820.2A. Contingency space has historically been set aside to account for possible inaccuracies in the WVP software when projecting waste generations and/or waste volume reduction factors. A total of 2.28 million gallons (one aging and one non-aging tank) of spare/contingency space was reserved for all three projection cases. This space is distributed space from FY 1999 on. Operational space in Tanks 102-AW and 106-AW was used to provide 0.72 Mgal of the required 2.28 Mgal of spare/contingency space from FY 1999 on (Awadalla, 1995). This assumption change reduces operational space which may create operational/space problems during the period when SST solids are being retrieved.

- o These projections assumed that dilute non-complexed waste could be evaporated to a specific gravity (SpG) of 1.41 rather than the previous 1.35 limit used in the 1995 projection, L9503A (Awadalla, 1995). Analysis has shown that as long as the SpG remains at 1.41 or less that there will not be a buildup of flammable gas in the DSTs (Fowler, 1999). Evaporating the waste to a SpG of 1.41 would save approximately 2/3 of a tank by the end of the projection as compared to the 1995 projection, L9503A.

- o Some double-shell tanks are nearing their design life. None of this year's projections provide for the loss of any DST space through 2018. The volume of this impact would be approximately one million gallons if one DST is lost. Spare space would be used if a loss of a double-shell tank should occur.

- o All three projections assumed that evaporator capacity would be available on an annual basis from FY 1999-2018 except for a one year outage in FY 2004. A reduction in evaporation capacity during years when space is tight or when waste receipts are high could result in a tank space shortage.

- o The PHMC team will need to use Tanks 101-AN, 106-AN, 104-AN, and 105-AN for waste management during the same time frame that Project W-211 is preparing them for use as intermediate feed staging tanks.

- o All three projection cases assume that timely permission is obtained to remove waste from watch-list tanks used as LAW feed sources and to remove the watch-list designation from that tank immediately after retrieval/dilution. This means that emptied tanks are immediately available for unrestricted use.

The space saving actions listed above reduce the need for construction of new DST space that was recommended based on a previous projection (Rev. 20) but introduce additional uncertainties and risks into the overall RPP program. If many of these items are not possible or if waste generations exceed those used in this projection, it may be necessary to either delay site cleanup activities, delay TPA milestones (e.g., SWL pumping and/or SST solids retrieval), increase the waste processing rate, or build additional tank space in order to avoid exceeding the available DST space. A special trade study was completed in FY 1999 to assess the space savings, costs, and risks associated with many of the space saving alternatives mentioned above (Garfield, 1999). This study states that sufficient DST is available to support waste feed delivery and that no action is necessary at this time to build new double-shell tanks. This assumes a reduced retrieval of SST solids.

5.1 PROJECTION CASE 1 RESULTS

Assumptions for the Case 1 projection represent the current planning basis for RPP programs to meet TPA commitments (Consent Decree milestones for SWL pumping). The LAW and HLW waste processing schedules used in Case 1 are based on the project planning baseline guidance provided by the Office of River Protection (ORP) in April 1999 (Taylor, 1999) coupled with a Tri-Party Agreement compliant SST solids retrieval schedule (Penwell, 1998). The projected tank space needs for the Case 1 projection, both with and without SST solids retrieval, are shown in Figure 3. "Without SST solids retrieval" refers to no additional SST retrieval beyond those solids scheduled to be retrieved for HLW vitrification feed for Phase 1B. The required tank space for the Case 1 projection without additional SST solids retrieval is near the available space for the period FY 2001-2005 due to the number of tanks required for SWL pumping and storage. Three tanks (Tanks 101-AN, 106-AN, and 108-AP) are projected to be used for SWL pumping in the 200 East Area while only one tank (tank 102-SY) is used for SWL pumping in the 200 West Area. Decreasing the number of tanks used for SWL pumping in the 200 East area could be used to decrease the required tanks space for Case 1 during the period FY 2000-2003 should the need arise.

The required tank space for the Case 1 projection with the TPA compliant SST solids retrieval schedule exceeds available space by one tank in FY 2004, by up to three tanks in FY 2005-2006, by up to ten tanks by FY 2010, and by up to twenty-five tanks by the end of FY 2012. The tank space shortage during the period FY 2004-2018 is the result of the delay in the start of waste processing and the reduced waste processing rates compared to the waste processing assumptions that were used when the TPA milestones were initially negotiated. The waste processing schedule used in Case 1 will not free up DST space fast enough to support the TPA compliant SST solids retrieval schedule. Furthermore, acceleration of the waste processing rate alone to meet the storage requirements for the TPA compliant SST solids retrieval schedule would require unrealistically high processing rates. If the waste processing rates used in Case 1 were held constant, building additional tanks to meet the storage requirements for the TPA compliant SST solids retrieval schedule would require building an excessive amount of tanks. Avoiding or meeting the projected tank space shortage would require a combination of the following options (see Section 6.0 for a more complete listing):

- Reduce the amount of SST solids waste retrieval volume during FY 2004-2018 by renegotiating the TPA milestones.
- Increase Phase 1B and/or Phase 2 processing rates to free up additional tank space.
- Optimize the use of existing DST space--this includes actions such as utilizing DST headspace, etc. (Garfield, 1999).
- Delay SWL pumping to reduce tank space (delays TPA milestones).
- Build additional double-shell tanks.

The required tank space for the Case 1 projection without additional SST solids retrieval beyond those needed to supply feed for HLW vitrification indicates that ample DST space exists to support waste processing but tank space is critical in the FY 2001-2005 timeframe. Space saving options (Garfield, 1999) will continue to be reviewed.

A spreadsheet summarizing the waste generations, evaporator WVR, and processing requirements for the Case 1 projection has been added to this document and is included as Table 11. This spreadsheet is included to present a global view of how the various inputs and outputs affect tank space. This spreadsheet is useful to review waste inventories and waste receipts but cannot accurately predict the dynamics of tank usage or the full impact of partially filled tanks on tank space needs.

RL has requested that the OWVP document should provide a list of all transfers for the next fiscal year (Kinzer, 1999). Appendix B in this document lists all the gains (GA), losses (LO), and transfers (TR) for projection Cases 1 and 2 through FY 2000. For convenience--this listing has been broken into two parts--part 1 includes inventory records, historical transactions for FY 1998, and projected transfers for 1999. Part 2 includes all transfers projected for FY 2000.

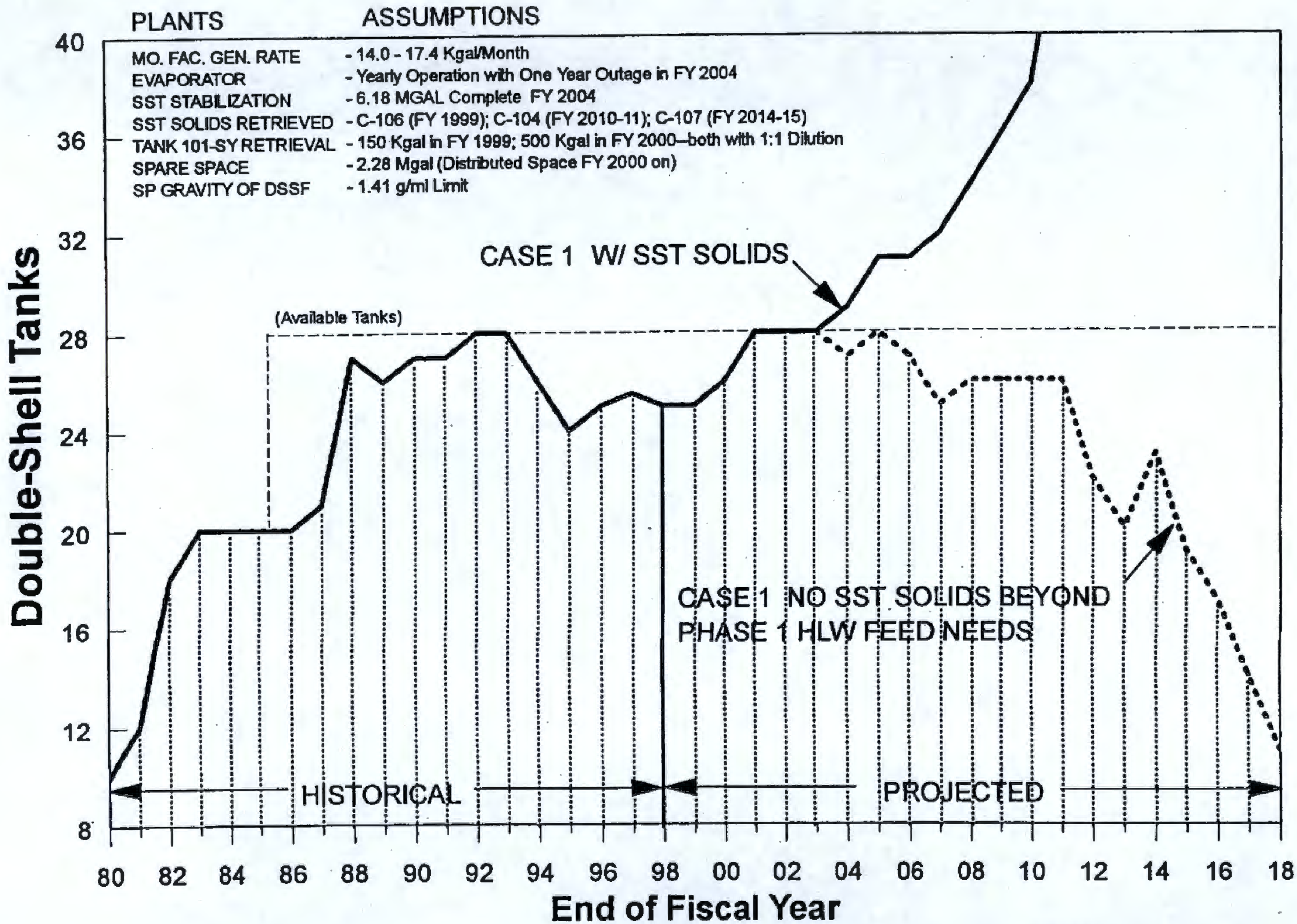


Figure 3. Double-Shell Tank Requirements for Case 1--TPA Compliant

OF3

Table 11. Spreadsheet of Waste Additions and Reductions for Case 1 with SST Solids Retrieval

FISCAL YEAR	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
STARTING INVENTORY	18353	18598	19438	21743	23456	24821	23926	26055	26771	25172	28144	29488	29581	31298	39777	51122	67099	81371	91858	102734	112103
SPACE UTILIZATION																					
Spare Space	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280
Watchlist Space	678	680	709	709	709	709	709	709	1218	826	826	1123	2177	1205	2045	0	0	0	0	0	0
Contingency Space	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Restricted Space	2956	719	719	653	653	653	653	1492	1058	880	1082	478	1330	445	458	769	1780	1281	750	1403	270
Priority/Operational Space	2483	4185	3209	3265	3461	4502	3174	2488	4374	4453	4593	6698	5317	5061	3133	3439	5080	2841	2845	3003	3096
NEW WASTE ADDITIONS																					
B Plant/WESF	0	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
S Plant/WSCF	7	12	11	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
T Plant	6	25	24	24	24	25	25	25	25	26	26	26	27	27	27	27	28	28	28	29	29
300 Area	15	2	20	40	18	16	16	18	2	2	2	2	2	2	2	2	2	2	2	0	2
TCO	37	5	5	45	5	5	223	217	5	5	205	5	5	5	5	5	5	5	5	5	5
Flushes	128	288	521	615	588	219	111	647	248	100	248	368	248	248	248	108	368	248	388	110	109
SWL Pumping	89	715	1228	1871	1736	574	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tank Farms	56	136	155	190	205	190	170	190	205	155	205	155	205	155	205	155	205	155	205	156	205
SST Retrieval	0	250	0	0	0	0	1567	1199	839	2771	1410	1742	2567	9748	13529	16483	15050	12841	12842	12352	4321
PFP	0	8	2	5	8	2	2	1	1	1	1	1	1	1	1	0	0	0	0	0	0
Inventory	0	0	0	66	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Retrieval Water	0	288	950	0	0	0	0	0	200	0	522	476	284	224	370	0	0	0	800	0	0
Everything Else	50	0	0	0	0	0	0	0	0	0	0	0	0	100	100	100	100	100	0	0	0
Pretreatment Dilution	0	0	0	0	0	0	0	231	382	813	395	98	25	1124	800	0	0	0	0	0	0
In-Tank Washing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW WASTE ADDITIONS TOTAL	382	1735	2921	2871	2580	1046	2129	2541	1932	3896	3029	2905	3399	11647	16102	16895	16093	13394	14085	12666	4686
TOTAL WASTE BEFORE EVAP	18735	20333	22359	24614	26036	25867	26055	28596	28703	29068	31173	32393	32980	42945	54879	68017	83792	94785	105743	115400	116789
EVAPORATOR WVR	0	-895	-616	-1156	-1215	-1941	0	-1825	-812	-639	-294	-661	-522	-570	-317	-606	-348	-636	-437	-451	-440
CUM EVAPORATOR WVR	0	-895	-1511	-2669	-3884	-5825	-5825	-7650	-8462	-9101	-9395	-10056	-10578	-11148	-11465	-12071	-12417	-13053	-13490	-13941	-14381
Loss due to (Burp, Lance Evap, Surf Chg, Instr, etc.)	-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Low activity waste	0	0	0	0	0	0	0	0	-1070	0	-981	-1797	-870	-2282	-3129	0	-1890	-1843	-1852	-2183	-2220
High Level Waste Contractor	0	0	0	0	0	0	0	0	-1649	-284	-409	-355	-291	-315	-311	-311	-386	-426	-519	-853	-747
EVAP AND OUTFLOWS TOTAL:	-137	-895	-616	-1156	-1215	-1941	0	-1825	-3531	-923	-1684	-2813	-1683	-3167	-3757	-917	-3422	-3105	-3008	-3297	-3407
NET INVENTORY CHANGE	245	840	2305	1713	1365	-895	2129	716	-1599	2973	1345	92	1716	8480	11345	15978	14271	10289	11077	9369	1279
END OF YEAR INVENTORY	18598	19438	21743	23456	24821	23926	26055	26771	25172	28145	29488	29580	31297	39778	51122	67100	81370	91880	102735	112103	113382
TOTAL CAPACITY	26995	27321	28880	30363	31924	32070	32871	33740	34103	36584	38250	40157	42401	48760	59038	73588	90490	98082	108610	118798	119028
	24	25	26	27	28	29	30	30	31	33	34	38	38	44	53	66	81	87	97	106	108

Interpretation of Short Range Projection Results

This section provides an interpretation of detailed short range projection results. The OWVP presents certain information in the form of graphics. A number of these graphics show 12 months of historical operations and 24 months of projected operations. Most of the vertical axis represent thousands of gallons of waste generated. An example of this type of graphic is the facility waste generation graphic. The volume generated per month for each facility is depicted on a facility waste generation graph. An example of the facility waste generation graph for PUREX waste is shown below (Figure 4).

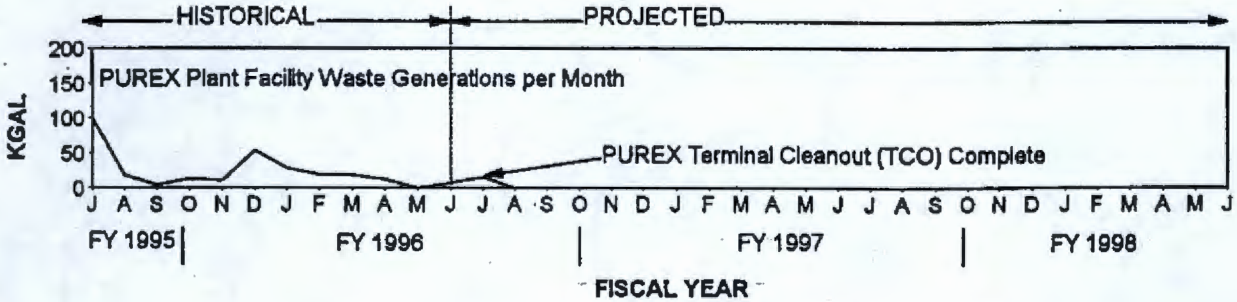


Figure 4. Facility Waste Generation Graphic

In the computer simulation, facility waste streams are routed to a receiver tank. A tank fill graphic shows the filling of the receiver tank and is on the same page as the facility waste generation graph of the waste stream it receives. The tank fill graphic shows the rate a specific tank is filled with waste. Usually when a receiver tank is full, waste is transferred to a holding tank. This waste is either evaporated or stored for future disposal. For every transfer out of a tank, there is a corresponding receipt of the same volume into another tank or facility. For every evaporation out of a tank there is a corresponding receipt of the more concentrated waste in the receiving tank and an increase in the condensate from the 242-A Evaporator being sent to the LERF.

An example of this type of graph (a tank fill graphic) for Tank 105-AW is shown below (Figure 5).

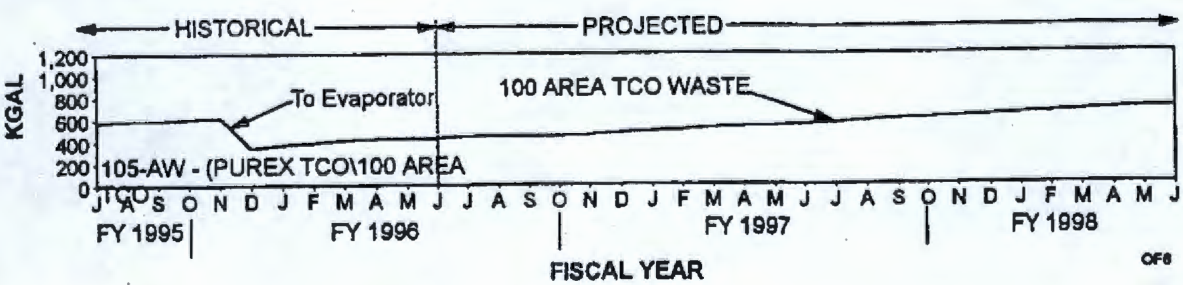


Figure 5. Tank Fill Graphic

The accuracy of this projection is directly related to the facility supplied assumptions. Some of the major assumptions are listed below:

- o Process operating schedules define the planned dates of plant operations or deactivation activities. These assumptions are consistent with the RPP program planning. Volumes and schedules for the various Hanford facilities for the three projection cases are presented in Sections 3 and 4.

- o Plant waste generation assumptions define the volume and type of waste that will be generated by the plants. These assumptions result from an analysis of recent waste generation history and future plans specified by the plants. Most waste streams volumes are projected based on historical data and/or facility supplied operating schedules. Section 5.4 includes a comparison of actual waste receipts to the facility waste generation targets for the last fiscal year (October 1997 to September 30, 1998).

Tank roles and waste routings define the use of tanks in the system. For example, a tank will be designated to act as receiver of the PUREX facility miscellaneous waste (Tank 105-AW), while other tanks will store concentrated waste.

The graphics depicted on the next few pages summarize the short range projection results for Projection Case 1. Figure 6 shows the role of each tank for a period of four years. It should be noted that if a tank has several transfers in or out of the tank in one month, no fluctuation in the tank level may appear. This is because the graphic program plots tank levels as of the last day of the month and any changes that occur during the month are not shown. The simplified routing schematic shown in Figure 7 depicts the assumptions that are made about the routing of waste from the plants to the tanks and from tanks to the facilities. The projected tank inventories and tank space usage for the Case 1 and 2 projections as of September 2001 are included in Table 12.

