DOE/ORP-2000-06
Revision 1

River Protection Project – Project Management Plan

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

P.O. Box 450
Richland, Washington 99352

Approved for public release; further dissemination unlimited

DOE/ORP-2000-06
Revision 1

River Protection Project – Project Management Plan

Date Published
March 2001

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

P.O. Box 450
Richland, Washington 99352

Chris Willingham 3/8/01
Release Approval Date

Approved for public release: further dissemination unlimited

LEGAL DISCLAIMER

This report was prepared as an account of work sponsored by an [illegible] f the United S[illegible] G[illegible] Neither th United States Government nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the results of such use of any information, apparatus, product, or process disclo[illegible]d, or represents that its use would not infringe privately [illegible] r gh t. Reference herein to any specific commercial product, p[illegible], or [illegible] b t [illegible], t [illegible] d [illegible], manufacturer, or [illegible], [illegible] t necessarily constitute or imply its endorsement, recommendation, or favoring by th United States Government or any agency thereof or its cont[illegible] or [illegible] actors. The views and opinions of authors expressed herein do not necessarily state or reflect th[illegible] of the United States Government or a[illegible] agency th[illegible]

This report has been reproduced from the best available copy.

Printed in the United States of America

DOE/ORP-2000-06 REV 1

RIVER PROTECTION PROJECT – PROJECT MANAGEMENT PLAN

For Harry L. Boston, Manager
Office of River Protection

7 March 2001
Date

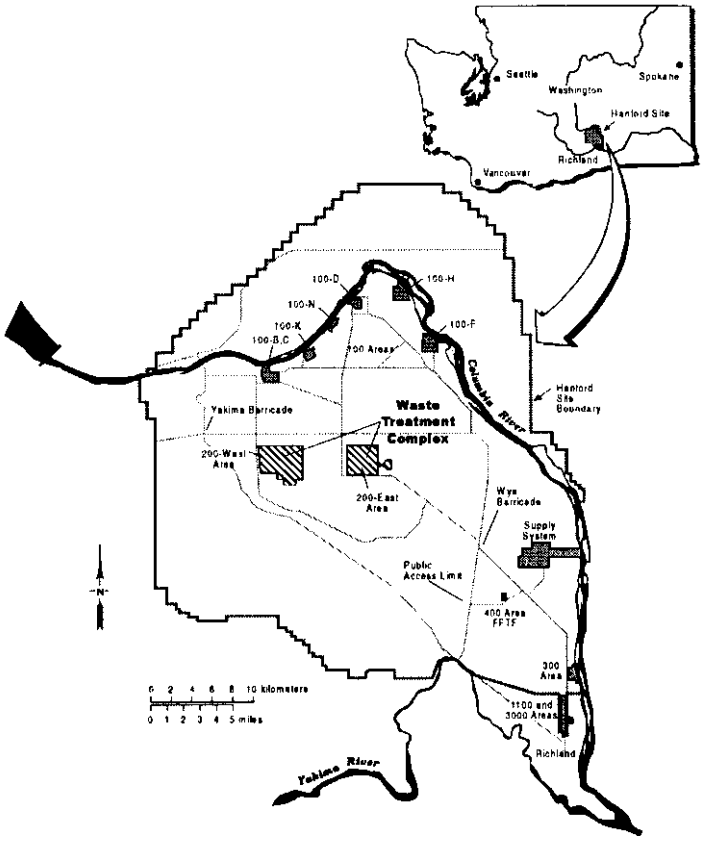
This page intentionally left blank.

EXECUTIVE SUMMARY

As directed by Congress in Section 3139 of the ***Strom Thurmond National Defense Authorization Actfor Fiscal Year 1999,'*** the **U.S.** Department of Energy established the Office of River Protection (ORP) at the Hanford Site in eastern Washington State to manage the River Protection Project (RPP) (formerly the Tank Waste Remediation System), which is the Department's largest and most complex environmental cleanup project.

The ORP is responsible for 53 million gallons of highly toxic, high-level radioactive waste stored in 177 underground tanks located within seven miles of the Columbia River. One hundred forty-nine of these tanks have a single steel liner inside the concrete tanks and are decades beyond their design life. Sixty-seven have leaked an estimated one million gallons of waste into the soil. Some of this waste has reached the groundwater, threatening the Columbia River. It is urgent that this waste be removed, treated (turned to glass or vitrified) and stored or disposed of in a more secure location before more leaks occur and before tanks and infrastructure deteriorate to the point where the cost and schedule for cleanup become prohibitive. Figure ES-1 shows the location of the waste storage tanks with respect to the Columbia River. This nuclear

Figure ES-1. Location of the Waste Treatment Complex at the Hanford Site.



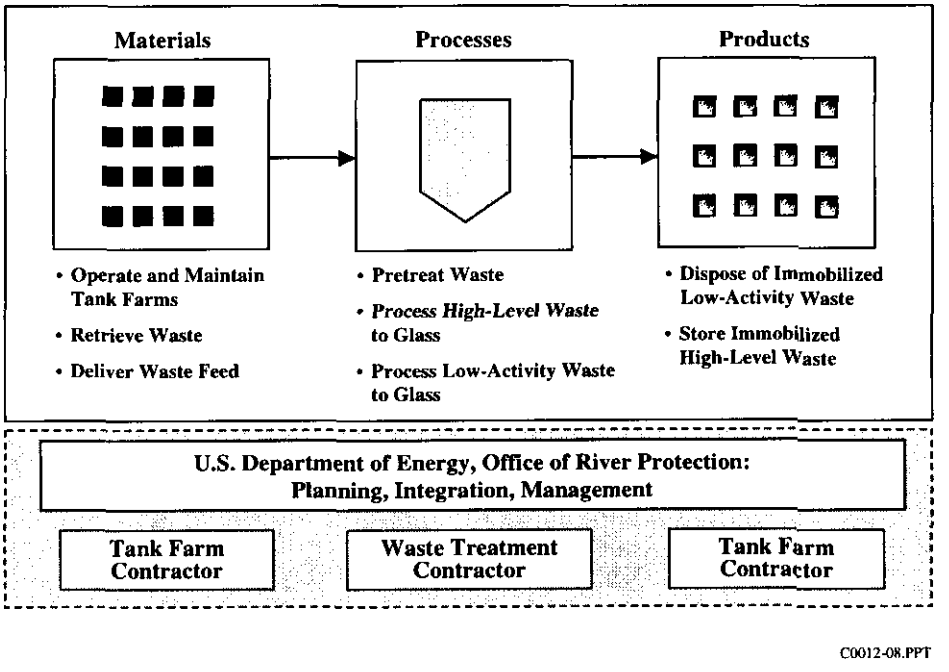
[1] ***Strom Thurmond National Defense Authorization Act*** for ***Fiscal Year 1999***, as amended, Public Law 105-261

waste is the result of more than **40** years of reactor operations and plutonium production for national defense. The cleanup of this legacy waste is now a national priority and part of closing the circle on the nuclear weapons production cycle. The project schedule and technical approach are driven by regulatory requirements and commitments.

The mission of the RPP is to build and operate **a** Waste Treatment Complex to complete the cleanup of the Site's highly radioactive tank waste. This cleanup must occur in **an** environmentally sound, safe, and cost-effective manner. The cleanup also must comply with the comprehensive cleanup and compliance agreement among the **U.S.** Department of Energy, the U.S. Environmental Protection Agency, and the Washington State Department of Ecology, signed on May 15, 1989. The ***Hanford Federal Facility Agreement and Consent Order,***[1] or Tri-Party Agreement, is an agreement for achieving compliance with the ***Comprehensive Environmental Response Compensation and Liability Act of 1980***[2] remedial action provisions and with the ***Resource Conservation and Recovery Act*** of ***1976***[3] treatment, storage, and disposal unit regulations and corrective action provisions.

The RPP is managed as a single, integrated Waste Treatment Complex. Figure ES-2 depicts this approach. The ORP contractors provide the materials, processes, and products necessary to

Figure ES-2. Depiction of Waste Treatment Complex Contracting Approach.



[1] ***hanford Federal Facility Agreement and Consent Order,*** 1996, 2 **vols.,** Washington State Department of Ecology, Olympia, Washington; U.S. Environmental Protection Agency, Washington, D.C.; and U.S. Department of Energy, Washington, D.C.

[2] ***Comprehensive Environmental Response. Compensation, and Liability Act of 1980.*** as amended, 42 USC 9601, el seq.

[3] ***Resource Conservation and Recovery Act*** of ***1976,*** Public Law 94-580, 90 Stat. 2795, 42 USC 6901, et seq.

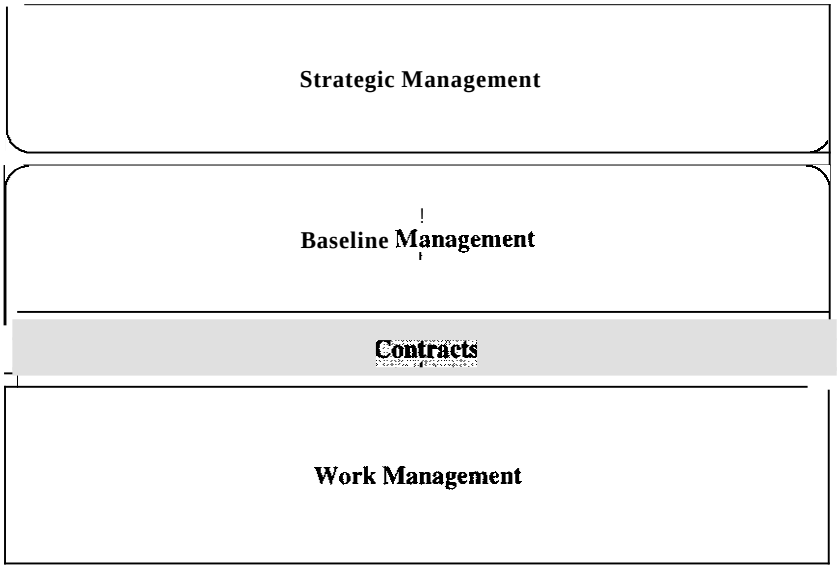
clean **up** Hanford Site tank waste. The ORP provides planning, management, and integration. This integration is essential to effectively and efficiently managing a project of this size and complexity.

This Project Management Plan describes how the ORP manages the RPP, specifically:

- It prescribes a system to implement the RPP as a single, integrated project
- It lays out the plan and tools to integrate government, contractors, and regulators into one integrated team.
- It provides an appropriate focus on quality and safety.

The structure shown in Figure ES-3 is used to depict the project management document hierarchy and the document hierarchy of many of the individual systems.

Figure ES-3. River Protection Project Management Structure.



This Project Management Plan meets the requirements of DOE P 413.1, *Program and Project Management Policy for the Planning, Programming, Budgeting and Acquisition of Capital Assets*[1] and DOE O 413.3, *Program and Project Management for the Acquisition of Capital*

[1]DOE P 413.1, 2000, *Program and Project Management Policy for the Planning, Programming, Budgeting and Acquisition of Capital Assets*, U.S. Department of Energy, Washington, D.C.

Assets, Chapter **4,** "Project Execution Process."' The Project Management Plan recognizes ORP's management role. The contractors will prepare project execution plans.

External Drivers. These documents include legal, regulatory, management, and technical requirements from outside sources that apply to the ORP and RPP. Most also apply to other programs or projects.

Strategic Management. These documents establish the top-level policies and strategy for ORP and the RPP. They apply only to ORP and the RPP and most require both **U.S.** Department of Energy-Headquarters and ORP approval.

Baseline Management. These documents establish the upper part of the RPP baseline or schedule and cost of work that ORP will control and use to manage the RPP and carry out the mission. They are approved and controlled by ORP.

Contracts. These documents are used by ORP to pass the work description, requirements, and performance measures to the contractors. They are legally binding agreements between ORP and its prime contractors and must be approved by both parties.

Work Management. These documents extend the work scope (including technical requirements), schedules, and cost estimates to lower levels of detail, and also define the contractors' work processes and controls. The contractors control them, but some must be approved by ORP as defined in the contracts or referenced requirements documents.

The Project Management Plan bas five essential sections:

- Section **2.0,** Mission, describes the purpose of creating the ORP and the environmental challenges of the Project. It details the Project's strategic, management, and technical approaches that form the overall management strategy to ensure mission success.

- Section **3.0,** Work Plan – River Protection Project Baseline, describes the work to be accomplished and defines how the complete scope of work is captured in the Project baseline. The baseline processes of developing project logics, building a work breakdown structure that breaks work down into manageable pieces with identified beginning and end points, and creating baseline schedules are described. The top-level logics, work breakdown structure, and schedule *are* provided. Time-phased budgets are presented.

- Section **4.0,** Management Structure, Responsibilities, and Authorities, describes the RPP and ORP organization, including interfaces with the **U.S.** Department of Energy-Headquarters, and respective project management responsibilities. This section details how the ORP organizations work together to accomplish the project mission and describes essential interfaces with the Defense Nuclear Facilities Safety Board, regulators, and contractors. The Critical Decision process as related to DOE **O 413.3** is

---

[1] DOE *O* **413.3,** 2000, ***Program and Project Management for the Acquisition of Capital Assets,*** **U.S.** Department of Energy, Washington, **D.C.**

summarized and the contract management approach, including contracting authorities, is presented.

- Section 5.0, Compliance and Management Systems, describes the processes ORP uses to manage the RPP as a single, integrated project. This section is the primary reference for project staff regarding project management systems and how the project is managed. Policies, systems, and work standards are referenced. Section 5.0 demonstrates compliance with applicable external requirements and U.S. Department of Energy Orders. The structure shown in Figure ES-3 provides a document hierarchy for individual systems. Differences between the Waste Treatment and Immobilization Plant and Tank Farm Contractors, based on differences in their scope and contracts, are shown.

This page intentionally left blank.

