S

ENGINEERING CHANGE NOTICE

1. ECN 660343

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	4. USQ Required?	5. Date
Supplemental [] Direct Revision [X] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	M. R. Adams, Requirements Planning and Support, R2-12, 373-6167	[] Yes [X] No	07/17/00
	6. Project Title/No./Work Order No. FY 2001 Tank Characterization Technical Sampling Basis & Waste Information Requirements Document	7. Bldg./Sys./Fac. No. N/A	8. Approval Designator N/A
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) RPP-5832, Rev. A	10. Related ECN No(s). N/A	11. Related PO No. N/A

12a. Modification Work	12b. Work Package No.	12c. Modification Work Complete	12d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 12b) [X] No (NA Blks. 12b, 12c, 12d)	N/A	N/A Design Authority/Cog. Engineer Signature & Date	N/A Design Authority/Cog. Engineer Signature & Date

13a. Description of Change

Complete revision.

13b. Design Baseline Document? [] Yes [X] No

14a. Justification (mark one)

Criteria Change	[X]	Design Improvement	[]	Environmental	[]	Facility Deactivation	[]
As-Found	[]	Facilitate Const	[]	Const. Error/Omission	[]	Design Error/Omission	[]

14b. Justification Details

The document is not in a draft form any longer.

15. Distribution (include name, MSIN, and no. of copies)

See attached distribution.

RELEASE STAMP

AUG 0 2 2000

DATE:

STA. 4

HANFORD RELEASE

ID: 5

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1) ECN-660343

16. Design Verification Required	17. Cost Impact				18. Schedule Impact (days)	
	ENGINEERING		CONSTRUCTION			
[] Yes	Additional	[] $	Additional	[] $	Improvement	[]
[X] No	Savings	[] $	Savings	[] $	Delay	[]

19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]	Tickler File	[]
Environmental Report	[]	Inspection Plan	[]		[]
Environmental Permit	[]	Inventory Adjustment Request	[]		[]

20. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision
N/A		

21. Approvals

Signature		Date	Signature	Date
Design Authority			Design Agent	
Cog. Eng. M.R. Adams	M R Adams	7/18/00	PE	
Cog. Mgr. J.W. Hunt	J W Hunt	8/1/00	QA	
QA			Safety	
Safety			Design	
Environ.			Environ.	
			Other	
			DEPARTMENT OF ENERGY	
			Signature or a Control Number that tracks the Approval Signature	
			ADDITIONAL	

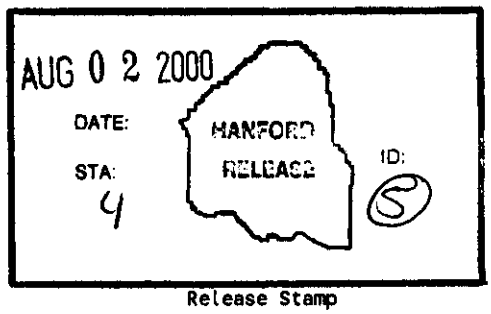
Fiscal Year 2001 Tank Characterization Technical Sampling Basis and Waste Information Requirements Document

Mel R. Adams
CH2M Hill Hanford Group, Inc. Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-99RL14097

EDT/ECN: ECN-660343 UC: 2070
Org Code: 74B10 Charge Code: 102227/ES30
B&R Code: EW 3120074 Total Pages: 81

Key Words: FY 2001, Tank, Characterization, Technical Sampling Basis, Waste, Information, Requirements

Abstract: N/A



8/1/00
Release Approval Date

Release Stamp

Approved for Public Release

RECORD OF REVISION	(1) Document Number RPP-5832	Page 1

(2) Title
Fiscal Year 2001 Tank Characterization Technical Sampling Basis and Waste Information Requirements Document

CHANGE CONTROL RECORD

(3) Revision	(4) Description of Change - Replace, Add, and Delete Pages	Authorized for Release	
		(5) Cog. Engr.	(6) Cog. Mgr. Date
A	(7) Initially released 05/16/00 on EDT-628379.	M.R. Adams	J.W. Hunt
RS0	Incorporate per ECN-~~657275~~ 660343. dlg 8/9/2000	M.R. Adams	J.W. Hunt
		M R Adams	J W Hunt 8/1/00

A-7320-005 (08/91) WEF168

RPP-5832
Revision 0

FISCAL YEAR 2001 TANK CHARACTERIZATION TECHNICAL SAMPLING BASIS AND WASTE INFORMATION REQUIREMENTS DOCUMENT

M. R. Adams
J. G. Douglas
N. L. Hulse
J. W. Hunt
CH2M HILL Hanford Group, Inc.

Date Published
August 2000

Prepared for the U.S. Department of Energy
Office of River Protection

Contract # DE-AC06-99RL14047

This page intentionally left blank.

TABLE OF CONTENTS

APPENDICES

LIST OF FIGURES

LIST OF TABLES

LIST OF TERMS

Bq	Becquerel
Btu/hr	British thermal units per hour
CCRN	correspondence control reference number
CHG	CH2M Hill Hanford Group, Inc.
cm	centimeter
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
DOE-RL	U.S. Department of Energy, Richland Operations Office
DOE-ORP	U.S. Department of Energy, Office of River Protection
DQO	data quality objective
DST	double-shell tank
Ecology	Washington State Department of Ecology
ECN	Engineering Change Notice
EPA	U.S. Environmental Protection Agency
FY	fiscal year
HLW	high-level waste
HTI	Hanford Tanks Initiative
ICD	Interface Control Document
IHLW	immobilized high-level waste
ILAW	immobilized low-activity waste
IMUST	inactive miscellaneous underground storage tank
in.	inches
kg	kilogram
Kgal	kilogallon
LAW	low activity waste
LERF	Liquid Effluent Retention Facility
LMHC	Lockheed Martin Hanford Corporation
LOI	Letter of Instruction
m^3	cubic meter
NOC	Notice of Construction
PHMC	Project Hanford Management Contract
PNNL	Pacific Northwest National Laboratory
RCRA	Resource Conservation and Recovery Act
RPP	River Protection Project
SST	single-shell tank
SWL	saltwell liquor waste

TCR	Tank Characterization Report
TFVZ	Tank Farm Vadose Zone team
TPA	Tri-Party Agreement (Hanford Facility Agreement and Consent Order)
TSB-WIRD	Technical Sampling Basis and Waste Information Requirements Document
TWINS	Tank Waste Information Network
USQ	unreviewed safety question
WFD	Waste Feed Delivery
WPD	Waste Processing Development
WHC	Westinghouse Hanford Company
WP&D	Waste Processing and Disposal
WTP	Waste Treatment Plant
%	percent

This page intentionally left blank.

1.0 PURPOSE

The *Fiscal Year 2001 Tank Characterization Technical Sampling Basis and Waste Information Requirements Document* (TSB-WIRD) has the following purposes:

- To identify and integrate sampling and analysis needs for fiscal year (FY) 2001 and beyond.
- To describe the overall drivers that require characterization information and to document their source.
- To describe the process for identifying, prioritizing, and weighting issues that require characterization information to resolve.
- To define the method for determining sampling priorities and to present the sampling priorities on a tank-by-tank basis.
- To define how the characterization program is going to satisfy the drivers, close issues, and report progress.
- To describe deliverables and acceptance criteria for characterization deliverables.

Characterization information is required to maintain regulatory compliance, perform operations and maintenance, resolve safety issues, and prepare for disposal of waste. Commitments connected with these requirements are derived from the *Hanford Facility Agreement and Consent Order* (Ecology et al. 1996), also known as the Tri-Party Agreement (TPA), *Hanford Facility Agreement and Consent Order Change Control Form M-44-97-03* (Ecology et al. 1997) and other requirement sources described in Section 3.0 of this document.

The information contained in this TSB-WIRD reflects ongoing planning and current understanding of projected characterization information needs to resolve the issues listed in this TSB-WIRD. Since original baseline requirements are in the process of being revised, the information contained herein may not exactly reflect currently published planning baselines.

2.0 CHARACTERIZATION INFORMATION FLOW DIAGRAM

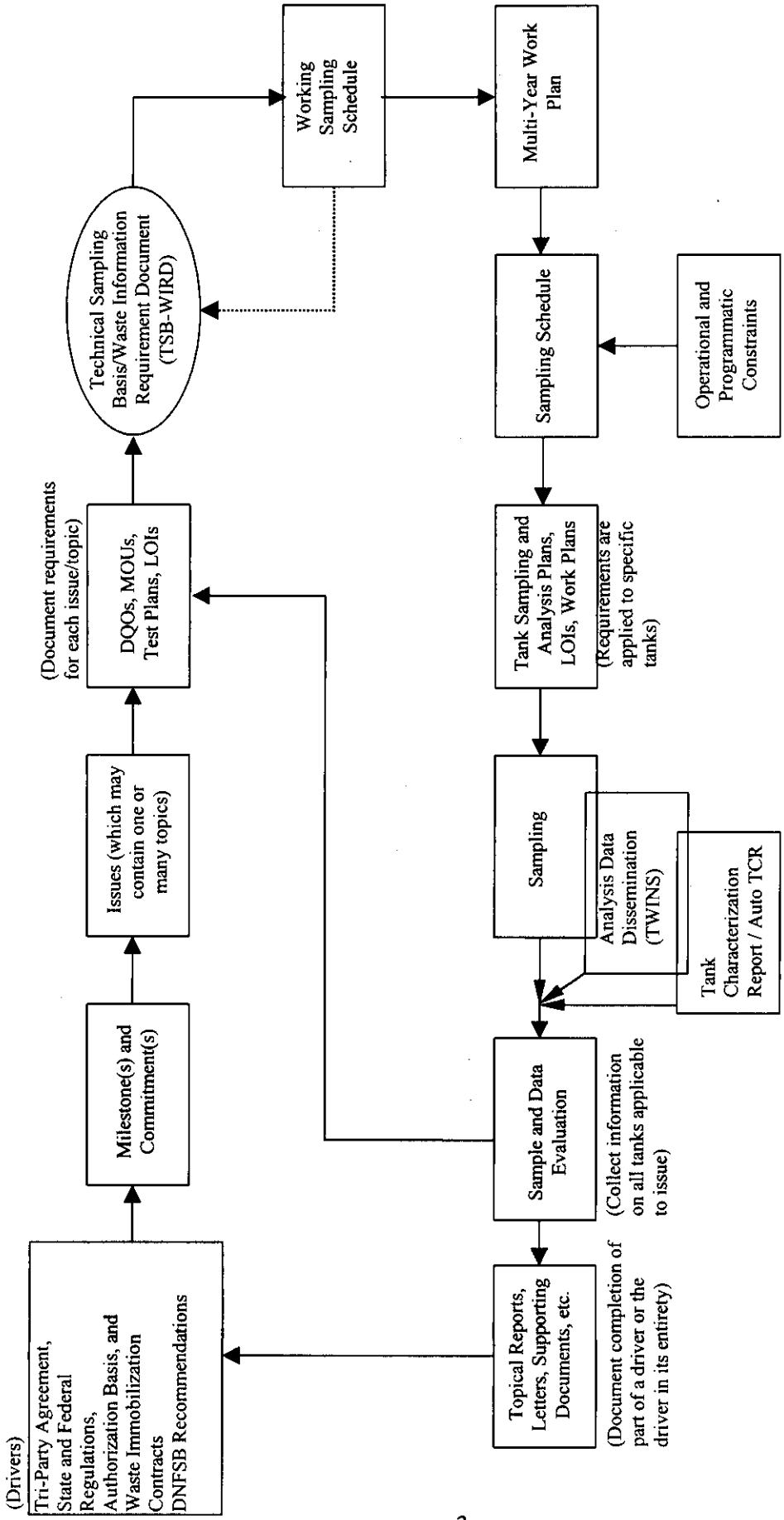
Figure 2-1 illustrates the process by which characterization information is generated and used. This document, the TSB-WIRD, is shown with an oval for quick identification. Each box represents a step in the characterization process. A step may be the creation of a document(s), execution of an event(s), or performance of a work function(s). Each step requires information from a preceding step. Note that the process is iterative; that is, information learned from a step may cause subsequent changes.

The specific information represented by each box or oval may change over time. The information drivers may change or be completed. Milestones may be added or removed. Data Quality Objectives (DQOs), test plans, and letters of instruction (LOIs) are created, removed, or updated periodically to reflect current program needs.

The TSB-WIRD is updated annually to reflect changes in milestones and commitments. The Multi-Year Work Plan (see RPP 1999 as an example) uses applicable milestones and commitments to build a budget-driven work plan. The work plan, TSB-WIRD, and operational and programmatic constraints are all combined to create a sampling schedule. The sampling schedule is routinely updated and changed to reflect changes in the program needs and conditions in the field.

Tank sampling and analysis plans (TSAPs), LOIs, and work plans are generated prior to tank sampling. The information from data evaluations is reported via electronic databases and web access, reports both hardcopy and electronic, letters, supporting documents, and other means to complete portions of a driver or the driver in its entirety. The cycle ends when there are no more drivers for information and all issues are closed.

Figure 2-1. Characterization Information Flow Diagram



3.0 CHARACTERIZATION INFORMATION DRIVERS

Characterization information drivers are currently derived from the following primary sources:

- Tri-Party Agreement (TPA)
- Regulatory requirements
- Disposal drivers
- Authorization Basis documents
- Consent decree (interim stabilization).

Documents describing these drivers, program activities meeting the objectives of the drivers, and associated information needs were used as input to this TSB-WIRD. Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 93-5 (DOE-RL 1996) which was a driver in previous years was completed and closed in November 1999.

Supporting documents report or reflect information driver milestones, commitments, and deliverables. Types of supporting documents include:

- Waste Characterization Multi-Year Work Plan
- Topical Reports
- DQO documents.

Each information driver source is discussed in the sections following.

3.1 TRI-PARTY AGREEMENT MILESTONES

Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement [TPA]) (Ecology et al. 1996) is an agreement between the U.S. Department of Energy (DOE), Washington State Department of Ecology (Ecology), and the U.S. Environmental Protection Agency (EPA). The agreement defines what actions the U.S. Department of Energy must take to complete the cleanup mission at the Hanford Site. The milestones in the TPA constitute a major driver for characterization activities.

Tri-Party Agreement milestones related to tank waste treatment capacity acquisition, tank waste treatment and associated tank waste work requirements are currently undergoing a dispute resolution process. On March 29, 2000, Ecology issued a final determination (Ecology 2000) which DOE has the option to appeal. For purposes of this document, the milestones as they appear in the final determination are used. At the same time, it is understood that these milestones may change, depending on the final result of the dispute resolution process, including appeals (if any). The intent of this document is not to agree

or disagree with the final determination, but to incorporate the final results as they determine characterization needs.

Under the final determination, milestones M-50-00 (Complete Pretreatment Processing of Hanford Tank Waste: 12/31/2028), M-51-00 (Complete Vitrification of Hanford High Level Tank Waste: 12/31/2028) and M-61-00 (Complete Pretreatment and Immobilization of Hanford Low Activity Tank Waste under the alternate path: 12/31/2028) are not modified and remain in force under the consolidated new M-62-00 major milestone. *Hanford Federal Facility Agreement and Consent Order* major milestone M-60-00 (Complete Pretreatment and Immobilization of Hanford Low Activity Tank Waste under the primary path: 12/31/2024, and interim milestones and target dates in the M-50-00, M-51-00, M-60-00 and M-61-00 series are deleted. Milestone M-45-00 (Complete Closure of All Single Shell Tank Farms: 09/30/2024) is modified. Milestone M-47-00 (Complete All Work Necessary to Support the Acquisition and Phase I Operations of Hanford Site High-Level Radioactive Tank Waste Treatment, Storage and Disposal Facilities: 02/28/2018) is established. Milestone M-90-00 (Complete Acquisition of New Facilities, Modification of Existing Facilities and/or Modification of Planned Facilities as Necessary for Storage of Hanford Site IHLW and ILAW, and Disposal of ILAW: date to be established) is modified.

A number of TPA milestones under the final determination are or will be supported by the characterization program. Milestone due dates and their relationship to TSB-WIRD issues are shown in Table 3-1. Please note that the milestone due dates shown in Table 3-1 are not repeated in the text discussion of each milestone.