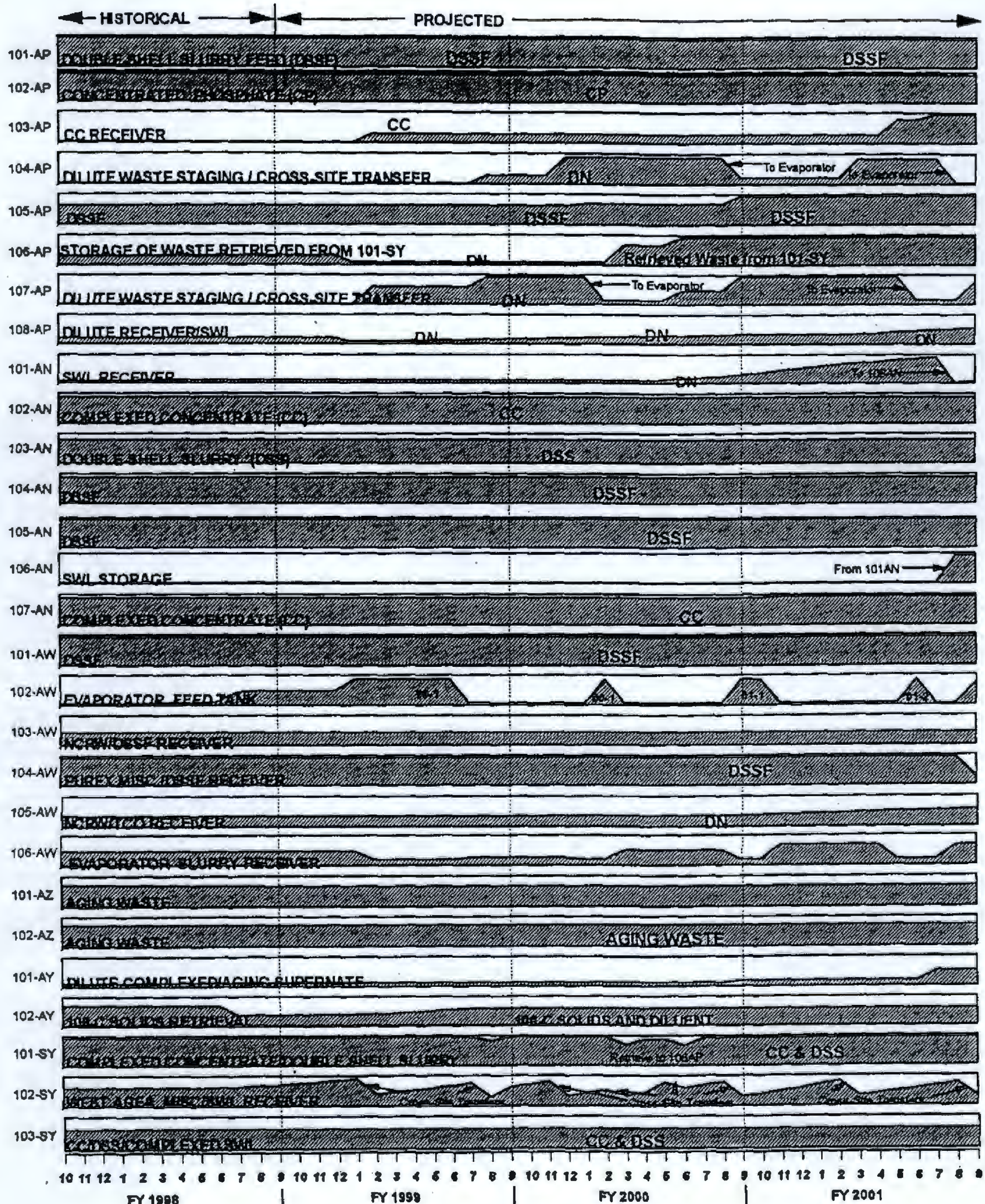


Figure 6. Tank Levels During the Short Range Projection

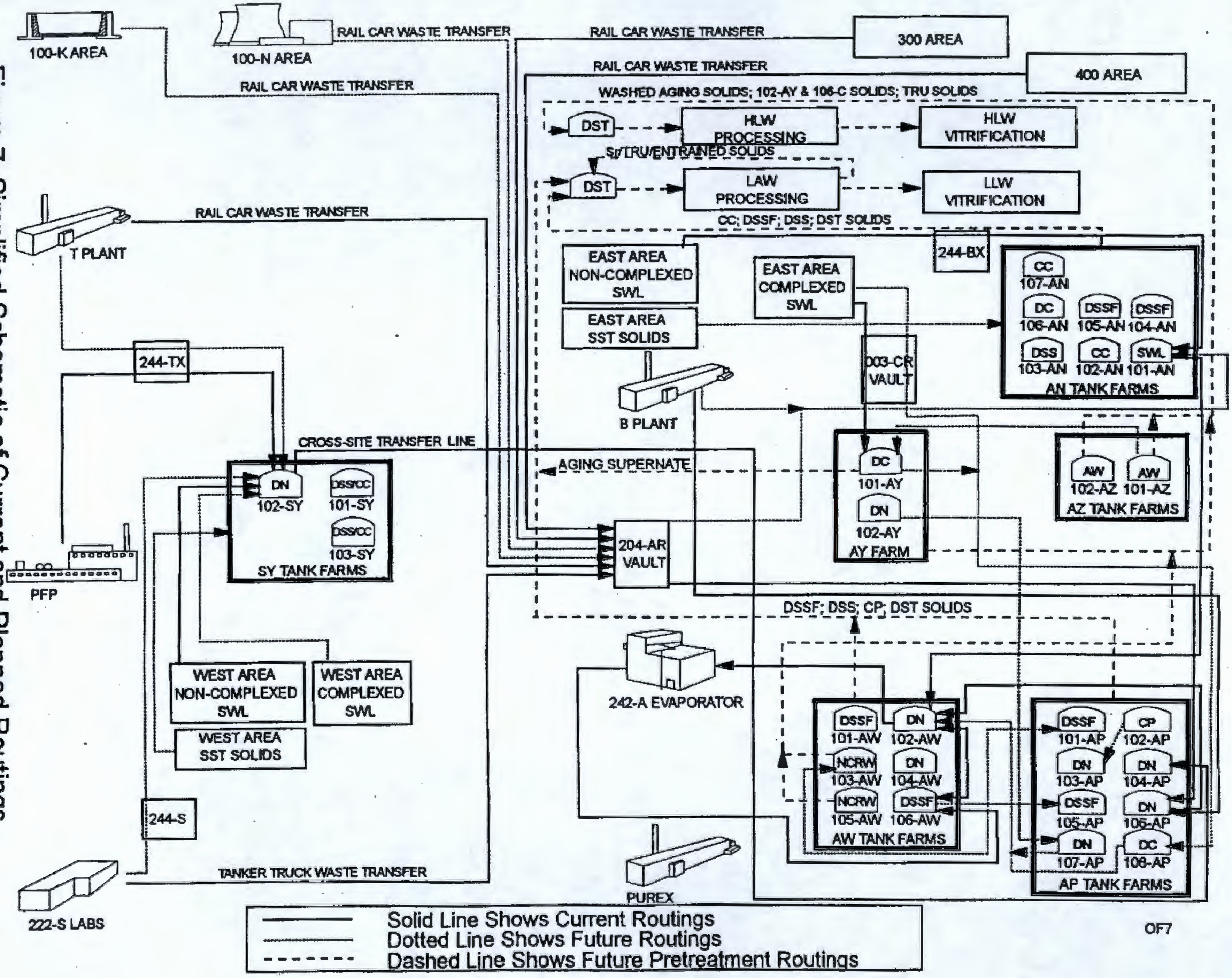


Figure 7. Simplified Schematic of Current and Planned Routings

Table 12. Projected Tank Usage on 9/2001 for the Case 1 and 2 Projections

Tank	Liquid (Kgal)	Solids (Kgal)	Total (Kgal)	Comment/Projected Usage for Tank as of 9/2001
101-AY	513	108	621	Due to space shortage, started storing concentrated wastes in 1AY in late 2000
102-AY	555	154	709	Received C-106 solids starting 10/1998; third HLW feed tank in all projection cases
101-AZ	798	47	845	NCAW/SL; first HLW feed tank in all projection cases
102-AZ	785	104	889	NCAW/SL; second HLW feed tank in all projection cases
101-SY	1115	5	1120	CC/SL inventory; minor retrieval/dilution 9/1999; major retrieval/dil. 3/2000
102-SY	287	88	375	DN/PT inventory; 200 West Area SWL and dilute receiver
103-SY	384	362	746	CC/SL inventory; WL tank
101-AW	819	306	1125	DSSF/SL inventory; WL tank; third tank to be processed in Case 1 & 2 projections
102-AW	865	40	905	Evaporator feed tank
103-AW	164	348	512	DN/PD solids; DSSF projected addition in FY 2002
104-AW	86	231	317	DN/SL; DN evaporated in 9/2001; projected refill w/ DSSF in FY 2002
105-AW	429	280	709	DN heel/PD solids; receives all 100 Area wastes & solids starting in 2001; dilute receiver starting in FY 2001
106-AW	594	228	822	Evaporator slurry receiver tank
101-AN	150	33	117	SWL receiver; transfer approx. full tank to 106-AN in late FY 2001; cleaned out for use as an intermediate staging tank in FY 2005
102-AN	984	89	1073	CC (TRU) inventory
103-AN	549	410	959	DSS inventory; WL tank
104-AN	606	449	1055	DSSF inventory; WL tank; second tank to be processed in Case 1 & 2 projections
105-AN	639	489	1128	DSSF inventory; WL tank;
106-AN	1097	17	1114	DN/SL; received SWL from Tank 101-AN in late FY 2001; used to stage dilute waste for evaporation in FY 2001-5; cleaned out for use as an intermediate staging tank in FY 2005
107-AN	867	247	1114	CC (TRU)/SL inventory; first tank to be processed in Case 1 & 2 projections
101-AP	1115		1115	DSSF
102-AP	1094		1094	CP inventory; Late Note--may be transferred to another AP tank in FY 2000-2001 if 102-AP is needed to serve as a backup feed/staging tank
103-AP	1139	1	1140	CC/SL; received concentrated waste 2/1999 on
104-AP	51		51	DN/DC; used to receive cross-sited waste from 102-SY and to stage dilute for evaporation
105-AP	986	89	1140	Filled w/ DSSF by 9/2000;
106-AP	1119		1119	In projections 1 & 2, used to store retrieved/diluted waste from 101-SY in FY 2000
107-AP	905		905	DN/DC; used to receive cross-sited waste from 102-SY and to stage dilute for evaporation; started filling with concentrated waste in FY 2003
108-AP	748	8	756	dilute receiver in E. Area until FY 2004; started filling with concentrated waste in FY 2004.

Evaporator WVR and LERF Condensate

Schedule and operational considerations presented in Section 3 result in the following Evaporator Waste Volume Reduction (WVR) and LERF Condensate production volumes for the Case 1 projection. The ratio of process condensate sent to LERF for every gallon of Waste Volume Reduction (WVR) for Evaporator Campaigns 94-1, 94-2, and 95-1 was 1.29, 1.24, and 1.26, respectively (Guthrie, 1996). The evaporator seal water and demister spray upgrade could reduce future process condensate production to 1.15 gallon of condensate/gallon of WVR which would lower the value used for future projections. This projection used a value of 1.20 gallon of condensate/gallon of WVR (Bloom, 1999) to project future condensate production recorded in Table 13. The waste sources, campaign schedule, and concentrated waste receiver tanks used in this projection are summarized Table 14. Table 14 shows evaporator campaigns through the start of FY 2005 only. Cross-site transfers through FY 2003 are shown in Table 15.

Table 13. Evaporator WVR and LERF Additions for Case 1 Projection

FISCAL YEAR	EVAPORATOR WVR (KGAL)	CONDENSATE TO LERF (KGAL)
1999	900	1080
2000	620	740
2001	1160	1390
2002	1220	1460
2003	1940	2330
2004	0	0
2005	1830	2200
2006	810	970
2007	640	770
2008	300	360
2009	660	790
2010	520	620
2011	570	680
2012	320	380
2013	610	730
2014	350	420
2015	640	770
2016	440	530
2017	450	540
2018	440	530

Table 14. Evaporator Campaign Schedule for the Case 1 and 2 Projections

Campaign	Start Date	Staging Tank(s)	Source	Waste Feed Type	Feed Volume (Kgal)	Receiver Tank
99-1	7/99	Direct to 102-AW	102-AY to 102-AW-- 7/98 108-AP to 102-AW-- 1/99	DN	~1000	105-AP
00-1	3/00	107-AP	102-SY to 107-AP-- 4/99 & 8/99	DN	~1000	105-AP & 101-AY
01-1	11/00	104-AP	102-SY to 104-AP-- 8/99 & 12/99	DN-SWL & DN DC from 101-SY	~1000	103-AP
01-2	7/01	107-AP	102-SY to 107-AP-- 6/00 & 9/00	DN/DC-SWL DC from 101-SY	~1000	103-AP & 101-AY
	8/01	104-AP	102-SY to 104-AP-- 9/00 & 3/01	DN/DC-SWL	~1000	101-AY & 101-AP
02-1	3/02	Direct to 102-AW	104-AW to 102-AW-- 9/01	DN	~ 800	101-AP
	4/02	107-AP	102-SY to 107-AP-- 9/01 105-AW to 107-AP-- 10/01	DN/DC-SWL	~1000	101-AP
03-1	11/02	104-AP	102-SY to 104-AP-- 3/02 108-AP to 104-AP-- 4/02	DN/DC-SWL DN-SWL & DN	~1000	101-AP & 104-AW
	12/02	Direct to 102-AW	106-AN to 102-AW-- 12/02	DN-SWL	~1000	104-AW & 107-AP
03-2	7/03	104-AP	102-SY to 104-AP-- 8/02 105-AW to 104-AP-- 8/02	DN/DC-SWL DN	~ 900	107-AP
	8/03	106-AN	102-SY to 106-AN-- 4/03 108-AP to 106-AN-- 4/03	DN/DC-SWL DN/DC-SWL	~1000	107-AP & 108-AP
FY-04	Evaporator outage is scheduled for FY 2004					
05-1	10/04	106-AN	101-AN to 106-AN-- 8/03 105-AW to 106-AN-- 9/03	DN/DC-SWL DN	~1000	108-AP
	11/04	104-AP	108-AP to 104-AP-- 12/03 105-AW to 104-AP-- 7/04	DN/DC-SWL DN	~1000	108-AP

Table 15. Cross-site Transfer Schedule for Projection Case 1 and 2

Date for Cross-site	Receiver Tank	Volume (Kgal)	Comments
4/99	107-AP	680	DN-SWL & DN
8/99	107-AP & 104-AP	680	DN-SWL & DN
12/99	104-AP	680	Includes minor dilution from 101-SY transferred to 102-SY plus commingled DN/DC-SWL & DN.
3/00	106-AP	680	Includes waste from the major dilution of 101-SY that is stored in 106-AP and is not scheduled to be evaporated.
6/00	106-AP & 107-AP	660	Includes waste from the major dilution of 101-SY plus commingled DN/DC-SWL & DN. Waste transferred to 106-AP is not scheduled to be evaporated.
9/00	107-AP & 104-AP	680	DN/DC-SWL & DN
3/01	104-AP	680	DN/DC-SWL & DN
9/01	107-AP	680	DN/DC-SWL & DN
3/02	104-AP	680	DN/DC-SWL & DN
8/02	104-AP	680	DN-SWL & DN
4/03	106-AN	650	DN-SWL & DN

Additional Notes for Table 14 and 15:

1. Tank 101-AP is currently filled with DSSF waste. Tank 101-AP is characterized and once the contents are found to be suitable, the DSSF contents are stored on top of the solids in Tanks 103-AW and 104-AW in early FY 2000. This allows Tank 101-AP to be refilled later in FY 2000. This method should allow topping off Tanks 103-AW and 104-AW with DSSF with less likelihood of producing another watch list tank than direct transfers from Tank 106-AW.

2. Evaporator campaigns were scheduled to start every eight months. Campaigns 00-1 and 01-1 could be combined and completed on some date after 4/00 without an adverse space impact.

3. The evaporator campaign and cross-site schedules are the same for projection Cases 1 and 2.

See Figure 8 for dilute receiver tanks, evaporator WVR, and the 242-A Evaporator operating schedules for the Case 1 and 2 projections.

Based on the 50 Mgal/year treatment capacity for the ETF, the ETF should have no problem processing the projected evaporator condensates thru 2018. There should be sufficient LERF and DST space for storage of Hanford facilities generated waste and condensates between FY 1999 and the end of 2018, provided:

- the 242-A Evaporator schedule is achieved
- the amount of condensate sent to LERF does not grossly exceed the 1.2 gallon condensate/gallon WVR factor
- facilities stay within their respective generation limits
- no unexpected waste receipts are received in the DSTs

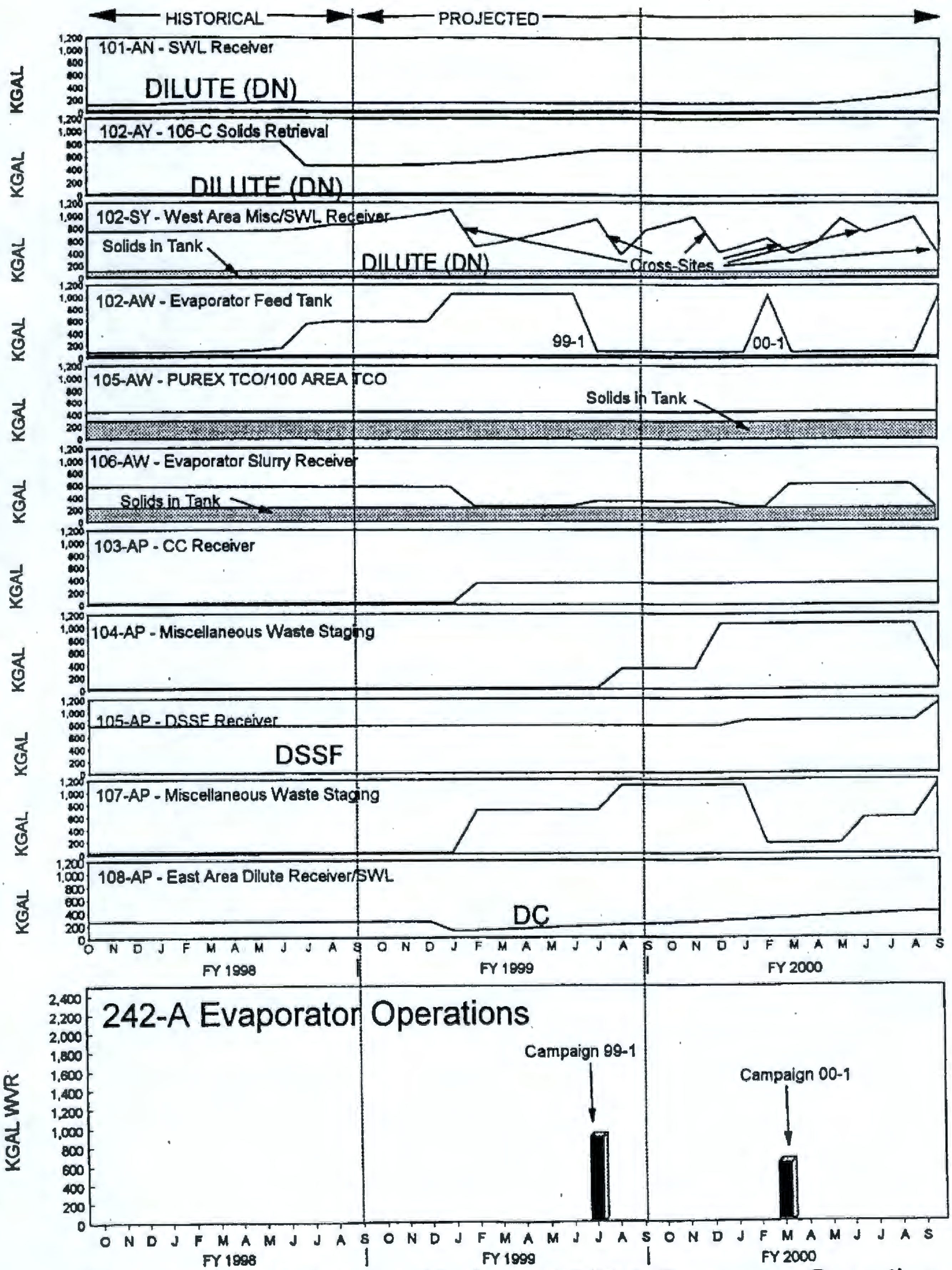


Figure 8. Dilute Receiver Tanks and 242-A Evaporator Operations

NON-AGING TANK SPACE

In later parts of the projections when tank space becomes tight due to processing needs and/or the amount of SST solids being retrieved, the evaporator is assumed to operate yearly to minimize waste storage needs and to decrease the volume of retrieved SST solids waste. Tank space pinches occurring between FY 2000 and FY 2018 (Figure 3) are caused by a combination of factors, including:

- SWL pumping (SST stabilization) volumes pumped by the end of FY 2000 and the use of three tanks in 200 East Area to pump SWL
- Four intermediate staging tanks are used to stage wastes for Phase 1B processing--Tanks 101-AN, 104-AN, 105-AN and 106-AN
- The large volume of SST solids retrieved beginning in FY 2004
- The decision not to operate the Grout Facility has eliminated an early means of freeing up DST space
- The decision not to consolidate NCAW solids has increased the DST space needs from 2001 on

Figures 9 through 12 show the detailed operation of all the DST waste tanks for the Case 1 and 2 projections during the near term.