CONTENTS

1.0 INTRODUCTION 1-1

2.0 MISSION 2-1
- 2.1 THE CHALLENGE 2-1
- 2.2 STRATEGY FOR SUCCESS 2-3
  - 2.2.1 Strategic Approach 2-3
  - 2.2.2 Management Approach 2-4
  - 2.2.3 Technical Approach 2-5

3.0 WORK PLAN - RIVER PROTECTION PROJECT BASELINE 3-1
- 3.1 WORK TO BE EXECUTED 3-1
- 3.2 RIVER PROTECTION PROJECT BASELINE - DEFINITION 3-1
- 3.3 IDENTIFICATION OF WORK 3-2
- 3.4 BUILDING THE WORK BREAKDOWN STRUCTURE 3-2
- 3.5 SEQUENCE OF WORK TO BE PERFORMED - LOGIC AND SCHEDULE 3-3
- 3.6 RIVER PROTECTION PROJECT SCHEDULE SUPPORT TOOLS 3-7
- 3.7 COST OF WORK TO BE PERFORMED 3-7
- 3.8 DOCUMENT HIERARCHY 3-8

4.0 MANAGEMENT STRUCTURE, RESPONSIBILITIES, AND AUTHORITIES 4-1
- 4.1 RIVER PROTECTION PROJECT ORGANIZATION AND RESPONSIBILITIES 4-1
- 4.2 OFFICE OF RIVER PROTECTION ORGANIZATION 4-4
- 4.3 RIVER PROTECTION PROJECT ORGANIZATIONAL INTERFACES 4-7
- 4.4 CONTRACTING AUTHORITY 4-8
- 4.5 CRITICAL DECISION AUTHORITIES 4-9

5.0 COMPLIANCE AND MANAGEMENT SYSTEMS 5-1
- 5.1 COMPLIANCE 5-1
  - 5.1.1 Integrated Safety Management 5-1
  - 5.1.2 Quality Assurance 5-7
  - 5.1.3 Emergency Management 5-8
  - 5.1.4 Safeguards and Security 5-9
- 5.2 MANAGEMENT SYSTEMS 5-9
  - 5.2.1 Systems Engineering Management 5-9
  - 5.2.2 Configuration Management 5-10
  - 5.2.3 Contract Management 5-12
  - 5.2.4 Baseline Change Control 5-14
  - 5.2.5 Risk Management 5-14
  - 5.2.6 Interface Management 5-16
  - 5.2.7 Human Resources Management 5-18
  - 5.2.8 Communications and Stakeholder/Public Involvement 5-18
  - 5.2.9 Performance Measurement and Reporting 5-19

6.0 REFERENCES 6-1

7.0 BIBLIOGRAPHY 7-1

APPENDICES

A MATRIX ..... A-i

B RIVER PROTECTION PROJECT SUMMARY SCHEDULE ..... B-i

C WORK BREAKDOWN STRUCTURE ..... C-i

D LEVEL 0 LOGIC ..... D-i

FIGURES

Figure 1-1. Location of the Waste Treatment Complex at the Hanford Site 1-1

Figure 2-1. Status of Tank Design Life 2-1

Figure 2-2. Environmental Threat of Tank *Leaks* 2-2

Figure 2-3. Depiction of Waste Treatment Complex Contracting Approach 2-3

Figure 2-4. Integrated Project Team 2-4

Figure 2-5. Office of River Protection Planning, Integration, and Management Process 2-5

Figure 2-6. Predecessors to Closure 2-6

Figure 3-1. Office of River Protection Project Facilities **3-1**

Figure 3-2. Work Breakdown Structure for the River Protection Project 3-3

Figure 3-3. Conceptual Summary of the Top-Level Logic Diagram 3-4

Figure 3-4. Management Summary Schedule 3-5

Figure 3-5. River Protection Project -Project Management Document Hierarchy Summary 3-9

Figure 4-1. Two U.S. Department of Energy Offices, One Hanford Site 4-2

Figure 4-2. Organizational Structure for the **U.S.** Department of Energy-Headquarters and the Office of River Protection 4-2

Figure 4-3. Office of River Protection Functional Organization **4-5**

Figure 4-4. Office of River Protection Organizational Structure 4-7

Figure 4-5. Contract Management Authority 4-9

Figure 4-6. Project Acquisition Process and Critical Decisions 4-10

Figure 5-1. Office of River Protection Integrated Safety Management Core Functions 5-2

Figure 5-2. Integrated Safety Management Document Hierarchy 5-3

Figure 5-3. Integrated Safety Management: The Foundation of Authorization Basis 5-6

Figure 5-4. Quality Assurance Document Hierarchy 5-7

Figure 5-5. Emergency Management Document Hierarchy 5-8

Figure 5-6. Configuration Management Document Hierarchy and Process 5-11

Figure 5-7. Tank Farm Contract Management 5-13

Figure 5-8. Risk Management Document Hierarchy and Process 5-15

Figure 5-9. River Protection Project Physical Interfaces 5-17

TABLES

Table 3-1. Estimated River Protection Project Total Cost Summary 3-8

TERMS

AMI&C	Assistant Manager for Integration and Control
AMO	Assistant Manager for Operations
AMPD	Assistant Manager for Project Delivery
AMSQ	Assistant Manager for Environment, Safety, Health and Quality
AMSR	Assistant Manager for System Requirements
BMA	Office of Business and Administration
CA	construction authorization
CD	critical decision
CERCLA	***Comprehensive Environmental Response, Compensation, and Liability Act of 1980***
CHG	CH2M HILL Hanford Group, Inc.
DEAR	Department of Energy Acquisition Regulation
DNFSB	Defense Nuclear Facilities Safety Board
DOE	**U.S.** Department of Energy
DOE-EM	U.S. Department of Energy, Office of Environmental Management
DOE-HQ	U.S. Department of Energy-Headquarters
DST	double-shell tank
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ES&H	environment, safety and health
EVMS	Earned Value Management System
FAR	Federal Acquisition Regulation
FRAM	***Safety Management Functions, Responsibilities, and Authorities Manual for the U.S. Department of Energy, Office of River Protection***
Fl-E	full-time equivalent
FY	fiscal year
HCA	Head of the Contracting Activity
HLW	high-level waste
ICD	interface control document
IHLW	immobilized high-level waste
ILAW	immobilized low-activity waste
ISE	initial safety evaluation
ISMS	Integrated Safety Management System
LAW	low-activity waste
LCA	limited construction authorization
MOA	memorandum of agreement
MOU	memorandum of understanding
OA	operating authorization
OECM	Office of Engineering and Construction Management
ORP	Office of River Protection
OSR	Office of Safety Regulation
PMP	Project Management Plan
QA	Quality Assurance

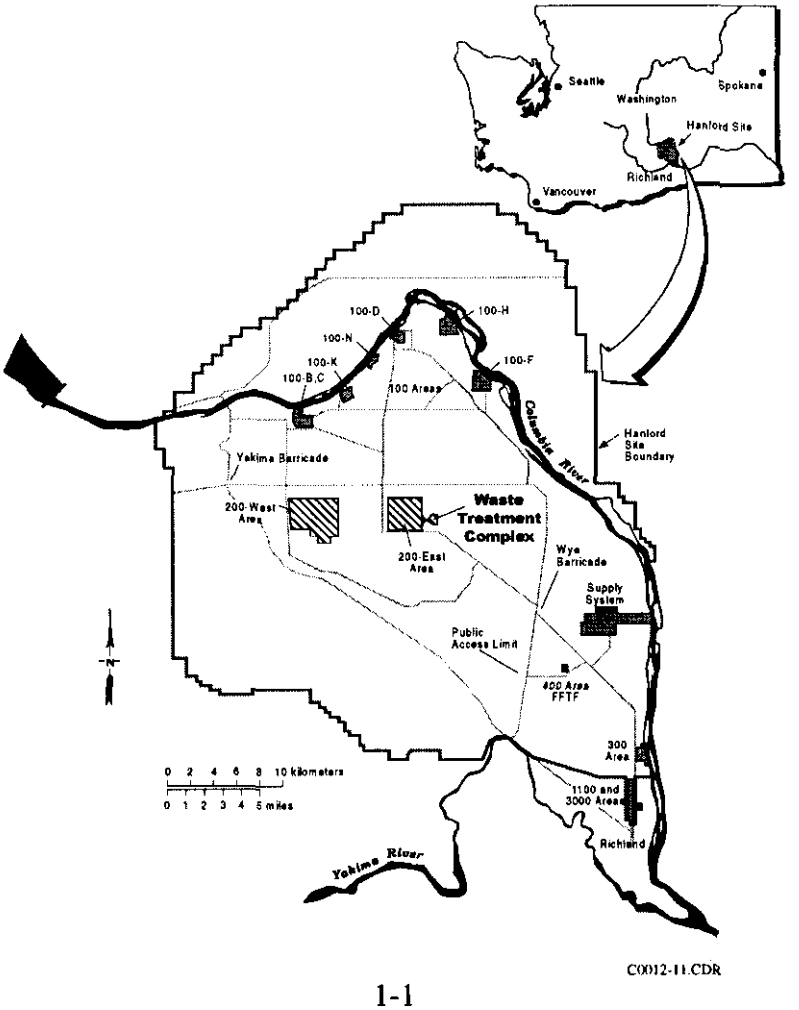
RL	U.S. Department of Energy, Richland Operations Office
RPP	River Protection Project
SA	standards approval
SOW	Statement of Work
SRS	Savannah River Site
SST	single-shell tank
TFC	Tank Farm Contractor
Tri-Party Agreement	*Hanford Federal Facility Agreement and Consent Order*
TSCA	*Toxic Substances Control Act of 1976*
WBS	work breakdown structure
WDOH	Washington Department of Health
WTC	Waste Treatment Complex
WTP	Waste Treatment and Immobilization Plant
WTPC	Waste Treatment and Immobilization Plant Contractor

1.0 INTRODUCTION

The Office of River Protection (ORP) Project Management Plan (PMP) for the River Protection Project (RPP) describes the process for developing and operating a Waste Treatment Complex **(WTC)** to clean up Hanford Site tank waste. The Plan describes the scope of the project, the institutional setting within which the project must be completed, and the management processes and structure planned for implementation. The Plan is written from the perspective **of** the ORP as the taxpayers' representative.

The Hanford Site, in southeastern Washington State, has one of the largest concentrations of radioactive waste in the world, as a result of producing plutonium for national defense for more than **40** years. Approximately **53** million gallons of waste stored in 177 aging underground tanks represent major environmental, social, and political challenges for the **U.S.** Department of Energy (DOE). These challenges require numerous interfaces with state and federal environmental officials, Tribal Nations, stakeholders, Congress, and the U.S. Department of Energy-Headquarters (DOE-HQ). The cleanup of the Site's tank waste is a national issue with the potential for environmental and economic impacts to the region and the nation. Figure 1-1 shows the location of the WTC at the Hanford Site.

Figure 1-1. Location of the Waste Treatment Complex at the Hanford Site.



Adequate funding is essential to carry out this vital mission in compliance with regulatory requirements and commitments. To date, Congress has been supportive in mandating the creation of a focused organization to complete this project and in providing funding. However, appropriation of adequate cleanup dollars is, and will continue to be, an important issue. The support of future elected officials and a nationwide commitment to this project are essential.

To this end, the DOE, in accordance with the Congressional mandate of the ***Strom Thurmond National Defense Authorization Act for Fiscal Year 1999,*** established the ORP to successfully execute and manage the RPP, formerly known as the Tank Waste Remediation System. The mission of the RPP is to build and operate a WTC to complete the cleanup of the Hanford Site's highly radioactive tank waste. The project's scope and schedule are now driven by regulatory requirements and commitments. Current mission execution plans are to carry out the project under two segments. In the first phase, called Initial Quantity (Phase 1), 10 percent of the Hanford Site tank waste by mass and ***25*** percent by radioactivity will be treated and immobilized. The next phase, included in the Balance of Mission (Phase 2), will treat and immobilize the remainder of the waste and carry out all other required activities through tank closure and transition to long-term stewardship. Total costs for the Initial Quantity (Phase 1) are estimated to be (in unescalated rounded FY 2000 dollars) **$15** billion. The Balance of Mission (Phase 2) will disposition the remaining tank waste. Estimates for this project segment (based on the past privatization concept for waste retrieval and treatment systems) range from $20 billion to $25 billion (in unescalated rounded FY 2000 dollars) over the next several decades.

Long-term project success relies on the strategic planning of research and technology efforts to reduce project uncertainties and drive efficiencies. These investments are primarily aimed at improving the safety, performance, reliability, and capacity of the Waste Treatment and Immobilization Plant (WTP). With this goal in mind, the recently selected Waste Treatment and Immobilization Plant Contractor (WTPC) was incentivized to improve the reference technology and propose alternatives to improve the WTP performance.

This PMP describes how the ORP manages the RPP and works with its contractors in an integrated project. The primary focus is on the ORP organization and management processes, but the PMP also references management documents of the ORP Prime Contractors (the Tank Farm Contractor [TFC] and the WTPC).

The ORP is one of two DOE field offices at the Hanford Site. The Richland Operations Office (RL) is responsible for cleaning up the environmental liabilities at the Hanford Site and overall Site management. The ORP relies on RL for administrative and infrastructure support. ORP coordinates with RL to address Sitewide issues and for future planning.

The PMP meets the requirements for a project execution plan as defined in DOE **O 413.3,** ***Program and Project Management for the Acquisition of Capital Assets.*** As accepted by the Order, the PMP was tailored to best satisfy the planning needs of a multi-billion dollar, multi-decade initiative into a concise, yet effective, communication tool for its audience. Appendix A provides a matrix that maps this PMP's compliance to DOE **O 413.3** requirements for a project execution plan.

This PMP is organized into the following five significant sections:

- Section 2.0, Mission, describes the purpose of creating the ORP, the challenges of this project, and the strategy for success.
- Section **3.0,** Work Plan - River Protection Project Baseline, describes the scope of work to be accomplished.
- Section **4.0,** Management Structure, Responsibilities, and Authorities, establishes the institutional and organizational structure for completing the WTC.
- Section 5.0, Compliance and Management Systems, describes the primary management processes the ORP uses to maintain control of the project during its life cycle.

This page intentionally left blank.

2.0 MISSION

The mission of the ORP is to build and operate the WTC to complete the cleanup of the highly radioactive tank waste at the Hanford Site.

2.1 THE CHALLENGE

The Hanford Site provides storage for 60 percent of the nation's high-level radioactive and chemically hazardous waste. The Site is the only DOE site with such waste **but** no capability to treat it. Current storage practices pose an environmental threat because of past and potential *leaks* from aging single-shell tanks (SST); 67 of 149 SSTs are suspected to have leaked. The newer double-shell tanks (DST) have a longer life expectancy, but there is insufficient capacity in the **28** DSTs to relocate all 53 million gallons of waste.

All tanks will have exceeded design life expectations before treatment can be completed. Figure 2-1 depicts the status of tank design life.

Figure 2-1. Status of Tank Design Life.