Table 3-1. Major Tri-Party Agreement Milestones Related to Issues (2 Sheets)

Program or Issue	Milestone or Driver	Milestone Due Date
Interim Stabilization	M-41-00 (Consent Decree)	9/30/2004 (Consent Decree Milestone)
Operations Sampling	M-43-00	6/30/2005
Tank Waste Disposal • Waste Feed Delivery, Phase 1 • ICD-23 • HLW/LAW Feed DQO • Certification (ICD 19 and 20)	M-47-00 M-62-00* M-62-00A M-62-04T M-62-05 M-62-06 M-62-07 M-62-08 M-90-00	2/28/2018 12/31/2028 2/28/2018 5/01/2000 8/31/2000 7/31/2001 TBD 7/31/2005 To be established after approval of project management plan.
SST Retrieval (including HTI functional scope)	M-45-00	9/30/2024

Table 3-1. Major Tri-Party Agreement Milestones Related to Issues (2 Sheets)

Program or Issue	Milestone or Driver	Milestone Due Date
Safety Screening	M-40-00	9/30/2001
Characterization Information Deliverables	M-44-00A	9/30/2002
	M-44-13E	6/30/2001
	M-44-14E	8/31/2001
	M-44-15E	9/30/2001
	M-44-15F	9/30/2002
	M-44-16E	9/30/2001
	M-44-16F	9/30/2002

Notes:

HLW - High Level Waste
HTI - Hanford Tanks Initiative
ICD - Interface Control Document
LAW - Low Activity Waste

*submilestones still subject to dispute resolution.

3.1.1 Tri-Party Agreement Major Milestone M-40-00, "Mitigate/Resolve Tank Safety Issues for High Priority Watch List Tanks."

Tri-Party Agreement (TPA) Milestone M-40-00 deals with closing all safety issues associated with single-shell and double-shell tanks. Characterization supports this milestone through the opportunistic sampling and analysis of tank waste material. Each safety issue has an associated DQO that specifies what information is required to resolve the safety issue.

3.1.2 Tri-Party Agreement Major Milestone M-41-00, "Complete Single-Shell Tank Interim Stabilization."

Tri-Party Agreement milestone M-41-00 deals with the stabilization of single-shell tanks (SSTs). This involves removing the pumpable liquid from the SSTs and moving it to the double-shell tanks (DSTs). This operation requires compatibility analysis of the tank liquid to be moved and of the waste in the receiving tank. Characterization supports this milestone by providing compatibility sampling and analysis. A schedule for completion of single-shell tank interim stabilization has become part of a Consent Decree (Ecology and DOE 1999).

3.1.3 Tri-Party Agreement Major Milestone M-43-00, "Complete Tank Farm Upgrades."

Tri-Party Agreement milestone M-43-00 deals with tank farm upgrades including ventilation upgrades and the cross-site transfer system. Characterization support is provided on an as-needed basis. Some operations samples have been taken to support such upgrades.

3.1.4 Tri-Party Agreement Major Milestone M-44-00A, "Complete Delivery of Information Requirements as Identified in the Annually Submitted WIRD."

The characterization program directly supports this milestone. For instance, the TSB-WIRD itself is a deliverable each year in the M-44-00A series. Milestones in the M-44 series are listed in Table 3-1. This milestone has six subparts relevant to this TSB-WIRD:

- M-44-13E: Submit draft WIRD to Ecology for FY 2002.
- M-44-14E: Submit final WIRD for FY 2002 to Ecology.
- M-44-15E: Issue characterization deliverables consistent with WIRD developed for FY 2001.
- M-44-15F: Issue characterization deliverables consistent with WIRD developed for FY 2002.
- M-44-16E: Complete input of characterization information for HLW tanks for which sampling and analysis were completed per the FY 2001 WIRD into electronic database.
- M-44-16F: Complete input of characterization information for HLW tanks for which sampling and analysis were completed per the FY 2002 WIRD into electronic database.

3.1.5 Tri-Party Agreement Major Milestone M-45-00, "Complete Closure of All Single-Shell Tanks."

Milestone M-45-00 directs the closure of all SST farms. Characterization support will be provided for retrieval and disposal of SST waste during Phase 2 disposal implementation.

3.1.6 Tri-Party Agreement Major Milestone M-47-00, "Complete All Work Necessary in Support of the Acquisition and Phase 1 Operations of Hanford Site High-Level Radioactive Tank Waste Treatment, Storage and Disposal Facilities."

A new series of M-47-00 milestones intended to support the acquisition and operation of the Phase 1 Tank Waste Treatment Complex has been established by Ecology's final determination.

3.1.7 Tri-Party Agreement Major Milestone M-62-00, "Complete Pretreatment Processing and Vitrification of Hanford High Level and Low Activity Tank Wastes."

A new milestone series addresses procurement, construction, and operation of a tank waste treatment complex for the pretreatment and vitrification of tank wastes.

Characterization will support this milestone as necessary by providing samples and/or information needed to accomplish the work.

This milestone contains a number of subparts as listed below; however, these milestones are still subject to dispute resolution:

- M-62-00A: Complete Pretreatment Processing and Vitrification of Hanford HLW and LAW Phase 1 Tank Wastes
- M-62-04T: Readiness to Proceed- Support to Phase 1 Treatment
- M-62-05: Issuance of DOE Authorization to Proceed- Phase 1 Treatment
- M-62-06: Start of Construction- Phase 1 Treatment Complex
- M-62-07: Construction Progress Milestones- Phase 1 Treatment Complex
- M-62-08: Submittal of Hanford Tank Waste Phase 2 Treatment Alternatives Report.

3.1.8 Tri-Party Agreement Major Milestone M-90-00: "Complete Acquisition of New Facilities, Modification of Existing Facilities, and/or Modification of Planned Facilities as Necessary for Storage of Hanford Site IHLW and ILAW, and Disposal of ILAW."

Milestone M-90-00 concerns the planning and construction of facilities to store the final immobilized product. Characterization information may be required as input to the design.

3.2 REGULATORY DRIVERS FOR CHARACTERIZATION

Several state and federal regulatory requirements are associated with sampling and analysis of dangerous waste and air emissions. Regulatory drivers are listed in several DQOs including Mulkey (1999a), Mulkey (1999b), and Mulkey and Markillie (1996). Sampling and analysis for Waste Immobilization environmental requirements are listed in the Waste Immobilization regulatory compliance DQO which was issued in December 1998 (Wiemers et al. 1998).

3.3 DISPOSAL DRIVERS FOR CHARACTERIZATION

At the end of FY 1998, the U.S. Department of Energy, Richland Operations Office (DOE-RL) signed a contract with a waste treatment plant (WTP) contractor to convert LAW and HLW waste into an immobilized form. In the contract, the waste specifications and procedures for delivery of waste to the contractor (Barrett 1998) were promulgated. The specific information requirements are developed in several DQOs, including:

- *Regulatory Data Quality Objectives Supporting Tank Waste Remediation System Privatization Project,* PNNL-12040, December 1998 (Wiemers et al. 1998).

- *Data Quality Objectives for RPP Privatization Phase 1: Confirm Tank T is an Appropriate Feed Source for High Level Waste Feed Batch X*; HNF-1558, Revision 2 (Nguyen 1999a.).

- *Data Quality Objectives for RPP Privatization Phase 1: Confirm Tank T is an Appropriate Feed Source for Low-Activity Waste Feed Batch X*; HNF-1796, Revision 2 (Nguyen 1999b).

- *Data Quality Objectives for RPP Privatization Phase 1: Tank Waste Transfer Control*; HNF-1802, Revision 1 (Banning 1999).

- *Characterization Data Needs for Development, Design and Operation of Retrieval Equipment Developed through the Data Quality Objective Process*; WHC-SD-WM-DQO-008, Revision 1 (Bloom and Nguyen 1996).

- *Low-Activity Waste and High-Level Waste Feed Processing Data Quality Objectives,* PNNL-12163, Revision 0 (Patello et al. 1999).

Other requirements including sampling requirements are spelled-out in the Interface Control Document ICD-19 (BNFL 2000a), Interface Control Document ICD-20 (BNFL 2000b), and Interface Control Document ICD-23 (BNFL 2000c). The *Tank Waste Remediation System Operations and Utilization Plan* (Kirkbride et al. 1999) provides an engineering analysis for the retrieval baseline that supports Waste Immobilization.

3.4 SAFE OPERATIONS DRIVERS FOR CHARACTERIZATION (AUTHORIZATION BASIS)

The Authorization Basis consists of a suite of documents including the *Tank Waste Remediation System Final Safety Analysis Report* (Sandgren 2000), various supporting documents, and a DOE-ORP approved letter-book. The documents constitute the technical basis for safe operations and maintenance of the tank farm facilities, equipment, and processes. This suite of documents is revised frequently. Reference should be made to the controlled "gold" copy suite located in the Tank Characterization and Safety Resource Center in the 2750E Building.

4.0 INFORMATION DRIVERS: SUPPORTING DOCUMENTS

Supporting documents report, schedule, evaluate, or reflect the milestones, commitments, or deliverables connected with information drivers. Supporting documents generally do not contain information drivers, but, in the case of DQOs, provide specific requirements associated with an information driver.

4.1 WASTE CHARACTERIZATION PROGRAM MULTI-YEAR WORK PLAN

The *River Protection Project FY 2000 Multi-Year Work Plan Summary,* RPP-5044, (RPP 1999) contains the technical baseline, work breakdown structure, schedule, and cost baseline for the Characterization Program. The document is issued each fiscal year. The most recent version contains FY 2000 work plans and was issued in August 1999.

4.2 TOPICAL REPORTS

Topical reports are technical documents that are used to present the current knowledge on a particular issue. Additional data or analysis needs may be discovered during preparation of a topical report that can lead to additional waste behavior studies.

Published topical reports include:

- *Flammable Gas Project Topical Report,* HNF-SP-1193, Rev. 2 (Johnson et al. 1997)
- *Organic Complexant Topical Report,* HNF-SD-WM-CN-058, Rev. 1 (Meacham et al. 1997)
- *Organic Solvent Topical Report,* HNF-SD-WM-SARR-036, Rev. 1A (Cowley et al. 1997).

4.3 DATA QUALITY OBJECTIVE DOCUMENTS

The DQOs define the work scope required to address a specific issue and contain guidance on the type and extent of characterization necessary to resolve the issue. Each River Protection Project (RPP) program issue has an associated DQO that defines the questions, decisions to be made, required information, and the quality of data required to resolve the questions. Table C-1 of Appendix C lists the RPP DQOs and their status. An active DQO is one wherein the data are still being collected to satisfy it or it is a DQO in preparation that has not yet been released. (For example, the two waste qualification DQOs listed on the last page of Table C-1 are being prepared.) An inactive DQO is one against which data are no longer being collected.

Although a DQO may be closed or closing for SST/DST issues, it may remain active for inactive miscellaneous underground storage tanks (IMUST) or other activities. A DQO currently inactive could again become active if new issues or questions arise.

5.0 PROCESS FOR DETERMINING CHARACTERIZATION ISSUES AND PRIORITIES

The process for determining characterization issues and priorities was completed in a facilitated workshop session that included representatives from the programs and projects that require characterization information, DOE-ORP, Ecology, and observers from DNFSB. Meeting minutes from the session form the basis for this section of the TSB-WIRD (Payne 2000). The objective of the facilitated session held on January 25, 2000 was threefold: (1) determine issues currently requiring and projected to require characterization support; (2) determine the relative priority (priority rank) of issues; and (3) establish the relative ranking and weight of the issues.

The team in the facilitated session determined that five of the issues in the previous (1999) issue meeting do not require listing as specific issues in the upcoming years. These issues are: SY-101 level rise, C-106 sluicing, industrial hygiene support, compatibility, and historical model validation. In addition, the previous Phase 1 Disposal issue was divided into three issues for FY 2001: Waste Feed Delivery Phase 1, Interface Control Document (ICD-23), and High Level Waste (HLW)/Low Activity Waste (LAW) Feed DQO. A Feed Certification (ICD-19 and ICD-20) issue was added. The former Regulatory issue was divided into two issues: Regulatory- Dangerous Waste and Regulatory- Air Emissions. The former Process Sampling issue was renamed Operations Sampling.

The SY-101 Level Rise, C-106 Sluicing, and Historical Model issues were removed because sufficient sampling has been completed to address the issues. Any further sampling in support of SY-101 or C-106 transfers will be covered under the Operations Sampling or SST Retrieval issues. The Industrial Hygiene and Compatibility issues were removed as specific issues because they are a subset type of sampling to be applied under several of the other issues.

Following identification of the issues, the maximum benefit gained by sampling for each issue was determined. The team then voted on the rank priority of issues using a decision analysis technique known as the Nominal Grouping Technique (NGT). Table 5-1 shows the issues in rank order of priority along with the maximum benefit derived from sampling for each issue. Further elaboration of these issues can be found in Section 6.0 of this TSB-WIRD.

Table 5-1. Maximum Benefit Gained by Sampling for Each Issue

Issue	Maximum Benefit Gained from Sampling
Interim Stabilization	Remove fluids from tanks via saltwell pumping. Comply with TPA milestones. Allow transfers to be made without adverse consequences.
Operations Sampling (tank transfers, cross-site transfers, and other operations support)	Allows proceeding with unplanned and planned evolutions or transfers without violating regulations or the authorization basis.
Evaporator Operations	Reduces Double Shell Tank (DST) waste and supports interim stabilization. Ensures that waste processing is in compliance with environmental and safety requirements.
Waste Feed Delivery (WFD), Phase 1	Validates the planned feed to WTP contractor
ICD-23 (WTP contractor - Waste Immobilization Regulatory and Process Testing)	Facilitates permitting for both WTP contractor and RPP. Supports WTP contractor design and ensures validity of WTP contractor design. Supports bench scale testing.
Regulatory- Dangerous Waste	Ensures compliance with regulations and supports uninterrupted completion of projects.
HLW/LAW Feed DQO (Waste Processing Development [WPD])	Ensures contractual envelopes are met. Identifies analytes required to obtain the WTP contractor permit. Facilitates a negotiation basis in the event envelopes are not met. Provides basis for the WTP contractor payment.
Regulatory- Air Emissions	Ensures compliance with regulations and supports uninterrupted completion of projects.
SST Retrieval (including HTI functional scope)	Establishes the design basis for SST retrieval systems. Transitions tank C-106 to interim closure status.
Safety Screening	Validates the safety status of tanks. Facilitates the commitment to DNFSB to opportunistically sample unscreened tanks.
Certification (ICD-19 and 20)	Ensures feed will meet ORP/WTP contractor staged feed acceptance criteria.
Miscellaneous Facilities	Determines level of risk associated with each facility. Confirms assumptions made in the Authorization Basis.
IMUSTs	Confirms the assumed level of risk based on process history. Facilitates future retrieval transfers.

Following determination of the relative priority of the issues, the issue weights were determined by the team using the Multi-Attribute Decision Analysis technique. Determination of issue weights was performed by establishing the most important issue (Interim Stabilization) with a relative weight of 100. Team members voted on the relative weight of every other issue with respect to Interim Stabilization. After individual voting for the relative importance of each issue, the results of the voting were combined and individual weights were averaged. Table 5-2 provides the ranks and weights of the issues. It should be noted that an issue listed with a low priority does not mean that the issue is not important. The priority is simply a means to permit optimum utilization of limited resources.

Table 5-2. Results of Ranking and Weighting of Issues

Issue	Priority Number	Issue Weight
Interim Stabilization	1	100
Operations Sampling (tank transfers, cross-site transfers, and other operations support)	2	93
Evaporator Operations	3	84
Waste Feed Delivery (WFD), Phase 1	4	76
ICD-23 (WTP contractor -Waste Immobilization Regulatory and Process Testing)	5	72
Regulatory- Dangerous Waste	6	64
HLW/LAW Feed DQO (WPD)	7	60
Regulatory- Air Emissions	8	53
SST Retrieval (including HTI functional scope)	9	32
Safety Screening	10	19
Certification (ICD-19 and 20)	11	15
Miscellaneous Facilities	12	10
IMUSTs	13	7

6.0 ISSUES REQUIRING CHARACTERIZATION INFORMATION

The issues listed and ranked in Tables 5-1 and 5-2 are further described in the following sections. Information required by each issue is documented through the DQO process (EPA 1994 and LMHC 1997a). The DQO process leads to the documentation of information needs, data quality requirements, boundary conditions, and special handling requirements relating to sampling and analysis. The DQO process is an iterative one requiring that a DQO be revised when program needs or conditions change. Table 4-1 lists DQOs.