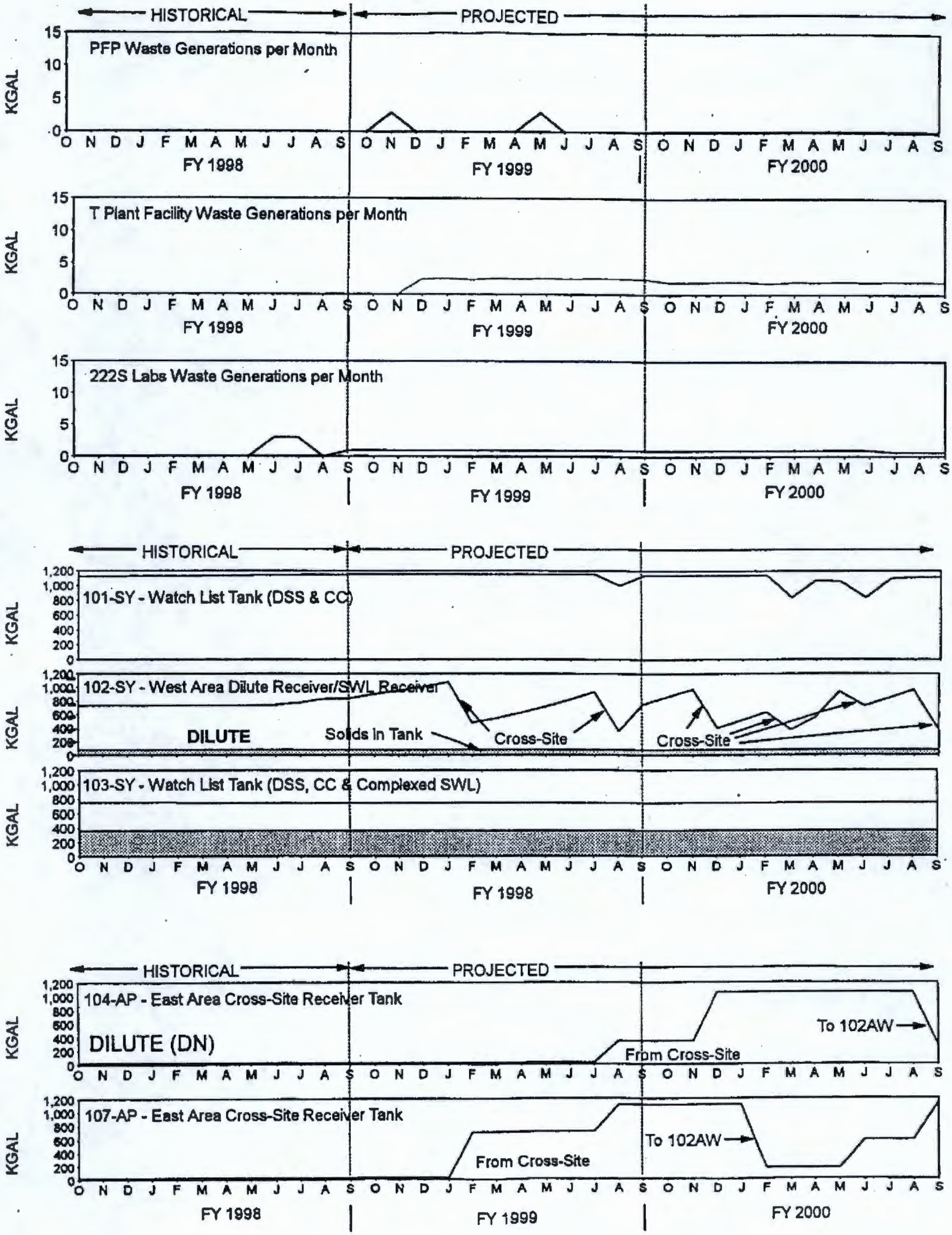


Figure 9. West Area Waste Generations and Tank Levels

OF9

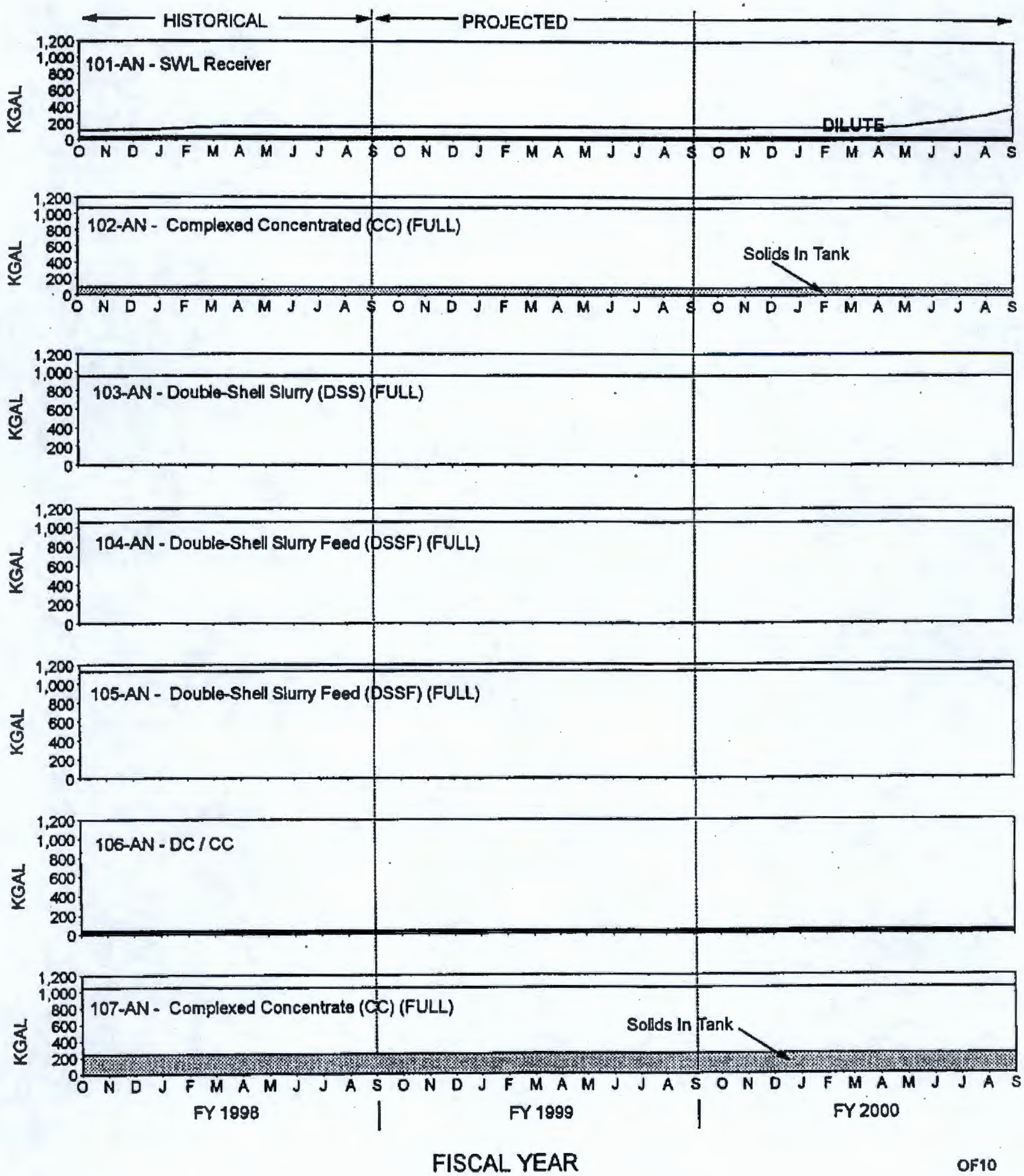


Figure 10. AN Tank Farm Levels

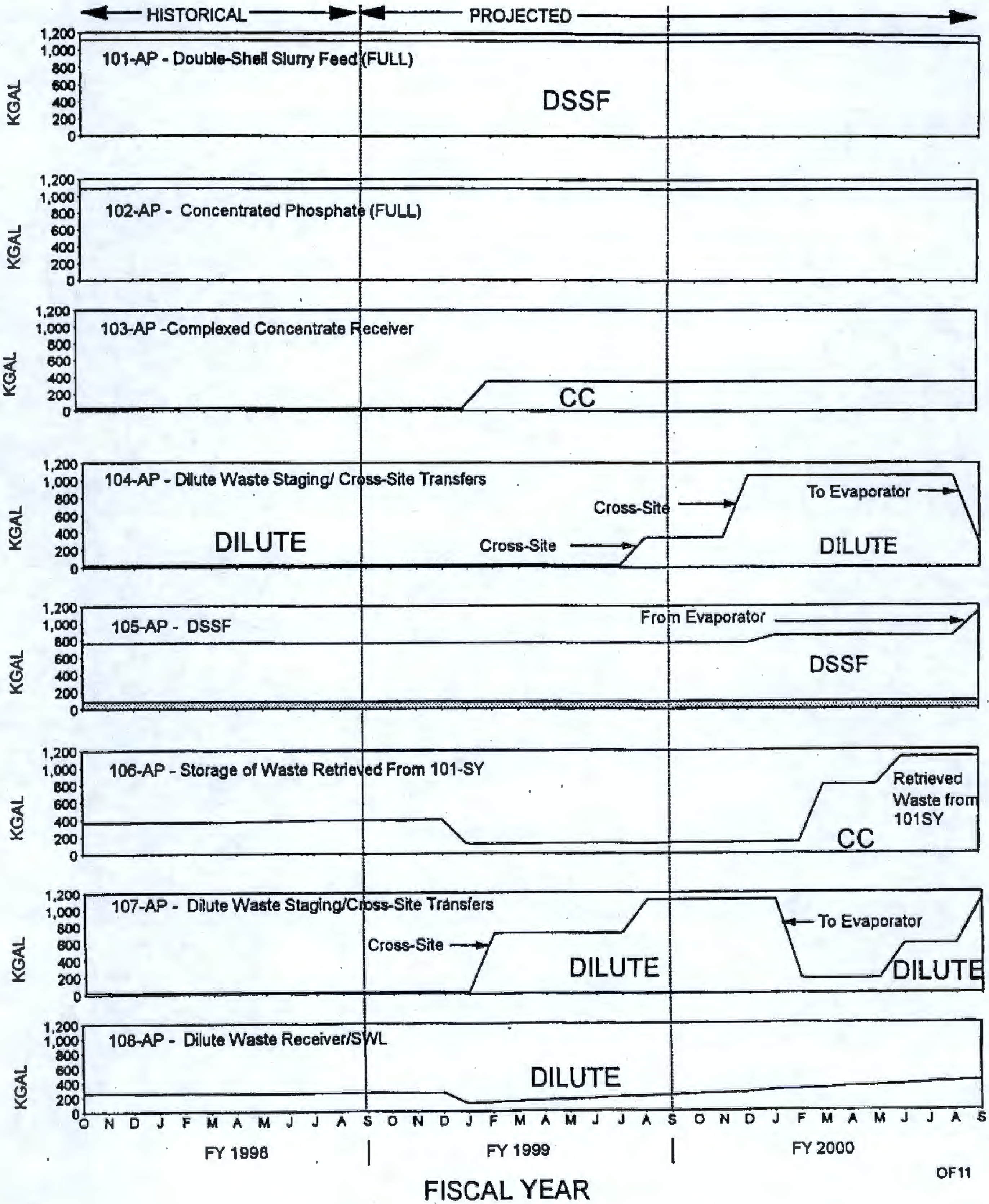


Figure 11. AP Tank Farm Levels

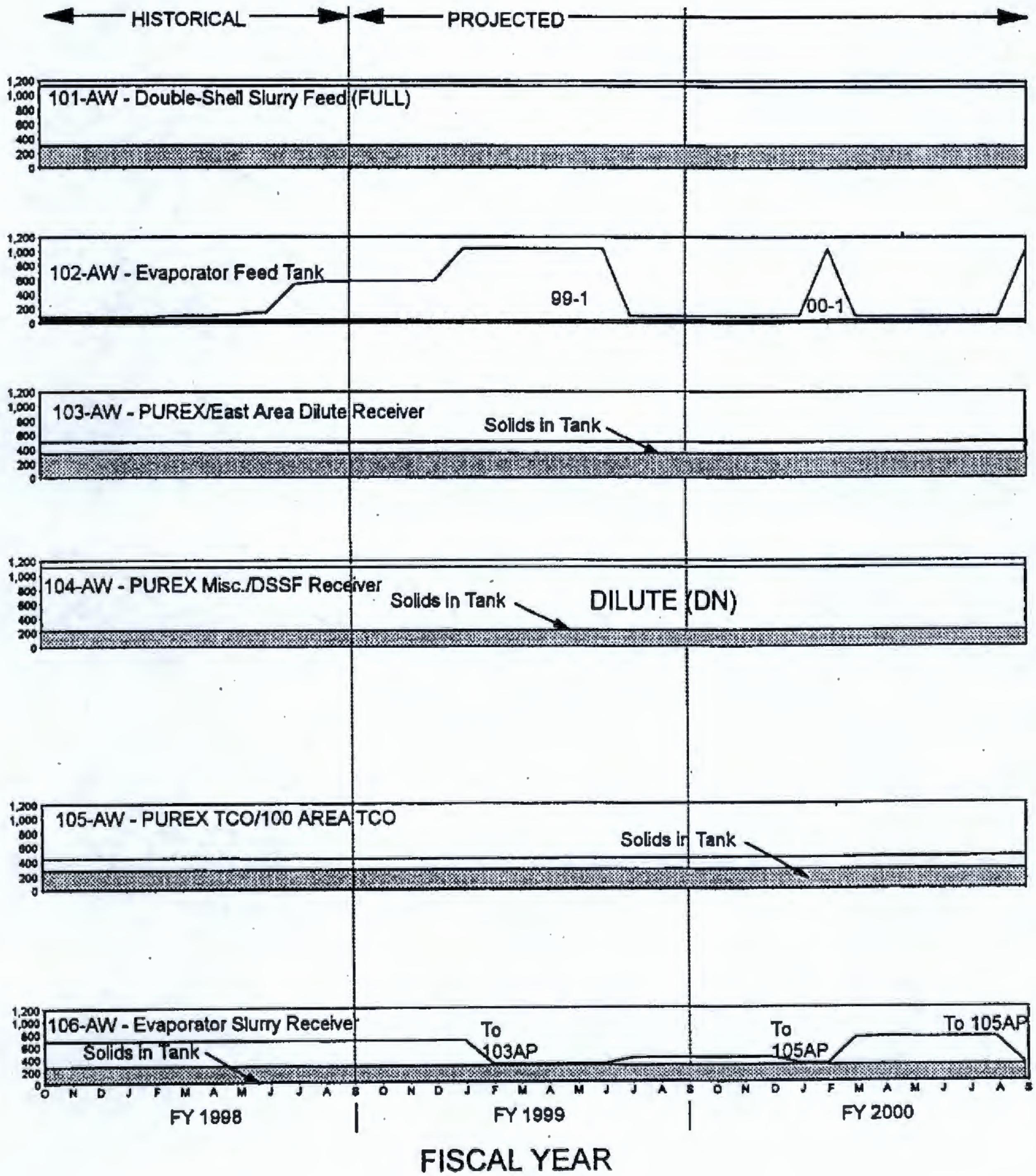


Figure 12. AW Tank Farm Levels

OF12

AGING WASTE TANK SPACE

Since PUREX has been decommissioned, only two aging waste tanks (Tanks 101-AZ and 102-AZ) are required to store existing aging waste.

One additional aging waste tank will be required to retrieve and store the contents of Tank 106-C (a SST containing high heat waste). Waste from Tank 106-C has been retrieved to Tank 102-AY from October 1998 thru June 1999. Tank 102-AY is also used to retrieve the SST solids from Tank 104-C in FY 2010-11.

In Revision 21 of this document, it was assumed that all NCAW solids and the 106-C solids would be combined into one aging waste tank (Tank 102-AZ) and that all NCAW supernates would be concentrated into one aging waste tank (Tank 101-AZ). Since that document was published, studies have been completed which looked at numerous sludge washing/combination options (Powell, 1996a). The alternatives for consolidating high heat sludges have been reviewed by a decision board comprised of Hanford contractor management, a RL representative, and a WDOE representative. It was concluded that consolidating all the sludges into a single tank would require modifications to the tank farm safety basis. The preliminary decision reached was not to consolidate all the high heat sludges into a single tank. The current HLW strategy will send all NCAW wastes to BNFL for pretreatment and sludge washing within their facility. No streams will be returned to DSTs from the HLW processing.

A graph of aging waste tank space requirements as a function of time is presented in Figure 13. The uses of each individual aging waste tank for the Case 1 projection are shown in Figure 14.