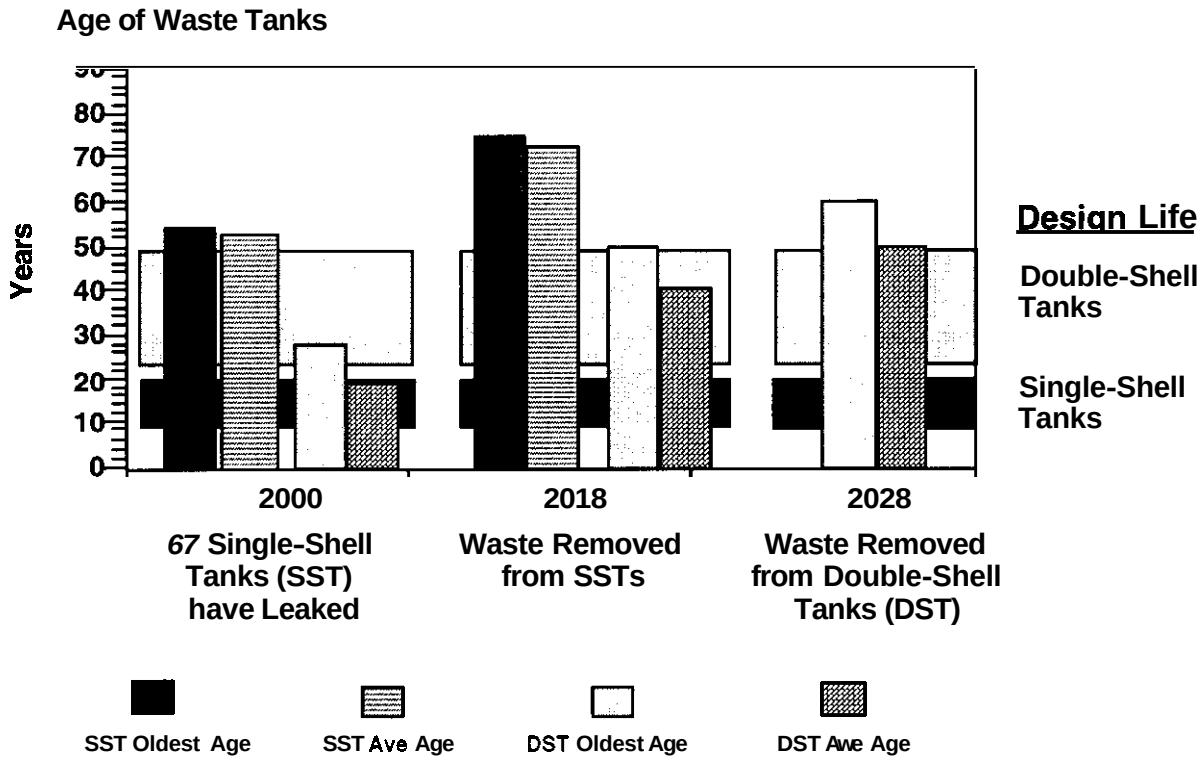
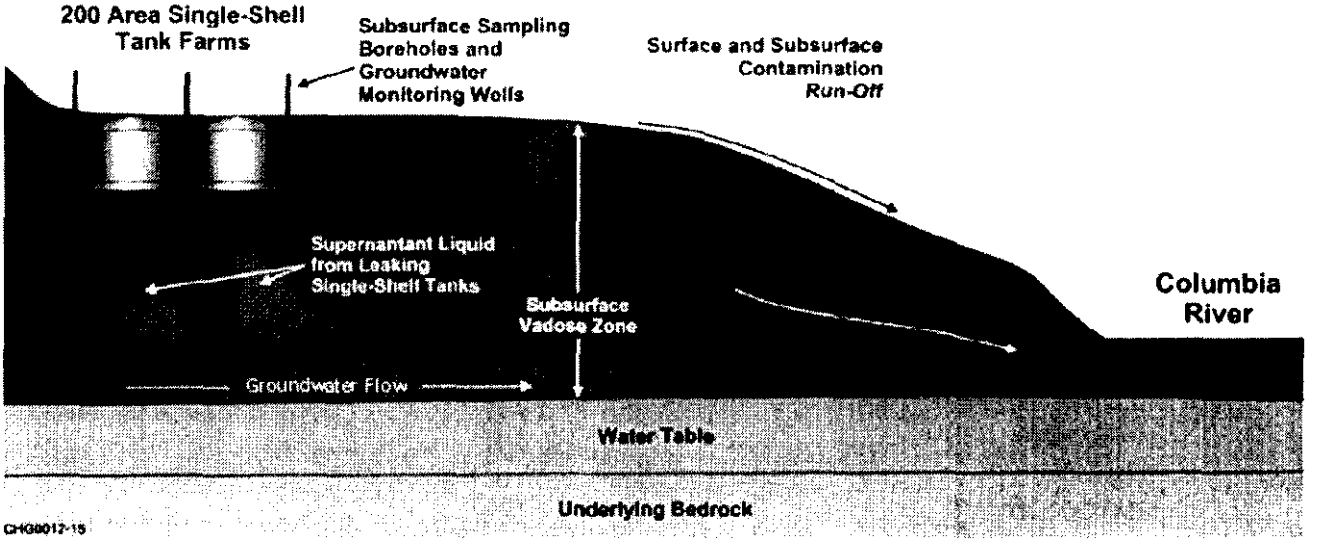


Figure 2-2 depicts the environmental threat of tank leaks. Over time, water infiltration will transport chemicals and mobile species of radionuclides to groundwater and ultimately the Columbia River. The River is a significant asset to the Northwest and the nation.

Figure 2-2. Environmental Threat of Tank Leaks.



As stated earlier, the DOE, in accordance with the *Strom Thurmond National Defense Authorization Act for Fiscal Yeur 1999,* created the ORP to provide a focus on completing actions to ensure long-term protection of the Columbia River. Several attempts to develop waste treatment capability have not been successful. The most rcccnt attempt was to involve commercial investment capital by privatizing the treatment facility. The privatized approach resulted in the conceptual design and technology solution that will be used as a starting point for the new WTP. The DOE elected to terminate the privatized approach because of significant and unsubstantiated growth in proposed cost, and unresolved questions regarding the capability of the privatized contractor to deliver the project.

The DOE's lack of progress in achieving the capability to treat Hanford Site waste has created an environment in which DOE's credibility and commitment are in question. The Washington State Department of Ecology (Ecology) has issued a Final Determination specifying dates when waste treatment actions must occur.

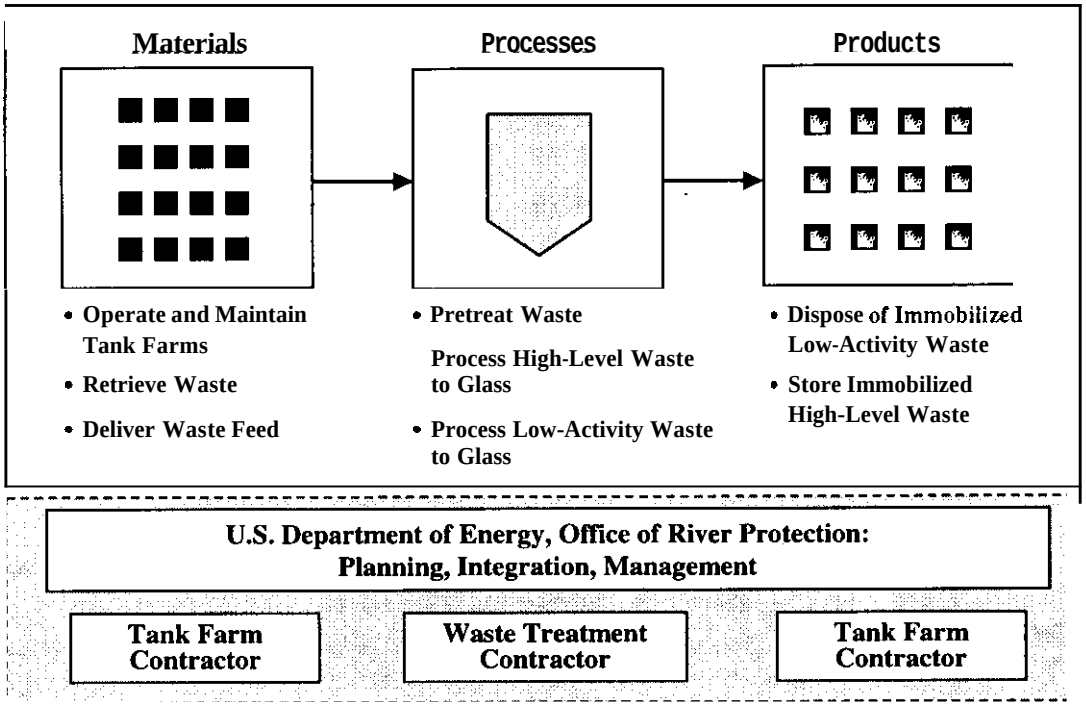
The DOE has made significant progress during the past several years in resolving safety issues associated with the storage facilities at the Hanford Site. A summary of this progress was documented in DOE-ORP 2000-27, *Office of River Protection 2-Year Progress Report to Congress, December 2000.* However, the commitment to solidify the waste in an acceptable form and close the storage facilities requires a major investment. An estimated 10 billion dollars (unescalated) are needed during the next 10 years to build and commission waste treatment facilities; prepare to deliver waste from the tanks to the vitrification facilities; prepare to safely store and dispose of immobilized waste; and carry out the other essential activities to safely maintain the tank farms and reduce risks to the workers, the public, and the environment.

2.2 STRATEGY FOR SUCCESS

2.2.1 Strategic Approach

The ORP is developing an integrated WTC for cleaning up Hanford Site tank waste. The ORP will develop and manage the WTC as an integrated chemical processing facility. Figure 2-3 is a depiction of this approach, which consists of three principal elements: (1) materials, (2) processes, and (3) products. The materials element consists of tank farm operations, where the 53 million gallons of waste are currently stored waste retrieval; and waste feed delivery. The process element consists of pretreatment, high-level waste vitrification, and low-activity waste vitrification. The product element comprises disposal of immobilized low-activity waste (ILAW) and storage of immobilized high-level waste (MLW). Significant efforts under way are required to safely maintain the waste in storage and to continue to reduce the level of waste released before retrieval for treatment.

Figure 2-3. Depiction of Waste Treatment Complex Contracting Approach.

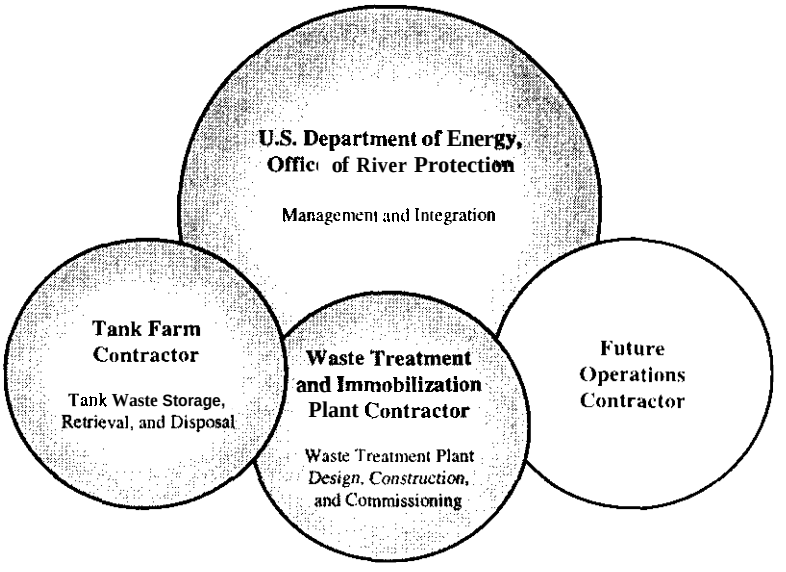


C0012-08.PPT

ORP federal staff are responsible for planning, integration, and management among the project elements. The project involves two separate contracts: (1) a WTPC contract (DE-AC27-01RV14136, ***Bechtel National, Inc., Design, Construction, and Commissioning of the Hanford Tank Waste Treatment and Immobilization Plant)*** and (2) a TFC contract (DE-AC27-99RL14047, ***CH2M HILL Hanford Group, Inc., Contract).***

The WTPC is responsible for designing, building, and commissioning waste treatment capability The TFC is responsible for operating the tank farms to safely store the waste and developing waste delivery and product-handling capability. Both contractors are working under incentive-based contracts. Once the required elements of the system have been completed, decisions will be made regarding the best contracting approach for future operations. Figure 2-4 depicts the integrated project team.

Figure 2-4. Integrated Project Team

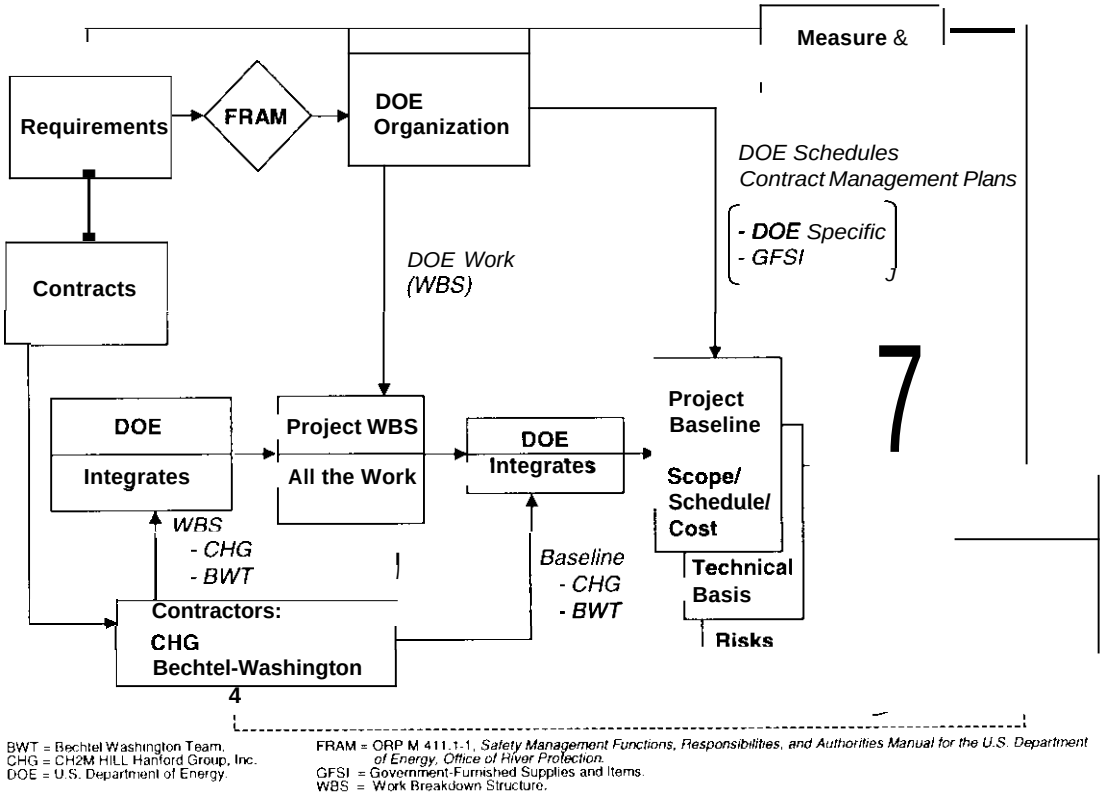


2.2.2 Management Approach

As depicted in Figure 2-5, project management starts with a clear definition of requirements. These requirements affect the contractors and the DOE. Requirements are imposed on the contractors through their contracts and by law. The DOE requirements are defined and imposed through DOE Orders and specific documents such as DOE/ORP-2000-10, *River Protection Project Mission Analysis Report* and ORP M 411.1-1, *Safety Management Functions, Responsibilities, and Authorities Manual for the U.S. Department of Energy, Office of River Protection.*

The contractors and the DOE define their work through a work breakdown structure (WBS), which captures all the work of the project. The DOE integrates contractor inputs and resolves any differences in scope and schedule and any questions regarding interfaces. The complete, integrated, definition of project technical scope, schedule, and cost forms the project baseline. This baseline is subject to a rigorous change control process.