6.1 INTERIM STABILIZATION

Saltwell pumping, or interim stabilization, is the primary method used to minimize future leakage from SSTs until the waste in the SSTs is retrieved and processed. In the pumping process, supernatant and drainable interstitial liquid are pumped out of the saltwell of a SST and into a DST.

Interim stabilization of SSTs is a major activity requiring compatibility sampling. The primary document defining interim stabilization needs is the *Single-Shell Tank Interim Stabilization Project Plan* (Lewis 1999). In addition, the State of Washington and the U.S. Department of Energy have developed a *Consent Decree* (Ecology and DOE 1999) issued in September 1999 that establishes a pumping schedule for SSTs. The court ordered consent decree replaced language in the TPA pertaining to tank stabilization. The decree requires 98 % of the remaining 4 million gallons of liquid waste to be pumped by September 2003 and the final 2 % to be removed by September 2004. The pumping schedule and other consent decree requirements are presented below.

Table 6-1. Table of Planned Pumping per Consent Decree

Tank Designation	Pumping Initiated	Projected Pumping Completion Date**
1. T-104	N/A	Completed
2. T-110	N/A	Completed
3. SX-104	Already initiated	December 30, 2000
4. SX-106	Already initiated	December 30 ,2000
5. S-102	Already initiated	March 30, 2001
6. S-106	Already initiated	March 30, 2001
7. S-103	Already initiated	March 30, 2001
8. U-103 *	Already initiated	April 15, 2002
9. U-105 *	Already initiated	April 15, 2002
10. U-102*	Already initiated	April 15, 2002
11. U-109*	Already initiated	April 15, 2002
12. A-101	Already initiated	September 30, 2003
13. AX-101	October 30, 2000	September 30, 2003
14. SX-105	March 15, 2001	February 28, 2003
15. SX-103	March 15, 2001	February 28, 2003
16. SX-101	March 15, 2001	February 28, 2003
17. U-106 *	March 15, 2001	February 28, 2003
18. BY-106	July 15, 2001	June 30, 2003
19. BY-105	July 15, 2001	June 30, 2003
20. U-108	December 30, 2001	August 30, 2003
21. U-107	December 30, 2001	August 30, 2003
22. S-111	December 30, 2001	August 30, 2003
23. SX-102	December 30, 2001	August 30, 2003
24. U-111	November 30, 2002	September 30, 2003
25. S-109	November 30, 2002	September 30, 2003
26. S-112	November 30, 2002	September 30, 2003
27. S-101	November 30, 2002	September 30, 2003
28. S-107	November 30, 2002	September 30, 2003
29. C-103	No later than December 30, 2000, DOE will determine whether the organic layer and pumpable liquids will be pumped from Tank C-103 together or separately, and will establish a deadline for initiating pumping of this tank. The parties will incorporate the initiation deadline into this schedule as provided in Section VI of the Decree.	

Notes: * tanks containing organic complexants.
**The project pumping completion dates in Table 6-1 refer to 98% of the remaining pumpable liquid.
DOE will complete interim stabilization of the final 2%of pumpable liquid in the tanks listed above by September 30, 2004.

A number of tanks listed above have already been sampled and those samples are adequate to support interim stabilization. See Table B-1, Appendix B, for tanks still needing to be sampled.

Table 6-2. Percentage of Pumpable Liquids Remaining to be Removed

Percentage	Date
93 % of Total Liquid	9/30/1999
38 % of Organic Complexed Pumpable Liquids	9/30/2000
5 % of Organic Complexed Pumpable Liquids	9/30/2001
18 % of Total Liquid	9/30/2002
2 % of Total Liquid	9/30/2003

Specific tanks to be interim stabilized that require sampling are listed in the interim stabilization section of Appendix B, Table B-1.

6.2 OPERATIONS SAMPLING

Operations sampling covers tank transfers, cross-site transfers, and other miscellaneous operations requirements.

Information requirements to support waste compatibility issues and waste transfers are described in the *Data Quality Objectives for Tank Farms Waste Compatibility Program* (Mulkey et al. 1999), the *Double-Shell Tank Waste Analysis Plan* (Mulkey 1998) and from the *Final Safety Analysis Report* (Sandgren 2000). Waste transfers that require compatibility information include transfers from DST to DST, SST to DST, and waste generators to DSTs. All DSTs are within the scope of the compatibility DQO. The SSTs are within the scope of the compatibility DQO only if waste is scheduled to be transferred out of a SST for interim stabilization of a tank.

6.2.1 Miscellaneous Operations Requirements

Before waste supernatant can be evaporated in the evaporator, the waste must be staged to the evaporator candidate feed tanks. The compatibility DQO must be applied between DSTs and candidate feed tanks.

The scope of operations sampling also includes caustic mitigation and verification of safety, operational, and environmental parameters. Occasionally, a safety or tank farm operations issue arises that requires sampling that may not be covered by any other of the issues described in this report. When a sampling need is identified, a sampling and analysis plan or letter of instruction is prepared to specify the sampling and analytical requirements.

Operations often require information on the caustic levels in tanks in order to stay within caustic limits to inhibit corrosion and stress corrosion cracking. Operations specifications for DSTs and saltwell receiver tanks describe limits for nitrite, nitrate, and hydroxide concentrations (LMHC 1997b, LMHC 1998, and LMHC 1996). The saltwell receivers include double-contained receiver tanks (DCRTs) 244-BX, 244-S, and 244-TX, and TK-003 of the CR vault. When information on caustic levels is required, Process Engineering prepares a letter of instruction or sampling and analysis plans to control the characterization work.

Double-shell tanks (DSTs) are required to remain within the caustic level operating specifications outlined in LMHC (1997b and 1998). Waste information is needed to verify that a tank is within its corrosion specifications, to determine if the tank is caustic deficient, to predict the corrosion rate, and to determine if caustic additions will restore the tank to the proper caustic level.

The sampling and analysis of caustic deficient tanks is as-needed driven. When a tank is outside the caustic operating limits, operations will determine whether sampling is required and when it is required.

Sampling and analysis to meet other safety, operational, or environmental monitoring concerns vary and are also as-needed driven. Examples of these needs include, but are not limited to, condensed and/or vapor phase sampling in support of flammable gas monitoring; ongoing, immediate safety concerns; industrial hygiene concerns, and/or sampling to evaluate unusual or suspect tank conditions. When such occur, letters of instruction are prepared to control characterization work.

6.2.2 Tank Transfers and Cross-Site Transfers

The planned needs for tank-to-tank transfers and cross-site transfers during the period FY 2001-2003 are primarily the result of the following activities:

- Operations - transfers are needed to pre-stage waste prior to transferring to the evaporator feed tank, store concentrated evaporator wastes, free up tanks for other use, and move waste from the 200 West to the 200 East Area.
- Waste feed delivery - prepare for waste feed delivery to the WTP contractor facility.

Table B-2, Appendix B, includes tanks for planned waste transfers and cross-site transfers.

6.3 EVAPORATOR OPERATIONS

Successful operation of the 242-A Evaporator requires sampling and analysis of evaporator feed waste in either a candidate feed staging tank or the source tank itself.

The sampling and analysis requirements are described in *242-A Evaporator Data Quality Objectives* (Von Bargen 1998 and Bowman 2000).

The evaporator DQO has requirements for three functions:

- Process control evaluation to ensure the evaporator operates efficiently with minimal equipment degradation. Process control evaluation also compares the waste compatibility in the candidate feed tanks with the wastes in the feed and slurry tanks.

- Safety evaluation to ensure that hazardous wastes do not endanger workers or the environment.

- Environmental compliance evaluation to ensure the waste released to the slurry tank, the gases released to the air and the water released to the Liquid Effluent Retention Facility (LERF) are in compliance with environmental limits.

Tanks that transfer waste to the feed tank are referred to as candidate feed tanks and currently include tanks 241-AP-107 and 241-AW-104. Tanks supporting the evaporator operations issue are listed in Appendix B, Table B-3.

6.4 WASTE FEED DELIVERY (WFD), PHASE 1

At the end of FY 1998, DOE-RL signed a Waste Immobilization contract with the WTP contractor to convert LAW and HLW waste feed into an immobilized form. Per the terms of this contract, DOE-ORP will purchase services from a WTP contractor operated facility. The Phase 1 WTP contract requires that CH2M HILL Hanford Group, Inc. on behalf of DOE-ORP, deliver feed in specified quantities and composition to the WTP contractor. In response to these requirements, the *Tank Waste Remediation System Operations and Utilization Plan, Volume 1 (TWRSOUP),* (Kirkbride et al. 1999) was prepared. The TWRSOUP establishes the baseline operating scenario for delivery of feed to the WTP contractor. The operating scenario is based on current knowledge of waste composition and chemistry. Additional data on waste quantity, physical and chemical characteristics, and transfer properties are needed.

The following is a list of DQOs required to deliver wastes and to verify that the wastes are within the LAW and HLW feed envelopes prior to staging of waste for delivery to the WTP contractor:

- *Data Quality Objectives for RPP Privatization Phase 1: Confirm Tank T is an Appropriate Feed Source for High Level Waste Feed Batch X;* HNF-1558, Revision 1 (Nguyen 1999a).

- *Data Quality Objectives for RPP Privatization Phase 1: Confirm Tank T is an Appropriate Feed Source for Low-Activity Waste Feed Batch X;* HNF-1796, Revision 2 (Nguyen 1999b).

- *Data Quality Objectives for RPP Privatization Phase 1: Tank Waste Transfer Control;* HNF-1802, Revision 1 (Banning 1999).

- *Characterization Data Needs for Development, Design and Operation of Retrieval Equipment Developed through the Data Quality Objective Process;* WHC-SD-WM-DQO-008, Revision 1 (Bloom and Nguyen 1996).

The TWRSOUP (Kirkbride et al. 1999) provides an engineering analysis for the retrieval baseline that supports Waste Immobilization. In general, the document provides an analysis of LAW and HLW feed staging, the SST retrieval sequence, and the process summary basis. One requirement is completion and maintenance of Best-Basis Inventory numbers.
The waste feed delivery program is dynamic and priorities, order of sampling, and/or specific tanks may change as program needs are further refined.

Specific tanks supporting Waste Feed Delivery, Phase 1 as identified at this time are listed in Appendix B, Table B-4.

6.5 INTERFACE CONTROL DOCUMENT 23 (ICD-23)

At the end of FY 1998, DOE signed a Waste Immobilization contract with a WTP contractor to convert LAW and HLW feed into an immobilized form. As a part of the contract, *Interface Control Document for Waste Treatability Samples* (BNFL 2000c) (ICD-23) has been developed between the WTP contractor and DOE. Using sample material identified in ICD-23, the WTP contractor conducts waste treatability studies to develop information in support of Waste Treatment Plant (WTP) facility design, safety basis, permitting, and waste form compliance. The waste treatability studies will be conducted using samples of candidate LAW feed and HLW feed collected from source tanks by the Characterization Project. It should be noted that earlier versions of ICD-23 required SST full depth cores from 6 to 8 tanks per year from FY 2002 to FY 2006 to address high organic. It has been determined that this is no longer a requirement, and is, therefore, no longer specified in ICD-23.

ICD-23 provides a three-year forecast for sample needs and dates samples are to be delivered from the Hanford site to a WTP contractor test facility. Process testing activities and analysis of samples in support of permitting are conducted by the WTP contractor. Permitting analyses are conducted using *Regulatory Data Quality Objectives Supporting Tank Waste Remediation System Privatization Project,* PNNL-12040, December 1998 (Wiemers et al. 1998) or adaptation thereof, as determined through negotiations with the regulator agencies.

ICD-23 identifies sample needs during Part B-1 of the WTP contract for waste treatability studies conducted during calendar years 1998, 1999, and 2000. All Characterization Project sampling requirements in support of Part B-1 have been completed. ICD-23 also provides a forecast of samples requested by the WTP contractor for delivery during Part B-2 of the contract. Part B-2 is anticipated to start in August 2000 upon receipt of a Congressional authorization to proceed. DOE is reviewing the Part B-2 requests, but has not as yet committed to providing the samples by dates as currently identified.

ICD-23 sampling requirements in this TSB-WIRD are based on sample delivery dates to the WTP contractor test facility, assuming that DOE approves the requests as currently identified in BNFL (2000c). Delivery dates early in a fiscal year may require sampling to be conducted in the preceding fiscal year. In such cases, tank sampling are reflected in this TSB-WIRD in the fiscal year the sampling activity is expected to be needed.

The WTP contractor implementation of the Waste Immobilization Regulatory DQO (Wiemers et al. 1998) requires a two step process. Step 1 includes a holding time study to be completed 24 to 28 months after receipt of the August 2000 Part B-2 authorization to proceed. The study is to be conducted using sample material from tanks 241-AN-102 and 241-AY-102. Although ICD-23 identifies additional tanks for potential sampling in support of permitting, no additional samples are to be taken for analysis per the DQO until step 1 is completed and DOE, Ecology, and the WTP contractor further negotiate sampling and analysis requirements. Tanks identified after negotiation will be used for step 2 of the DQO, WTP facility permitting. In the meantime, however, other samples are needed by the WTP contractor to conduct process verification and waste form qualification tests in support of design and operation of the WTP.

Specific tanks supporting ICD-23 for FY 2001 and beyond, as identified at this time, are listed in Appendix B, Table B-5.

6.6 REGULATORY- DANGEROUS WASTE

Regulatory information on solid and liquid components of tank waste material is identified in the *Data Quality Objectives for Regulatory Requirements for Dangerous Waste Sampling and Analysis* (Mulkey 1999a). The dangerous waste sampling requirements are directed at DSTs that are staged for transfer of waste feed to the Waste Immobilization contractor in order to verify treatment standard applicability. Negotiations are ongoing between DOE and regulatory agencies on the extent and timing of sampling and analysis. Specific tanks expected to support Regulatory Dangerous Waste sampling are listed in Appendix B, Table B-6.

6.7 HLW/LAW FEED PROCESSING DQO (WP&D)

The information that describes the drivers and the characterization needs for the Waste Feed Processing and Disposal (WP&D) management of Waste Immobilization Phase 1 is described in the *Low-Activity Waste and High-Level Waste Feed Processing Data Quality Objectives* (Patello et al. 1999). The purpose of this DQO is to provide preliminary information for planning and design of process and facilities and for Immobilized Low-Activity Waste (ILAW) and Immobilized High-Activity Waste (IHLW) storage and disposal design and specifications. The Waste Immobilization Contract issued in late 1998 is not static and negotiations as of May 2000 were not completed for a modified contract and milestones affecting this issue. Characterization data has been gathered from many of the source tanks from earlier sampling events; however, new schedules and source tanks may affect the characterization needs. Data assessment for the completeness and quality of the available characterization data is an ongoing effort and also may impact the future sampling and characterization needs from the source tanks.

Specific tanks supporting WP&D Phase 1 Waste Processing and Disposal as identified at this time are listed in Appendix B, Table B-7.

6.8 REGULATORY- AIR EMISSIONS

Characterization sampling and analysis of tank headspace is to be conducted according to *Data Quality Objectives for Regulatory Requirements for Hazardous and Radioactive Air Emissions Sampling and Analysis* (Mulkey 1999b). Although this DQO applies to all DSTs and SSTs whether actively or passively ventilated, the current sampling needs for air emissions are directed to tanks that have an immediate need for an air permit because of planned activities related to disposal. Generally, these are tanks that will be disturbed as a result of equipment installation, disposal activities or interim stabilization measures.

Specific tanks supporting Air Emissions sampling are listed in Appendix B, Table B-8.

6.9 SST RETRIEVAL INCLUDING HTI FUNCTIONAL SCOPE

The SST retrieval issue is being addressed by tasks to prepare to retrieve the SSTs early, DST space permitting. The Consent Decree (Ecology and DOE 1999) mandates an aggressive SST retrieval schedule which is being supported by an operational analysis of the DST system and evaluation of alternative, highly efficient SST retrieval technologies.

The Hanford Tanks Initiative (HTI) was originally a technical and financial partnership between the U.S. Department of Energy and the Office of Science and Technology. The purpose of HTI was to accelerate activities to gain technical, cost and regulatory perspectives on retrieval of high-level SSTs. This SST Retrieval issue includes the HTI

functional work scope. Planning for SST Retrieval is in its early stages. However, several tank sampling events have been identified in support of early retrieval.

Specific tanks supporting early SST Retrieval are listed in Appendix B, Table B-9.