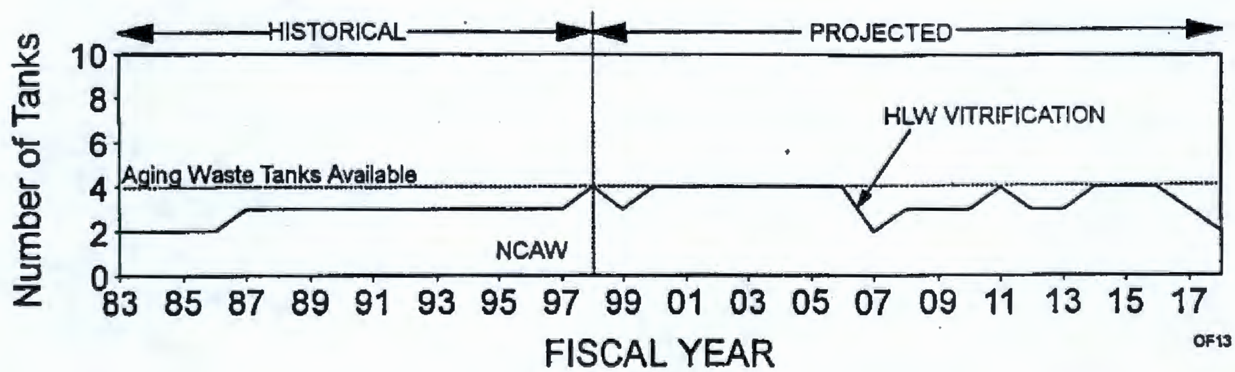


Figure 13. Aging Tank Requirements

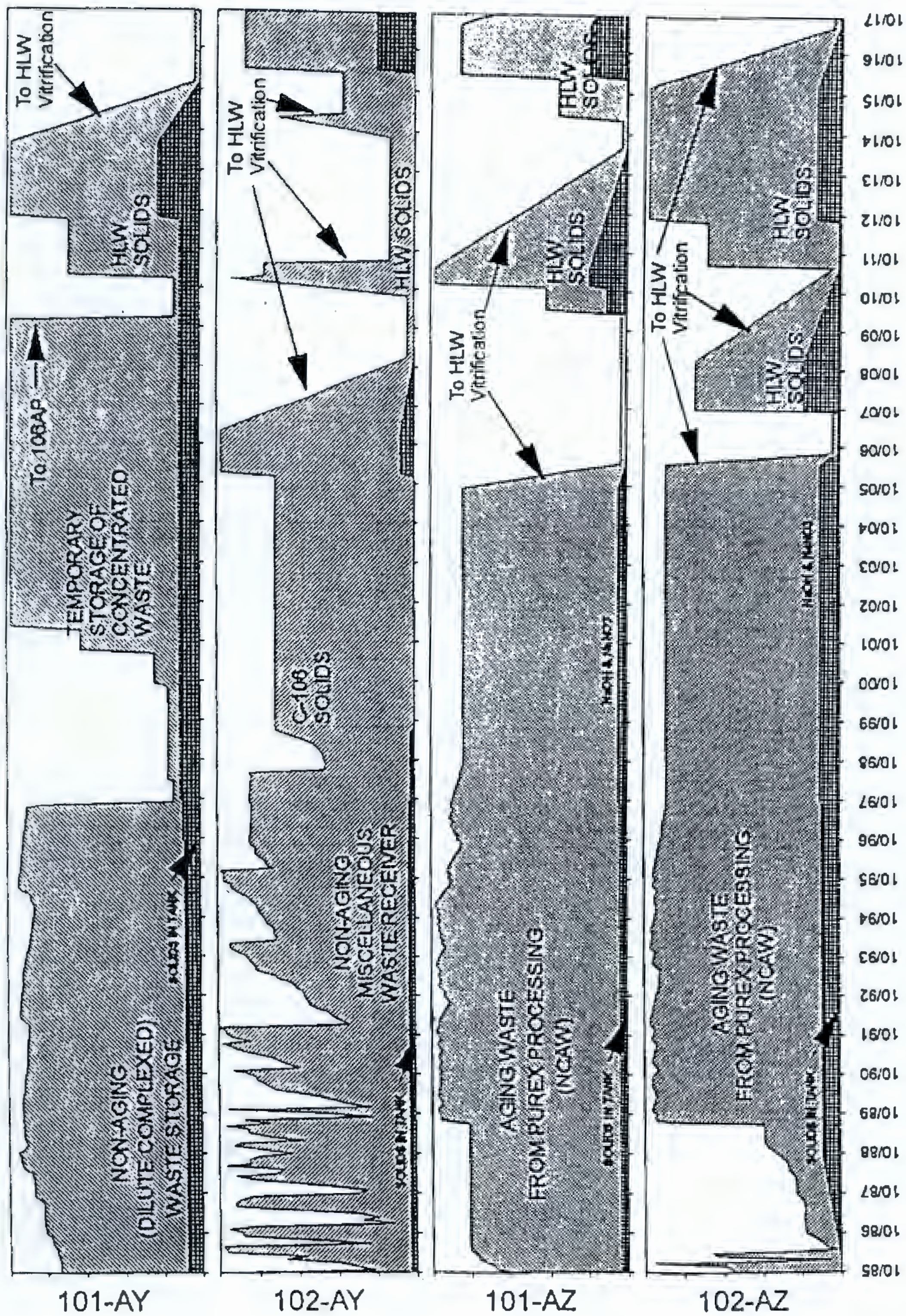


Figure 14. Aging Waste Tank Usage

5.2 PROJECTION CASE 2 RESULTS

Tank space needs for the Case 2 projection, both with and without SST solids retrieval, are shown in Figure 15. "Without SST solids retrieval" refers to no additional SST retrieval beyond those solids scheduled to be retrieved for HLW vitrification feed for Phase 1B. The required tank space needs without additional SST solids retrieval is identical to Case 1 since both cases use the same processing schedule for Phase 1B.

The required tank space for the Case 2 projection with the Disposal Engineering Case 3s3 solids retrieval schedule (Penwell, 1999), exceeds available space one tank in FY 2011 and by one tank in FY 2014 in Figure 15. The tank space shortage in FY 2011 and 2014 could be easily eliminated by shifting some of the retrieval volume in these two years to the period FY 2012-2013 when excess tank space is available.

A spreadsheet summarizing the waste generations, evaporator WVR, and processing requirements for the Case 2 projection is included in Table 16. The tank usage, evaporator, and cross-site transfer information for Case 2 are identical to those presented for Case 1 and were shown previously in Tables 12-15.

Figure 16 shows the waste additions and available space for Case 2 in a bar graph format to allow the user to more easily visualize the tank space usage. Numbered comments have been added to the bar graph explaining the inventory changes. These comments follow the figure. During the period when SST solids are being retrieved and processed, some of the tanks could be filled and processed within the same fiscal year. These tanks will show up as "empty" in the graphic because they have been filled and processed within the same fiscal year and their inventory at the end of the year has been reduced to a heel. Thus, the bar graph misleads the user into believing that most of the space dedicated to SST solids retrieval is not needed. The space is actually needed to allow staging and processing of the SST solids wastes. Retrieval and processing rates are high enough in FY 2011-2018 that it is difficult to retrieve the wastes, allow the 100 days assumed for characterization, and process the waste at the specified rate.

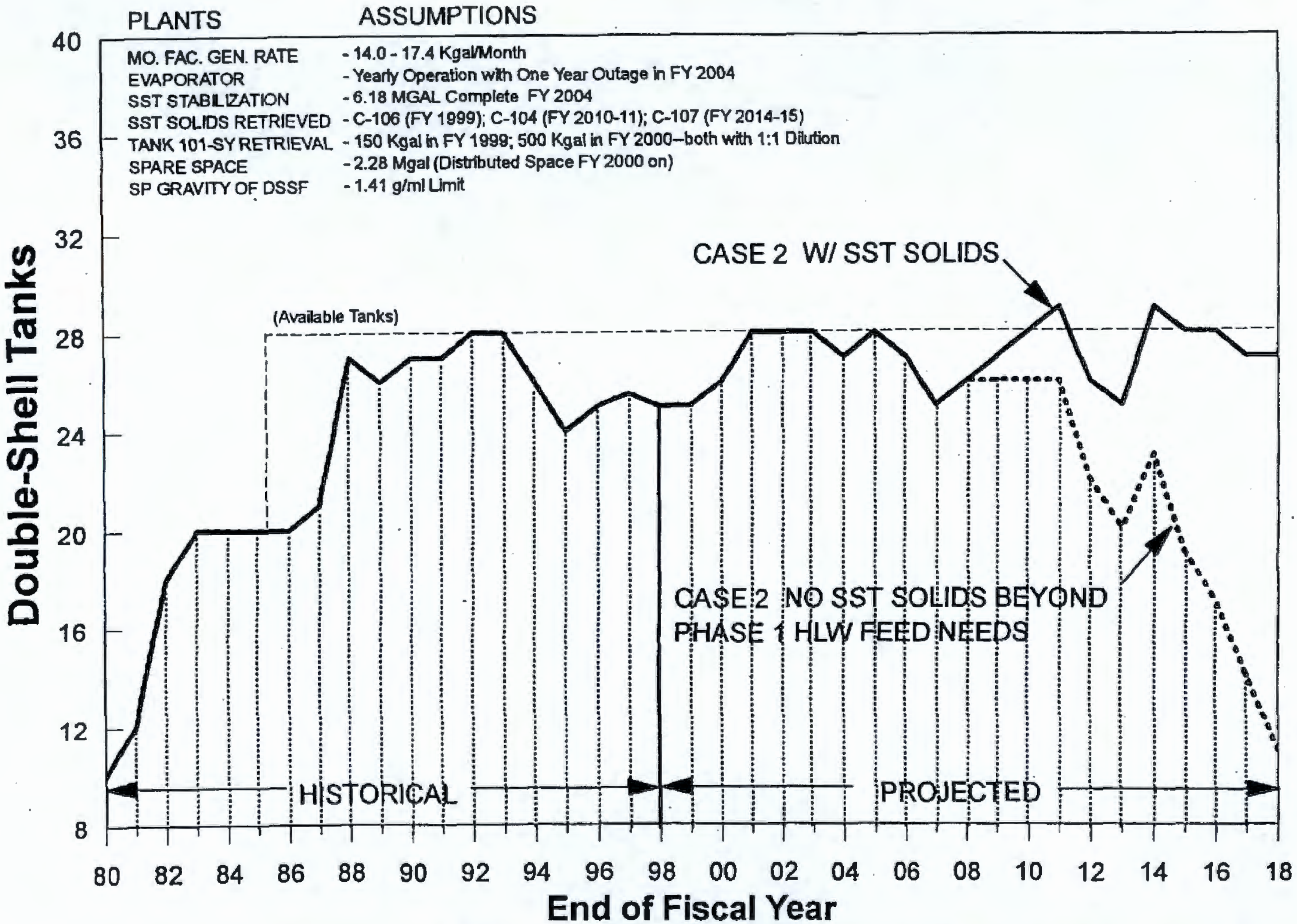


Figure 15. Double-Shell Tank Requirements for Case 2

OF15

Table 16. Spreadsheet of Waste Additions and Reductions for Case 2 with SST Solids Retrieval

FISCAL YEAR	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
STARTING INVENTORY	18353	18598	19438	21743	23456	24821	23926	24559	24170	21826	22121
SPACE UTILIZATION											
Spare Space	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280
Watchlist Space	678	689	709	709	709	709	709	709	1218	826	826
Contingency Space	0	0	0	0	0	0	0	0	0	0	0
Restricted Space	2956	719	719	653	653	653	653	1492	1050	880	1082
Priority/Operational Space	2483	4185	3209	3265	3461	4602	2568	1834	3419	3049	2689
NEW WASTE ADDITIONS											
B Plant/WESF	0	5	5	5	5	5	5	5	5	5	5
S Plant/WSCF	7	12	11	10	10	10	10	10	10	10	10
T Plant	0	25	24	24	24	25	25	25	25	26	26
300 Area	15	2	20	40	18	16	16	16	2	2	2
TCO	37	5	5	45	5	5	223	217	5	5	205
Flushes	128	288	521	615	569	219	111	647	248	108	248
SWL Pumping	89	715	1228	1871	1736	574	0	0	0	0	0
Tank Farms	56	138	155	190	205	190	170	190	205	155	205
SST Retrieval	0	250	0	0	0	0	71	94	94	94	94
PFP	0	6	2	5	8	2	2	1	1	1	1
Inventory	0	0	0	66	0	0	0	0	0	0	0
Retrieval Water	0	289	950	0	0	0	0	0	200	0	522
Everything Else	50	0	0	0	0	0	0	0	0	0	0
Pretreatment Dilution	0	0	0	0	0	0	0	231	392	813	395
In-Tank Washing	0	0	0	0	0	0	0	0	0	0	0
NEW WASTE ADDITIONS TOTAL	382	1735	2921	2871	2580	1046	633	1436	1187	1219	1713
TOTAL WASTE BEFORE EVAP	18735	20333	22359	24614	26036	25867	24559	25995	25357	23045	23834
EVAPORATOR WVR	0	-895	-616	-1158	-1215	-1941	0	-1825	-812	-639	-294
CUM EVAPORATOR WVR	0	-895	-1511	-2669	-3884	-5825	-5825	-7650	-8462	-9101	-9395
Loss due to (Burp, Lance Evap, Surf Chg, Instr, etc.)	-137	0	0	0	0	0	0	0	0	0	0
Low activity waste	0	0	0	0	0	0	0	0	-1070	0	-901
High Level Waste Contractor	0	0	0	0	0	0	0	0	-1649	-284	-489
EVAP AND OUTFLOWS TOTAL:	-137	-895	-616	-1158	-1215	-1941	0	-1825	-3531	-923	-1684
NET INVENTORY CHANGE	245	840	2305	1713	1365	-895	633	-389	-2344	296	29
END OF YEAR INVENTORY	18598	19438	21743	23456	24821	23926	24559	24170	21826	22122	22150
TOTAL CAPACITY	26995	27321	28660	30363	31924	32070	30767	30485	29602	29157	29087
	24	25	26	27	29	29	28	28	27	26	26

FISCAL YEAR	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
STARTING INVENTORY	22149	20664	21482	23503	22191	22554	22151	23455	24147	22937
SPACE UTILIZATION										
Spare Space	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280
Watchlist Space	1123	2177	1205	2045	0	0	0	0	0	0
Contingency Space	0	0	0	0	0	0	0	0	0	0
Restricted Space	478	1330	445	456	709	1700	1281	750	1403	270
Priority/Operational Space	6495	4873	4221	3534	3840	5966	3533	3587	3694	3583
NEW WASTE ADDITIONS										
B Plant/WESF	5	5	5	5	5	5	5	5	5	5
S Plant/WSCF	10	10	10	10	10	10	10	10	10	10
T Plant	26	27	27	27	27	28	28	28	29	29
300 Area	2	2	2	2	2	2	2	2	0	2
TCO	5	5	5	5	5	5	5	5	5	5
Flushes	388	248	248	248	108	388	248	388	110	109
SWL Pumping	0	0	0	0	0	0	0	0	0	0
Tank Farms	155	205	155	205	155	205	155	205	155	205
SST Retrieval	164	1688	3288	872	869	1275	3858	2458	1773	4521
PFP	1	1	1	1	0	0	0	0	0	0
Inventory	0	0	0	0	0	0	0	0	0	0
Retrieval Water	475	284	224	370	0	0	0	600	0	0
Everything Else	0	0	100	100	100	100	100	0	0	0
Pretreatment Dilution	96	25	1124	600	0	0	0	0	0	0
In-Tank Washing	0	0	0	0	0	0	0	0	0	0
NEW WASTE ADDITIONS TOTAL	1327	2500	5189	2445	1281	2018	4411	3701	2087	4886
TOTAL WASTE BEFORE EVAP	23476	23164	26671	25948	23472	24572	26562	27156	26234	27823
EVAPORATOR WVR	-661	-522	-570	-317	-606	-346	-636	-437	-451	-440
CUM EVAPORATOR WVR	-10056	-10578	-11148	-11465	-12071	-12417	-13053	-13490	-13941	-14381
Loss due to (Burp, Lance Evap, Surf Chg, Instr, etc.)	0	0	0	0	0	0	0	0	0	0
Low activity waste	-1797	-870	-2282	-3129	0	-1690	-1843	-1952	-2193	-2220
High Level Waste Contractor	-355	-291	-315	-311	-311	-386	-626	-619	-653	-747
EVAP AND OUTFLOWS TOTAL:	-2813	-1683	-3167	-3757	-917	-2422	-3105	-3008	-3297	-3407
NET INVENTORY CHANGE	-1486	817	2022	-1312	364	-404	1306	693	-1210	1479
END OF YEAR INVENTORY	20663	21481	23504	22191	22555	22150	23457	24148	22937	24416
TOTAL CAPACITY	31037	32141	31655	30506	29444	32156	30551	30785	30314	30549
	28	29	29	28	27	29	28	28	27	28

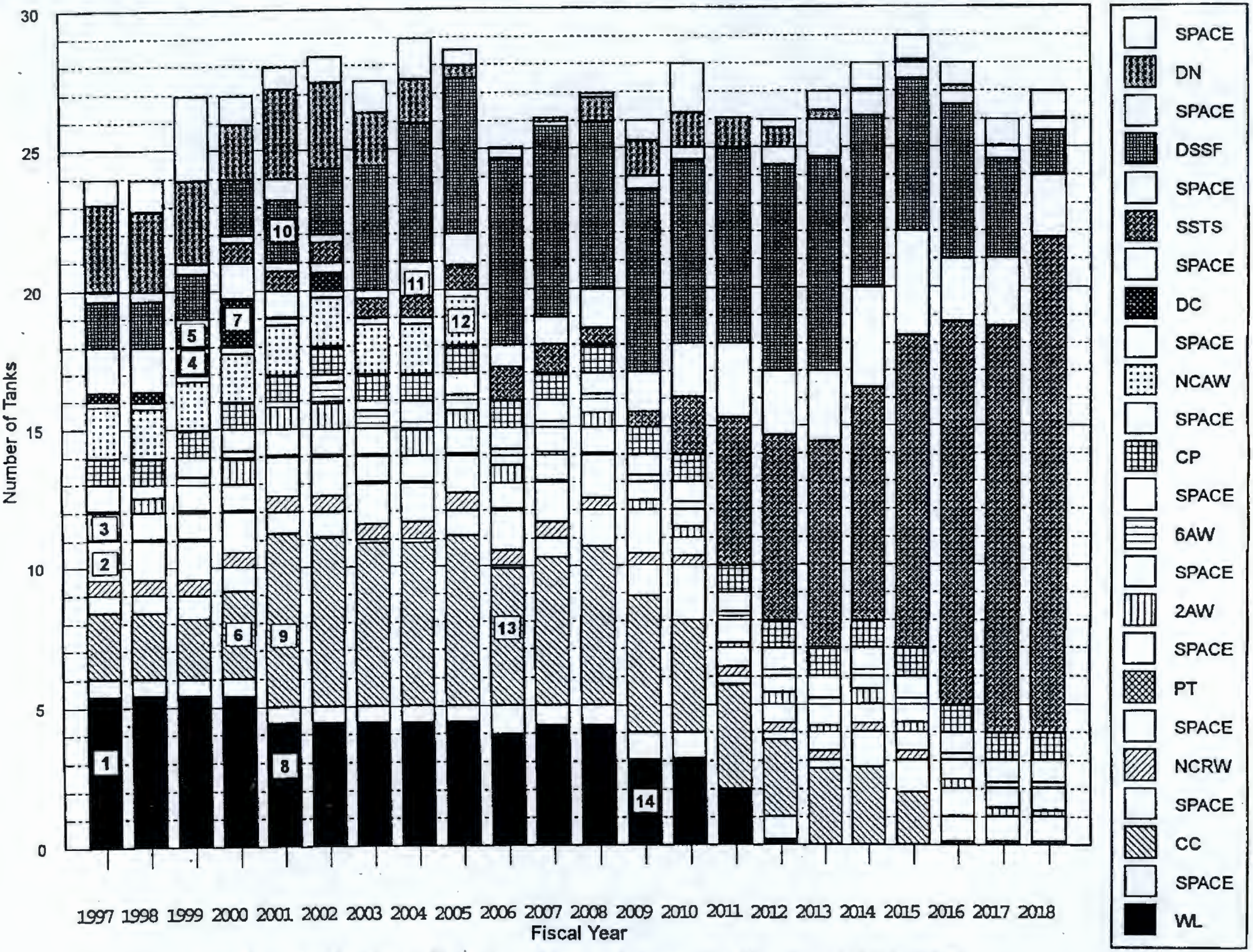


Figure 16. Double-Shell Tank Inventory and Space for the Case 2 Projection

Comments for Figure 16--Double-Shell Tank Inventory and Space for the Case 2 Projection
This bar chart graphic is meant to show the increase and decrease in the various waste categories or waste types for this year's Case 2 projection. Spare and processing receipt tanks are not shown. Beginning in 1999, a portion of the evaporator operational space maintained in Tanks 102-AW and 106-AW (abbreviated 2AW and 6AW on Figure 4) will also be considered as spare space to decrease tank space needs. Levels of Dilute Non-complexed waste (DN) in the dilute receiver and evaporator tanks will vary with time. The bar for each year depicts the tank space needs for the end of that fiscal year and may not show tank space changes occurring during the fiscal year, especially if the tank inventory has been removed prior to the end of the fiscal year.