Figure 2-5. Office of River Protection Planning, Integration, and Management Process.



The DOE manages and the contractors execute the work required to design, construct, and operate the WTC. The ORP ensures all work is conducted in a manner that is protective of worker and public health and safety, and the environment, by ensuring the requirements of DOE O 435.1, *Radioactive Waste Management*, are followed. Progress is carefully measured, with an emphasis on identifying opportunities for reducing project risk and costs and improving the project schedule. Appendix B provides a summary project life-cycle schedule. Any Lessons Learned that may involve changes to the requirements are carefully examined and are implemented through change control.

2.2.3 Technical Approach

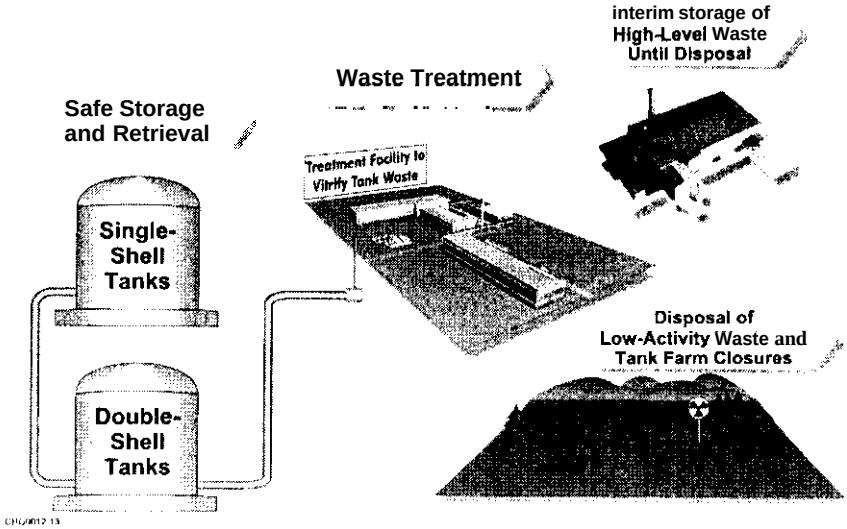
The waste will be hydraulically removed from the tanks and separated into HLW and LAW portions. This separation reduces the amount of HLW, which is more expensive than LAW to immobilize and dispose. The HLW portion will be immobilized and stored onsite until it can be shipped offsite to a federal geologic repository for disposal. The ILAW will be disposed onsite.

In addition, the waste must be safely stored until it is retrieved. This includes interim stabilization of the SSTs by transferring the pumpable liquid waste to the newer DSTs. Monitoring, surveillance, and maintenance activities are performed to validate safe storage conditions and tank integrity. Maintenance activities are required for the continued safe storage

of the waste and to maintain the tank farm infrastructure capable of future waste retrieval and transfer activitics.

Upon completion of waste processing, the tank farms, associated pipelines and facilities, and contaminated soils will be disposed through a regulatory process called closure (see Figure 2-6). The ORP also is responsible for disposing of 60 small miscellaneous tanks and **1,933** highly radioactive cesium and strontium capsules derived from previous tank waste treatment missions.

Figure 2-6. Predecessors to Closure



As discussed in Section 1.0,the plan to treat and immobilize all Hanford Site tank waste is divided into two segments. Implementation of this approach was chosen because it meets all regulatory requirements, addresses technical uncertainties, and provides flexibility to accommodate future changes in response to new information and technology development.

The scope of the Balance of Mission (Phase 2) is to continue the Initial Quantity (Phase 1) activities with expanded WTP capabilities until all the waste has been immobilized and disposed and **all** facilities closed. The scope includes the following:

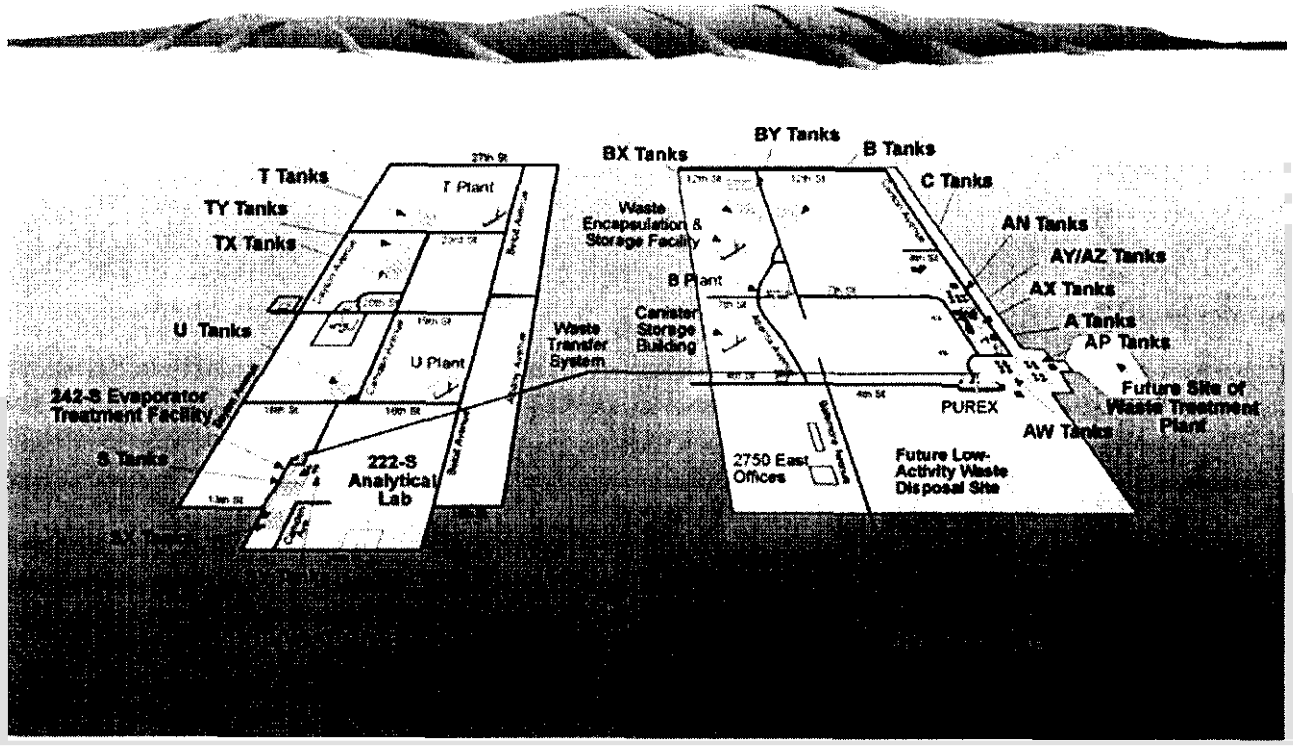
- Safely storing the tank waste until retrieved
- Retrieving all tank waste necessary to allow tank closure
- Dividing waste into two portions: (1) removing selected radionuclides to form the LAW portion and (2) processing the remaining waste as HLW
- Immobilizing LAW and HLW portions by vitrification
- Disposing ILAW onsite and storing IHLW until it can be shipped to an offsite federal geologic repository for disposal
- Closing the tanks and dispositioning other project facilities

3.0 WORK PLAN - RIVER PROTECTION PROJECT BASELINE

3.1 WORK TO BE EXECUTED

To accomplish its mission, the RPP will build and operate a WTC composed of four systems or components: waste storage, waste retrieval, waste treatment, and immobilized waste disposal. The waste retrieval component will transport waste from storage to the WTP. Once the waste is treated/immobilized, the ILAW will be stored onsite. The IHLW will be stored onsite at an interim storage facility before being transported to an offsite repository. Figure **3-1** shows the current and future WTC facilities.

Figure 3-1. Office of River Protection Project Facilities



By 2046, the WTC will have completed its mission and will be decommissioned and closed; therefore, the work to be executed will cover approximately 46 years.

3.2 RIVER PROTECTION PROJECT BASELINE - DEFINITION

The RPP baseline consists of three interrelated elements: scope, schedule, and cost. The scope element defines the work to be performed over the life of the RPP. The schedule and cost elements define the timeframe, interrelationships. and estimated resources required to complete

the scope. The RPP baseline integrates these three elements using a common framework, or WBS.

Specific WBS elements are allocated to the appropriate contractor through its respective contract. The RPP contractors subdivide and further define each element to the lowest measurable task while remaining consistent with the RPP WBS. The ORP has the right under the contracts to evaluate performance down to the lowest measurable task level. The WBS (and all other controlled items) are controlled through the ORP change management process, with individual change thresholds for all controlled items.

3.3 IDENTIFICATION OF WORK

To build and operate the WTC, it is necessary for the RPP to identify and document all work that is to be performed. The work is organized into a consistent framework called a WBS. However, because the work will take decades to complete, the WTC will undergo a number of major evolutions, including the following:

- Waste storage
- Design and construction of the waste transport systems, waste treatment systems, and treated waste storage systems
- Operation and maintenance of the WTC
- Decommissioning and closure of the WTC after mission completion.

Therefore, the WBS, the RPP organizational structure, and the required skill mix of employees will change as the project matures. With this in mind, the WBS was constructed with a focus on initial project activities, which include the following:

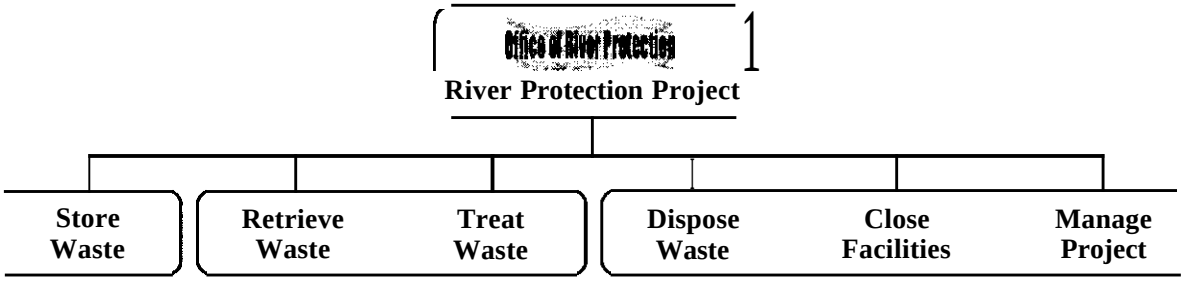
- Waste storage
- Design and construction of the waste transport systems, waste treatment systems, and treated waste storage and disposal systems
- Initial quantity WTP waste vitrification.

While these tasks are being completed, the WBS will be further refined to fully address the extended operation and maintenance of the WTC, and eventually facility closure.

3.4 BUILDING THE WORK BREAKDOWN STRUCTURE

Figure 3-2 shows the top levels of the RPP WBS. Appendix C provides the ORP-approved levels of the WBS. Although all work is identified, detailed planning has been focused on the initial tasks discussed in the previous paragraphs

Figure 3-2. Work Breakdown Structure for the River Protection Project.



To build the WBS, work was broken down into manageable pieces that had identifiable beginning and end points. These pieces are called scopes of work. Using top-level functions and technical requirements, the ORP built the WBS starting at the highest level and refined the breakdown of the scopes of work to the contractor level of control. Specific WBS elements are allocated to the appropriate contractor through its respective contract. The contractor further refined the scopes of work down through various levels to the lowest measurable task. The WBS captures all of the work necessary to operate and maintain waste storage, and the work to design, construct, and operate the waste retrieval, treatment, and immobilized waste disposal systems. In addition, the scopes of work for WTC decommissioning and RPP managcmcnt are captured in the Close Facilities and Manage Project boxes of the WBS. Further definition of the RPP work scopes is documented in WBS dictionary sheets.