6.10 SAFETY SCREENING (OPPORTUNISTIC)

The *Tank Safety Screening Data Quality Objective* (Dukelow et al. 1995) was developed to ensure that tanks that were not originally included on a Watch List would be screened to determine if they should be categorized under one or more of the existing safety issues. The safety screening DQO also tested tanks that were on a Watch List to confirm that the correct safety issues were applied to the tanks. The safety screening DQO was not designed to remove a tank from a Watch List, but merely to refer the tank to the appropriate safety issue(s) for further evaluation.

The major driver for the safety screening issue has been DNFSB Recommendation 93-5. The recommendation actions have been completed and the DNFSB milestones met and closed (DNFSB 1999). See DOE-RL 1996 for background information about DNFSB Recommendation 93-5. The ferrocyanide, organic complexant, and organic solvent safety issues have been closed. The criticality unreviewed safety question (USQ) has also been closed. Several topical reports concerning these issues have been completed (see Section 4.2). The *Tank Waste Remediation System Final Safety Analysis Report (FSAR)* (Sandgren 2000) has also been issued and implemented and establishes proper controls on all tanks whether safety screened or not.

The sampling and analysis requirements of the safety screening DQO will continue to be applied opportunistically to tanks not yet safety screened, but which are being sampled for some other purpose. In summary, the characterization efforts have resulted in enough knowledge about specific safety issues to render the safety screening issue moot as a sole driver for sampling of SSTs and DSTs.

Appendix B, Table B-10 lists tanks that remain to be safety screened on an opportunistic basis. Since sampling is opportunistic, tanks listed are not included in the overall tank priority analysis in Appendix A.

6.11 WASTE CERTIFICATION (ICD 19 AND 20)

The Waste Immobilization contract between DOE and the WTP contractor requires that tank waste sent to the WTP contractor to meet criteria based on the chemical concentrations of certain waste components. These criteria or envelope limits (Envelopes A, B, and C for LAW, Envelope D for HLW) require the concentration of specific components in the waste to be below a specified limit. For LAW the maximum limit is a ratio defined as the analyte (mole) to sodium (mole) and for the radionuclides analyte (Bq) to sodium (mole). For HLW the limit is the ratio defined as the analyte (grams) per

100 grams of the waste oxides and for the radionuclides, analyte (curies) per 100 grams of waste oxides. In addition to the Waste Immobilization contract, certification requirements are listed in ICD-19 for LAW (BNFL 2000a) and ICD-20 for HLW (BNFL 2000b).

Two certification DQOs are being developed. One of the DQOs covers certification sampling and analysis requirements for LAW. The second DQO covers HLW certification sampling and analysis requirements.

Certification will take place in the staging tanks prior to transferring the waste to the WTP contractor. In some cases the source tank is the same as the staging tank. In other cases, the waste from a source tank will be transferred to a different staging tank.

All specific tanks and order of waste delivery to the WTP contractor have not been finalized. However, the staging tanks that have been identified at this time are listed in Appendix B, Table B-11. Certification sampling and analysis activities are not expected to begin until FY 2005.

6.12 MISCELLANEOUS FACILITIES

Tanks within major facilities designed to house multiple processes and components are to be dispositioned with the facility, i.e., the tanks within the facility will be managed as a common unit of property. Therefore, tanks within these facilities are treated here as a separate issue from the IMUST issue described in Section 6.13. Facilities considered are those that are RPP owned, and all are within the Hanford 200 Areas.

There are no miscellaneous facilities-specific DQOs, and none are in preparation at this time. All facilities considered are typically inactive and do not pose an immediate safety concern in their current configuration. Lipke and Stickney (1998) provide a detailed qualitative evaluation of the facilities and conclude that there are no cases identified where there is immediate need to invoke new or different controls for the purposes of preventing facility worker fatality or serious injury, or unacceptable risks to onsite workers or the public.

Lipke and Stickney (1998) do, however, identify 11 miscellaneous facilities of interest, 6 of which are recommended for characterization sampling to be conducted at some time. The facilities, in general order for sampling priority, are:

- 242-T Evaporator
- 244- CR Vault
- 242-S Evaporator
- ITS-1 In-tank Solidification System

- 241-AX Ion Exchange Column
- 244-AR Vault.

In each of these facilities, characterization sampling and analysis of tanks or other components will serve to improve the facility technical baseline through better, more quantifiable identification of tank contents. The 242-T Evaporator is of highest priority primarily because the surrounding facility is of questionable structural integrity. Early characterization of tank contents will serve to provide a basis for activities in support of structural remediation or decommissioning. The other facilities are of generally equal priority with the 244-AR Vault being lower since potential sampling is only needed in the event of sump level conditions which may drive a need to remove the waste in tank 244-AR-TK-002.

Sampling priority rankings and criteria for miscellaneous facilities are shown in Appendix B, Table B-12.

To date there are no definitive schedules or timeframe within which characterization of the miscellaneous facilities must be completed.

6.13 INACTIVE MISCELLANEOUS UNDERGROUND STORAGE TANKS (IMUST)

An IMUST is a tank other than a SST or DST that is: (a) inactive, (b) radioactive, (c) underground or partially underground, and (d) not located within a major miscellaneous facility. (See Section 6.12 for miscellaneous facilities). There are currently about 70 IMUSTs identified on the Hanford site. IMUSTs assigned to RPP are listed in the *Tank Waste Remediation System Final Safety Analysis Report* (Sandgren 2000). Generally, it was determined that IMUSTs pose no immediate threat to Hanford workers or the public. If some characterization is needed to support IMUST flammable gas and organic USQs, characterization will support the sampling effort.

There are no RPP IMUST-specific DQOs at this time. The only potential technical drivers for sampling and analysis of IMUSTs are in support of resolving flammable gas and organic USQs. However, no IMUST sampling in the near term is required nor desired. The IMUST Organic USQ is expected to be closed using data already available. There are no active components in the IMUSTs and no technical driver to close inactive facilities USQs at this time. The FSAR and Technical Safety Requirements include IMUST controls. Resources are better used to support waste feed delivery and disposal of the DST and SST efforts with IMUSTs deferred to future decontamination and decommissioning efforts.

Nevertheless, a planning directive (DOE-RL 1999) required incorporating the sampling and analysis of IMUSTs into fiscal year planning documents. A future IMUST sampling priority list was subsequently developed (Lipke 1999) in compliance with this directive. The priority list represents issues pertaining to IMUSTs: flammable gas, organic, criticality, and Authorization Basis compliance and is derived from Lipke and Stickney (1998). Ten tanks were selected that taken together (1) represent the identified issues and (2) return the greatest amount of useful information while sampling a relatively small number of tanks. The list is found in Appendix B, Table B-13. Analytical results from these ten IMUSTs would be expected to provide sufficient information to adequately address the other IMUSTs. Although ranked in sequence, the order of sampling could vary depending on operational constraints. If sampling resources remain limited, sampling of the tanks having easier access would provide valuable information on each of the four issues of concern at the earliest time.

6.14 ISSUES IDENTIFIED BUT NOT PRIORITIZED

During the facilitated workshop to determine issues for FY 2001 and beyond, two potential future issues were discussed: (a) vadose zone and (b) Polychlorinated Biphenyl (PCB). A brief discussion of these potential future issues is included here for information.

Vadose Zone Potential Future Issue

The Tank Farm Vadose Zone (TFVZ) team is charged with developing an understanding of the impacts of past spills and leaks of tank waste on the vadose zone underlying the tank farms. This effort is focused on the eight tank farms (S, SX, B, BX, BY, T, TX, and TY) currently under Resource Conservation and Recovery Act (RCRA) applicability assessment. These tank farms were placed under RCRA assessment because their operations have led to potential or known impacts to groundwater quality. The investigations include review of historical leak-related documents, tank waste transfer records, groundwater monitoring and geological data, and historical and spectral gamma-ray logging data. The conceptual models developed from an integration of information from this broad database are then tested through field investigations and modeling exercises.

A member of the TFVZ team participated in the TSB-WIRD facilitated workshop held on January 25, 2000, to ascertain the potential application of future SST waste characterization on the issues being addressed by the TFVZ team. The workshop focused on establishing the priorities for the tank sampling program in FY-2001. The potential use of current and future tank sampling data in understanding the impacts of past SST leaks was discussed extensively. The consensus was that additional characterization of current SST wastes would provide very little, if any, insight to the understanding of historical SST leaks. However, issues were raised as to the level of waste characterization that might be required to assess the potential impacts of future losses of tank waste to the soil column from tank leaks or losses during waste transfer operations. Since waste transfer operations require some level of waste characterization to address waste compatibility issues, it is likely the information available would be adequate to

address questions about the inventory of radionuclides and chemicals lost during a spill associated with a waste transfer process.

If a leak developed in one of the SSTs, it would be prudent to evaluate our current understanding of the composition of the supernatant liquids in such a tank. Then, depending of the results of the evaluation, it may be advisable to collect a supernatant liquid sample for analysis.

Finally, the TFVZ team is developing and implementing a number of near-surface sampling and analysis techniques that could have some applicability to investigating future tank waste losses to the vadose zone. Cone penetrometer technology is being implemented to collect spectral gamma-ray data. This methodology allows samples to be collected in selected regions of the sub-surface for laboratory analyses. Statistical techniques are being developed to convert gamma-ray data into inventory estimates.

Polychlorinated Biphenyl (PCB) Issue

The potential presence of PCBs stored in tank farms is being addressed. Negotiation of the issue is ongoing at a high level between DOE, the EPA, and Ecology. At the present time, three activities are underway to address the PCB issue:

1. Preparation of a PCB characterization plan
2. Preparation of a PCB inventory management plan
3. Preparation of a PCB DQO document.

The PCB characterization plan will describe the approach for obtaining PCB data to establish baseline inventories in the tanks. It will also provide criteria for prioritizing tanks from which samples (existing or new) will be analyzed. A schedule for PCB analysis will also be provided.

The PCB inventory management plan will provide details on how PCB wastes will be managed in the DST system. It will describe how the PCB management system will be implemented, provide decision limits for acceptance of PCB wastes found in solids and liquids along with the bases for the limits and describe the PCB tracking system for waste transfers into and within the DST system. Only PCB wastes found within the DST system including piping, catch tanks and double-contained receiver tanks will be addressed in this document.

The PCB DQO will focus on two points: (1) the sampling and analysis required to manage the PCB content in the waste storage tanks and (2) verification sampling and analysis required for incoming waste streams. The plan for the DQO is not to address any waste streams or facilities downstream of the storage tanks. Should PCB analyses be required for waste or facilities downstream of the storage tanks, additional DQOs or a revision to the PCB DQO would be prepared.

The PCB characterization plan and the PCB inventory management plans are scheduled to be delivered to DOE in mid-August 2000. The PCB DQO is due to DOE in September 2000.

7.0 TANK SAMPLING PRIORITIES

One of the purposes of the TSB-WIRD is to optimize use of characterization resources by establishing tank sampling priorities. To this end, a tank sampling priority list has been created. Priority numbers have been assigned for each of the 177 SSTs and DSTs. The priority numbers become the basis for identifying tanks that, if sampled, will support resolution of important safety issues, develop the waste retrieval and disposal process, and support ongoing operations activities. This section describes how the priority numbers were developed. (Miscellaneous facilities and IMUST tanks are prioritized separately in Appendix B Tables B-12 and B-13, respectively, of this TSB-WIRD.)

7.1 DEVELOPMENT OF SAMPLING PRIORITY NUMBERS

The following steps were used to develop sampling priority numbers for each tank:

- For each tank, a determination was made as to which issues apply in each of the following waste phases: solid, liquid and vapor. (See Section 6.0 for a description of the issues.) For some tanks, more than one issue applies. (See Appendix B for tanks in the scope of each issue.)

- Because some tanks within an issue are more important (higher priority) than other tanks with regard to closure of that issue, a determination was made as to whether each tank was high, medium, or low priority with regard to that issue compared to other tanks within that issue. High, medium, and low priorities were assigned according to when the tank needs to be sampled to meet the needs of the issue.

- An overall priority number was then developed for each tank for each of the three waste phases by summing the issue weights from Table 5-2 for the issues that apply to the waste phases in that tank. Before summing, each issue weight was multiplied by 5 if the tank is high priority for that issue, by a 3 if the tank is medium priority for that issue, or by a 1 if the tank is low priority for that issue. As an example, if the Interim Stabilization issue and the Evaporator Operations issue apply to the solid phases in a tank and the tank is high priority for the Interim Stabilization issue but low priority for the Evaporator Operations issue, the calculation of the raw priority number for solid phase samples are as follows for that tank: (100x5) + (84 x 1) = 584. This process is completed for each waste phase: solid, liquid and vapor.

- Following calculation of the above raw priority numbers for each tank, the priority numbers were normalized with 100 being assigned to the highest priority tank for each waste phase.

The methodology above gives higher priority to tanks wherein sampling will address more than one issue. The priority also considers the relative weight of the issues that apply to a tank. In addition, the priority considers how important a tank is with regard to each issue that applies to it. The high, medium, or low ranking of a tank for an issue was made by the programs and/or tank coordinator experts on each tank in consideration of but not necessarily limited to the following: (a) when sampling is needed with higher priority to those needed sooner or (b) the waste forms and types in the tank with higher priority given to those tanks that best represent an issue. (See Appendix B for elaboration of the criteria for assigning high, medium, and low ranking for tanks within each issue.)

In general, a tank will have the higher priority when:

- The tank has numerous issues that apply to it.
- The issues that apply to the tank are of high relative weight compared to other issues.
- The sampling needs are sooner rather than later.
- The tank better represents an issue than another tank to which that issue applies.

Tank sampling priorities for solid, liquid and vapor phase sampling are shown in Appendix A, Tables A-1, A-2 and A-3.

7.2 DESCRIPTION OF SAMPLING REPORTING TABLES

Table 7-1 *Summary of Sampling/Reporting by Issue* provides information on the number of tanks needed for sampling by issue and by fiscal year and the number of tanks scheduled for sampling in FY 2001. The table also provides a means to report and track the actual numbers of tanks sampled per issue on an ongoing basis. The table is updated and included in each quarterly report to show sampling actual progress in comparison to samples scheduled. Key features of Table 7-1 include:

- **Tanks Needed FY 20xx:** The table shows the minimum number of tanks (by issue) projected to be needed in each fiscal year to meet milestones and commitments.
- **Total Tanks Scheduled FY 2001:** The table shows the number of tanks scheduled (by issue) in FY 2001 to meet milestones and commitments. The scheduled number may differ from the FY 2001 needed number because the scheduled number is dependent on available resources.

- **Total Tanks Sampled FY 2001:** The table shows the number of tanks actually sampled (by issue). The table is updated for use in quarterly reports. This row will be completed as tanks are actually sampled during FY 2001.

Specific tanks are not identified in Table 7-1 because of ongoing changes in program needs and operational considerations. However, specific tanks currently expected to support each issue are shown in Appendix B. If and when an archived sample meets analytical needs for a tank listed, the TSB-WIRD commitment for that tank will be considered to have been met without further sampling.

Table 7-1. Summary of Sampling and Reporting by Issue

	Interim Stab.	Ops. Samples	Evap. Ops.	WFD Phase 1	ICD-23	Danger. Wastes	WPD	Air Emiss.	SST Retrieval & Tank Closure	Safety Screen	Waste Certif. (ICD-19 & ICD-20)
Total Tank Samplings Needed for Issue	7	20	3	15	17	18	9	6	5	OP	19
Tanks Needed FY2001	5	6	1	3	4	0	3	1	1	OP	0
Total Tanks Scheduled FY2001	5	6	1	3	4	0	3	1	1	OP	0
Total Tanks Sampled FY2001											
Tanks Needed FY2002	2	5	1	2	5	0	2	0	1	OP	0
Tanks Needed FY2003 and beyond	0	9	1	10	8	18	4	5	3	OP	19

Notes: Air Emiss. = Air Emissions
Danger. Wastes = Dangerous Wastes
Evap. Ops. = evaporator operations
ICD = interface control document
Interim Stab. = Interim Stabilization
OP = opportunistic sampling
Ops. Samples = operations samples
SST = single-shell tank
Waste Certif. = Waste Certification
WFD = Waste Feed Delivery
WPD = Waste Processing and Disposal

Table 7-2 shows the twelve Tank Characterization Reports (TCRs) planned for FY 2001. The table also indicates the issues that will be addressed by each TCR planned in FY 2001.