Numbered Comments for "Tank Inventory and Space" Graphic

1. "Watch List" (WL) tank inventories are constant from 1997-2000. In late FY 2006, half of the contents of Tank 104-AN are staged to Tank 101-AN for Phase 1B processing causing a decrease in WL inventory. By FY 2007, the WL inventory has increased to its original total due to dilution of the remaining half of the waste in Tank 104-AN. The remainder of Tank 104-AN is processed in FY 2009, causing a decrease in inventory and tank count in the WL category. All WL tanks have been processed by FY 2013 causing this category to disappear from the graphic. Once the wastes are removed from the Watch List tank, the watch list designation is removed from the tank and it is reused for storage of other wastes.

2. Space above Neutralized Cladding Removal Waste (NCRW) solids is routinely used to store Dilute Non-complexed (DN) waste. For clarity, the graph shows this DN inventory in with the other DN inventory toward the top of the graph. (i.e, to ascertain "free" space, add the space shown in the NCRW group to that shown in the DN group).

3. Space above PFP Tru (PT) solids is used to store DN waste, (see note 2). It is assumed that complexed salt well liquid pumping in 200 West Area would be added to Tank 102-SY before the PT (PFP TRU) solids are retrieved.

4. Increase in the DC category in FY 1999 was the result of the "minor" dilution of Tank 101-SY (150 Kgal was retrieved, diluted 1:1, and combined with SWL waste in Tank 102-SY). The waste in Tank 102-SY was cross-sited to AP farm for evaporation.

5. Appearance of the SSTS (single-shell tank solids) inventory in FY 1999 was caused by the retrieval of Tank C-106 solids to Tank 102-AY.

6. The increase in the CC volume and tank count in FY 2000 was caused by the "major" dilution of Tank 101-SY (500 Kgal was retrieved, diluted 1:1, and transferred to Tank 102-SY). In this projection it was assumed that the retrieved and diluted waste would be cross-sited to Tank 106-AP to be held as feed for BNFL.

7. Increases and decreases in the DC category during the period FY 2000-2003 are due to the pumping of dilute complexed SWL wastes and their re-evaporation to CC.

8. Decrease in Watch List (WL) tank count in FY 2001 was caused by the retrieval and 1:1 dilution of waste from Tank 101-SY mentioned above in note 6. It was assumed that this remediation would result in Tank 101-SY being removed from the Watch List in FY 2001 thus decreasing the WL

category by one tank. The diluted waste in Tank 101-SY was held as feed for BNFL.

9. The increase in the CC category in FY 2001 was due both to the evaporation of dilute complexed SWL wastes and 1:1 dilution of waste from Tank 101-SY (see notes 6 and 9).

10. The increase in the DSSF category in FY 2001 and beyond was due to the evaporation of dilute non-complexed miscellaneous and SWL wastes.

11. The gradual increase in the SSTS category beginning in FY 2004 and the increase in headspace is due to the beginning of SST solids retrieval. The gradual decrease in the SSTS category in FY 2008-9 is due to the HLW processing occurring from Tank 102-AY (Tank C-106 solids are being processed). By FY 2010, the yearly retrieval of other SST solids to DSTs causes the SSTS category to increase significantly. This category continues to increase through the end of FY 2018.

12. The NCAW category disappears by the end of FY 2006 because the solids in Tanks 101-AZ and 102-AZ have been sent to HLW vitrification.

13. The decrease in the CC category in FY 2006 was caused by the staging of CC waste for LAW processing. Subsequent increases in the inventory and tank count FY 2007-8 were caused by the dilution of CC waste for processing and the higher number of feed tanks occupied by the diluted waste. Beginning in FY 2009, the CC inventory decreases steadily due to LAW waste processing.

14. The decrease in Watch List category in FY 2009 was caused by staging of wastes from Watch List tanks for LAW processing--see note 1 for greater detail.

5.3 PROJECTION CASE 3 RESULTS

Projected tank space needs for the Case 3 projection, both with and without additional SST solids retrieval, are shown in Figure 17. The Case 3 projection incorporates waste processing schedules from Disposal Engineering Case 6b (Kirkbride, 1999a). The LAW processing rate is initially one third slower but ramps up to a rate twice as fast as the rate used for OWVP projection Cases 1 and 2 (see Table 9 for processing rate comparison). The SST solids retrieval schedule for Case 3 is a reduced retrieval schedule that does not meet most of the TPA milestones. By the end of FY 2012, Case 3 would predict a tank space need three tanks higher than that predicted for Cases 1 and 2 due to the slower initial processing rate for Case 3. By the end of FY 2013, Case 3 would predict a tank space need one tank higher than Cases 1 and 2. By the end of FY 2014, Case 3 would predict a tank space need eight tanks lower than Cases 1 and 2 due to the faster ramp-up in the LAW processing rate for Case 3. Therefore, additional space has been freed up for SST solids retrieval from FY 2014 and beyond.

The required tank space for the Case 3 projection with SST solids retrieval incorporates the SST solids retrieval schedule from Disposal Engineering's Case 6b (Kirkbride, 1999a and Penwell, 1999). The projected tank space need with SST solids retrieval exceeds available space during the periods FY 2011-2015 and 2017-2018. The SST solids retrieval schedule used for Case 3 scales up the SST solids retrieval faster than waste processing has emptied tanks.

A spreadsheet summarizing the waste generations, evaporator WVR, and processing requirements for the Case 3 is included in Table 17.

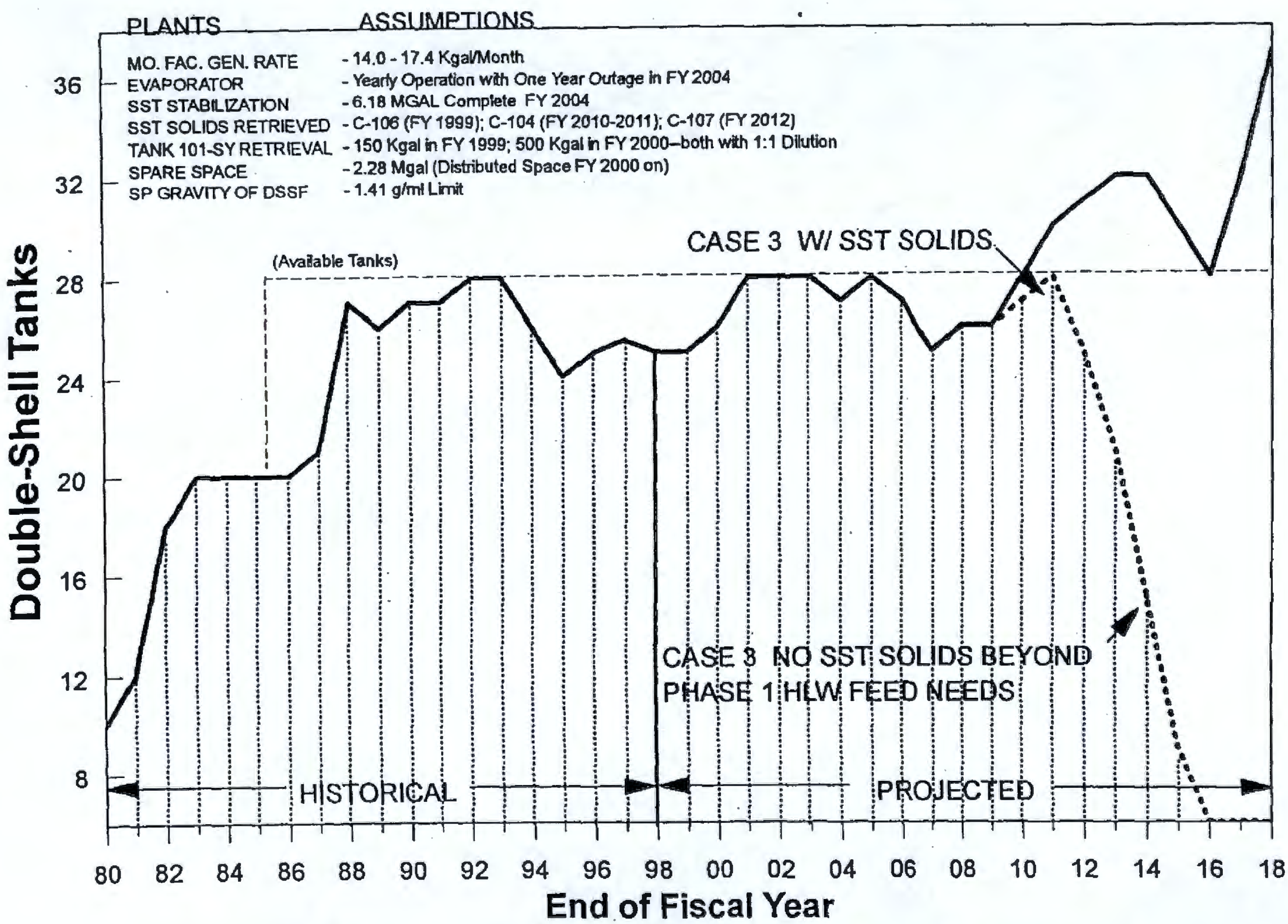


Figure 17. Double-Shell Tank Requirements for Case 3

OF17

Table 17. Spreadsheet of Waste Additions and Reductions for Case 3 with SST Solids Retrieval

FISCAL YEAR	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
STARTING INVENTORY	18353	18598	19438	21743	23456	24821	23926	24488	24005	22266	22465	22875	20514	21970	23131	23964	23122	21342	20648	20863	25960
SPACE UTILIZATION																					
Spare Space	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280
Watchlist Space	678	689	709	709	709	709	709	709	709	826	826	826	1098	1317	0	0	0	0	0	0	0
Contingency Space	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Restricted Space	2956	719	719	853	853	853	853	1492	1038	338	882	313	1227	440	449	1928	2873	2873	2873	2873	983
Priority/Operational Space	2483	4195	3208	3265	3481	4502	1525	2913	3250	2874	2624	6873	4315	3269	4041	5527	9115	8015	7024	8410	5619
NEW WASTE ADDITIONS																					
B Plant/WESF	0	5	5	5	5	5	5	5	5	6	5	5	6	5	5	5	6	5	5	5	5
S Plant/WSCF	7	12	11	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
T Plant	0	25	24	24	24	25	25	25	25	26	26	26	27	27	27	27	28	28	28	28	29
300 Area	15	2	20	40	18	18	18	18	2	2	2	2	2	2	2	2	2	2	2	0	2
TCO	37	5	5	45	5	5	223	217	5	5	205	5	5	5	5	5	5	5	5	5	5
Flushes	128	288	521	615	589	219	111	647	248	108	108	248	388	388	948	808	248	108	108	110	109
SWL Pumping	89	715	1228	1871	1736	574	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tank Farms	56	138	155	190	205	190	170	190	205	155	205	155	205	155	205	155	205	155	205	155	205
SST Retrieval	0	250	0	0	0	0	0	0	-0	0	0	70	918	3025	4723	6158	3750	3598	4743	10112	9368
PFP	0	6	2	5	8	2	2	1	1	1	1	1	1	1	1	0	0	0	0	0	0
Inventory	0	0	0	66	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Retrieval Water	0	269	950	0	0	0	0	0	200	0	522	0	751	224	870	0	0	0	0	0	0
Everything Else	50	0	0	0	0	0	0	0	0	0	0	0	0	100	100	100	100	100	0	0	0
Pretreatment Dilution	0	0	0	0	0	0	0	231	0	784	0	0	937	562	2124	0	0	0	0	0	0
In-Tank Washing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW WASTE ADDITIONS TOTAL	382	1735	2921	2871	2580	1048	562	1342	701	1096	1084	522	3249	4504	9120	7270	4353	4011	5106	10428	9733
TOTAL WASTE BEFORE EVAP	18735	20333	22359	24614	26036	25867	24488	25830	24706	23362	23549	23397	23763	26474	32251	31234	27475	25353	25754	31289	35693
EVAPORATOR WVR	0	-895	-616	-1158	-1215	-1941	0	-1825	-612	-662	-295	-539	-542	-586	-558	-960	-945	-509	-451	-334	-315
CUM EVAPORATOR WVR	0	-895	-1511	-2669	-3884	-5825	-5825	-7650	-8462	-9124	-9419	-9958	-10500	-11086	-11622	-12582	-13527	-14036	-14487	-14821	-15136
Loss due to (Burp, Lance Evap, Surf Chg, Instr, etc.)	-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Low activity waste	0	0	0	0	0	0	0	0	0	0	0	-1071	-901	-2362	-5660	-5161	-4870	-4195	-4440	-4995	-4440
High Level Waste Contractor	0	0	0	0	0	0	0	0	-1828	-235	-378	-373	-351	-413	-2072	-1989	-320	0	0	0	0
EVAP AND OUTFLOWS TOTAL:	-137	-895	-616	-1158	-1215	-1941	0	-1825	-2440	-897	-674	-2083	-1794	-3341	-8288	-8110	-6135	-4704	-4891	-5329	-4755
NET INVENTORY CHANGE	245	840	2305	1713	1365	-895	562	-483	-1739	199	410	-2361	1455	1163	832	-840	-1782	-693	215	5097	4978
END OF YEAR INVENTORY	18598	19438	21743	23456	24821	23926	24488	24005	22266	22465	22875	20514	21969	23133	23963	23124	21340	20649	20863	25960	30938
TOTAL CAPACITY	26985	27321	28860	30303	31924	32070	29655	31399	29543	28781	29487	30808	30889	30439	30733	32857	35608	33617	33040	39523	39830
	24	25	26	27	29	29	27	28	27	26	27	28	28	27	28	30	32	30	30	36	36

5.4 ACTUAL WASTE GENERATION COMPARED TO MANAGEMENT LIMITS

During the Tank Space Management Board (TSMB) meeting on August 7, 1991, the need to establish new facility waste generation limits was discussed with the Hanford facility representatives based on additional delays in the 242-A Evaporator restart. A new total monthly waste generation rate of 64 Kgal/month was adopted based on: discussions with facility representatives, the average monthly waste generation rate for each facility during FY 1991, and the need to provide contingency space for potential delays in the 242-A Evaporator restart.

Facility generation limits were not established for high priority waste generations, which were assigned to "Priority Space". These generations included the PFP stabilization campaign (safety), SWL pumping (TPA milestone), and the 242-A Evaporator (space necessary for the mini-run and restart).

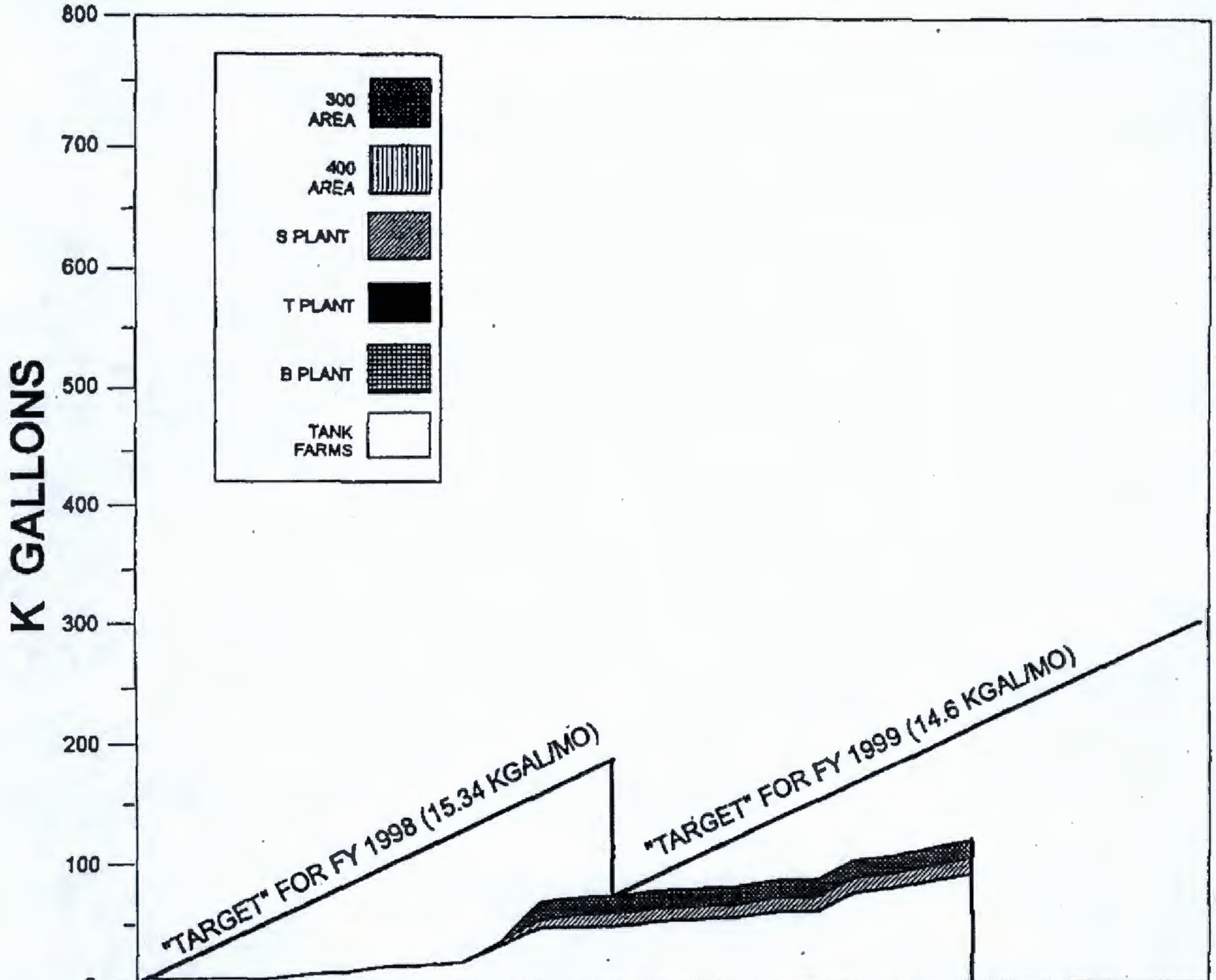
New average monthly waste generation targets have been established for this projection with waste generations being reduced by the facilities (references and discussion in Section 3). Table 18 presents a comparison of the previous limits established for each facility, the newly established target rates for this projection, and the actual average monthly waste generation rate (Kgal/month) for the period October 1997 through September 30, 1998. Terminal cleanout (TCO) was completed at B Plant in 1998 and no additional waste will be received from this facility. TCO at the PUREX facility was completed but the facility will be sending ~5 Kgal/year of collected condensate to Tank Farms.

Table 18. Comparison of Average Monthly Waste Generation Rates (Kgal/month)

FACILITY	64 KGAL/MONTH MANAGEMENT LIMIT FROM OWVP REV. 20	FACILITY TARGET FOR REV. 25	AVERAGE MONTHLY FACILITY GENERATIONS (10/97 - 9/98)
TANK FARMS	10.0	10.0	3.7
B PLANT	23.0	N/A-TCO MODE	N/A-TCO MODE
WESF	N/A	0.5	0.0
PUREX	N/A	0.4	0.0
PFP	N/A	0.4	0.0
T PLANT	6.0	1.4	0.0
S PLANT	5.0	1.7	0.9
300 AREA	5.0	2.3	1.3
400 AREA	0.0	0.2	0.0
TOTAL#	64.0	16.9	5.9

\# Monthly Totals do not Include Terminal Clean-out Volumes or SWL Pumping

Due to the commendable efforts by the Hanford facilities, all waste generators are at or below their new waste generation target for the period October 1997 through September 30, 1998. A comparison of the volumes of waste entering the DST tank space for that time period is compared graphically to the various targets or projected generations in Figures 18-21.