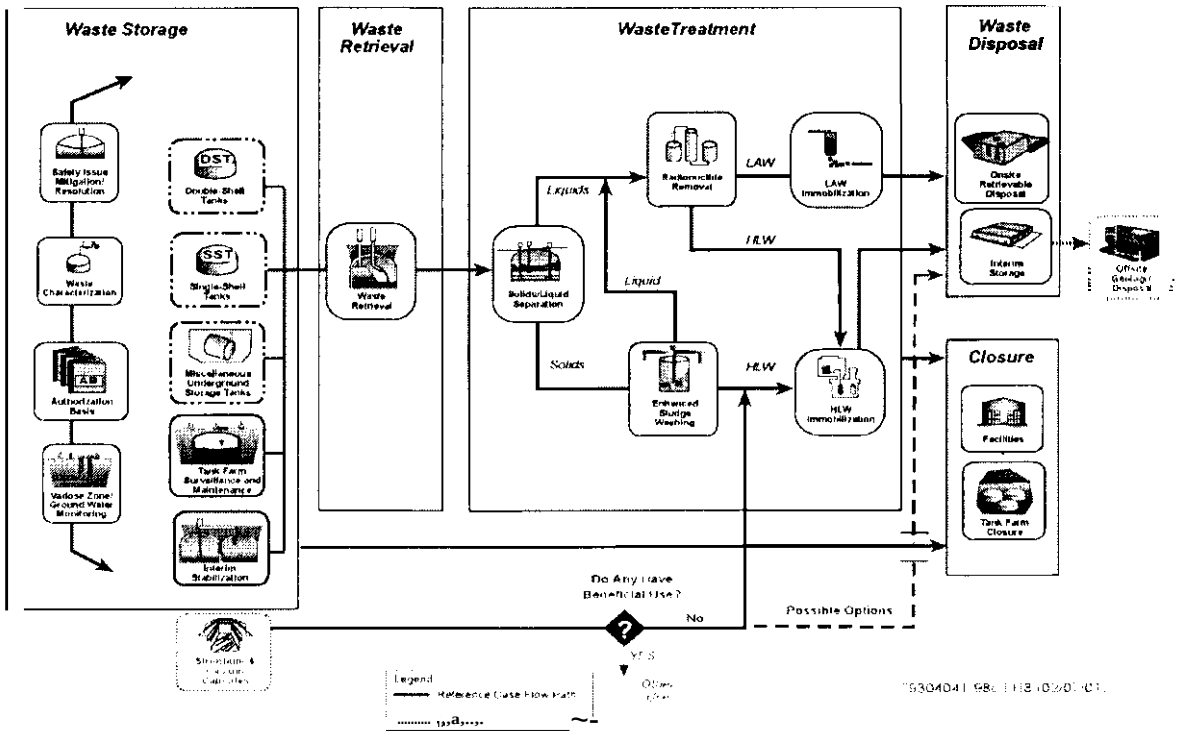
The new WBS will be placed under configuration management following further development by the contractors, as required by the WTPC contract award and TFC extension. Implementation of the contractor-developed structure is subject to DOE approval. The execution of the individual scopes of work is managed and measured via oversight and earned-valued performance assessment.

3.5 SEQUENCE OF WORK TO BE PERFORMED - LOGIC AND SCHEDULE

The work that is identified and documented in the WBS is organized in a logical sequence and captured on logic diagrams. Appendix D provides the RPP functional logic diagram, which translates the RPP mission requirements into a sequence of activities necessary to achieve the mission objectives. The logic diagram illustrates the major work that the RPP must perform to accomplish its mission, including Balance of Mission.

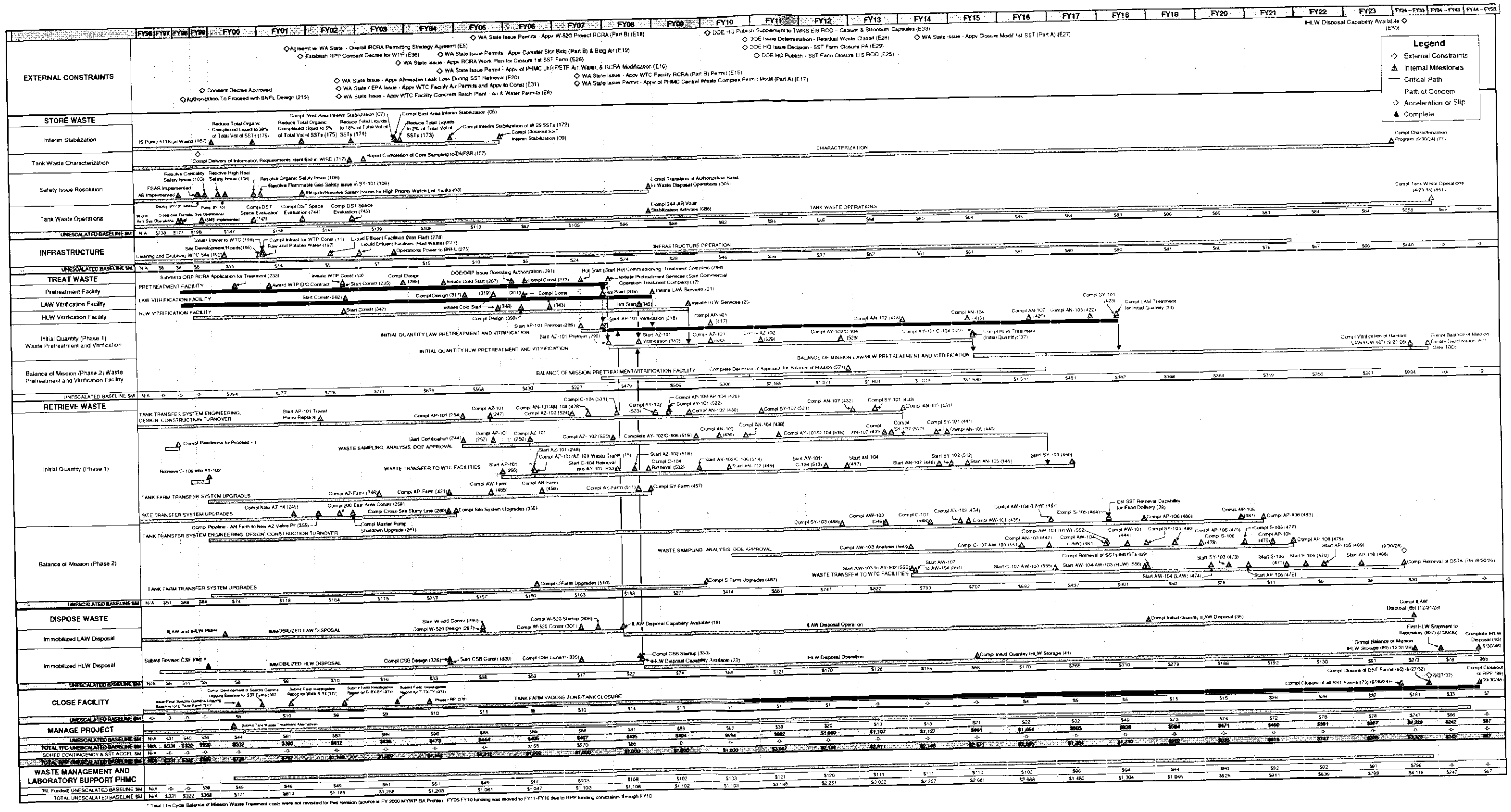
Figure 3-3 shows a conceptual summary of the top-level logic diagram for the RPP. **As** with the WBS, the top-level logic is further refined by the contractor. The RPP schedule is built based on the ORP-approved, contractor-developed logic diagrams.

Figure 3-3. Conceptual Summary of the Top-Level Logic Diagram.



The RPP schedule describes the duration of the logical sequence of activities required to accomplish the RPP scope. The RPP schedule primarily consists of an integration of the TFC and WTPC schedules, and is documcntcd in the integrated mission schedule and graphically depicted in a management summary schedule, which is used for external communications. The integrated mission schedule is resource-loaded; employs a Critical Path Method approach; and identifies interface points among activities, constraints, decision points, and milestones. This resource-loaded schedule provides the basis for variance reporting and documenting schedule commitments. Figure 3-4 shows the management summary schedule.

Figure 3-4. Management Summary Schedule.



* Total Life Cycle Balance of Mission Waste Treatment costs were not revised for this revision (source is FY 2000 MYWP BA Profile). FY05-FY10 funding was moved to FY11-FY16 due to RPP funding constraines through FY10

3.6 RIVER PROTECTION PROJECT SCHEDULE SUPPORT TOOLS

A set of support tools was developed to aid in communicating and managing the schedule elements of the RPP baseline. The three support tools developed are as follows:

- Expanded Management Summary Schedule

  The expanded management summary schedule is a several-page summary of the integrated mission schedule. It identifies activities at the project level and significant interfaces between activities and critical decisions and milestones. The expanded management summary schedule focuses on construction and operational activities required for Initial Quantity (Phase 1) retrieval, treatment, and storage/disposal. The critical path and near-critical paths to completion of Initial Quantity (Phase 1) arc identified.

- Management Summary Schedule

  The management summary schedulc is a one-page summary of the integrated mission schedule. The management summary schedule identifies scope, cost, and events for the life of the RPP at a summary level. The critical path to complete Initial Quantity (Phase 1) vitrification and near-critical path to delivery of the first waste feed to the WTP are identificd.

- Milestone Sequence Chart

  The milestone sequence chart is a one-page listing of RPP major events, or milestones, in chronological order. Supporting rnilestoncs required for completion of each major event are included. The type of milestone (e.g., *Hanford Federal Facility Agreement and Consent Order* [Tri-Party Agreement]) and responsible organizations are identified.

3.7 COST OF WORK TO BE PERFORMED

Cost is the time-phased budget required to accomplish the RPP scope in accordance with the RPP schedule. Estimated costs are included in the RPP resource-loaded schedule for each task and are integrated with the RPP scope and schedule via the WBS. This element of the baseline is documented in the integrated mission schedule, and, therefore, reflects the TFC and WTPC resource-loaded schedules. This element also provides the **basis** for variance reporting on contractual cost commitments by the ORP and its contractors. Table **3**-1 provides a summary of RPP estimated costs related to major project objectives.

	FY 1997-FY 2000	Projected FY 2001-FY 2028	Projected FY 2029-FY 2046	Projected total project
Store waste	800	2,553	389	3,742
Retrieve waste	297	8,361	107	8.765
Treat waste	423	18,244	--	18,667
Dispose waste	29	2,899	188	3,116
Close facilities	8	310	136	454
Manage project	151	2,348	419	2,918
Total cost (unescalated)	1,708	34,715	1,239	37,662

A summary of project life-cycle estimated costs by fiscal year is shown at the bottom of Figure 3-4 (these costs will be updated in the next document revision to reflect changes caused by the recent WTPC contract award and TFC extension).

3.8 DOCUMENT HIEKARCHY

A projcct management document hierarchy that identifies the primary documents (excluding business and administration documents) used by the ORP to manage the RPP and the higher-level source documents is shown in Figure 3-5. This hicrarchy displays the document relationships, the major categories into which the documents can be classified for management purposes, and a mechanism for tracing requirements to lower levels of management control. The hierarchy is a project management hierarchy; it does not include the many other RPP documents.

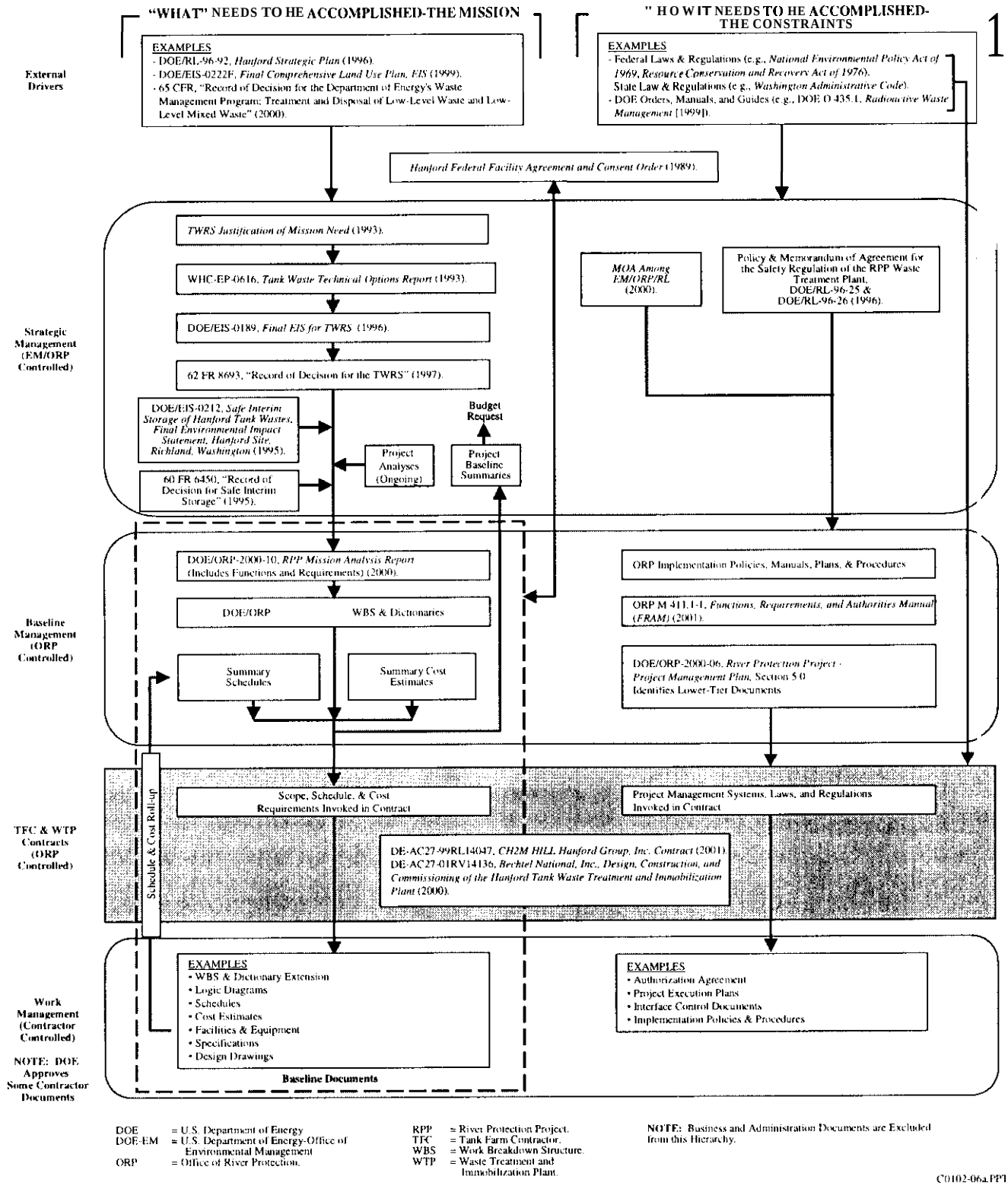
External Drivers. These documents include legal, regulatory, management, and technical requirements from outside sources that apply to the ORP and RPP. Most also apply to other programs or projects.

Strategic Management. These documents establish the RPP strategy and ORP management agreements with other DOE organizations and the RPP. They apply only to ORP and the RPP and most require both DOE-HQ and ORP approval.

Baseline Management. These documents establish the upper part of the RPP baseline that ORP will control and use to manage the RPP. They are approved and controlled by ORP.