Table 7-2. Planned TCR s and New Issues Addressed

Tank	Issues Addressed
AP-101 (1)	ICD-23, WFD, WIT/WPD
AP-106 (1)	Compatibility
AP-107 (1)	Evaporator operations, compatibility
AP-108 (1)	Evaporator operations, compatibility
AW-103 (2)	WFD, WIT/WPD
AW-104 (2)	Evaporator operations, compatibility
AY-101 (2)	WFD, WIT/WPD
AY-102 (2)	ICD-23, WFD, WIT/WPD, safety screening
AZ-101 (2)	ICD-23, WFD, WIT/WPD, mixer pump test
BY-106 (2)	Compatibility
SY-103 (2)	WFD, WIT/WPD, safety screening
U-108 (2)	Compatibility

Notes:
(1) Analyses completed
(2) TCR contingent on completion of analyses
WFD - Waste Feed Delivery DQOs
WIT - Low Level/High Level Waste Immobilization DQO
WPD - Waste Processing Development

Tanks listed above are listed in alphabetical order and are not necessarily listed in the order the TCRs will be completed.

7.3 USE OF PRIORITY TABLES IN CHARACTERIZATION SCHEDULING

Once characterization sampling requirements are prioritized, the sampling requirements are reflected into an operational sampling schedule that is updated and revised for configuration control as conditions in the field or program needs change. It is not always possible (or desirable) to sample in the exact order of the sampling priority listed in the tables of Appendix A. When creating the sampling schedule, consideration is given to: (a) the priority number of the tank(s) and (b) operational and programmatic constraints.

The first consideration when creating the sampling schedule is to schedule tanks with the highest priority numbers possible in order to support the maximum number of high weight issues. The second consideration is operational and programmatic constraints. Some of the most common operational and programmatic considerations are:

- **Tank Farm Operations**: If a tank is scheduled for other operations such as saltwell pumping or caustic additions, it may be necessary to delay

characterization sampling for other issues regardless of the sampling priority of the tank.

- **Location Considerations**: Moving the sampling equipment from farm to farm is time consuming and costly because of considerations of worker exposure and radiological control. It may be beneficial to sample tanks of lower priority while the equipment is positioned in a farm rather than to return at a later date.

Operational and programmatic considerations are not necessarily restricted to those described above.

8.0 REPORTING CHARACTERIZATION PROGRESS

Two tools are provided in the TSB-WIRD to measure characterization progress during FY 2001. The tools are:

- Table 7-1 provides a summary of the total number of tanks that need to be sampled in FY 2001 and out-years to satisfy the issues indicated and to meet milestone commitments. (See "Total Tank Samplings Needed for Issue" row in Table 7-1.) The "Tanks FY 2001 Needed" row shows the minimum number needed in FY 2001 to meet ultimate milestones. The table also shows the number of tanks scheduled (projected) to be sampled for each issue during FY 2001 based on current projections of sampling capabilities. (See "Total Tanks Scheduled FY 2001" row.) Note that the tanks needed for an issue may be more or less than the tanks scheduled for an issue because the tanks scheduled are based on operational and fiscal considerations. The table also contains a row to indicate the number of tanks actually sampled for an issue during FY 2001. This row is updated during each quarter and the table is included in a TSB-WIRD quarterly report to DOE-ORP and Ecology.

- Table 7-2 provides information on the number of TCRs planned and the issues addressed by each TCR. The status of TCR development and release will be included in the TSB-WIRD quarterly reports.

9.0 DESCRIPTION OF DELIVERABLES AND ACCEPTANCE CRITERIA

The primary focus in acquiring characterization information is to sample tanks, analyze samples, and interpret the data in order to meet the requirements of safe storage, waste retrieval, waste disposal, and operations functions. In this process, a number of deliverables are due to Ecology. The deliverables include TCRs, the TSB-WIRD, quarterly reports, and completion of tank samplings and TCRs as evidenced by a fiscal year-end fourth quarterly report, due in October of the next fiscal year.

9.1 CHARACTERIZATION PROJECT SAMPLING ACTIVITIES

This section outlines the types of sampling performed by the Characterization Project and is divided into condensed phase and vapor phase sampling sections.

Condensed Phase Sampling

Core Sampling: Core sampling provides a sample that represents the waste depth in the tank regardless of whether the waste is in the liquid or solid phase. Core sampling may be performed in push mode, rotary mode, by auger, or by other appropriate sampling devices that may be devised.

Grab Sampling: Grab sampling is normally used to obtain a liquid sample or a sample of salt or sludge solids that are suspended in a slurry. Grab sampling can obtain liquid samples from the surface of the tank or below the surface as long as there is no solid layer to obstruct the sampler. Grab samples are normally used to satisfy requirements connected with operations issues, particularly waste compatibility, evaporator operations, and caustic mitigation. Grab samples may also be used to provide Waste Immobilization LAW samples to the WTP vendors. When no solid waste layers are encountered, grab samples can be used effectively.

Auger Sampling: Auger sampling involves manually drilling an auger into the waste surface to obtain samples from the top of the waste down to 15 inches. Auger sampling is not effective in dry, crumbly waste because the sample will not adhere to the auger or in liquids.

Vapor Phase Sampling

Vapor sampling is used to obtain a gas sample from inside the tank dome/head space above the surface of the solid or liquid phase or from stacks as appropriate. Vapor samples are taken to meet requirements in the air emissions regulatory DQO, to routinely monitor/verify readings from selected standard hydrogen monitoring system (SHMS) cabinets for the flammable gas program, to collect industrial hygiene data, or to support special projects or emerging issues.

9.2 TANK CHARACTERIZATION REPORTS

Tank Characterization Reports (TCRs) are used to report and interpret data collected from tanks and to evaluate the extent to which the data satisfy DQO requirements. The TCRs also report the "Best-Basis" estimate of the total inventory of various chemicals and radionuclides within a tank.

TCRs are no longer released in "hard copy" form but are available electronically via a tool called the automated TCR. The automated TCR, available on the local area network and the internet, allows a user to assemble a custom made TCR at any time for any purpose by selecting from a menu of standard data tables, including analytical data, vapor data, best-basis inventory data, tank level and temperature data, etc. The automated TCR also provides the user with a question and answer format Tank Interpretive Report (TIR). The TIR interprets data by way of answers to seven (7) questions including questions regarding: tank information drivers, tank history, tank comparisons, disposal implications, scientist's assessment of data quality and quantity, unique aspects of the tank, and best-basis inventory derivations for the tank. The automated TCR also provides the user with a tank-specific reference list with electronic links to references related to a tank. The automated TCR draws data from a configuration-controlled database containing analytical data for tanks called the Tank Waste Information Network System (TWINS). TWINS is accessible via the internet at http://twins.pnl.gov:8001.

9.3 ACCEPTANCE CRITERIA FOR ECOLOGY DELIVERABLES

Technical Sampling Basis and Waste Information Requirements Document (TSB-WIRD):

Information needs are defined in the TSB-WIRD that is prepared and submitted to Ecology annually. The document identifies characterization deliverables to support safe storage, waste retrieval, waste disposal, and operations. The TSB-WIRD describes characterization deliverables to be issued based on existing TPA milestones, other milestones and other directive documents. The document also identifies and prioritizes characterization issues, and prioritizes tanks for sampling.

The TSB-WIRD and the other deliverables discussed in this section (9.3) shall conform in quality to the standards in the *River Protection Project Process Engineering Desk Instruction and Guidance Manual* (Adams 1999a), Section 5.0, Guidelines for Document Preparation.

The portion of the TSB-WIRD that identifies tank waste characterization activities outside the scope of the TPA shall not be subject to Ecology approval or concurrence, but shall be considered for information only.

Quarterly Reports:

Quarterly reports are provided through DOE-ORP to Ecology to give status on characterization progress. The quarterly reports include use of the measures of progress described in Section 8.0. In general, the quarterly reports include the following elements:

- Discussion of tanks sampled (by issue) for comparison with tanks scheduled for sampling (by issue).
- Discussion of the status of TCRs released.
- Discussion of issues encountered.
- Prediction of sampling and TCR production for the next quarter.
- Discussion of other information, as deemed appropriate, to report characterization status and progress.

Characterization Deliverable Report:

Each fiscal year, a final year-end summary report reflecting characterization deliverables identified in the most recent TSB-WIRD is prepared to report the extent to which deliverables were completed as of September 30 of the year. The report identifies specific issues and/or tanks to which the deliverables were applied. The final report builds upon information provided in the first three quarterly reports and is included in the fourth quarterly report due October 31 of the next fiscal year.

Data Management Deliverables:

Currently the TPA requires that tank characterization data be provided to Ecology and EPA offsite via electronic means. This requirement is met by use of TWINS. TWINS is accessible via the internet at http://twins.pnl.gov:8001. Analytical data concerning tank contents is posted to TWINS within seven working days after release of the final analytical data package from the laboratory. Data entry into the TWINS is regulated by Standard Electronic Formats (Adams 1998 and Adams 1999b.)

10.0 REFERENCES

Adams, M. R., 1998, *Standard Electronic Format Specification for Tank Characterization Data Loader: Version 2.4,* HNF-3638, Rev. 0, Lockheed Martin Hanford Corp., Richland, Washington.

Adams, M. R., 1999a, *River Protection Project Process Engineering Desk Instruction and Guidance Manual,* HNF-SD-WM-PROC-021, Rev. 3-A, CH2M Hill Hanford Group, Inc., Richland, Washington.

Adams, M. R., 1999b, *Standard Electronic Format Specification for Tank Vapor Data MSEXCEL Spreadsheets: Version 1.0,* HNF-3815, Rev. 0, Lockheed Martin Hanford Corp., Richland, Washington.

Banning, D. L., 1999, *Data Quality Objectives for TWRS Privatization Phase 1: Tank Waste Transfer Control,* HNF-1802, Rev. 1, Lockheed Martin Hanford Corp., Richland, Washington.

Barrett, M. K., 1998, *TWRS Privatization, DOE Contract DE-AC06-RL13308, Modification A005,* BNFL, Inc., Richland, Washington.

Bloom, G. R., and Q. H. Nguyen, 1996, *Characterization Data Needs for Development Design and Operation of Retrieval Equipment Developed through the Data Quality Objective Process,* WHC-SD-WM-DQO-008, Rev. 1, Westinghouse Hanford Company, Richland, Washington.

BNFL, 2000a, *Interface Control Document for Low-Activity Waste Feed, ICD-19,* BNFL-5193-ID-19, Rev. 4E, BNFL, Inc., Richland, Washington.

BNFL, 2000b, *Interface Control Document for High-Level Waste Feed, ICD-20,* BNFL-5193-ID-20, Rev. 4F, BNFL, Inc., Richland, Washington.

BNFL, 2000c, *Interface Control Document for Waste Treatability Samples, ICD-23,* BNFL-5193-ID-23, Rev. 3c.rl, BNFL, Inc., Richland, Washington.

Bowman, M. W., 2000, *242-A Evaporator Data Quality Objectives,* ECN-653669, HNF-SD-WM-DQO-014, Rev. 2, Fluor Hanford Inc., Richland, Washington.

Cowley, J. T., J. M. Grigsby, and A. K. Postma, 1997, *Organic Solvent Topical Report,* HNF-SD-WM-SARR-036, Rev. 1A, Duke Engineering & Services Hanford, Richland, Washington.

DNFSB, 1999, Letter from J. T. Conway to Secretary Richardson, dated November 15, 1999, Defense Nuclear Facilities Safety Board, Washington, D.C.

DOE-RL, 1996, *Recommendation 93-5 Implementation Plan,* DOE-RL 94-0001, Rev. 1, Change 2, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL, 1999, *Addition of Inactive Miscellaneous Underground Storage Tanks (IMUSTs) to the Tank Waste Storage and Retrieval Characterization Basis Project Technical Basis,* Letter 9950568 from S. A. Sieracki to Fluor Daniel Hanford, Inc., Richland, Washington.

Dukelow, G. T., J. W. Hunt, H. Babad, and J. E. Meacham, 1995, *Tank Safety Screening Data Quality Objective,* WHC-SD-WM-SP-004, Rev. 2, Westinghouse Hanford Company, Richland, Washington.

Ecology, 2000, letter from T. Fitzsimmons and C. Clarke to C. Huntoon, R. T. French, and K. Klein, DOE, dated March 29, State of Washington Department of Ecology, Olympia, Washington.

Ecology and DOE, 1999, *Consent Decree, # CT-99-5076-EPS, between State of Washington Department of Ecology (plaintiff) and the U.S. Department of Energy (defendant),* Washington State Department of Ecology, and U.S. Department of Energy, Olympia, Washington.

Ecology, EPA, and DOE, 1996, *Hanford Federal Facility Agreement and Consent Order,* As amended, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington.

Ecology, EPA, and DOE, 1997, *Hanford Federal Facility Agreement and Consent Order Change Control Form M-44-97-03*, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington.

EPA, 1994, *Guidance for the Data Quality Objective Process,* EPA QA/G-4, U.S. Environmental Protection Agency, Washington, D.C.

Johnson, G. D., W. B. Barton, R. C. Hill, J. W. Brothers, S. A. Bryan, P. A. Gauglitz, L. R. Pederson, C. W. Stewart, and H. L. Stock, 1997, *Flammable Gas Project Topical Report,* HNF-SP-1193, Rev. 2, Duke Engineering & Services Hanford, Richland, Washington.

Kirkbride, R. A., G. K. Allen, R. M. Orme, and R. S. Whitman, 1999, *Tank Waste Remediation System Operations and Utilization Plan, Volume 1,* HNF-SD-SM-SP-012, Rev. 1, Numatec Hanford Corp., Richland, Washington.

Lewis, J. G., 1999, *Single-Shell Tank Interim Stabilization Project Plan*, HNF-2358, Rev. 3A, Lockheed Martin Hanford Corp., Richland, Washington.

Lipke, E. J., 1999, *IMUST Prioritization for Sampling,* Internal memorandum to J. W. Hunt, Lockheed Martin Hanford Corp., Richland, Washington.

Lipke, E. J., and R. G. Stickney, 1998, *Authorization Basis Status Report (Miscellaneous TWRS Facilities, Tanks and Components),* HNF-2503, Rev. 0, Duke Engineering and Services Hanford, Richland, Washington.

LMHC, 1996, *Operating Specifications for the Saltwell Receiver Vessels,* OSD-T-151-00011, Rev. C-4, Lockheed Martin Hanford Corp., Richland, Washington.

LMHC, 1997a, *Data Quality Objectives for Sampling and Analysis,* HNF-IP-0842, Rev. 0, Volume IV, Section 4.16, Lockheed Martin Hanford Corp., Richland, Washington.

LMHC, 1997b, *Operating Specifications for Aging Waste Operations in 241-AY and 241-AZ,* OSD-T-151-00017, Rev. D-10, Lockheed Martin Hanford Corp., Richland, Washington.

LMHC, 1998, *Operating Specifications for the 241-AN, AP, AW, AY, AZ, and SY Tank Farm,* OSD-T-151-00007, Rev. H-21, Lockheed Martin Hanford Corp., Richland, Washington.

Meacham, J. E., A. B. Webb, N. W. Kirch, J. A. Lechelt, D. A. Reynolds, D. M. Camaioni, F. Gao, R. T. Hallen, and P.G. Heasler, 1997, *Organic Complexant Topical Report,* HNF-SD-WM-CN-058, Rev. 1A, Duke Engineering & Services Hanford, Richland, Washington.

Mulkey, C. H., 1998, *Double- Shell Tank Waste Analysis Plan,* HNF-SD-WM-EV-053, Rev. 5, Lockheed Martin Hanford Corp., Richland, Washington.

Mulkey, C. H., 1999a, *Data Quality Objectives for Regulatory Requirements for Dangerous Waste Sampling and Analysis,* WHC-SD-WM-DQO-025, Rev. 1, Lockheed Martin Hanford Corp., Richland, Washington.

Mulkey, C. H., 1999b, *Data Quality Objectives for Regulatory Requirements for Hazardous and Radioactive Air Emissions Sampling and Analysis,* HNF-SD-WM-DQO-021, Rev. 1, Lockheed Martin Hanford Corp., Richland, Washington.

Mulkey, C. H., and K. D. Markillie, 1996, *Data Quality Objective for Regulatory Requirements for Wastewater Effluents Sampling and Analysis,* WHC-SD-WM-DQO-024, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

Mulkey, C. H., M. S. Miller, and L. Jackson, 1999, *Data Quality Objectives for Tank Farms Waste Compatibility Program,* HNF-SD-WM-DQO-001, Rev. 3, Lockheed Martin Hanford Corp., Richland, Washington.