	TARGET	10/97	11/97	12/97	1/98	2/98	3/98	4/98	5/98	6/98	7/98	8/98	9/98	10/98	11/98	12/98	1/99	2/99	3/99	4/07	5/99	6/99	7/99	8/99	9/99	10/99	11/99	12/99
300 AREA	1.4	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0						
400 AREA	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
S PLANT	1.3	0	0	0	0	0	0	0	0	3	3	4	1	0	0	0	0	0	1	0	1	0						
T PLANT	1.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
B PLANT	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**						
TANK FARMS	10.0	0	0	0	4	2	4	1	3	14	15	0	1	4	1	2	5	0	16	4	6	5						
TOTAL	14.6	0	0	0	4	2	4	1	3	17	33	4	2	4	1	2	5	0	17	4	7	5						

NOTE: THIS GRAPHIC DEPICTS CONTRIBUTIONS FROM FACILITY GENERATIONS; TERMINAL CLEAN-OUT AND SWL PUMPING IS NOT SHOWN
** B-PLANT LISTED UNDER TERMINAL CLEAN-OUT FROM 10/96.

Figure 18. Comparison of Facility Generations to "TARGET"

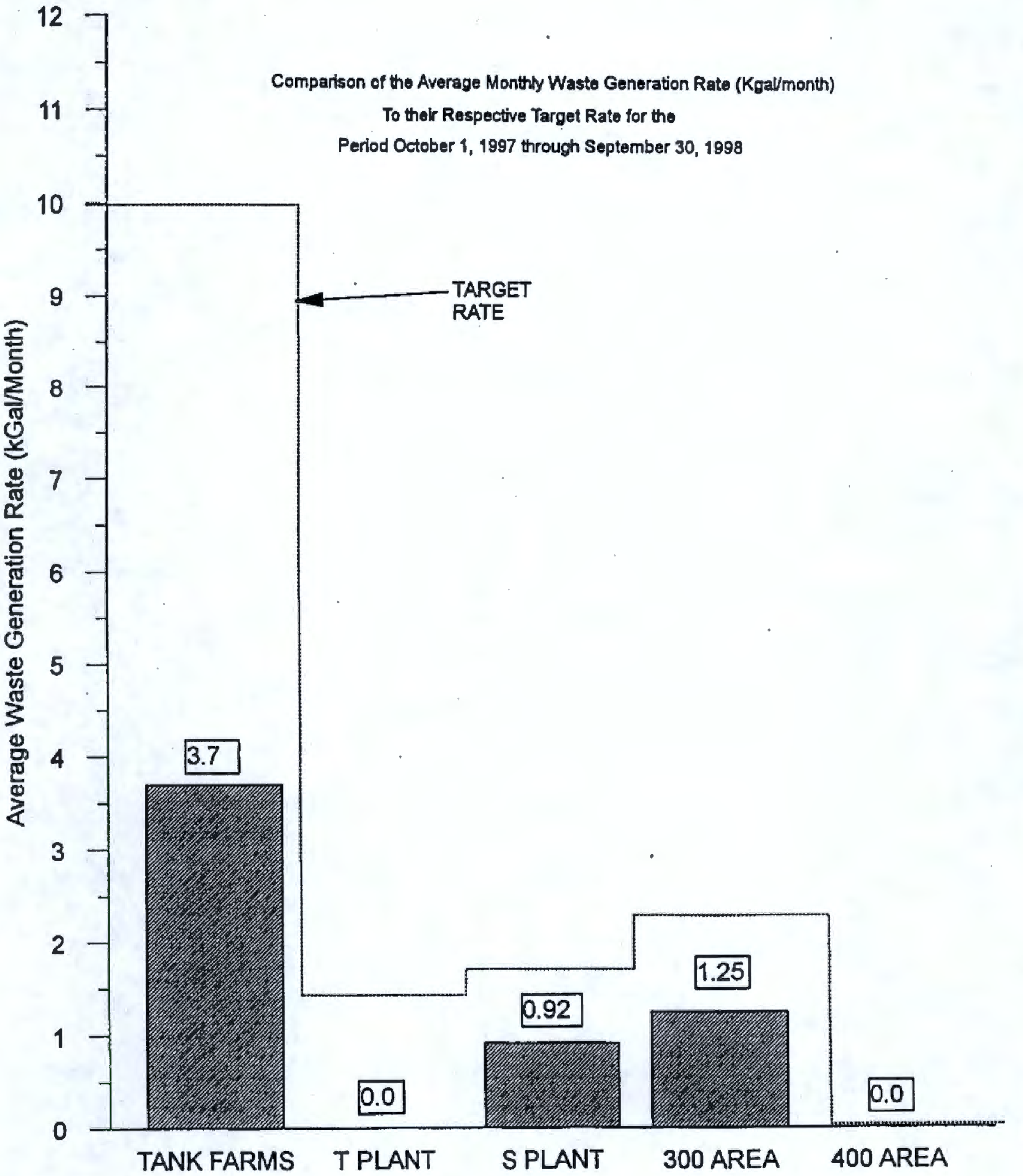
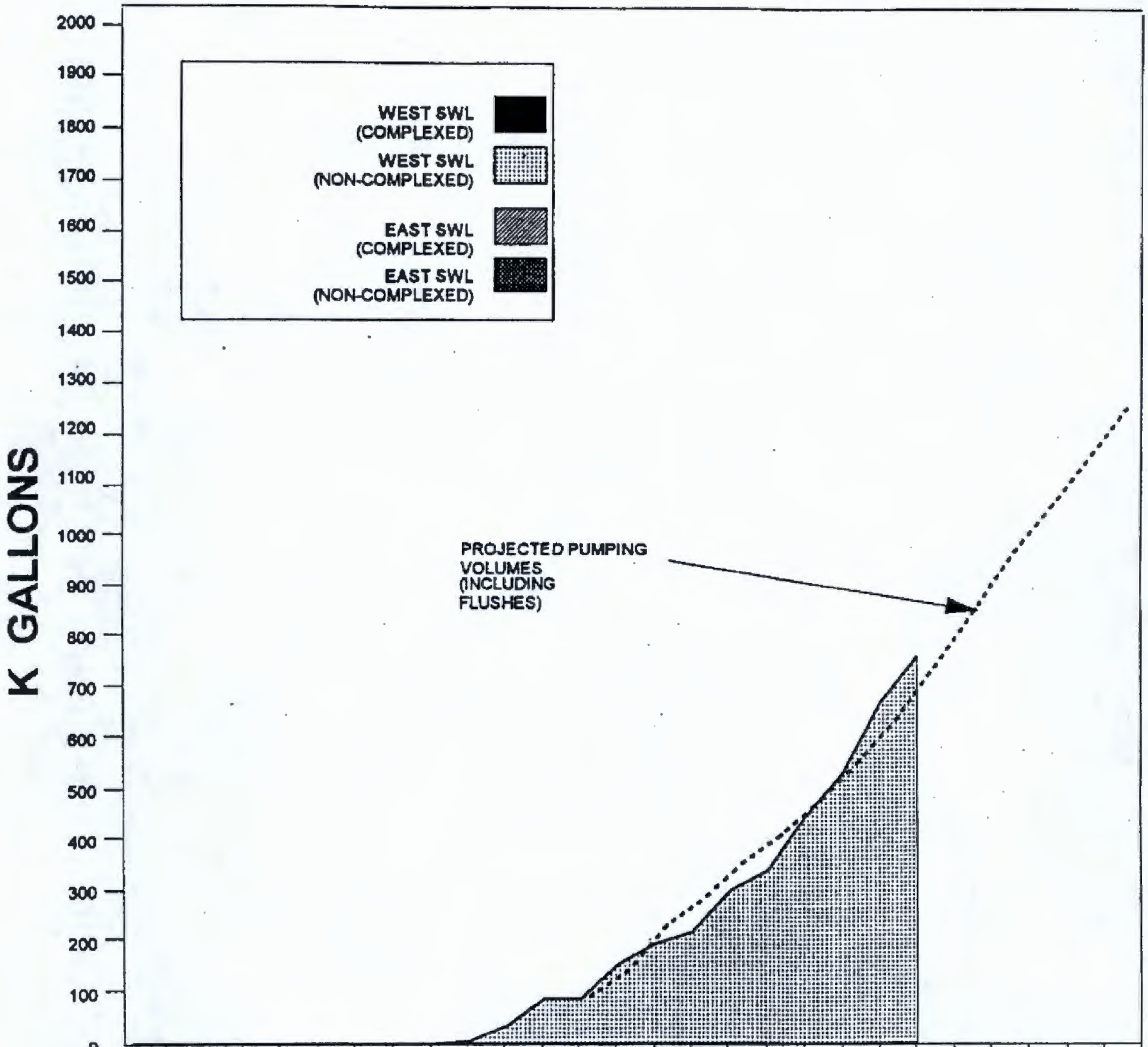


Figure 19. Comparison of Monthly Average Waste Generation To Target Rate



	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
WEST SWL (DC)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
WEST SWL (DN)	0	0	0	0	0	0	0	0	7	28	53	0	69	42	22	84	40	108	89	141	92						
EAST SWL (DC)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
EAST SWL (DN)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						

FY 1998 FY 1999

Figure 20. Contributions From Salt Well Liquid Pumping

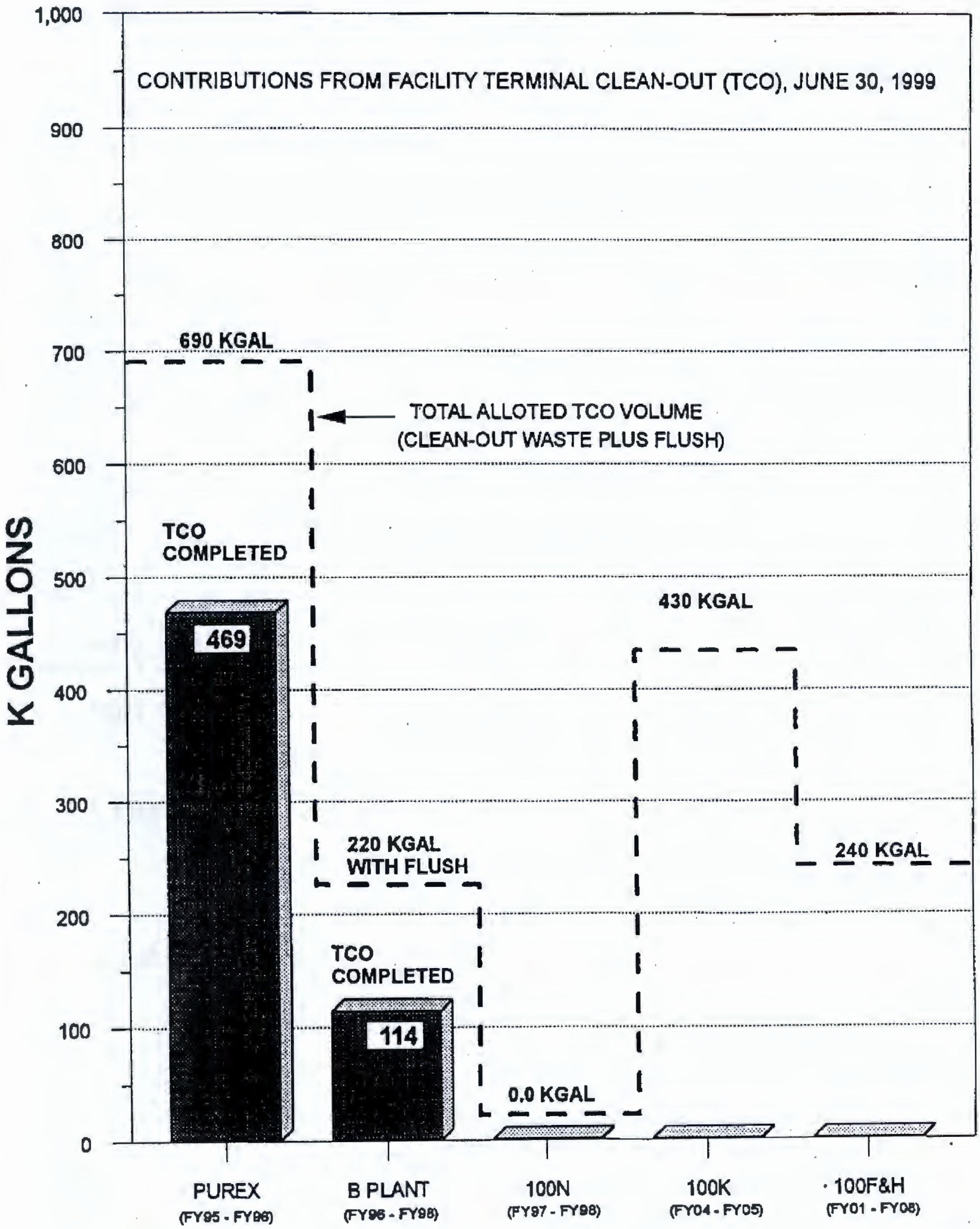


Figure 21. Contributions From TCO (June 30, 1999)

6.0 SPACE SAVING ALTERNATIVES

In the near term, space saving alternatives include waste minimization, continued availability of the 242-A Evaporator, LERF availability, and the operation of the ETF. These alternatives must be considered because new inputs to the system may develop (e.g., unexpected new waste streams or a leaking SST or DST).

Should a tank space shortage develop in the period 1999 through 2018, response to the shortage for the TPA Compliant Case must be in one of three areas. The inflows to the system must be reduced, the outflows to the system must be increased (or started earlier), or the available tank space increased. Inflows to the system include miscellaneous facility waste generations, TCO wastes, dilution of Tanks 101-SY and 103-SY (for processing), processing, SWL pumping, and SST solids retrieval. Outflows include the 242-A Evaporator and waste disposal (processing and vitrification). Increasing the tank space available could be done by building more tanks (a six to eight year task), mixing segregated waste types (which would gain about half a million gallons of space), or operating without reserved spare tank space.

In addition to minimizing waste generations, other actions could be pursued. The list below includes many actions which can result in tank space savings or economization, and can serve as a starting point in a tank space optimization program. A special trade study was completed in FY 1999 to assess the space savings, costs, and risks associated with some of the space saving alternatives mentioned below (Garfield, 1999). The special trade study stated that sufficient DST is available to support waste feed delivery and that no action is necessary at this time to build new double-shell tanks. The special trade study assumed a reduced retrieval of SST solids.

PUREX Facility

- TCO of PUREX was completed in FY 1997. Therefore, waste reductions for PUREX will not be a viable option.

B Plant

- Continue to reduce waste being generated at B Plant
- Reduce or eliminate flush volumes following low-level waste transfers to DSTs

Plutonium Finishing Plant

- Continue to reduce waste being generated at PFP (only 33 Kgal of total waste are scheduled to be generated from FY 1999-2006

6.0 SPACE SAVING ALTERNATIVES (CONTINUED)

<u>Tank Farms</u>

- Continue to reduce waste being added to DSTs
- Continue waste accountability and minimization controls
- Develop a total waste cutoff plan
- Increase the 5 <u>M</u> Na limitation on aging waste tanks
- Use dilute waste for retrieval, air lift circulator flushes, line flushes, etc.
- Increase the WVR of the 242-A Evaporator
- Accelerate plans to consolidate solids from Tanks 102-SY into Tank 105-AW
- Delay SWL pumping
- Build new tanks
- Accept loss of waste segregation (used as a last resort)
- Store facility generated waste in designated "spare tank space" (used in an extreme emergency)
- Improve efficiency of the 242-A Evaporator
- Solidify treated waste and dispose of as low level waste in burial grounds
- Consolidate NCAW and Tank 106-C solids in one aging tank with one additional aging tank being used to combine NCAW supernates (requires modification of safety basis).
- Increase the heat limit on non-aging DSTs to allow either the Tank 106-C wastes or the supernate from Tank 101-AZ to be stored in a non-aging DSTs
- Concentrate DSSF to Double-Shell Slurry (DSS). Experience with Tank 101-SY makes this alternative highly unlikely.
- Store waste in single-shell tanks (used in an extreme emergency; would require approval by DOE, EPA, and Ecology)
- Store waste in facility storage tanks or portable tanks such as railcars (used in an extreme emergency; total space available is small compared to the contents of a DST)
- Upgrade single-shell tanks by adding a liner to allow storage of waste

<u>Grout</u>

- Reinstate the Grout Disposal Program (unlikely to occur; considered an emergency option only) to grout the existing waste in Tanks 102-AP and 101-AW

7.0 CONCLUSIONS

Last year's OWVP (Rev. 24) stated in the risk assessment table (Table 2) that if the LAW Phase 1 waste processing did not start in FY 2002 and process 2.2 Mgal per year or if Phase 2 processing did not start in FY 2011 and process 24.1 Mgal/yr, that the SST solids retrieval schedule would have to be delayed (due to lack of space). Recent schedule slippages in the privatization contract start date and decreases in the waste processing rate in the RPP project planning guidance received in April 1999 (Taylor, 1999) have impacted the amount of space in DSTs that will be available for SST solids retrieval. The delay in the start of LAW processing to March 2007 and the lower waste processing rates have decreased the space available for SST solids retrieval. Tank space is not available to meet the space requirements for the TPA compliant SST solids retrieval milestones beginning in FY 2004. A review of the space needs with and without SST solids retrieval follows:

<u>Projected Tank Needs Without SST Solids Retrieval</u>
Without SST Solids retrieval refers to no additional solids retrieval beyond those solids scheduled to be retrieved for Phase 1B HLW processing feed. Cases 1 and 2 would retrieve solids from Tank C-106 during Phase 1B and the solids from Tanks C-104 and C-107 during Phase 1B prime. A review of the three projections completed in this document indicate that tank space is available to meet the needs of waste feed delivery for Phase 1B and for the retrieval of those SST solids necessary to supply Phase 1B HLW processing feed. In other words, no new tanks are required if SST retrieval is reduced to those tanks mentioned above.

<u>Projected Tank Needs With TPA Compliant SST Solids Retrieval (Projection Case 1)</u>
With the TPA complaint SST solids retrieval schedule added, Case 1 projects that tank space requirements will significantly exceed available space:

-by one tank by the end of FY 2004
-three tanks by the end of FY 2006
-twenty five tanks by the end of FY 2012
-seventy nine tanks by the end of FY 2018

In projection Cases 1 and 2, the Phase 1B prime (extended) waste processing will be processing DST waste until approximately 2018-2019 and very little SST solids retrieval wastes could be processed which accounts for the large number of additional tanks that would be required. Clearly, if the TPA compliant SST solids retrieval schedule is to be met and the waste processing schedule cannot be increased, an excessively high number of DSTs will have to be built. Furthermore, since it requires 6-8 years to build additional DSTs, it is doubtful that additional tank space could be built fast enough to meet the early TPA milestones for SST solids retrieval by FY 2004. A DST space trade study (Garfield, 1999) has been completed which addresses some of the space saving alternatives mentioned in Section 6 of this document.