Contracts. These documents are used by ORP to pass the work description, requirements, and performance measures to the contractors. They are legally binding agreements between ORP and its Prime Contractors and must be approved by both parties.

Figure 3-5. River Protection Project - Project Management Document Hierarchy Summary.



Work Management. These documents extend the work scope (including technical requirements) to lower levels of detail. The contractors then estimate the resources required to execute the work, and develop a schedule and cost estimate that is the basis for the RPP baseline The contractors' work processes, controls, and work products developed in response to contract requirements are also included.

The document hicrarchy is further organized into two general columns in the figure. The left column focuses on "what" needs to be done to carry out the mission and how well it must he done. It begins with documents that define the mission, the alternatives for meeting the mission need, and selection of the alternative to be pursued. This leads to establishing the RPP baseline, which includes top-level technical requirements, scope, schedule, and estimated cost.

The right column focuses on "how" the project must be conducted. It includes the laws, regulations, methods, and management systems that must be followed while conducting the work. ORP management systems are identified in this PMP, while the contracts identify laws, regulations, and DOE Orders that must be followed.

4.0 MANAGEMENT STRUCTURE, RESPONSIBILITIES, AND AUTHORITIES

To execute the RPP mission, the ORP receives direction, guidance, and input from Congress, the DOE-HQ, and RPP stakeholders. The RPP management team (i.e., ORP, WTPC, TFC, and future WTC operator) executes the mission. The ORP coordinates and integrates RPP activities with the U.S. Department of Energy, Richland Operations Office (RL) and its contractors for Site services such as utilities and laboratories. The following sections describe the RPP organization, ORP organization, RPP organizational interfaces, and contracting and critical decision authorities.

4.1 RIVER PROTECTION PROJECT ORGANIZATION AND RESPONSIBILITIES

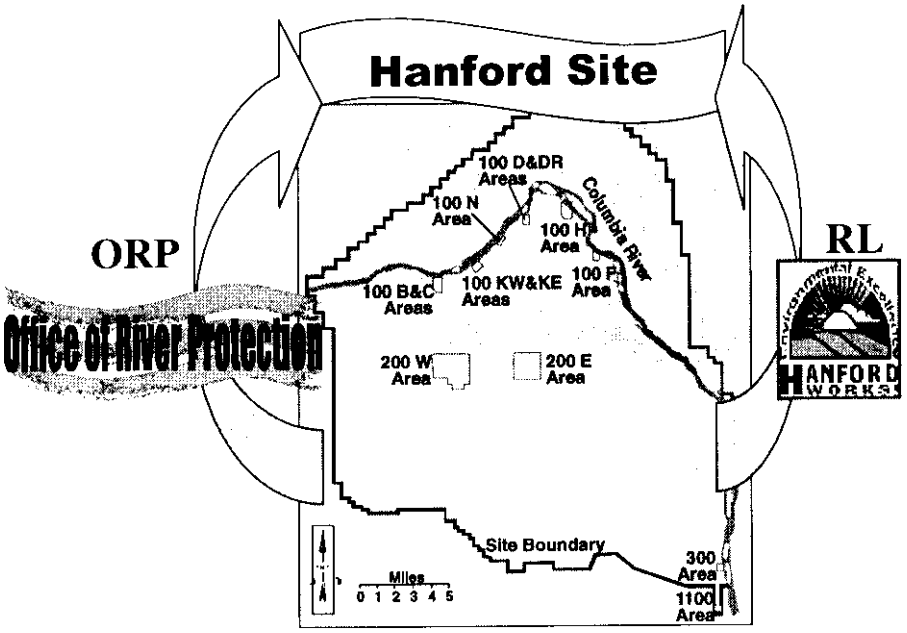
A project management team, consisting of the ORP and its contractors, is established to execute the RPP. RL and DOE-HQ interfacing requirements are coordinated and integrated into RPP activities, as are other external interfaces.

The ***Memorandum of Agreement** Among **the** Office of **Environmental Management, the** Office **of River Protection, and the Richland** Operations Office* reflects the relationship of the organizations for safety regulation of the WTPC and outlines roles, responsibilities, and principles, including:

- The ORP Manager is responsible for the successful execution of the RPP
- The ORP reports to the U.S. Department of Encrgy, Office of Environmental Management and coordinates Hanford Site activities with the Manager, RL.

To achieve mission objectives, the two DOE field offices at the Hanford Site are working together to leverage Site success, efficiency, and alignment (see Figure 4-1).

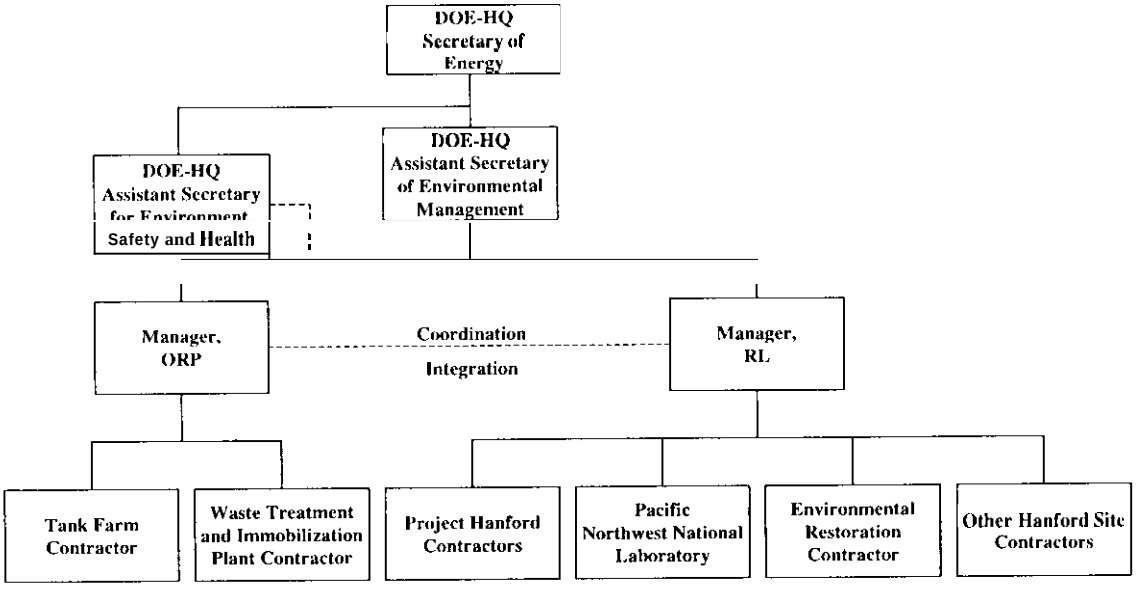
Figure 4-1. Two **U.S.** Department of Energy Offices, One Hanford Site.



- Shared administrative services
- Shared Site services (security, fire, power)
- Common groundwater-vadoze zone
- Joint future site planning

Figure 4-2 shows the primary relationships between the ORP and other DOE organizations and contractors performing the RPP mission.

Figure 4-2. Organizational Structure for the **U.S.** Department of Energy-Headquarters and the Office of River Protection.



DOE-HQ = U.S. Department of Energy-Headquarters.
ORP = Office of River Protection.
RL = U.S. Department of Energy, Richland Operations Office.

The roles of the DOE and Prime Contractors (with respective web site addresses to access additional information) associated with the RPP mission are as follows:

DOE-HQ (http://www.doc.eov) is responsible for the management and integration of all DOE activities, including those at the Hanford Site. EM provides programmatic overview of the entire RPP mission, including DOE-HQ oversight of the ORP program for the regulation of RPP contractors. The Assistant Secretary for Environment, Safety, and Health provides independent DOE oversight of the program for the regulation of RPP contractors and provides technical assistance.

RL (http://www.hanford..ov) is responsible for the ultimate restoration, long-term stewardship, and potential reuse of the Hanford Site. RL responsibilities to the ORP are the provision of infrastructure and support services.

ORP (http://www.hanford.zov/orp/intlex.html) is responsible to build and operate the WTC to complete the cleanup of the highly radioactive tank waste at the Hanford Site.

TFC (http://apweb02.rl.gov/rpp/) is responsible for tank waste storage, waste retrieval, interim storage, and/or disposal of immobilized waste. The TFC integrates activities with the DOE, the WTPC, and other Hanford Site contractors, as necessary.

WTPC (http://www.rl.gov/wtp/index.html) will design, construct, and commission the WTP. In addition, the WTPC will integrate its activities with the DOE, the TFC, and other Hanford Site contractors.

Project Hanford Management Contractors (http://www.hanford.gov/top/whowho.html) provide support to the RPP, as specified in DOE contracts, memoranda of understanding, memoranda of agreement, and interface control documents (ICD). Under the direction of the DOE, the Project Hanford contractors organize, plan, integrate, and manage most of the Hanford Site infrastructure and support services activities. Major support services for the RPP include evaporator operations for reducing waste volumes; the Liquid Effluent Retention Facility and Effluent Treatment Facility for managing liquid waste effluents; a laboratory for charscterizing tank waste; the disposal of hazardous, low-level, radioactive, and mixed solid wastes; and physical infrastructure, e.g., electricity, water, roads, and telecommunications. Additional Hanford Site infrastructure and support services include engineering, construction management, emergency management, and safeguards and security.

Environmental Restoration Contractor (http://www.bh-crc.com/) conducts the Hanford Environmental Restoration Program. The Environmental Restoration Contractor also manages cleanup of the vadose zone and groundwater outside the tank farms.

Pacific Northwest National Laboratory (http://www.pnl.zov/) conducts research and technology development for tank waste, vadose zone, and groundwater issues.

Other Hanford Site contractors, including the Hanford Environmental Health Foundation and general support services contractors, support the ORP with their specific services.

Regulatory federal and state agencies, not shown in Figure 4-2, provide regulation and oversight of the RPP. Federal and state agencies regulate the ORP in a manner similar to other activities on the Hanford Site. The external regulatory agencies and their specific roles include the following:

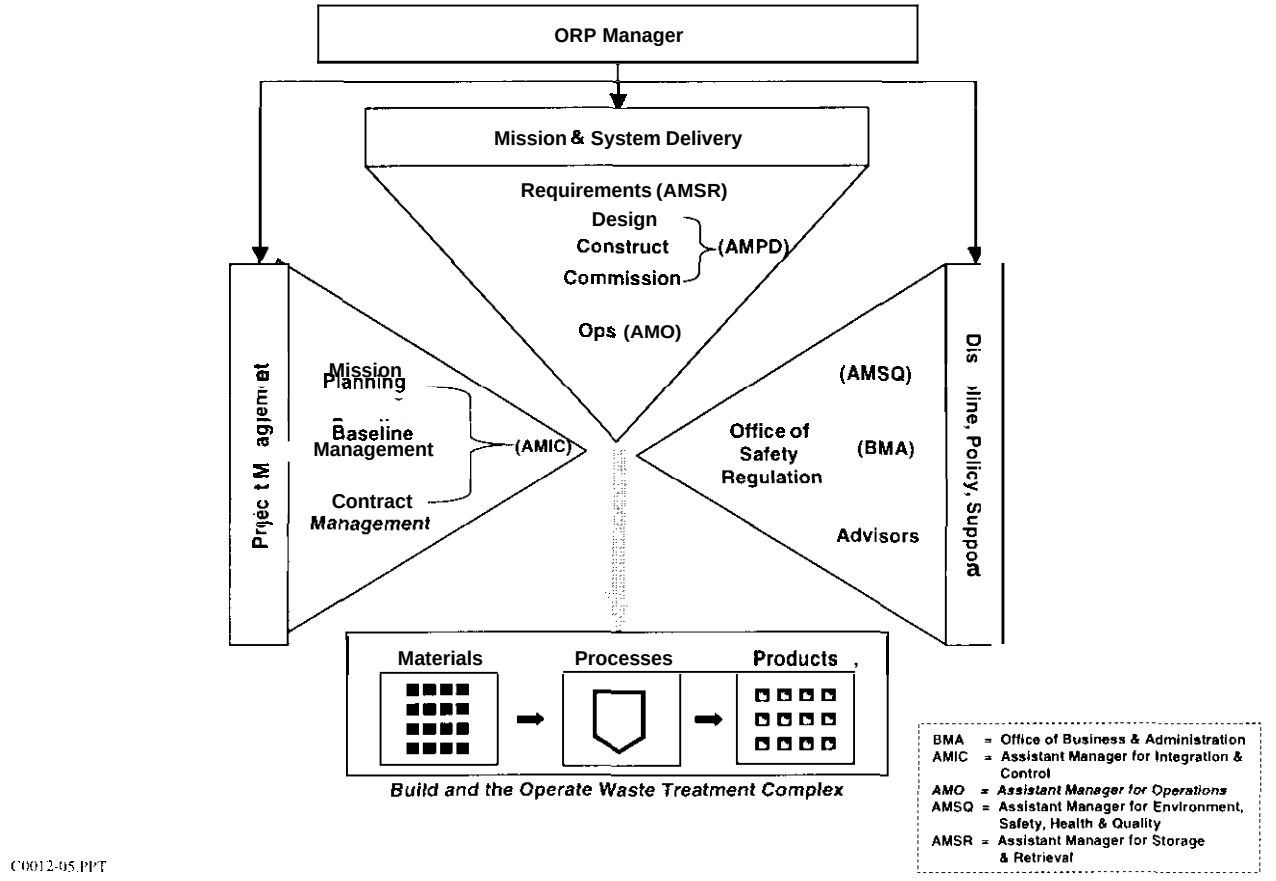
- U.S. Environmental Protection Agency (EPA) and Ecology negotiate and regulate DOE/ORP activities under the provisions of the *Resource Conservation and Recovery Act of 1976* through the Tri-Party Agreement.
- EPA and Ecology regulate and administer permits for treatment and storage operations under the *Resource Conservation and Recovery Act of 1976,* the *Washington State Hazardous Waste Management Act,* and the *Clean Air Act of 1977.*
- The Washington State Department of Health regulates radioactive air emissions
- EPA, Ecology, and the Benton Clean Air Authority regulate nonradioactive air emissions.
- EPA, Ecology, Washington State Department of Health, and/or local health agencies regulate liquid effluents. Most WTP liquid effluents receive final treatment at other permitted Hanford Site facilities.
- Ecology and the U.S. Department of Transportation regulate offsite transport of radioactive waste and nonradioactive hazardous wastes. Key Stakeholders who provide input to ORP management include the State of Oregon, the Hanford Advisory Board, and the Tribal Nations.