Nguyen, D. M., 1999a, *Data Quality Objectives for RPP Privatization Phase 1: Confirm Tank T is an Appropriate Feed Source for High-Level Waste Feed Batch X,* HNF-1558, Rev. 2, Lockheed Martin Hanford Corp., Richland, Washington.

Nguyen, D. M., 1999b, *Data Quality Objectives for RPP Privatization Phase 1: Confirm Tank T is an Appropriate Feed Source for Low-Activity Waste Feed Batch X,* HNF-1796, Rev. 2, Numatec Hanford Corporation, Richland, Washington.

Nguyen, D. M., 2000, *Sampling and Analysis Plan for Flammable Gases in Inactive Miscellaneous Underground Storage Tanks,* RPP-5658, Rev. 0, CH2M HILL Hanford Group Inc., Richland, Washington.

Patello, G. K., M. J. Truex, and K. D. Wiemers,1999, *Low-Activity Waste and High-Level Waste Feed Processing Data Quality Objectives,* PNNL-12163, Rev. 0, Pacific Northwest National Laboratory, Richland, Washington.

Payne, M. A., 2000, *Meeting Report of January 25, 2000 Facilitated Workshop for Identification and Prioritization of Characterization Issues, Fiscal Year 2001;* Letter # CHG-0000741 to D. C. Bryson, CH2M HILL Hanford Group Inc., Richland, Washington.

RPP, 1999, *River Protection Project FY 2000 Multi-Year Work Plan Summary,* RPP-5044, Lockheed Martin Hanford Corp., Richland, Washington.

Sandgren, K. R., 2000, *Tank Waste Remediation System Final Safety Analysis Report* HNF-SD-WM-SAR-067, Rev. 1C, CH2M HILL Hanford Group, Inc., Richland, Washington.

Von Bargen, B. H., 1998, *242-A Evaporator Data Quality Objectives,* HNF-SD-WM-DQO-014, Rev. 2, Waste Management Federal Services of Hanford, Inc., Richland, Washington.

Wiemers, K. D., M. E. Lerchen, M. Miller, and K. Meier, 1998, *Regulatory Data Quality Objectives Supporting Tank Waste Remediation System Privatization Project,* PNNL-12040, Rev. 0, Pacific Northwest National Laboratory, Richland, Washington.

This page intentionally left blank.

APPENDIX A

A.0 TANK SAMPLING PRIORITY TABLES

This page intentionally left blank.

Table A-1. Tank Sampling Priority Rankings by Waste Phase[1]

Solid		Liquid		Vapor	
Tank	Priority	Tank	Priority	Tank	Priority
SY-102	100	SY-102	100	SY-102	100
C-107	76	AP-104	77	AP-105	20
AZ-101	40	AP-106	67	AP-106	20
AN-104	38	AN-101	65	AP-108	20
AW-103	27	AW-103	64	AW-101	20
AN-103	20	AN-106	60	AW-104	20
AW-104	19	AP-105	57		
AY-101	19	BY-106	42		
S-103	16	SX-102	42		
AZ-102	14	U-107	42		
AN-105	12	U-108	42		
S-102	10	U-111	42		
S-105	10	AP-108	42		
AY-102	7	SY-101	40		
S-106	7	AN-104	37		
S-108	7	AN-107	37		
AN-101	6	AZ-101	37		
AN-102	6	AP-107	35		
AN-107	6	AW-104	26		
AP-105	6	C-103	25		
AW-101	6	S-112	25		
SY-101	6	AP-101	25		
C-104	3	AP-103	23		
		AW-106	23		
		AN-103	19		
		AY-101	18		
		AN-105	13		
		AZ-102	13		
		AW-102	7		
		AN-102	7		
		AW-101	7		
		AY-102	7		
		SY-103	6		
		AP-102	1		

NOTE:

[1]Only tanks with identified issues are listed in this table.

Table A-2. Tank Sampling Priority Rankings by Tank[1]

Tank	Solids Priority	Liquid Priority	Vapor Priority
AN-101	6	65	0
AN-102	6	7	0
AN-103	20	19	0
AN-104	38	37	0
AN-105	12	13	0
AN-106	0	60	0
AN-107	6	37	0
AP-101	0	25	0
AP-102	0	1	0
AP-103	0	23	0
AP-104	0	77	0
AP-105	6	57	20
AP-106	0	67	20
AP-107	0	35	0
AP-108	0	42	20
AW-101	6	7	20
AW-102	0	7	0
AW-103	27	64	0
AW-104	19	26	20
AW-106	0	23	0
AY-101	19	18	0
AY-102	7	7	0
AZ-101	40	37	0
AZ-102	14	13	0

Tank	Solids Priority	Liquid Priority	Vapor Priority
BY-106	0	42	0
C-103	0	25	0
C-104	3	0	0
C-107	76	0	0
S-102	10	0	0
S-103	16	0	0
S-105	10	0	0
S-106	7	0	0
S-108	7	0	0
S-112	0	25	0
SX-102	0	42	0
SY-101	6	40	0
SY-102	100	100	100
SY-103	0	6	0
U-107	0	42	0
U-108	0	42	0
U-111	0	42	0

Table A-3. Tank Sampling Priority Rankings by Issue[1]

Tank ↓	Solids Priority	Liquid Priority	Vapor Priority	Interim Stab.	Tank Rank	Ops. Samples	Tank Rank	Evap. Ops.	Tank Rank	WFD Phase 1	Tank Rank	ICD-23	Tank Rank	Danger. Wastes	Tank Rank	WPD	Tank Rank	Air Emiss.	Tank Rank	SST Retrieval & Tank Closure	Tank Rank	Safety Screen(2)	Tank Rank	Waste Certif. (ICD 19 & ICD-20)	Tank Rank
Issue Weight →				100		93		84		76		72		64		60		53		32		19		15	
AN-101	6	65	0			L	5			L	3			SL	1									L	1
AN-102	6	7	0											SL	1									L	1
AN-103	20	19	0									SL	3											L	1
AN-104	38	37	0									SL	5	SL	1									L	1
AN-105	12	13	0									SL	1	SL	1									L	1
AN-106	0	60	0			L	5	L	3																
AN-107	6	37	0									L	5	SL	1									L	1
AP-101	0	25	0									L	3	L	1									L	1
AP-102	0	1	0																					L	1
AP-103	0	23	0			L	3																		
AP-104	0	77	0							L	5	L	3			L	5							L	1
AP-105	6	57	20			L	5			L	1			SL	1	L	1	V	1					L	1
AP-106	0	67	20			L	5			L	1			L	1	L	3	V	1					L	1
AP-107	0	35	0					L	5																
AP-108	0	42	20			L	3			L	1			L	1	L	1	V	1					L	1
AW-101	6	7	20											SL	1			V	1					L	1
AW-102	0	7	0					L	1																
AW-103	27	64	0			L	5					SL	3	SL	1									SL	1
AW-104	19	26	20			L	1			SL	1			SL	1	SL	1	V	1					SL	1
AW-106	0	23	0			L	3																		
AY-101	19	18	0									SL	1	SL	1	SL	1							SL	1
AY-102	7	7	0											SL	1									SL	1
AZ-101	40	37	0									SL	5	SL	1									SL	1
AZ-102	14	13	0									SL	1	SL	1									SL	1
BY-106	0	42	0	L	5																				
C-103	0	25	0	L	3																				
C-104	3	0	0																	S	1				
C-107	76	0	0							S	5					S	5			S	5				
S-102	10	0	0							S	1									S	1				
S-103	16	0	0							S	1									S	3				
S-105	10	0	0							S	1									S	1				
S-106	7	0	0							S	1														
S-108	7	0	0							S	1														
S-112	0	25	0	L	3																				
SX-102	0	42	0	L	5																				
SY-101	6	40	0							L	3			SL	1	L	3								
SY-102	100	100	100			L	5			S	5	SL	5	SL	1	SL	5	V	5						
SY-103	0	6	0							L	1														
U-107	0	42	0	L	5																				
U-108	0	42	0	L	5																				
U-111	0	42	0	L	5																				

Key: S = Solid, L = Liquid, V = Vapor

Tank Rank: 5 = High Value, 3 = Medium Value, 1 = Low Value

[1]Only tanks with identifed issues are listed in this table.

[2]See Section 6.10

This page intentionally left blank.

APPENDIX B

B.0 PRIORITIZATION OF TANKS WITHIN ISSUES

This page intentionally left blank.

APPENDIX B

PRIORITIZATION OF TANKS WITHIN ISSUES

This appendix contains high (H), medium (M), or low (L) rankings for each tank within each issue. High means a sample is needed in FY 2001, medium means a sample is needed in FY 2002, and low means a sample is needed in FY 2003 or beyond. The criteria for establishing the ranking of each tank are also given. The phases of waste to which the rankings apply can be found in Tables A-1, A-2, and A-3 along with the normalized priority numbers for each waste phase by tank.

If and when an archived sample is determined to meet analytical needs for a tank listed, the TSB-WIRD commitment for that tank will be considered to have been met without further sampling.

Some of the tanks identified for sampling in FY 2001 may get sampled late in FY 2000. In such cases, credit will be taken against the FY 2001 requirement.

B1.0 INTERIM STABILIZATION ISSUE

Compatibility samples are taken to support SST interim stabilization. Tank rankings in support of interim stabilization are given in Table B-1 below.

Please note that interim stabilization transfers including transfers from single-shell tanks to double-shell receiver tanks are covered in Table B-1. Cross-site transfers that may directly or indirectly support interim stabilization are covered in Table B-2.

Table B-1. Ranking of Tanks for Interim Stabilization

TANK	RANKING	RANKING CRITERIA
BY-106	H	Samples needed in FY 2001.
SX-102*	H	Samples needed in FY 2001.*
U-107*	H	Samples needed in FY 2001.*
U-108	H	Samples needed in FY 2001.
U-111	H	Samples needed in FY 2001.
C-103	M	Samples needed in FY 2002.
S-112	M	Samples needed in FY 2002.

*Tanks are being assessed to determine if sufficient archive is available to preclude need for additional sampling in FY 2001.

B2.0 OPERATIONS SAMPLING (TANK TRANSFERS AND CROSS-SITE TRANSFERS) ISSUE

Operations sampling covers compatibility sampling for tank transfers and cross-site transfers, plus other miscellaneous operations requirements.

Tanks listed below are based on considerations for positioning of saltwell liquor waste from interim stabilization operations, receipt of miscellaneous wastes, and positioning of wastes in preparation for eventual retrieval operations.

Note that interim stabilization transfers, saltwell liquor transfers from single-shell tanks to double-shell receiver tanks, are covered in Table B-1. Cross-site transfers that may directly or indirectly support interim stabilization are covered in Table B-2.

Table B-2 lists known and planned waste transfers that are supported by compatibility sampling. Other miscellaneous operations sampling (see Section 6.2.1) will be conducted on an "operationally contingent" basis as items are identified.

Table B-2. Double-Shell Tank to Double-Shell Tank Transfer Rankings

TANK	RANKING	RANKING CRITERIA
AN-101	H*	Receives saltwell liquor (SWL) waste from A-101 and AX-101
AN-106	H*	Stores SWL waste transferred from AN-101
AP-105	H*	Stores concentrated waste
AP-106	H*	Stores concentrated waste
AW-103	H*	Stores concentrated waste (staged feed tank)
SY-102	H	SWL receiver and misc. waste receiver in West Area
AP-103	M	Stores concentrated waste
AP-108	M	Receives SWL waste and misc. waste in East Area
AW-103	M	Stores concentrated waste (staged feed tank)
AW-106	M	Evaporator receiver tank
SY-102	M	SWL receiver and misc. waste receiver in West Area
AN-101	L	Receives SWL waste from A-101 and AX-101
AN-101	L	Final volume of SWL to be evaporated
AN-106	L	Stores concentrated waste
AP-103	L	Stores concentrated waste
AP-108	L	Receives SWL waste and misc. waste in East Area
AW-103	L	Stores concentrated waste
AW-104	L	Stores concentrated waste
AW-106	L	Evaporator receiver tank
SY-102	L	SWL receiver and misc. waste receiver in West Area

*Based on ongoing analysis of available data, these tanks may require compatibility sampling prior to the end of FY 2001. However, available data may be adequate to preclude sampling.

B3.0 EVAPORATOR OPERATIONS ISSUE

Evaporator operations includes staging of waste in an evaporator candidate feed tank or processing direct from a source tank. Tanks upon which the Evaporator DQO is expected to be applied are listed below.

Table B-3. Ranking of Tanks for Evaporator Operations Issue

TANK	RANKING	RANKING CRITERIA
AP-107 (1)	H	Samples needed in FY 2001 and 2003. (2)
AN-106 (3)	M	Samples needed in FY 2002.
AW-102 (3)	L	Samples needed in FY 2003.

Notes: (1) Candidate feed tank
(2) Two sampling events required in FY 2003.
(3) Wastes are expected to go directly to the evaporator without first staging in a candidate feed tank.

B4.0 WASTE FEED DELIVERY (WFD), PHASE 1 ISSUE

The waste feed delivery program is dynamic and priorities, order of sampling, and/or specific tanks may change as program needs are further defined.

Table B-4. Tank Rankings for Waste Feed Delivery, Phase 1 (2 Sheets)

TANK	RANKING	RANKING CRITERIA
AP-104 (2)	H	Sample needed in FY 2001.
C-107 (4)	H	Sample needed in FY 2001.
SY-102 (3)	H	Sample needed in FY 2001.
AN-101 (2)	M	Sample needed in FY 2002.
SY-101 (5)	M	Sample needed in FY 2002.
AP-105 (6)	L	Sample needed in FY 2003 or beyond.
AP-106 (6)	L	Sample needed in FY 2003 or beyond.
AP-108	L	Sample needed in FY 2003 or beyond.
AW-104 (1)	L	Sample needed in FY 2003 or beyond.
S-102	L	Sample needed in FY 2003 or beyond.
S-103	L	Sample needed in FY 2003 or beyond.
S-105	L	Sample needed in FY 2003 or beyond.
S-106	L	Sample needed in FY 2003 or beyond.
S-108	L	Sample needed in FY 2003 or beyond.
SY-103	L	Sample needed in FY 2003 or beyond.

Notes: (1) 2000 gram composite required.
(2) Sampling required after staging SY-101/SY-102 waste.

(3) Need core samples (800 g) from 2 risers.
(4) Required for blending with AW-103.
(5) After supernate transfer to AP-104 and backfill with water.
(6) Require filling with SWL prior to sampling.

B5.0 INTERFACE CONTROL DOCUMENT 23 (ICD-23) ISSUE

The ICD-23 issue consists of two components as discussed in Section 6.5: samples to support the Waste Immobilization Regulatory DQO (Wiemers et al. 1998) and samples to support process verification and waste form qualification tests. When feasible, a single tank sampling event will provide samples to support both components. However, due to time restrictions of the Waste Immobilization Regulatory DQO, separate samplings of a given tank may be required. In that case, a tank may be listed more than once in Table B-5. In the ranking criteria of Table B-5, some tank samples for process verification and waste form qualification can be either from archived samples or a combination of archived and new samples. If and when archived samples meet the waste treatment plant (WTP) contractor quantity requirements, the TSB-WIRD commitment for that tank will be considered to have been met without further sampling.

The disposal system remains dynamic and is still subject to DOE and Ecology negotiations. Therefore, priorities, order of sampling, and/or specific tanks may change as program needs are further defined.