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APPENDICES

APPENDIX A. Acronyms

ASD - ammonia scrubber distillate from
ASF - ammonia scrubber feed from
AW - aging waste, also called NCAW
BCP - B Plant process condensate
CC - complexant concentrate waste
CP - concentrated phosphate waste
DC - dilute complexed waste
DCRT - doubly contained receiver tank
DN - dilute non-complexed waste
DOE - U.S. Department of Energy
DP - dilute phosphate waste
DSS - double-shell slurry (most concentrated double-shell tank waste)
DSSF - double-shell slurry feed
DST - double-shell tank
EIS - Environmental Impact Study
FFTF - Fast Flux Test Facility
FSAR - Facility Safety Analysis Report
FY - fiscal year
GTF - Grout Treatment Facility
HFW - Hanford facility waste (waste produced at 100, 300, 400 areas)
HLW - High Level Waste
IPM - Initial Pretreatment Module
IX - ion-exchange
KGAL - kilogallon (1000 gallons)
LERF - Liquid Effluent Retention Facility
LETF - Liquid Effluent Treatment Facility
LAW - Low Activity Waste
MOTU - metric tons of uranium
NCAW - neutralized current acid waste
NCRW - neutralized cladding removal waste
OWVP - Operational Waste Volume Projection
NEA - National Environmental Policy Act
NSF - New Pretreatment Facility
NEV - New Pretreatment Vault
NVOL - Non-volatile oxide less sodium and silicon
PAD - process distillate discharge from PUREX
PFP - Plutonium Finishing Plant
PRF - Plutonium Reclamation Facility
PAW - phosphate/sulfate waste
PHMC - Project Hanford Management Contractor
PUREX - Plutonium-Uranium Extraction
RMC - Remote Mechanical C Line
SpG - Specific Gravity
SST - single-shell tank
SWL - salt well liquid
TCO - terminal clean-out
TOE - total operating efficiency
TPA - Tri-Party Agreement
TRU - transuranic
TRUEX - Transuranic Extraction Process
TSMB - Tank Space Management Board
UO_3 - Uranium Oxide Facility
WSCF - Waste Sampling and Characterization Facility
WVR - waste volume reduction

APPENDIX B. Transfers for Projections in FY 1998-2000

Appendix B-1: Transactions for projection Case 1 through Fiscal Year 1999 - Page 1 of 4

Transactions through 9/30/1998 are historical records.

Transactions from 10/01/1998 through 9/30/1999 are projected.

	FROM	TO	START DATE	STOP DATE	QUANTITY	WASTE TYPE	TOTAL TANK INVENTORY	COMMENTS
SUBFILE: 101AY								
1 GA	1AYDC	101AY	10/1/1996	9/30/1997	37	DC	37	INVENTORY
2 GA	1AWSL	101AY	10/1/1996	9/30/1997	108	SL	145	INVENTORY
3 LO	101AY	UNKN	10/2/1997	9/30/1998	-6	DC	139	
4 GA	WATER	101AY	4/5/1998	4/6/1998	31	DC	170	
SUBFILE: 102AY								
1 GA	2AYDN	102AY	10/1/1996	9/30/1997	820	DN	820	INVENTORY
2 GA	1AWSL	102AY	10/1/1996	9/30/1997	22	SL	842	INVENTORY
3 LO	102AY	UNKN	10/2/1997	5/31/1998	-9	DN	833	
4 GA	NAOH	102AY	6/1/1998	6/30/1998	8	DN	841	
5 GA	NAOH	102AY	7/1/1998	7/30/1998	13	DN	854	
6 LO	102AY	UNKN	7/1/1998	9/30/1998	-6	DN	848	
7 TR	102AY	102AW	7/15/1998	7/31/1998	-389	DN	459	
8 GA	AWSOL	102AY	10/2/1998	12/30/1998	11	SS	470	
9 GA	SSTSC	102AY	10/3/1998	12/30/1998	9	SC	479	
10 GA	AWSOL	102AY	1/1/1999	3/30/1999	25	SS	504	
11 GA	SSTSC	102AY	1/1/1999	3/30/1999	22	SC	526	
12 GA	AWSOL	102AY	4/1/1999	7/30/1999	96	SS	622	
13 GA	SSTSC	102AY	4/1/1999	7/30/1999	87	SC	709	
SUBFILE: 101AZ								
1 GA	1AWSL	101AZ	10/1/1996	9/30/1997	47	SL	47	INVENTORY
2 GA	1AZAW	101AZ	10/1/1996	9/30/1997	850	AW	897	INVENTORY
3 LO	101AZ	UNKN	10/1/1997	9/30/1998	-62	AW	835	
SUBFILE: 102AZ								
1 GA	1AWSL	102AZ	10/1/1996	9/30/1997	104	SL	104	INVENTORY
2 GA	2AZAW	102AZ	10/1/1996	9/30/1997	784	AW	888	INVENTORY
3 GA	WATER	102AZ	10/3/1997	9/30/1998	1	AW	889	
SUBFILE: 101SY								
1 GA	1SYCC	101SY	10/1/1996	9/30/1997	516	CC	516	INVENTORY
2 GA	1AWSL	101SY	10/1/1996	9/30/1997	605	SL	1121	INVENTORY
3 GA	UNKN	101SY	10/2/1997	9/30/1998	29	CC	1150	
4 GA	WATER	101SY	6/20/1998	6/21/1998	1	CC	1151	
5 TR	101SY	102SY	9/10/1999	9/20/1999	-150	CC	1001	
6 GA	RWAT	101SY	9/21/1999	9/30/1999	139	CC	1140	
SUBFILE: 102SY								
1 GA	2SYPT	102SY	10/1/1996	9/30/1997	88	PT	88	INVENTORY
2 GA	2SYDN	102SY	10/1/1996	9/30/1997	645	DN	733	INVENTORY
3 LO	102SY	UNKN	1/1/1998	5/31/1998	-2	DN	731	
4 GA	XSWAT	102SY	2/1/1998	2/28/1998	5	DN	736	
5 GA	WNW88	102SY	6/1/1998	6/30/1998	7	DN	743	
6 GA	EVAPF	102SY	6/1/1998	6/30/1998	2	DN	745	
7 GA	SPN87	102SY	6/1/1998	6/30/1998	3	DN	748	
8 LO	102SY	UNKN	7/1/1998	9/30/1998	-2	DN	746	
9 GA	SPN87	102SY	7/1/1998	7/31/1998	3	DN	749	
10 GA	WATER	102SY	7/1/1998	7/31/1998	4	DN	753	
11 GA	WNW88	102SY	7/1/1998	7/31/1998	24	DN	777	
12 GA	WNW88	102SY	8/1/1998	8/31/1998	50	DN	827	
13 GA	WATER	102SY	8/1/1998	8/31/1998	7	DN	834	
14 GA	WATER	102SY	9/1/1998	9/30/1998	1	DN	835	
15 GA	SPN87	102SY	9/1/1998	9/30/1998	1	DN	836	
16 LO	102SY	UNKN	9/1/1998	9/30/1998	-1	DN	835	
17 GA	WNW88	102SY	9/1/1998	9/30/1998	8	DN	843	
18 GA	SPN87	102SY	10/1/1998	12/30/1998	3	DN	846	

Appendix B-1: Transactions for projection Case 1 through Fiscal Year 1999 - Page 2 of 4

19 GA	WATER	102SY	10/1/1998	10/31/1998	12	DN	858	
20 GA	WNW88	102SY	10/1/1998	10/31/1998	41	DN	899	
21 GA	WATER	102SY	10/2/1998	12/30/1998	1	DN	900	
22 GA	WATER	102SY	11/1/1998	11/30/1998	11	DN	911	
23 GA	WNW88	102SY	11/1/1998	11/30/1998	39	DN	950	
24 GA	ZNL87	102SY	11/1/1998	11/30/1998	3	DN	953	
25 GA	WATER	102SY	11/2/1998	11/30/1998	1	DN	954	
26 GA	WATER	102SY	12/1/1998	12/31/1998	12	DN	966	
27 GA	WNW88	102SY	12/1/1998	12/31/1998	41	DN	1007	
28 GA	WNW88	102SY	1/1/1999	1/31/1999	54	DN	1061	
29 GA	WATER	102SY	1/1/1999	1/31/1999	15	DN	1076	
30 GA	SPN87	102SY	1/1/1999	3/30/1999	3	DN	1079	
31 GA	WATER	102SY	1/2/1999	3/30/1999	1	DN	1080	
32 GA	WNW88	102SY	2/1/1999	2/28/1999	43	DN	1123	
33 GA	WATER	102SY	2/1/1999	2/28/1999	12	DN	1135	
34 TR	102SY	107AP	3/1/1999	3/13/1999	-151	DN	984	
35 GA	WATER	102SY	3/1/1999	3/31/1999	15	DN	999	
36 GA	WNW88	102SY	3/1/1999	3/31/1999	52	DN	1051	
37 GA	WNW88	102SY	4/1/1999	4/30/1999	59	DN	1110	
38 GA	SPN87	102SY	4/1/1999	6/30/1999	3	DN	1113	
39 GA	WATER	102SY	4/1/1999	4/30/1999	17	DN	1130	
40 GA	WATER	102SY	4/1/1999	4/14/1999	-499	DN	631	
41 TR	102SY	107AP	4/2/1999	6/30/1999	1	DN	632	
42 GA	WATER	102SY	5/1/1999	5/31/1999	19	DN	651	
43 GA	WNW88	102SY	5/1/1999	5/31/1999	66	DN	717	
44 GA	ZNL87	102SY	5/2/1999	5/30/1999	3	DN	720	
45 GA	WATER	102SY	5/2/1999	5/30/1999	1	DN	721	
46 GA	WNW88	102SY	6/1/1999	6/30/1999	78	DN	799	
47 GA	WATER	102SY	6/1/1999	6/30/1999	22	DN	821	
48 GA	WNW88	102SY	7/1/1999	7/31/1999	84	DN	905	
49 GA	SPN87	102SY	7/1/1999	9/30/1999	3	DN	908	
50 GA	WATER	102SY	7/1/1999	7/31/1999	24	DN	932	
51 GA	WATER	102SY	7/2/1999	9/30/1999	1	DN	933	
52 GA	WNW88	102SY	8/1/1999	8/31/1999	84	DN	1017	
53 GA	WATER	102SY	8/1/1999	8/31/1999	24	DN	1041	
54 TR	102SY	107AP	8/7/1999	8/12/1999	-400	DN	641	
55 TR	102SY	104AP	8/12/1999	8/15/1999	-280	DN	361	
56 GA	WATER	102SY	9/1/1999	9/30/1999	21	DN	382	
57 GA	WNW88	102SY	9/1/1999	9/30/1999	74	DN	456	
58 GA	RWAT	102SY	9/11/1999	9/20/1999	150	DC	756	
SUBFILE: 103SY								
1 GA	3SYCC	103SY	10/1/1996	9/30/1997	386	CC	386	INVENTORY
2 GA	1AWSL	103SY	10/1/1996	9/30/1997	362	SL	748	INVENTORY
3 LO	103SY	UNKN	10/2/1997	9/30/1998	-2	CC	746	
SUBFILE: 101AW								
1 GA	1AWSL	101AW	10/1/1996	9/30/1997	306	SL	306	INVENTORY
2 GA	1AWSF	101AW	10/1/1996	9/30/1997	820	SF	1126	INVENTORY
3 LO	101AW	UNKN	11/1/1997	11/30/1997	-1	SF	1125	
SUBFILE: 102AW								
1 GA	1AWSL	102AW	10/1/1996	9/30/1997	40	SL	40	INVENTORY
2 GA	2AWDC	102AW	10/1/1996	9/30/1997	46	DC	86	INVENTORY
3 GA	BPTCO	102AW	3/1/1998	3/30/1998	18	DN	104	
4 GA	EVAPF	102AW	3/1/1998	3/30/1998	3	DN	107	
5 GA	EVAPF	102AW	5/1/1998	5/30/1998	1	DN	108	
6 GA	BPTCO	102AW	5/29/1998	5/31/1998	11	DN	119	
7 GA	WATER	102AW	6/1/1998	6/30/1998	36	DN	155	
8 GA	EVAPF	102AW	8/1/1998	8/30/1998	46	DN	590	
9 GA	EVAPF	102AW	9/1/1998	9/30/1998	1	DN	591	
10 EV	SF8.4	106AW	7/5/1999	7/30/1999	-977	DN	68	
11 GA	EVAPF	102AW	7/29/1999	7/30/1999	35	DN	103	

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SUBFILE: 103AW									
1 GA	3AWDN	103AW	10/1/1996	9/30/1997	165	DN	165	INVENTORY
2 GA	3AWPD	103AW	10/1/1996	9/30/1997	348	PD	513	INVENTORY
3 LO	103AW	UNKN	1/1/1998	1/31/1998	-1	DN	512	
SUBFILE: 104AW								
1 GA	4AWDN	104AW	10/1/1996	9/30/1997	888	DN	888	INVENTORY
2 GA	4AWSL	104AW	10/1/1996	9/30/1997	231	SL	1119	INVENTORY
3 LO	104AW	UNKN	12/1/1997	12/31/1997	-1	DN	1118	
4 GA	EVAPF	104AW	4/1/1998	4/30/1998	1	DN	1119	
SUBFILE: 105AW								
1 GA	5AWDN	105AW	10/1/1996	9/30/1997	157	DN	157	INVENTORY
2 GA	5AWPD	105AW	10/1/1996	9/30/1997	280	PD	437	INVENTORY
3 LO	105AW	UNKN	10/1/1997	9/30/1998	-3	DN	434	
SUBFILE: 106AW								
1 GA	6AWCC	106AW	10/1/1996	9/30/1997	353	CC	353	INVENTORY
2 GA	1AWSL	106AW	10/1/1996	9/30/1997	228	SL	581	INVENTORY
3 LO	106AW	UNKN	10/1/1997	10/31/1997	-1	CC	580	
4 TR	106AW	103AP	2/3/1999	2/28/1999	-324	CC	256	
5 EV	SF8.4	106AW	7/5/1999	7/30/1999	82	SF	338	
SUBFILE: 101AN								
1 GA	1AWSL	101AN	10/1/1996	9/30/1997	33	SL	33	INVENTORY
2 GA	1ANDN	101AN	10/1/1996	9/30/1997	85	DN	118	INVENTORY
3 GA	WATER	101AN	11/1/1997	11/30/1997	5	DN	123	
4 GA	WATER	101AN	1/1/1998	1/31/1998	8	DN	131	
5 GA	WATER	101AN	2/1/1998	2/28/1998	15	DN	146	
6 GA	WATER	101AN	3/1/1998	3/31/1998	9	DN	155	
7 GA	WATER	101AN	5/1/1998	5/31/1998	3	DN	158	
SUBFILE: 102AN								
1 GA	1AWSL	102AN	10/1/1996	9/30/1997	89	SL	89	INVENTORY
2 GA	2ANCC	102AN	10/1/1996	9/30/1997	984	CC	1073	INVENTORY
3 LO	102AN	UNKN	10/1/1997	9/30/1997	-7	CC	1066	
SUBFILE: 103AN								
1 GA	3ANSL	103AN	10/1/1996	9/30/1997	410	SL	410	INVENTORY
2 GA	3ANSF	103AN	10/1/1996	9/30/1997	549	SF	959	INVENTORY
3 LO	103AN	UNKN	10/1/1997	10/31/1997	-1	SF	958	
SUBFILE: 104AN								
1 GA	4ANSL	104AN	10/1/1996	9/30/1997	449	SL	449	INVENTORY
2 GA	4ANSF	104AN	10/1/1996	9/30/1997	606	SF	1055	INVENTORY
3 LO	104AN	UNKN	11/1/1997	11/30/1997	-1	SF	1054	
SUBFILE: 105AN								
1 GA	5ANSF	105AN	10/1/1996	9/30/1997	640	SF	640	INVENTORY
2 GA	5ANSL	105AN	10/1/1996	9/30/1997	489	SL	1129	INVENTORY
3 LO	105AN	UNKN	11/1/1997	11/30/1997	-1	SF	1128	
SUBFILE: 106AN								
1 GA	1AWSL	106AN	10/1/1996	9/30/1997	17	SL	17	INVENTORY
2 GA	6ANCC	106AN	10/1/1996	9/30/1997	25	CC	42	INVENTORY
3 LO	106AN	UNKN	3/1/1998	3/31/1998	-3	CC	39	
SUBFILE: 107AN								
1 GA	7ANSL	107AN	10/1/1996	9/30/1997	247	SL	247	INVENTORY
2 GA	7ANCC	107AN	10/1/1996	9/30/1997	806	CC	1053	INVENTORY
3 LO	107AN	UNKN	10/1/1997	9/30/1998	-5	CC	1048	
SUBFILE: 101AP								
1 GA	1APSF	101AP	10/1/1996	9/30/1997	1116	SF	1116	INVENTORY
2 LO	101AP	UNKN	12/1/1997	12/31/1997	-1	SF	1115	

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SUBFILE: 102AP									
1	GA	2APCP	102AP	10/1/1996	9/30/1997	1096	CP	1096	INVENTORY
2	LO	102AP	UNKN	10/1/1997	10/31/1997	-1	CP	1095	
3	LO	102AP	UNKN	12/1/1997	12/31/1997	-1	CP	1094	
SUBFILE: 103AP									
1	GA	3APDN	103AP	10/1/1996	9/30/1997	27	DN	27	INVENTORY
2	GA	5APSL	103AP	10/1/1996	9/30/1997	1	SL	28	INVENTORY
3	LO	103AP	UNKN	11/1/1997	11/30/1997	-3	DN	25	
SUBFILE: 104AP									
1	GA	4APDN	104AP	10/1/1996	9/30/1997	26	DN	26	INVENTORY
2	LO	104AP	UNKN	11/1/1997	11/30/1997	-1	DN	25	
3	GA	XSWAT	104AP	8/17/1999	8/18/1999	35	DN	340	
SUBFILE: 105AP									
1	GA	5APSL	105AP	10/1/1996	9/30/1997	89	SL	89	INVENTORY
2	GA	5APSF	105AP	10/1/1996	9/30/1997	682	SF	771	INVENTORY
3	LO	105AP	UNKN	10/1/1997	9/30/1998	-4	SF	767	
SUBFILE: 106AP									
1	GA	6APDN	106AP	10/1/1996	9/30/1997	367	DN	367	INVENTORY
2	GA	WATER	106AP	3/2/1998	3/30/1998	1	DN	368	
3	GA	BPTCO	106AP	4/1/1998	4/30/1998	8	DN	376	
4	GA	WATER	106AP	5/2/1998	5/30/1998	1	DN	377	
5	GA	EVAPF	106AP	6/1/1998	6/30/1998	2	DN	379	
6	GA	34L87	106AP	6/1/1998	7/30/1998	15	DN	394	
7	LO	106AP	UNKN	6/2/1998	9/30/1998	-5	DN	389	
8	GA	EVAPF	106AP	10/1/1998	10/30/1998	1	DN	390	
9	GA	EVAPF	106AP	11/1/1998	11/30/1998	2	DN	392	
10	GA	WESF	106AP	12/1/1998	9/30/1999	5	DN	397	
11	GA	PXTCO	106AP	12/1/1998	9/30/1999	5	DN	402	
12	GA	EVAPF	106AP	12/1/1998	12/30/1998	10	DN	412	
13	GA	34L87	106AP	1/1/1999	1/30/1999	2	DN	414	
14	GA	EVAPF	106AP	1/1/1999	1/30/1999	10	DN	424	
15	GA	WATER	106AP	1/2/1999	1/30/1999	4	DN	428	
16	TR	106AP	108AP	1/20/1999	1/23/1999	-532	DN	124	
SUBFILE: 107AP									
1	GA	7APDN	107AP	10/1/1996	9/30/1997	28	DN	28	INVENTORY
2	LO	107AP	UNKN	10/1/1997	9/30/1998	-4	DN	24	
3	GA	XSWAT	107AP	2/13/1999	2/14/1999	35	DN	709	
SUBFILE: 108AP									
1	GA	8APDC	108AP	10/1/1996	9/30/1997	256	DC	256	INVENTORY
2	LO	108AP	UNKN	10/1/1997	10/31/1997	-1	DC	255	
3	LO	108AP	UNKN	1/1/1998	1/31/1998	-1	DC	254	
4	GA	TAL88	108AP	12/1/1998	9/30/1999	24	DN	278	
5	GA	TNS88	108AP	12/1/1998	9/30/1999	1	SL	279	
6	GA	WATER	108AP	12/2/1998	9/30/1999	4	DN	283	
7	TR	108AP	106AP	1/15/1999	1/18/1999	-228	DC	55	
8	TR	108AP	102AW	1/25/1999	1/28/1999	-454	DN	133	
9	GA	EVAPF	108AP	2/1/1999	2/28/1999	10	DN	143	
10	GA	EVAPF	108AP	3/1/1999	3/30/1999	10	DN	153	
11	GA	EVAPF	108AP	4/1/1999	4/30/1999	10	DN	163	
12	GA	EVAPF	108AP	5/1/1999	5/30/1999	10	DN	173	
13	GA	EVAPF	108AP	6/1/1999	6/30/1999	10	DN	183	
14	GA	EVAPF	108AP	7/1/1999	7/30/1999	10	DN	193	
15	GA	EVAPF	108AP	8/1/1999	8/30/1999	10	DN	203	
16	GA	EVAPF	108AP	9/1/1999	9/30/1999	10	DN	213	