4.2 OFFICE OF RIVER PROTECTION ORGANIZATION

The ORP is structured with four key functions: (1) the Manager's office (including the Office of Chief Counsel, Office of Communications, and Senior Technical Advisors), responsible for the mission; (2) the line organizations (Assistant Manager for System Requirements (AMSR), Assistant Manager for Project Delivery [AMPD], and Assistant Manager for Operations [AMO]), responsible for requirements, design, construction, commissioning, and operation of the WTC; (3) the compliance organizations (Office of Safety Regulation and Assistant Manager for Environment, Safety, Health and Quality [AMSQ]), responsible for policy, discipline and compliance support; and (4) the program organizations (Assistant Manager for Integration and Control [AMI&C] and Office of Business and Administration [BMA]), responsible for integration, control, and contract management.

The ORP functional structure is shown in Figure 4-3. The structure shows how the organizations work together to accomplish the mission to build and operate the WTC.

Figure 4-3. Office of River Protection Functional Organization.



The ORP Manager is responsible for the mission, driving system delivery with a disciplined management to ensure compliance with policies. The mission end state is to safely build, operate, and close out the WTC. The ORP Manager's Office includes the Manager, Office of Chief Counsel, Office of Communications, and Senior Technical Advisors:

- The Office of the Manager, ORP, is responsible for the successful execution of the RPP. In this role, the Manager must ensure work is accomplished safely, efficiently, on schedule, and within budget; provide strategic/long-term planning; manage the contractors via the contracts; involve the public; and coordinate with DOE-HQ, RL, and regulators. The Deputy Manager shares responsibilities with the Manager with a primary focus on ORP internal activities.

- The Office of Chief Counsel is responsible for internal and external legal support and DOE-HQ interface for legal matters.

- The Office of Intergovernmental Affairs provides support in the areas of government relations, public involvement, emergency response, regulatory affairs, and media relations. It interacts with Hanford Site personnel, DOE-HQ personnel, and stakeholders by providing press releases and conferences, media kits, tours/briefings, and issue papers. It prepares a monthly ORP ***Employee*** *Newsletter* and provides input to the *Hanford*

Reach (the Hanford Site newspaper). The Intergovernmental Affairs Director plays a vital role in negotiation of regulatory agreements and communication of technical information to stakeholders.

- Senior Technical Advisors provide advice on key technical areas, such as nuclear and radiological safety, strategic planning, technological and scientific issues, project management, and organizational effectiveness.

Mission and System Delivery—The Assistant Managers for System Requirements, Project Delivery, and Operations share the ownership for project execution:

- The AMSR is responsible for managing facilities' requirements, research and technology programs, systems specifications and optimization, interfaces, and initial integration of ISM into plans and requirement documents.

- The AMPD is responsible for design to/construct to requirements, project management from design to decommissioning, critical decision reviews, and facilities turnover. The AMPD also is responsible for design review and construction safety, and compliance with the Integrated Safety Management System (ISMS) and Authorization Basis.

- The AMO ensures the tank waste is safely stored and managed. The AMO ensures the waste is retrieved and pumped to the WTP, and conducts immobilized waste retrieval and storage/disposal operations. The AMO has line management responsibility for operational safety, including ISMS and Authorization Basis implementation.

Discipline, Policv, and Support—This Assistant Manager and Offices are responsible for discipline, policy, and business management controls for the ORP:

- The AMSQ ensures work is being performed safely, efficiently, and in compliance with applicable environmental permits, statutes, and agreements like the Tri-Party Agreement (excluding WTP radiological, nuclear, and process safety). The AMSQ also ensures that quality programs are in place and implemented, and manages the TFC safety Authorization Basis.

- The Office of Safety Regulation (OSR) provides radiological, nuclear, and process safety regulation of the WTPC consistent with that which would accrue from regulation by the U.S. Nuclear Regulatory Commission. The OSR manages the WTP Authorization Basis.

- The BMA develops and oversees crosscutting business and administrative functions, such as submitting and supporting the ORP budget, managing the budget and funds process, and maintaining the finance system. The BMA also provides resource management and Management Information System management.

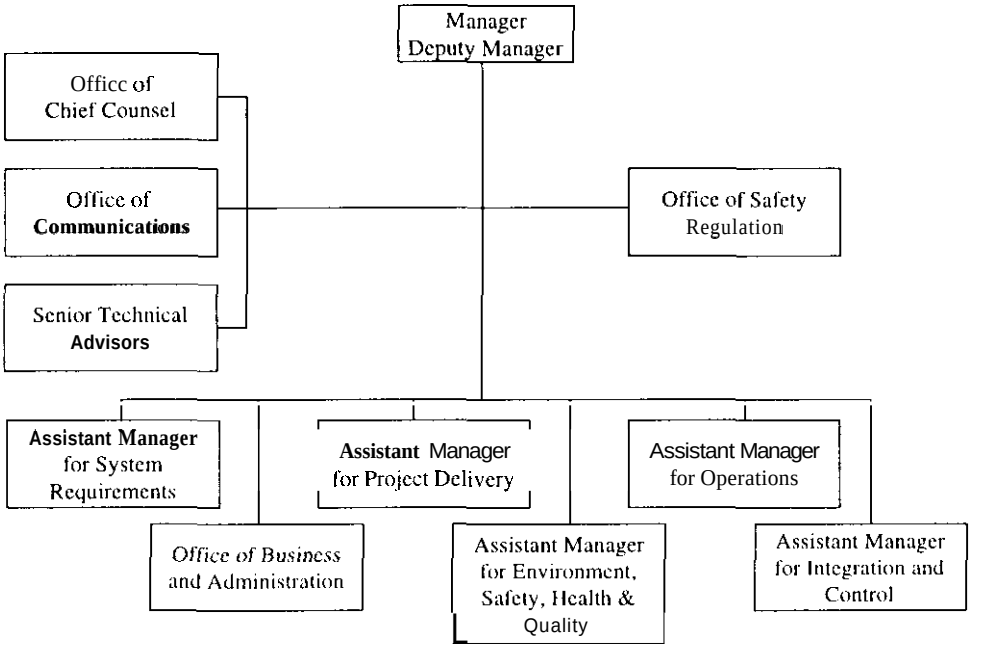
Project Management--This organization is the integration and control element that provides baseline, contract management, and budgeting functions:

- The AMI&C is responsible for strategic analysis, top-level requirements management, configuration management, contract management and administration, baseline integration, baseline change control, risk management, variance management,

performance measurement and reporting, and vadose zone management. Contract Management manages all contractual interface activities with the contractors.

The ORP functional *line* structure is shown in Figure 4-4. The ORP organization and division of responsibilities are detailed in ORP M 411.1-1, *Safety Management Functions, Responsibilities, and Authorities Manual for the U.S. Department of Energy, Office of River Protection.*

Figure 4-4. Office of River Protection Organizational Structure.



4.3 RIVER PROTECTION PROJECT ORGANIZATIONAL INTERFACES

Successful execution of the ORP mission requires clear communication between the ORP and its contractors and external regulators. These include the following:

- Interfaces between ORP and the Defense Nuclear Facilities Safety Board (DNFSB)--The interface procedure for DOE organizations and the DNFSB is described in DOE M 140.1-1A, *Interface with the Defense Nuclear Facilities Safety Bonrd.* An RL liaison arranges for information exchange and meetings between the ORP and the DNFSB.

- Interfaces between ORP and federal and state environmental regulatory entities--The U.S. Department of Energy, Office of Environmental Management policy for negotiating and approving environmental compliance and cleanup agreements is delineated in *Review arid Approval Guidance for Environmental Compliance and Cleanup Agreements for the Office of Environmental Management.* ORP maintains liaison with Washington State, Ecology, the Washington State Department of Health, and the EPA. Although not a regulatory interface, liaison is maintained with the State of Oregon as a key stakeholder in protecting the Columbia River Communities.

- Interface among ORP, RL, and DOE-HQ--The *Memorandum of Agreement Among the Office Environmental Management, the Office of River Protection, and the Richland Operations Office* documents ORP organizational authorities, roles, responsibilities, and reporting structure. The primary interface role of RL with the ORP is to ensure effective integration between ORP and Hanford Site services (including budget preparation). RL provides infrastructure and technical support to the ORP upon request, maintains responsibility for Hanford Site safety and security, and acts as the signatory authority for certain Sitewide permits and agreements.

- Interfaces between ORP and its Contractors--The critical interfaces for the RPP's mission success are those between the ORP and its contractors and the contractors with each other, particularly those involving engineering and technical requirements. Interface management is a requirement of the respective contracts. (See Section 4.4 for the contract management structure and authority, and Section 5.2.6 for an Interface Management discussion.)

- Interface with advisory groups, the public, and Tribal Nations

4.4 CONTRACTING AUTHORITY

Contracting authority in the DOE flows down from the Secretary of Energy to the ORP Contracting Officers and Contracting Officer's Representatives, as described below and shown in Figure 4-5:

- Secretary of Energy (S-I)--Authority and responsibility to contract for supplies and services necessary to meet the agency's mission are vested in the agency head. Much of this authority has been delegated to the DOE Procurement Executive.

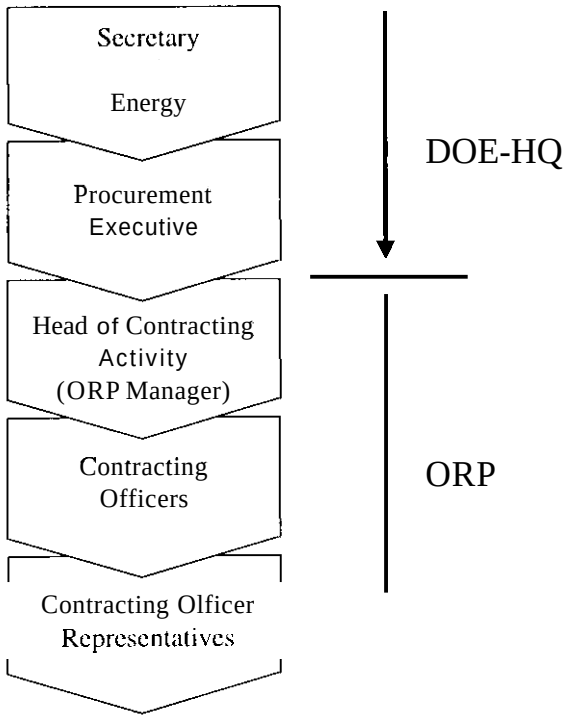
- Procurement Executive (MA-5)--Authority and responsibility to establish contracting activities within the DOE, and to oversee and provide policy guidance to all DOE contracting operations. Appoints Head of Contracting Activities (HCA) for individual DOE activities.

- HCA (ORP Manager)--Authority and responsibility to make formal Contracting Officer appointments within the ORP, and perform other HCA functions as described in the Federal Acquisition Regulation (FAR) and Department of Energy Acquisition Regulation (DEAR). The ORP HCA, in accordance with the Memorandum from the Acting Director, Office of Procurement and Assistance Management (MA-5) to the Manager, ORP, February 26, 2000, *Delegation of Authority/Designation Head of Contracting Activity (HCA)*, is the ORP Manager.

- Contracting Officers--Authority and responsibility to make formal Contracting Officer Representative appointments within the ORP, and broad discretion to perform Contracting Officer functions as described in the FAR and DEAR.

- Contracting Officer Representatives--Limited authority and responsibility to provide technical direction regarding statement of work technical matters that are within the scope of work stated in the contract.

Figure 4-5. Contract Management Authority.

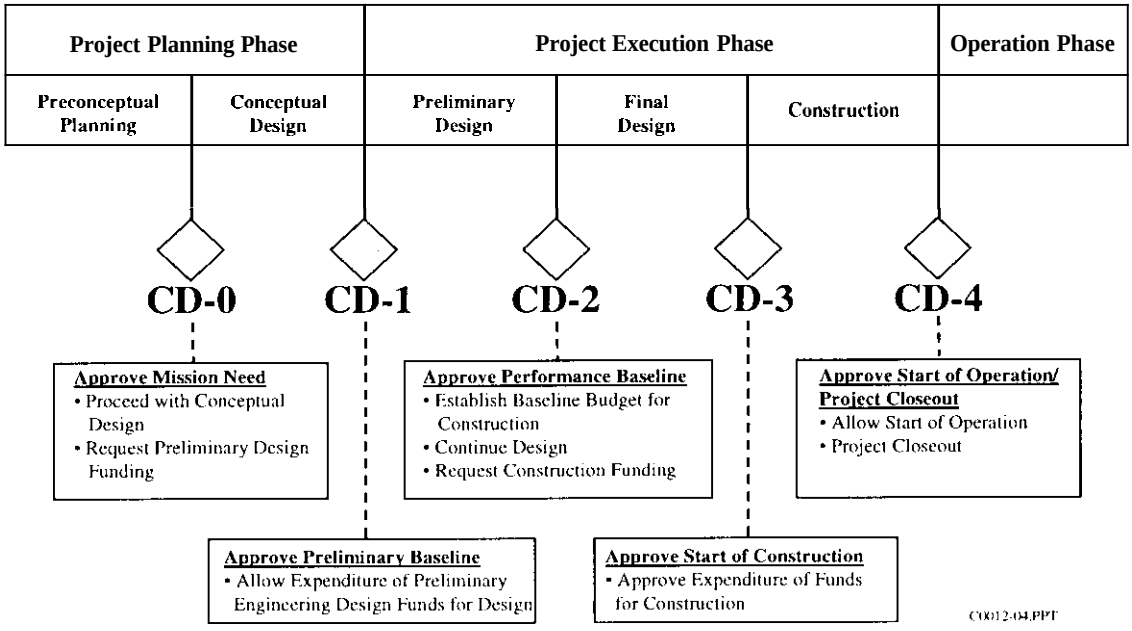


DOE-HQ = U.S. Department of Energy-Headquarters.
ORP = Office of River Protection.