Table B-5. Ranking of Tanks for ICD-23 Issue (2 Sheets)

TANK	RANKING	RANKING CRITERIA
Tank Samples Required for Step 2 of the Waste Immobilization Regulatory DQO (1) (2)		
AN-103	M	Sample required by the WTP contractor November-December 2002
AZ-101	M	Sample required by the WTP contractor December 2002 – January 2003
AN-104	L	Sample required by the WTP contractor February-March 2003
AN-105	L	Sample required by May-June 2003
AP-101	L	Sample required by the WTP contractor July-August 2003
AP-104	L	Sample after AP-104 is filled with SY-101 material, salt well liquors, and other miscellaneous waste. Assume FY 2003.
AY-101	L	Sample after retrieval of C-104 into AY-101. Assume FY 2003.
AZ-102	L	Sample required by the WTP contractor March-April 2003
SY-102	L	Sample required by the WTP contractor January-February 2004

Table B-5. Ranking of Tanks for ICD-23 Issue (2 Sheets)

TANK	RANKING	RANKING CRITERIA
Tank Samples Required for Process Verification and Waste Form Qualification Tests (2)		
AN-104	H	Sample required by the WTP contractor August-September 2001. May be archive or new core sample.
AN-107	H	Sample required by the WTP contractor May-June 2001. May be archive and combination of new samples.
AZ-101	H	Sample required by the WTP contractor June-July 2001. May be representative archive.
SY-102	H	Sample required by the WTP contractor November-December 2001. May be archive or new core sample.
AP-104 (3)	M	Sample after AP-104 is filled with SY-101 material, salt well liquors, and other miscellaneous waste. May be archive and combination of new samples. Assume FY 2002.
AP-101	M	Sample required by the WTP contractor July-August 2002. May be archive and combination of new samples.
AW-103	M	Sample required by the WTP contractor January-February 2002. May be archive or new core sample.
AY-101	L	Sample after retrieval of C-104 into AY-101.

Notes:
(1) Step 2 of the Waste Immobilization Regulatory DQO cannot begin until August 2002 at the earliest. Tanks shown are those reflected in ICD-23, but remain subject to DOE-ORP/WTP contractor negotiations.
(2) The Waste Immobilization Regulatory DQO and the process verification and waste form qualification tests require delivery of both solid and liquid samples from full depth cores or from supernate samples in which the solids are those solids that are present in the supernate sample.
(3) Sampling of AP-104 containing waste from SY-101 and other wastes.

B6.0 REGULATORY- DANGEROUS WASTE ISSUE

Regulatory information on solid and liquid components of tank waste material is required by the Regulatory DQO (Mulkey 1999a). Negotiations are ongoing between DOE and regulatory agencies on the extent and timing of sampling and analysis in support of the Dangerous Waste DQO. Tanks expected to be applied are listed in Table B-6. Pending outcome of negotiations, no tank is designated for sampling and analysis in FY 2001 or FY 2002.

Table B-6. Ranking for Dangerous Waste

TANKS	RANKING: DANGEROUS WASTE	RANKING CRITERIA
AN-101	L	Waste designation for feed delivery FY 2003 or beyond.
AN-102	L	Waste designation for feed delivery FY 2003 or beyond.
AN-104	L	Waste designation for feed delivery FY 2003 or beyond.
AN-105	L	Waste designation for feed delivery FY 2003 or beyond.
AN-107	L	Waste designation for feed delivery FY 2003 or beyond.
AP-101	L	Waste designation for feed delivery FY 2003 or beyond.
AP-105	L	Waste designation for feed delivery FY 2003 or beyond.
AP-106	L	Sample needed FY 2003 or beyond.
AP-108	L	Waste designation for feed delivery FY 2003 or beyond.
AW-101	L	Sample needed FY 2003 or beyond.
AW-103	L	Waste designation for feed delivery FY 2003 or beyond.
AW-104	L	Waste designation for feed delivery FY 2003 or beyond.
AY-101	L	Waste designation for feed delivery FY 2003 or beyond.
AY-102	L	Waste designation for feed delivery FY 2003 or beyond.
AZ-101	L	Waste designation for feed delivery FY 2003 or beyond.
AZ-102	L	Waste designation for feed delivery FY 2003 or beyond.
SY-101	L	Waste designation for feed delivery FY 2003 or beyond.
SY-102	L	Waste designation for feed delivery FY 2003 or beyond.

B7.0 HIGH-LEVEL WASTE/LOW-ACTIVITY WASTE (HLW/LAW) FEED PROCESSING DATA QUALITY OBJECTIVE (WPD) ISSUE

Current sampling and analysis priorities are assigned based on start of vitrification in FY 2006 and planning for LAW and HLW sequence of feed delivery to the WTP contractor. As plans are solidified, there may be changes in the sampling priorities.

Numerous tanks have already been sampled and have been or are in the process of being analyzed for the WPD issue. For most, sufficient archive is available if further analyses are deemed to be needed. Tanks listed in Table B-7 are those currently remaining to be sampled. If some previously sampled tanks should need resampling, they will be incorporated as appropriate.

Tank priorities are based upon when the waste in the respective tanks becomes static.

Table B-7. Ranking of Tanks for WPD

TANK	WPD	RANKING CRITERIA
AP-104 (1)	H	(SY-101 waste) LAW feed
C-107	H	HLW feed source tank
SY-102 (2)	H	HLW feed source tank
SY-101	M	LAW feed
AP-106 (3)	M	LAW feed source, saltwell liquor
AP-105 (3)	L	LAW feed source, saltwell liquor
AP-108	L	LAW feed source tank
AW-104 (2)	L	LAW feed source, saltwell liquor HLW feed source tank
AY-101 (4)	L	HLW feed source tank

Foot notes:

LAW = low activity waste
HLW = high level waste

1) SY-101 waste transferred to AP-104.
2) Core and supernatant after saltwell liquor added.
3) Sample needed after saltwell liquor added
4) Collect sample after C-104 waste is transferred to AY-101.

B8.0 REGULATORY- AIR EMISSIONS ISSUE

Current planning for FY 2000 calls for Type IV vapor cart sampling to be conducted on tank farm exhaust stacks, Tank Farms AN, AP, AW, and AY/AZ, in support of construction projects W-521 and W-211. Stack samples will be analyzed for the Regulatory Air Emissions DQO. Analyses of the exhaust stack samples could result in a need to go back and sample individual tanks within a farm. If that occurs, tanks affected would become high priority for vapor sampling, and would be incorporated into FY 2001 schedules. Other tanks currently having priority for air emissions are listed in Table B-8 below.

Table B-8. Ranking for Air Emissions Issue

TANKS	RANKING: AIR EMISSIONS	RANKING CRITERIA
SY-102	H	Construction (W-211) Prepare NOCs
AP-105	L	Construction (W-522) Prepare NOCs
AP-106	L	Construction (W-522) Prepare NOCs
AP-108	L	Construction (W-522) Prepare NOCs
AW-101	L	Construction (W-521) Prepare NOCs
AW-104	L	Construction (W-521) Prepare NOCs

Notes:
NOC = Notice of Construction

B9.0 SINGLE-SHELL TANK RETRIEVAL ISSUE

The purpose of the SST retrieval activity is to become prepared to retrieve SSTs early, DST space permitting. This issue includes the HTI functional scope. Tanks currently identified as supporting the SST retrieval issue are listed in Table B-9.

Table B-9. Ranking of Tanks for SST Retrieval Activities

TANK	RANKING	EARLY RETRIEVAL POTENTIAL	RANKING CRITERIA
C-107	H	Primary candidate for early retrieval.	Phase 1 retrieval expected
S-103	M	Desire to move demonstration ahead one year due to stabilization issue.	Technology demonstration is scheduled for January 2004. Sampling needed in 2002-2003 time frame.
C-104	L	Phase 1 Retrieval	Sluice in 2006.
S-102	L	Moderate potential for early retrieval	Scheduled retrieval in 2013
S-105	L	Moderate potential for early retrieval	Scheduled retrieval in October 2013
Other S Farm	L*	Some potential for early retrieval	Scheduled retrieval 2014 - 2017

*Not reflected in Table 7-1. As tanks are identified, they will be added via quarterly reports.

B10.0 SAFETY SCREENING ISSUE

Table B-10 shows tanks not yet sampled or not sufficiently sampled for safety screening (Hanlon 2000). These tanks are sampled opportunistically. The Safety Screening DQO is addressed only if the tank is being sampled for some other issue. They, therefore, have no priority ranking.

Table B-10. Tanks for Opportunistic Sampling for Safety Screening DOQ (2 Sheets)

Item No.	Tank ID No	Item No.	Tank ID No.
1	A-103	23	TX-101
2	A-104	24	TX-102
3	A-105	25	TX-103
4	A-106	26	TX-105
5	B-105	27	TX-106
6	BX-102	28	TX-108
7	BY-105	29	TX-109
8	BY-106	30	TX-110
9	C-102 (1)	31	TX-111
10	S-103	32	TX-112
11	S-105	33	TX-114
12	S-108	34	TX-115
13	S-112	35	TX-116
14	SX-104	36	TX-117

Table B-10. Tanks for Opportunistic Sampling for Safety Screening DOQ (2 Sheets)

Item No.	Tank ID No	Item No.	Tank ID No.
15	SX-107	37	TY-101
16	SX-109	38	TY-102
17	SX-110	39	TY-103
18	SX-111	40	TY-105
19	SX-112	41	U-101 (1)
20	SX-114	42	U-104
21	T-101	43	U-111
22	T-103 (1)		

Note: (1) Tank has been sampled, but not sufficiently for safety screening.

B11.0 WASTE CERTIFICATION ISSUE

Waste certification sampling and analysis of the first staging tank is not scheduled to begin until FY 2005 and the DQOs for the certification are not yet completed. For these reasons, all of the tanks have a low ranking.

Table B-11 shows planned Phase 1 minimum and extended order staging tanks that will require sampling before waste is transferred to the WTP contractor. Some staging tanks will be used for later batches of waste. In these cases the tank is not listed more than once, but the planned sampling dates for the later batches of waste staged in that tank are listed.

Table B-11. Ranking of Waste Certification Staging Tanks (2 Sheets)

TANK	RANKING	TYPE OF WASTE	CERTIFICATION DATE FISCAL YEAR
AN-101	L	LAW	2009 2011 2015
AN-102	L	LAW	2008 2010 2012 2015
AN-103	L	LAW	2013
AN-104	L	LAW	2008
AN-105	L	LAW	2011 2013 2016
AN-107	L	LAW	2010
AP-101	L	LAW	2005

Table B-11. Ranking of Waste Certification Staging Tanks (2 Sheets)

TANK	RANKING	TYPE OF WASTE	CERTIFICATION DATE FISCAL YEAR
			2015
AP-102 (2)	L	LAW	2008
AP-104	L	LAW	2005 2011 (1) 2014 2016
AP-105	L	LAW	2017
AP-106	L	LAW	2015
AP-108	L	LAW	2017
AW-101	L	LAW	2013
AW-103	L	HLW	2007
AW-104	L	HLW	2007 2016
AY-101	L	HLW	2010
AY-102	L	HLW	2009 2014
AZ-101	L	HLW	2005 2011
AZ-102	L	HLW	2006

Note: (1) Certified in 2005 as backup feed. Will not be recertified in 2011 if certification timing exemption is allowed.
(2) To be certified in 2008 as staged backup feed.

B12.0 MISCELLANEOUS FACILITIES ISSUE

Miscellaneous facilities are not prioritized within the same list as DSTs or SSTs. They are not listed in the Appendix A tables. Table B-12 provides separate priority rankings for sampling for miscellaneous facilities.

Table B-12. Ranking of Miscellaneous Facilities for Sampling (2 Sheets)

FACILITY	RANKING	RANKING CRITERIA
242-T Evaporator	1	Need quantitative tank content data. Surrounding facilities in poor condition. Moderate safety concern. Prudent to sample for structural integrity remediation support. High radiation with difficult access. Needs vapor and condensed phase samples.
244-CR Vault	2	Need quantitative tank content data. Low safety concern. No critical dates. Needs vapor and condensed phase samples.

Table B-12. Ranking of Miscellaneous Facilities for Sampling (2 Sheets)

FACILITY	RANKING	RANKING CRITERIA
244-S Evaporator	3	Same as above with emphasis on tank C-100.
ITS-1 In-Tank Solidification System	4	Same as above, but need for condensed phase samples depends on vapor sample results.
241-AX-IX Ion Exchange Column	5	Same as above.
244-AR Vault	6	Sump level increase with potential for tank damage. Reevaluation needed. Low safety concern. Tank 002 needs condensed and vapor phase samples. Date needed will be established after evaluation of sump conditions.

B13.0 INACTIVE MISCELLANEOUS UNDERGROUND STORAGE TANK (IMUST) ISSUE

IMUSTs are not prioritized within the same list as DSTs or SSTs. They are not listed in Appendix A tables. Table B-13 provides separate priority rankings for sampling of IMUSTs. AB refers to the Authorization Basis suite of documents (see Sections 3.4 and 6.13).

Table B-13. Ranking of IMUSTs for Sampling

TANK NUMBER	RANK	ACCESSIBILITY	PARTICULAR INTEREST
241-Z-8	1	Easy (risers)	AB and Criticality
244-UR-002	2	Difficult	AB, Criticality and Organic
242-TA-R1	3	Limited (cover)	AB and Criticality
241-ER-311A	4	Limited (risers below grade)	AB and Criticality
241-AX-151CT	5	Difficult	AB and Criticality
241-C-301	6	Easy (risers)	AB, Criticality and Flammable Gas
241-S-302A	7	Easy (risers)	AB, Criticality and Flammable Gas
241-T-301B	8	Easy (risers)	AB, Criticality and Flammable Gas
241-B-301	9	Easy (risers)	AB, Criticality and Flammable Gas
244-BXR-002	10	Difficult	AB, Criticality and Organic

B14.0 REFERENCES

Ecology and DOE, 1999, *Consent Decree, # CT-99-5076-EPS, between State of Washington Department of Ecology (plaintiff) and the U.S. Department of Energy (defendant),* Washington State Department of Ecology, and U.S. Department of Energy, Olympia, Washington.

Hanlon, B. M., 2000, *Waste Tank Summary Report for Month Ending December 31, 1999,* HNF-EP-0182-141, Lockheed Martin Hanford Corp., Richland, Washington.

Mulkey, C. H., 1999a, *Data Quality Objectives for Regulatory Requirements for Dangerous Waste Sampling and Analysis,* WHC-SD-WM-DQO-025, Rev. 1, Lockheed Martin Hanford Corp., Richland, Washington.

Mulkey, C. H., 1999b, *Data Quality Objective for Regulatory Requirements for Hazardous and Radioactive Air Emissions Sampling and Analysis,* WHC-SD-WM-DQO-021, Rev. 1, Lockheed Martin Hanford Corp., Richland, Washington.

Patello, G. K., M. J. Truex, and K. D. Wiemers, 1999, *Low-Activity Waste and High-Level Waste Feed Processing Data Quality Objectives,* PNNL-12163, Rev. 0, Pacific Northwest National Laboratory, Richland, Washington.

Wiemers, K. D., M. E. Lerchen, M. Miller, and K. Meier, 1998, *Regulatory Data Quality Objectives Supporting Tank Waste Remediation System Privatization Project,* PNNL-12040, Rev. 0, Pacific Northwest National Laboratory, Richland, Washington.

This page intentionally left blank.

APPENDIX C

C.0 DATA QUALITY OBJECTIVE DOCUMENTS

This page intentionally left blank.

APPENDIX C

DATA QUALITY OBJECTIVE DOCUMENTS

The DQOs define the work scope required to address a specific issue and contain guidance on the type and extent of characterization necessary to resolve the issue. Each River Protection Project (RPP) program issue has an associated DQO that defines the questions, decisions to be made, required information, and the quality of data required to resolve the questions. Table C-1 lists the RPP DQOs and their status. An active DQO is one wherein the data are still being collected to satisfy it or it is a DQO in preparation that has not yet been released. (For example, the two waste qualification DQOs listed on the last page of Table C-1 are being prepared.) An inactive DQO is one against which data are no longer being collected.

Although a DQO may be closed or closing for SST/DST issues, it may remain active for inactive miscellaneous underground storage tanks (IMUST) or other activities. A DQO currently inactive could again become active if new issues or questions arise.

Table C-1. RPP DQO Documents (8 Sheets)

Inactive Documents are Shaded and Marked Inactive
Listed in alpha/numerical order by subject.

SUBJECT DOCUMENT NUMBER	DOCUMENT TITLE	DOCUMENT SCOPE	ISSUE DATE/TRANSMITTAL NUMBER
242-A Evaporator HNF-SD-WM-DQO-014	*242-A Evaporator Data Quality Objectives*	Covers information needs for Evaporator operations.	ECN-653669 issued 1/14/00 Rev. 2 issued 4/3/98 Rev. 1A issued 5/16/95 Rev. 1 issued 4/25/95 Rev. 0 issued 9/29/94
Air Emission Regulatory DQO WHC-SD-WM-DQO-021	*Data Quality Objectives for Regulatory Requirements for Hazardous and Radioactive Air Emissions Sampling and Analysis*	Covers information needs for tank farms air regulatory compliance and permitting.	Rev. 1 issued 7/6/99 Rev. 0 issued 11/30/95

Table C-1. RPP DQO Documents (8 Sheets)

Inactive Documents are Shaded and Marked Inactive
Listed in alpha/numerical order by subject.