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	FROM	TO	START DATE	STOP DATE	QUANTITY	WASTE TYPE	TOTAL TANK INVENTORY	COMMENTS
SUBFILE: 101SY								
7 TR	101SY	102SY	3/8/2000	3/21/2000	-170	CC	970	
8 GA	RWAT	101SY	3/22/2000	4/25/2000	160	CC	1130	
9 TR	101SY	102SY	4/26/2000	5/9/2000	-170	CC	960	
10 GA	RWAT	101SY	5/10/2000	6/14/2000	170	CC	1130	
11 TR	101SY	102SY	6/15/2000	6/28/2000	-160	CC	970	
12 GA	RWAT	101SY	6/29/2000	8/4/2000	150	CC	1120	
SUBFILE: 102SY								
58 GA	WCW88	102SY	10/1/1999	10/31/1999	16	DC	772	
59 GA	WNW88	102SY	10/1/1999	10/31/1999	68	DN	840	
60 GA	WATER	102SY	10/1/1999	10/31/1999	19	DN	859	
61 GA	ZNL87	102SY	10/1/1999	9/30/2000	2	DN	861	
62 GA	WATER	102SY	10/1/1999	10/31/1999	5	DC	866	
63 GA	SPN87	102SY	10/1/1999	12/30/1999	3	DN	869	
64 GA	WATER	102SY	10/2/1999	12/30/1999	1	DN	870	
65 GA	WATER	102SY	11/1/1999	11/30/1999	16	DN	886	
66 GA	WCW88	102SY	11/1/1999	11/30/1999	25	DC	911	
67 GA	WNW88	102SY	11/1/1999	11/30/1999	59	DN	970	
68 GA	WATER	102SY	11/1/1999	11/30/1999	7	DC	977	
69 GA	WATER	102SY	12/1/1999	12/31/1999	9	DC	986	
70 GA	WATER	102SY	12/1/1999	12/31/1999	14	DN	1000	
71 GA	WCW88	102SY	12/1/1999	12/31/1999	34	DC	1034	
72 GA	WNW88	102SY	12/1/1999	12/31/1999	52	DN	1086	
73 TR	102SY	104AP	12/15/1999	12/24/1999	-680	DC	406	
74 GA	WCW88	102SY	1/1/2000	1/31/2000	34	DC	440	
75 GA	SPN87	102SY	1/1/2000	3/30/2000	3	DN	443	
76 GA	WNW88	102SY	1/1/2000	1/31/2000	52	DN	495	
77 GA	WATER	102SY	1/1/2000	1/31/2000	14	DN	509	
78 GA	WATER	102SY	1/1/2000	1/31/2000	9	DC	518	
79 GA	WATER	102SY	1/2/2000	3/30/2000	1	DN	519	
80 GA	WNW88	102SY	2/1/2000	2/28/2000	46	DN	565	
81 GA	WCW88	102SY	2/1/2000	2/28/2000	44	DC	609	
82 GA	WATER	102SY	2/1/2000	2/28/2000	13	DN	622	
83 GA	WATER	102SY	2/1/2000	2/28/2000	12	DC	634	
84 GA	WATER	102SY	3/1/2000	3/31/2000	10	DN	644	
85 GA	WNW88	102SY	3/1/2000	3/31/2000	35	DN	679	
86 GA	WCW88	102SY	3/1/2000	3/31/2000	49	DC	728	
87 GA	WATER	102SY	3/1/2000	3/31/2000	14	DC	742	
88 GA	RWAT	102SY	3/15/2000	3/21/2000	150	CC	1062	
89 TR	102SY	106AP	3/22/2000	3/31/2000	-680	CC	382	
90 GA	SPN87	102SY	4/1/2000	6/30/2000	3	DN	385	
91 GA	WATER	102SY	4/1/2000	4/30/2000	4	DN	389	
92 GA	WATER	102SY	4/1/2000	4/30/2000	10	DN	399	
93 GA	WNW88	102SY	4/1/2000	4/30/2000	34	DN	433	
94 GA	WATER	102SY	4/1/2000	4/30/2000	16	DC	449	
95 GA	WCW88	102SY	4/1/2000	4/30/2000	58	DC	507	
96 GA	WATER	102SY	4/2/2000	6/30/2000	1	DN	508	
97 GA	WATER	102SY	5/1/2000	5/31/2000	9	DN	687	
98 GA	WATER	102SY	5/1/2000	5/31/2000	16	DC	703	
99 GA	WCW88	102SY	5/1/2000	5/31/2000	57	DC	760	
100 GA	WNW88	102SY	5/1/2000	5/31/2000	33	DN	793	
101 GA	RWAT	102SY	5/5/2000	5/9/2000	150	CC	943	
102 GA	WATER	102SY	6/1/2000	6/30/2000	9	DN	952	
103 GA	WATER	102SY	6/1/2000	6/30/2000	16	DC	968	
104 GA	WCW88	102SY	6/1/2000	6/30/2000	56	DC	1024	
105 GA	WNW88	102SY	6/1/2000	6/30/2000	33	DN	1057	
106 TR	102SY	106AP	6/6/2000	6/10/2000	-280	CC	777	
107 TR	102SY	107AP	6/10/2000	6/15/2000	-380	CC	397	

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108 GA	RWAT	102SY	6/20/2000	6/28/2000	170	DC	727
109 GA	WCW88	102SY	7/1/2000	7/31/2000	52	DC	779
110 GA	WATER	102SY	7/1/2000	7/31/2000	11	DN	790
111 GA	SPN87	102SY	7/1/2000	9/30/2000	2	DN	792
112 GA	WATER	102SY	7/1/2000	7/31/2000	15	DC	807
113 GA	WNW88	102SY	7/1/2000	7/31/2000	39	DN	846
114 GA	WATER	102SY	8/1/2000	8/31/2000	15	DC	861
115 GA	WATER	102SY	8/1/2000	8/31/2000	11	DN	872
116 GA	WNW88	102SY	8/1/2000	8/31/2000	39	DN	911
117 GA	WCW88	102SY	8/1/2000	8/31/2000	52	DC	963
118 GA	WNW88	102SY	9/1/2000	9/30/2000	28	DN	991
119 GA	WATER	102SY	9/1/2000	9/30/2000	8	DN	999
120 GA	WATER	102SY	9/1/2000	9/30/2000	14	DC	1013
121 GA	WCW88	102SY	9/1/2000	9/30/2000	49	DC	1062
122 TR	102SY	107AP	9/20/2000	9/27/2000	-550	DC	512
123 TR	102SY	104AP	9/27/2000	9/30/2000	-130	DC	382
124 GA	SPN87	102SY	10/1/2000	12/30/2000	3	DN	385
125 GA	WCW88	102SY	10/1/2000	10/31/2000	38	DC	423
126 GA	WATER	102SY	10/1/2000	10/31/2000	13	DN	436
127 GA	ZNL87	102SY	10/1/2000	9/30/2001	5	DN	441
128 GA	WATER	102SY	10/1/2000	10/31/2000	11	DC	452
129 GA	WNW88	102SY	10/1/2000	10/31/2000	45	DN	497
SUBFILE: 102AW							
12 EV	SF369	106AW	3/5/2000	3/30/2000	-977	DN	68
13 GA	EVAPF	102AW	3/29/2000	3/30/2000	35	DN	103
SUBFILE: 105AW							
4 GA	WATER	105AW	10/2/1999	12/30/1999	5	DN	439
5 GA	WATER	105AW	1/2/2000	3/30/2000	4	DN	443
6 GA	WATER	105AW	4/2/2000	6/30/2000	4	DN	447
7 GA	WATER	105AW	7/2/2000	9/30/2000	4	DN	451
8 GA	TAL88	105AW	10/1/2000	9/30/2001	23	DN	474
9 GA	TNS88	105AW	10/1/2000	9/30/2001	1	SL	475
10 GA	EVAPF	105AW	10/1/2000	10/30/2000	10	DN	485
11 GA	WESF	105AW	10/1/2000	9/30/2001	5	DN	490
12 GA	1FL96	105AW	10/1/2000	12/30/2000	10	DN	500
13 GA	PXTCO	105AW	10/1/2000	9/30/2001	5	DN	505
14 GA	34L87	105AW	10/1/2000	10/30/2000	7	DN	512
SUBFILE: 106AW							
6 TR	106AW	105AP	1/3/2000	1/6/2000	-82	SF	256
7 EV	SF369	106AW	3/5/2000	3/30/2000	361	SF	617
8 TR	106AW	105AP	9/3/2000	9/6/2000	-291	SF	326
9 TR	106AW	101AY	9/20/2000	9/23/2000	-70	SF	256
SUBFILE: 101AN							
8 GA	WNE88	101AN	5/1/2000	5/31/2000	19	DN	177
9 GA	WATER	101AN	5/1/2000	5/31/2000	5	DN	182
10 GA	WATER	101AN	6/1/2000	6/30/2000	9	DN	191
11 GA	WNE88	101AN	6/1/2000	6/30/2000	31	DN	222
12 GA	WNE88	101AN	7/1/2000	7/31/2000	31	DN	253
13 GA	WATER	101AN	7/1/2000	7/31/2000	9	DN	262
14 GA	WATER	101AN	8/1/2000	8/31/2000	11	DN	273
15 GA	WNE88	101AN	8/1/2000	8/31/2000	41	DN	314
16 GA	WNE88	101AN	9/1/2000	9/30/2000	62	DN	376
17 GA	WATER	101AN	9/1/2000	9/30/2000	17	DN	393
18 GA	WATER	101AN	10/1/2000	10/31/2000	17	DN	410
19 GA	WNE88	101AN	10/1/2000	10/31/2000	62	DN	472
SUBFILE: 104AP							
4 GA	XSWAT	104AP	12/24/1999	12/25/1999	35	DC	1055
5 TR	104AP	102AW	9/15/2000	9/18/2000	-942	DC	113
6 GA	XSWAT	104AP	9/29/2000	9/30/2000	35	DC	278

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SUBFILE: 106AP							
17 GA	XSWAT	106AP	6/9/2000	6/10/2000	35	CC	1119
SUBFILE: 107AP							
4 TR	107AP	102AW	2/1/2000	2/4/2000	-942	DN	167
5 GA	XSWAT	107AP	6/16/2000	6/17/2000	35	DC	582
SUBFILE: 108AP							
17 GA	PXTCO	108AP	10/1/1999	9/30/2000	5	DN	218
18 GA	WESF	108AP	10/1/1999	9/30/2000	5	DN	223
19 GA	EVAPF	108AP	10/1/1999	10/30/1999	10	DN	233
20 GA	TNS88	108AP	10/1/1999	9/30/2000	1	SL	234
21 GA	TAL88	108AP	10/1/1999	9/30/2000	23	DN	257
22 GA	WATER	108AP	10/2/1999	9/30/2000	5	DN	262
23 GA	EVAPF	108AP	11/1/1999	11/30/1999	10	DN	272
24 GA	EVAPF	108AP	12/1/1999	12/30/1999	10	DN	282
25 GA	EVAPF	108AP	1/1/2000	1/30/2000	10	DN	292
26 GA	34L87	108AP	1/1/2000	1/30/2000	7	DN	299
27 GA	WATER	108AP	1/2/2000	1/30/2000	3	DN	302
28 GA	EVAPF	108AP	2/1/2000	2/28/2000	10	DN	312
29 GA	EVAPF	108AP	3/1/2000	3/30/2000	10	DN	322
30 GA	EVAPF	108AP	4/1/2000	4/30/2000	10	DN	332
31 GA	34L87	108AP	4/1/2000	4/30/2000	7	DN	339
32 GA	WATER	108AP	4/2/2000	4/30/2000	3	DN	342
33 GA	EVAPF	108AP	5/1/2000	5/30/2000	10	DN	352
34 GA	EVAPF	108AP	6/1/2000	6/30/2000	10	DN	362
35 GA	34L87	108AP	7/1/2000	7/30/2000	6	DN	368
36 GA	EVAPF	108AP	7/1/2000	7/30/2000	10	DN	378
37 GA	WATER	108AP	7/2/2000	7/30/2000	3	DN	381
38 GA	EVAPF	108AP	8/1/2000	8/30/2000	10	DN	391
39 GA	EVAPF	108AP	9/1/2000	9/28/2000	10	DN	401

Acronyms used in transaction list

ZNL87	COMBINED PFP WASTE STREAM(NO TRUEX)
ZTL87	COMBINED PFP WASTE STREAM(TRUEX)
ZNS87	COMBINED PFP SOLIDS
ZTS87	COMBINED PFP SOLIDS
PAW88	PUREX NCAW FROM THE PROCESSINGOF NPR FUEL
PDL89	PUREX DECLADDING WASTE STREAM(FY 1989 ON)
PDS89	PUREX DECLADDING SOLIDS(FY 1989 ON - NON-TRU SOLIDS)
PML89	PUREX SPENT METHATHESIS WASTE(FY 1989 ON)
PMS89	PUREX SPENT METHATHESIS SOLIDS(FY 1989 ON - TRU SOLIDS)
PMW88	PUREX MISC. WASTEFROM PROCESSING NPR FUEL
PASF	PUREX AMMONIUM SCRUBBER FEED
PXTCO	PUREX TCO WASTES
AWSC	AGING WASTE STEAM CONDENSATE
AWPC	AGING WASTE PROCESS CONDENSATE
SPN87	S PLANT DILUTE NON-COMPLEXED
WNE88	SALT WELL LIQUIDDILUTE, NON-COMPLEXED
WCE88	SALT WELL LIQUIDCOMPLEXED
WNW88	SALT WELL LIQUIDDILUTE, NON-COMPLEXED
WCW88	SALT WELL LIQUIDCOMPLEXED
TAL88	T PLANT SUPERNATE(AS IS MODE)
TNS88	T PLANT SOLIDS(NO TRUEX - TRU SOLIDS)
1FL96	105-F, 105-H, & 100-N LIQUID TCOWASTE
1KL96	100-K LIQUID TCO WASTE
1NS96	100-AREA SOLID TCO WASTE
34L87	300/400 AREA LAB WASTE
PWAT	PRETREATMENT DILN. ENTERED AS SF
EVAPF	EVAPORATOR FLUSH AND TANK FARMWATER
ERD31	ENVIR. RESTOR. DISP. FAC. TRENCH31 LEACHATE
BPN89	B PLANT MISCELLANEOUS WASTE
BPTCO	B PLANT TCO WASTE
BVC87	B PLANT VESSEL CLEANOUT
BCD87	B PLANT CELL DRAINAGE
BPT89	B PLANT CATCH TANK WASTE
BPDCV	B PLANT DILUTE COMPLEXED VESSELCLEAN OUT
BNS7	B PLANT AGING WASTEFROM NCAW PROCESSING ALL TANKS
BNL7	B PLANT SUPERNATEFROM NCAW PROCESSING
PCWAT	PRETREATMENT DILN. COMPLEXED ENTERED AS CC
BCIS7	B PLANT SOLID STREAMFROM PROCESSING OF CC WASTE
BPL88	B PLANT LIQUID STREAMFROM PFP PROCESSING (COMBINED)
BPS88	B PLANT SOLIDS STREAMFROM PFP PROCESSING
BPCU7	B PLANT SOLID STREAMSUPERNATE
HWV87	HWVP WASTE
CCSL	CONCENTRATED COMPLEXANT SOLIDS
WATER	FLUSH WATER
XSWAT	CROSS-SITE TRANSFER WATER
RWAT	RETRIEVAL WATER FOR DST WASTE
SWAT	RETRIEVAL WATER FOR SST SOLIDS RETRIEVAL
SSTSL	SST SLUDGE
SSTSC	SST SALTCAKE
WSSTL	WASHED SST LIQUID
WSSTS	WASHED SST SOLID
PSSTL	PRETREATED SST LIQUID
PSSTS	PRETREATED SST SOLID
1ANDN	101AN INVENTORY
2ANCC	102AN INVENTORY
3ANSF	103AN INVENTORY

3ANSL	103AN INVENTORY
4ANSF	104AN INVENTORY
4ANSL	104AN INVENTORY
5ANSF	105AN INVENTORY
5ANSL	105AN INVENTORY
6ANCC	106AN INVENTORY
7ANCC	107AN INVENTORY
7ANSL	107AN INVENTORY
1APSF	101AP INVENTORY
2APCP	102AP INVENTORY
3APDN	103AP INVENTORY
4APDN	104AP INEVNTORY
5APSF	105AP INVENTORY
5APSL	105AP INVENTORY
6APDN	106AP INVENTORY
7APDN	107AP INVENTORY
8APDC	108AP INVENTORY
8APDN	108AP INVENTORY
1AWSF	101AW INVENTORY
1AWSL	101AW INVENTORY
2AWDC	102AW INVENTORY
3AWDN	103AW INVENTORY
3AWPD	103AW INVENTORY
4AWDN	104AW INVENTORY
4AWSL	104AW INVENTORY
5AWDN	105AW INVENTORY
5AWPD	105AW INVENTORY
6AWCC	106AW INVENTORY
1AYDC	101AY INVENTORY
1AYAW	101AY INVENTORY
2AYDN	102AY INVENTORY
1AZAW	101AZ INVENTORY
2AZAW	102AZ INVENTORY
1SYCC	101SY INVENTORY
2SYDN	102SY INVENTORY
2SYPT	102SY INVENTORY
3SYCC	103SY INVENTORY
HCFIN	HIGH CONCENTRATION FACTOR INVENTORY
LCFIN	LOW CONCENTRATION FACTOR INVENTORY
DSSF	DOUBLE-SHELL SLURRY FEED
TCO	ESTIMATED WVRF FOR TCO WASTES
7ANDN	7AN CAUSTIC
INTWA	IN TANK WASHING SOLNS.
IMUST	INDEP. MISC UNDERGR. STORAGE TANKWASTE
SRRTN	Sr Return Stream/Entrained Solids/TRU from Pretreatment
WESF	WESF WASTES
UNKN	CHANGE DUE TO GAS, SURFACE CHG.,INSTRUMENT,ETC
NAOH	CONCENTRATED NAOH
INST	CHANGE DUE TO INSTRUMENT
ADJUS	ADJUST WASTE MAKEUP USUALLY DUE TO NEW SOLIDS MEAS.
AWSOL	AGING WASTE OR HIGH HEAT SOLIDS
CAUST	Caustic Wash

Mr. Mike Wilson
99-OPD-065

SEP 30 1999

The point-of-contact for the OWVP is Mark Ramsay. (509) 376-7924.

Sincerely,

ORIGINAL SIGNED

George H. Sanders, Administrator
Hanford Tri-Party Agreement

OPD:MLR

Attachment

cc w/attach:
D. Hagen, Ecology
TPA Administrative Record, FDH

cc w/o attach:
T. B. Veneziano, FDH
B. G. Erlandson, LMHC

bcc: OPD OFF File
OPD Rdg File
W. J. Taylor, DPD
G. H. Sanders, EAP
D. C. Bryson, OPD
M. L. Ramsay, OPD
J. A. Poppiti, PDD

RECORD NOTE: The TPA Administrative Record MSIN is H6-08.

Office >	OPD	OPD	OPD	OPD	OCC BDW	EAP GHS
Surname >	RAMSAY	ROYACK	CARREON	BRYSON	WILLIAMSON	SANDERS
Date >	9/29/99	9/29/99	9/29/99	9/29/99	9/30/99	9/30/99

(Please return to Leslie McClure 6-2025 H6-60/2440STVCN RX 3-1313)

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