SUBJECT DOCUMENT NUMBER	DOCUMENT TITLE	DOCUMENT SCOPE	ISSUE DATE/TRANSMITTAL NUMBER
AZ-101 Mixer Pump DQO RPP- 5498	*Tank 241-AZ-101 Mixer Pump Test Data Quality Objective*	Covers information needed during the mixer pump test in tank 241-AZ-101. This document only covers a particular test.	Rev. 1 issued 2/2/00 Rev. 0 issued 1/10/00
C-103 Dip Sample PNL-8871 UC-510	*Organic Layer Sampling for SST 241-C-103 Background, and Data Quality Objectives, and Analytical Plan*	Covers information needs to resolve the specific issue of the organic layer in tank 241-C-103. **INACTIVE**	Issued 8/93
C-103 Vapor WHC-EP-0774	*Tank 241-C-103 Vapor and Gas Sampling Data Quality Objectives*	Covers information needs to resolve the vapor problem in tank 241-C-103. **INACTIVE**	Rev. 0 issued 2/28/94 CCRN 9451694
C-106 High Heat WHC-SD-WM-DQO-015 Originally WHC-EP-0723	*Tank 241-C-106 Sampling Data Requirements Developed Through the DQO Process*	Covers information needs to help resolve high heat issue in C-106. **INACTIVE**	Rev. 0 issued 1/20/94 as WHC-EP-0723 CCRN 9450464
Crust Burn Flammable Gas WHC-SD-WM-DQO-003	*Data Requirements Required Through the Data Quality Objectives Process for the Crust Burn Issue Associated with Flammable Gas Tanks*	Covers information needs to ensure coring could be performed safely (without igniting the crust) in tanks 241-SY-103 and 241-AW-101. **INACTIVE**	Rev. 1 issued 4/27/94 CCRN 9453471

Table C-1. RPP DQO Documents (8 Sheets)

Inactive Documents are Shaded and Marked Inactive
Listed in alpha/numerical order by subject.

SUBJECT DOCUMENT NUMBER	DOCUMENT TITLE	DOCUMENT SCOPE	ISSUE DATE/TRANSMITTAL NUMBER
Dangerous Waste Regulatory WHC-SD-WM-DQO-025	*Data Quality Objectives for Regulatory Requirements for Dangerous Waste Sampling and Analysis*	Covers information needs for TWRS dangerous waste regulatory compliance and permitting.	Rev. 1 issued 7/2/99 Rev. 0 issued 7/2/96
Ferrocyanide WHC-SD-WM-DQO-007 Originally WHC-EP-0728	*Data Requirements for the Ferrocyanide Safety Issue Developed through the Data Quality Objectives Process*	Covers information needs for the resolution of the Ferrocyanide safety issue. **INACTIVE**	Rev. 2 issued 7/13/95 Rev. 1 issued 4/28/95 Rev. O issued 8/24/94 CCRN 9455679 Originally issued 12/31/93 CCRN 9361056
Flammable Gas WHC-SD-WM-DQO-004	*Flammable Gas Tank Safety Program: Data Requirements for Core Sample Analysis Developed through the Data Quality Objectives (DQO) Process*	Covers information needs to support resolution of the flammable gas issue.	Rev. 3A issued 4/2/98 Rev. 3 issued 12/18/97 Rev. 2 issued 7/20/95 Rev. 1 issued 5/1/95 Rev. 0 issued 5/13/94 CCRN 9453471
Hanford Tank Initiative (Characterization of the C-106 hard heel)	Title not yet determined.	Covers information needs to support HTI in hard heel removal and tank closure. Tank 241-C-106 only. **INACTIVE**	The HTI project is no longer active. Not currently scheduled for issuance.
Hazardous Vapor Safety Screening WHC-SD-WM-DQO-002	*Data Quality Objectives for Hazardous Vapor Safety Screening*	Covers information needs to support the Vapor Programs safety screening. **INACTIVE**	Rev. 2 issued 11/15/99
Historical Data Acquisition Model Verification WHC-SD-WM-DQO-018	*Historical Model Evaluation Data Requirements*	Covers information needs supporting the historical model for tank grouping. **INACTIVE**	Rev. 2 issued 2/18/97 Rev. 1 issued 6/20/96 Rev. 0 issued 5/8/95

Table C-1. RPP DQO Documents (8 Sheets)

Inactive Documents are Shaded and Marked Inactive
Listed in alpha/numerical order by subject.

SUBJECT DOCUMENT NUMBER	DOCUMENT TITLE	DOCUMENT SCOPE	ISSUE DATE/TRANSMITTAL NUMBER
HLW Feed DQO (Waste Immobilization) WIT-98-024	*High-Level Waste Feed Data Quality Objectives*	Covers information needs required by the WTP contractor and DOE WP&D for Phase 1 HLW waste feed. **INACTIVE**	Replaced by PNNL-12163 Rev. 0 issued 5/98
HTI AX-104 Vadose Zone HNF-2326	*Hanford Tank Initiative Tank 241-AX-104 Upper Vadose Zone Demonstration Data Quality Objectives*	Covers demonstration of the cone penetrometer technology and upper vadose zone sample collection within the AX tank farm. Data used to support risk assessment and tank closure. **INACTIVE**	The HTI project is no longer active. Rev. 0 issued 3/24/98
HTI Tank AX-104 waste Characterization HNF-SD-WM-DQO-027	*Tank 241-AX-104 Waste Characterization Data Quality Objective*	Covers information needs to support Hanford Tank Initiative (HTI) in tank closure and risk assessment. Tank 241-AX-104 only. **INACTIVE**	The HTI project is no longer active. ECN (Rev. 0-B) issued 1/13/98 ECN (Rev. 0-A) issued 10/10/97 Rev. 0 issued 9/3/97
In-Tank Generic Vapor WHC-SD-WM-DQO-002	*Data Quality Objective for Tank Hazardous Vapor Safety Screening* (Formerly - *Data Quality Objectives for Generic In-Tank Health and Safety Vapor Issue Resolution*	Covers information needs required by the Vapor Program. Presently retained to cover industrial health and safety.	Rev. 2 issued 11/15/95 Rev. 1 issued 4/28/95 Rev. 0 issued 3/7/94 CCRN 9451694
LAW and HLW Feed Processing DQO PNNL-12163	Low-Activity Waste and High-Level Waste Feed Processing DQOs.	Waste feed processing information needs required by DOE WP&D. Supercedes PNNL-12064 and WIT-98-024.	Rev. 0 issued 4/99

Table C-1. RPP DQO Documents (8 Sheets)

Inactive Documents are Shaded and Marked Inactive
Listed in alpha/numerical order by subject.

SUBJECT DOCUMENT NUMBER	DOCUMENT TITLE	DOCUMENT SCOPE	ISSUE DATE/TRANSMITTAL NUMBER
LAW Feed DQO (Waste Immobilization) Revision number PNNL-12064 Original number is WHC-SD-WM-DQO-023	Revision title is: *Low-Activity Waste Feed Data Quality Objective* Old title is: *Data Requirements For TWRS Privatization Waste Characterization*	Covers Phase 1 LAW waste feed information needs required by the WTP contractor and DOE WP&D. **INACTIVE**	Replaced by PNNL-12163. Rev. 0 issued 12/98 (PNNL-12064) Rev. 0 issued 11/97 (WIT-98-010) Rev. 0 issued 11/13/96 (WHC-SD-WM-DQO-023)
Organic Complexant WHC-SD-WM-DQO-006	*Data Quality Objective to Support Resolution of the Organic Fuel Rich Tank Safety Issue*	Covers information needs to resolve the organic complexant issue. **INACTIVE**	Rev. 2 issued 9/8/95 Rev. 1 issued 4/28/95 Rev. 0 issued 4/29/94 CCRN 9453093
Organic Solvent HNF-SD-WM-DQO-026	*Data Quality Objective to Support Resolution of the Solvent Safety Issue*	Covers information needs to resolve the safety issue of organic solvent pools in the tanks.	Rev. 0 issued 8/13/97
Pretreatment WHC-SD-WM-DQO-022 Originally DQO-011 Sampling Strategy WHC-SD-WM-TA-154	*Data Needs and Attendant Data Quality Objectives for Tank Waste Pretreatment and Disposal*	Covers information needs to support enhanced sludge washing, solids/liquid separation, cesium removal, strontium removal, TRU removal, and technetium removal. Current information presently collected by the WTP contractor. **INACTIVE**	Rev. 0 issued 6/29/95 OLD DQO WAS DQO-011 Rev. 1 issued 9/15/94 CCRN 9456763 Rev. 0 issued 8/3/94 CCRN 9455386
Waste Immobilization Regulatory PNNL-12040	*Regulatory Data Quality Objectives Supporting Tank Waste Remediation System Privatization Project.*	Covers information needs under RCRA and corresponding state requirements, and to facilitate permitting and compliance activities for treatment and disposal of waste.	Rev. 0 issued 12/98

Table C-1. RPP DQO Documents (8 Sheets)

Inactive Documents are Shaded and Marked Inactive
Listed in alpha/numerical order by subject.

SUBJECT DOCUMENT NUMBER	DOCUMENT TITLE	DOCUMENT SCOPE	ISSUE DATE/TRANSMITTAL NUMBER
Retrieval (equipment) WHC-SD-WM-DQO-008	*Characterization Data Needs for Development, Design and Selection of Retrieval Equipment and Process for SSTs and DSTs, Developed through the DQO Process*	Covers information needs for retrieval equipment requirements. Expected to be applied to three tanks only (C-102, C-104, and AZ-101).	Rev. 1 issued 7/31/96 Rev. 0 issued 6/29/95
Safety Screening WHC-SD-WM-SP-004	*Tank Safety Screening Data Quality Objectives*	Covers information needs to determine safe storage of tank waste. (Includes criticality analysis requirements.)	Rev. 2 issued 8/31/95 Rev. 1 issued 4/27/95 Rev. 0 issued 2/23/94 CCRN 9451671
Tank 241-Z-361 Characterization DQO for Sludge HNF-4225	*241-Z-361 Sludge Characterization DQO*	Covers information needs for disposal of the waste in tank 241-Z-361. Final data package expected March 2000. **INACTIVE**	Rev. 0 issued 4/99
Tank 241-Z-361 Characterization DQO for Vapor HNF-2176	*Tank 241-Z-361 Waste Characterization Data Quality Objective: Headspace Vapor and Tank Structure*	Covers information needs to open, vapor sample, and photograph tank 241-Z-361. **INACTIVE**	Rev. 0 issued 6/10/98
Vapor Rotary Mode WHC-SD-WM-SP-003	*Rotary Core Vapor Sampling Data Quality Objective*	Covers information needs to support the NOC for rotary coring. **INACTIVE**	Rev. 0 issued 2/25/94 CCRN 9451694
Waste Compatibility WHC-SD-WM-DQO-001	*Data Quality Objective for Tank Farms Waste Compatibility Program*	Covers information needed for waste transfers within the tank farms and for waste coming into the tank farms.	Rev. 3 issued 6/99. Rev. 2 issued 6/23/97 Rev. 1 issued 4/24/95 Rev. 0 issued 3/4/94 CCRN 9451694

Table C-1. RPP DQO Documents (8 Sheets)

Inactive Documents are Shaded and Marked Inactive
Listed in alpha/numerical order by subject.

SUBJECT DOCUMENT NUMBER	DOCUMENT TITLE	DOCUMENT SCOPE	ISSUE DATE/TRANSMITTAL NUMBER
Waste Feed Delivery - Confirm Tank T is Appropriate for Batch X (LAW) HNF-1796	*Data Quality Objectives for RPP Privatization Phase 1: Confirm Tank T Is an Appropriate Feed Source for Low-Activity Waste Feed Batch X*	Covers information needs for waste feed delivery for LAW to the staging tanks for Phase 1.	Rev. 2 issued 3/3/99 Rev. 1 issued 7/2/98 Rev. 0 issued 3/11/98
Waste Feed Delivery - Confirm Tank T is Appropriate for Batch X (HLW) HNF-1558	*Data Quality Objectives for RPP Privatization Phase 1: Confirm Tank T Is an Appropriate Feed Source for High Level Waste Feed Batch X*	Covers information needs for waste feed delivery for HLW to the staging tanks for Phase 1.	Rev. 2 issued 8/26/99 Rev. 1 issued 3/3/99 Rev. 0 issued 8/20/98
Waste Feed Delivery - Waste Certification (HLW)	*High-Level Waste Feed Certification Data Quality Objective*	Covers information needs to transfer HLW from the staging tank to the WTP contractor.	Scheduled for completion by September 30, 2000.
Waste Feed Delivery - Waste Certification (LAW) RPP-6070	*Low-Activity Waste Feed Certification Data Quality Objective*	Covers information needs to transfer LAW from the staging tank to the WTP contractor.	In preparation for completion by September 30, 2000
Waste Feed Delivery - Waste Transfer Control HNF-1802	*Data Quality Objectives for TWRS Privatization Phase 1: Tank Waste Transfer Control*	Covers information needs to transfer waste into or out of a Phase 1 feed tank prior to retrieval.	Rev. 1 issued 4/28/99 Rev. 0 issued 8/4/98

Table C-1. RPP DQO Documents (8 Sheets)

Inactive Documents are Shaded and Marked Inactive
Listed in alpha/numerical order by subject.

SUBJECT DOCUMENT NUMBER	DOCUMENT TITLE	DOCUMENT SCOPE	ISSUE DATE/TRANSMITTAL NUMBER
Wastewater Regulatory WHC-SD-WM-DQO-024	*Data Quality Objectives for Regulatory Requirements for Wastewater Effluents Sampling and Analysis*	Covers regulatory information needs for TWRS wastewater effluents. Does not apply to tank waste.	Rev. 0 issued 3/28/96

Notes: CCRN = correspondence control reference number
ECN = engineering change notice
NOC = Notice of Construction
RCRA = Resource Conservation and Recovery Act
TWRS = Tank Waste Remediation System
WP&D = Waste Processing and Disposal

DISTRIBUTION SHEET

To	From	Page 2 of 2
Distribution	Requirements Planning and Support	Date 07/17/00
Project Title/Work Order		**EDT No.** N/A
RPP-5832, Rev. 0, "Fiscal Year 2001 Tank Characterization Technical Sampling Basis and Waste Information Requirements Document"		**ECN No.** ECN-660343

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
Waste Management					
E. Q. Le	S6-72	X			
C. M. Seidel	G1-32	X			

DISTRIBUTION SHEET

To	From	Page 1 of 2
Distribution	Requirements Planning and Support	Date 07/17/00

Project Title/Work Order	EDT No. N/A
RPP-5832, Rev. 0, "Fiscal Year 2001 Tank Characterization Technical Sampling Basis and Waste Information Requirements Document"	ECN No. ECN-660343

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
CH2M Hill Hanford Group, Inc.					
M. R. Adams	R2-12	X			
J. H. Baldwin	R3-73	X			
D. L. Banning	R2-12	X			
R. J. Cash	R1-44	X			
J. N. Doeler	T4-07	X			
J. G. Field	R2-12	X			
R. W. Harmsen	R3-75	X			
M. T. Hughey	S7-34	X			
N. L. Hulse	R2-12	X			
J. W. Hunt	R2-12	X			
L. S. Krogsrud	T4-07	X			
J. J. Luke	R1-51	X			
C. H. Mulkey	R1-51	X			
T. R. Pauley	S7-01	X			
P. A. Powell	R1-51	X			
A. M. Templeton	R2-12	X			
J. L. Towne	T4-08	X			
D. T. Vladimiroff	S7-20	X			
T.C.S.R.C.	R1-10	X			
Defense Nuclear Facility Safety Board					
M. T. Sautman	A5-17	X			
Fluor Hanford					
E. J. Lipke	A0-26	X			
Lockheed Martin Services, Inc.					
Central Files	A3-88	X			
MAC Technical Services Company					
V. F. Fitzpatrick	R2-89	X			
T. E. Jones	H0-22	X			
R. D. Potter	R3-73	X			
Office of River Protection					
V. L. Callahan	H6-60	X			
W. S. Liou	H6-60	X			
DOE Reading Room	H2-53	X			