4.5 CRITICAL DECISION AUTHORITIES

DOE **O 413.3,** *Program and* ***Project*** *Management for the* ***Acquisition*** *of Capital* ***Assets,*** defines the project acquisition process, the critical decision requirements, and the review process used by the Deputy Secretary as the Secretarial Acquisition Executive during the planning and execution of a capital project. Critical decisions are formal determinations or decisions at specific points in a project phase that allow the project to proceed to the next phase and commit resources. Figure 4-6 depicts the project acquisition process and the critical decisions that are required for each phase of the project

Figure 4-6. Project Acquisition Process and Critical Decisions



The ORP is responsible for the review of acquisition projects for critical decisions. For the RPP, critical decision authority for projects with an estimated cost up to $400 million has been delegated to the Construction Team Lead. Critical decisions are implemented through ORP-OPD-PP-02, ***Critical Decision Process,*** which includes an Encrgy System Acquisition Advisory Board equivalent board for line-item subprojects. Critical decision determinations are planned so that necessary documentation and activities can be performed without causing delays in project schedules. In conjunction with the authority vested in the ORP, a memorandum of approval by the Secretary authorized the ORP to finalize and award the WTP contract for design, construction, and commissioning, thus granting the ORP authority for all critical decisions for the WTP.

5.0 COMPLIANCE AND MANAGEMENT SYSTEMS

This section describes the systems used to comply with regulations and manage the project. General process flow diagrams containing a reference to the applicable requirements documents and blocks showing the major process functions are included.

5.1 COMPLIANCE

The RPP is committed to conduct its business in compliance with applicable requirements and to be responsive to the changing regulatory climate and practices. The topics are discussed from an RPP perspective and describe the mechanisms and documents that demonstrate compliance for the ORP and its Prime Contractors, the TFC and the WTPC. Compliance areas of utmost importance in the RPP include the following:

- Integrated Safety Management (ISM)
  - Environmental Management
  - Occupational Safety and Health
  - Nuclear Safety
  - Radiological Safety
- Quality Assurance
- Emergency Management
- Safeguards and Security.

5.1.1 Integrated Safety Management

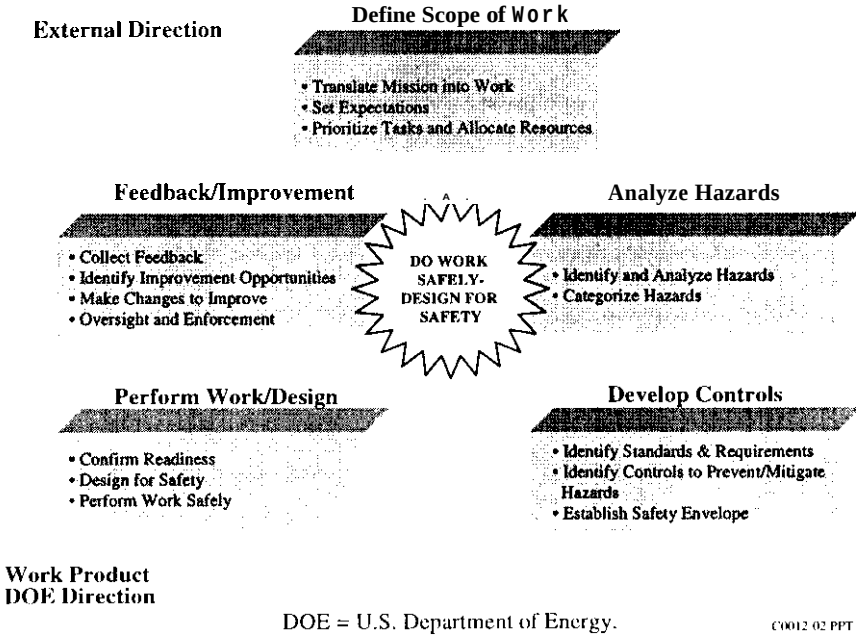
A comprehensive environment, safety and health (ES&H) management system capable of managing complex hazards, risks, and issues is necessary to complete the RPP mission safely and efficiently. DOE P 450.4, *Safety Management System Policy*,[1] establishes the basis for the **ISMS.** The objective of the ISMS is to systematically incorporate ES&H requirements into the management and work practices at all levels to DO WORK SAFELY using mechanisms that involve and result in continuous improvement. As a basic principle, safety is integrated into daily work activities. **As** such, the ISMS shifts the focus of safety into work processes that are used to plan, analyze, perform, assess, and improve the safe and efficient conduct of work at all levels of the project.

ORPPD 450.1, *River Protection Project Environment, Safety, and Health Policy,* establishes the RPP policy on the ISMS and directs that the ISMS be implemented throughout the RPP. ORPPD 450.I directs ISMS implementation through the five core functions illustrated in Figure 5-1. The five core functions and seven guiding principles are established in DOE P 450.4. ORPM 450.1. *Office of River Protection Integrated Environment, Safely and Health System Description,* provides guidance and clarification regarding integration of the

[1]The term "safety" is used synonymously in this document for purposes of prose with the term "environment, **safely.** and health" to encompass protection of the public, the workers. and the environment.

ISMS across organizational functions and interfaces. ORP functions, responsibilities, and authorities are described in ORP M 411.1-1, *Sufety Management Functions, Responsibilities, and Authorities Manual for the U.S. Department of Energy, Office of River Protection,* in accordance with DOE **P** 411.1, *Sufety Management Functions, Responsibilities, and Authorities Policy.*

Figure 5-1. Office of River Protection Integrated Safety Management Core Functions



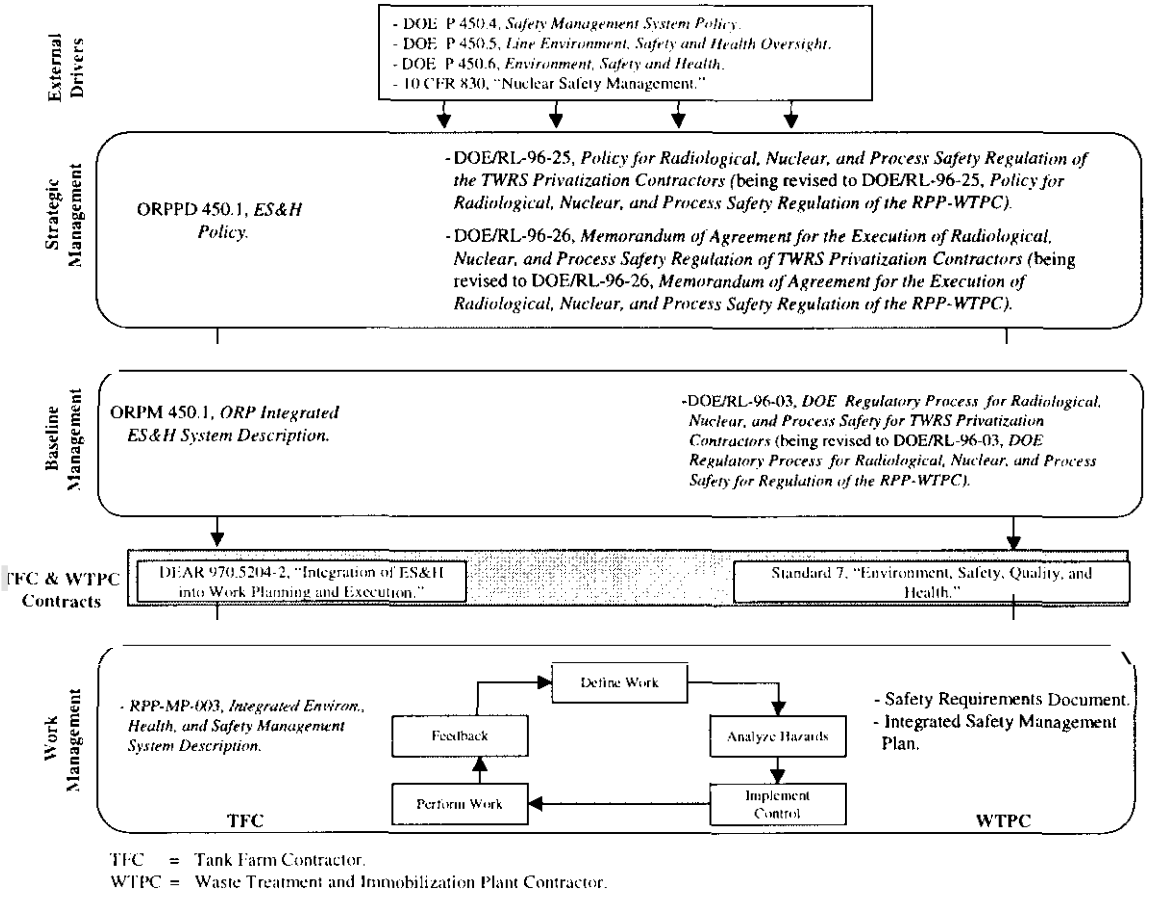
RPP contractors are required to implement and support the ISMS through their contracts and DEAR 970.5204-2, "Integration of Environment, Safety, and Health into **Work** Planning and Execution." The ORP and the RPP contractors' safety performance commitments must be consistent with the project annual work plans and must meet the safety performance goal established for the project. DEAR 970.5204-2 requires an annual review and update of the ISMS that will include the following:

- A summation of contractor performance against the previous year's ES&H performance objectives, performance measures, and commitments
- The resources planned and budgeted for the out-year to meet ES&H needs
- Corrective actions for functional ES&H program integration issues
- Corrective actions to improve ISM implementation and effectiveness
- ES&H performance objectives, measures, and commitments for the next year
- Changes required in a self- and independent assessment focus or criteria

- Changes required to an ISMS description document system
- Impacts of any changes to laws, regulations, and directives.

Figure 5-2 illustrates (1) the ORP giving direction to the contractors, (the core nctions. and (3) the feedback that is a vital part of the ISMS.

Figure 5-2. Integrated Safety Management Document Hierarchy.



TFC = Tank Farm Contractor.
WTPC = Waste Treatment and Immobilization Plant Contractor.

The AMO has line management responsibility for operational safety, including ISM implementation for the TFC. The AMPD has responsibility for overseeing ISM implementation for the WTPC and all construction projects. The current measures of effectiveness for ISM implementation are tracked by the following set of four project-wide performance indicators: (1) total recordable case rate, (2) occupational safety and health cost index, (3) worker radiation dose, and (4) reportable occurrences of releases to the environment. The AMSQ and staff provide support to the AMO and AMPD and are advocates for ISM. The OSR reviews and approves the WTPC ISM process and program and periodically assesses implementation.

- **Environmental Management**

  Environmental Management is a major portion of the ISMS for the RPP. ORP employees and contractors are stewards of the environment, as reflected in ORP policies and actions the project undertakes. Protection of the environment includes protection of

natural, archeological, cultural, and historical resources and public health. The RPP is committed to achieving environmental excellence by systematically integrating environmentally sound principles into all aspects of the project work with RPP contractors, RL, and other Hanford Site Prime Contractors.

ORP activities are subject to numerous environmental laws, regulations, and requirements, including, but not limited to, the *National Environmental Policy Act of 1969; Comprehensive Environmental Response, Compensation, and Liability Act of 1980*; *Resource Conservation und Recovery Act of 1976; Clean Air Act of 1977; Clean Water Act of 1977; Toxic Substunces Control Act of 1976; Emergency Planning and Community Right-to-Know Act of 1986; Safe Drinking Water Act of 1974; Federal Insecticide, Fungicide, and Rodenticide Act of 1972; Pollution Prevention Act of 1990; Nutionul Historic Preservation Act of 1966; Endangered Species Act of 1973;* and several other federal and state laws.

To ensure compliance and foster environmental stewardship, the ORP works in partnership with contractors, regulators, Tribal Nations, other stakeholders, and the public to:

- Consider the impacts of ORP activities on the environment.
- Comply with the Tri-Party Agreement, consent decrees and orders, laws, regulations. permits, and directives.
- Integrate pollution prevention, resource conservation, wastc minimization, and environmental impact considerations.
- Identify and mitigate adverse environmental conditions before they pose a threat to the environment.
- Promptly report and seek to correct environmental incidents and deficiencies.

Because of the nature of work activities to be performed within the RPP, identification of potential hazards and environmental impacts will be a continual process. The ORP and its contractors will identify the environmental impacts of the RPP through several mechanisms, such as *National Environmentul Policy Act of 1969* documentation, environmental monitoring, spill reporting, chemical-use tracking and reporting, pollution-prevention opportunity assessments, environmental permitting, assessments, inspections, self-assessments, reports, and waste-generation tracking and reporting. RPP contractors are contractually required to comply with environmental management requirements.

- **Occupational Safety and Health**

The ORP believes that all occupational injuries and illnesses are preventable. Injuries and incidents are not mere chance occurrences, but represent a system failure that management is responsible to prevent through the implementation of a comprehensive ISM Program.

The major external requirement for occupational safety and health for the ORP and its contractors is DOE O 440.1A, *Worker Protection Management for DOE Federal and Contractor Employees* and its requirements. This Order establishes the framework for an occupational protection program to provide workers with a safe and healthy workplace during all phases of the project. The occupational protection program for federal employees is implemented through HFID 440.I, *Federal Employee Occupational Safety tind Health (FEOSH) Program at Hanford.* The ORP is committed to worker participation in all aspects of the ISM Program but it is imperative that worker involvement be strong in the occupational safety and health program. Only through the participation and support of all the workers can the ORP expect to prevent injuries, illnesses, and accidents. The ORP supports and sponsors participation of the RPP organizations in the DOE Occupational Safety and Health Administration Voluntary Protection Program. Participation in the Voluntary Protection Program assists the RPP in accomplishing the mission in a quality, efficient, and effective manner.

- **Nuclear Safety**

The objective of the RPP Nuclear Safety Program is to ensure that RPP nuclear facilities are sited, designed, constructed, operated, decommissioned, and disposed while providing protection from nuclear hazards to workers, the public, and the environment. This is accomplished through stringent enforcement of nuclear safety requirements in 10 CFR 830, "Nuclear Safety Management," within the context of a Safety Authorization Basis for operations.

The AMSQ is responsible for all aspects of establishing and maintaining the safety Authorization Basis programmatic requirements documents and the associated nuclear safety programs for the tank waste storage and retrieval operation activity, including resolution of the flammable gas safety issue. The Office of Safety Regulation is responsible for defining the Nuclear Safety Program for the WTPC. The line managers (AMO and AMPD) are responsible for implementing the Nuclear Safety Program through the TFC and the WTPC. The Office of Safety Regulation will provide radiological, nuclear, and process safety regulation of the WTPC. This regulation is accomplished using standards-based ISM (see Figure 5-3). Standards-based ISM requires the contractor to define the work to be accomplished, identify the hazards associated with the work, and determine specific strategies to control the hazards. The contractor then selects (and DOE reviews and approves) the standards to implement the control strategies. The standards-based ISM process and the commitment that the process is conducted in full view of the public, stakeholders, and Tribal Nations, ensure that the unique hazards of the contractor's process arc specifically and adequately controlled. The following major regulatory actions are required:

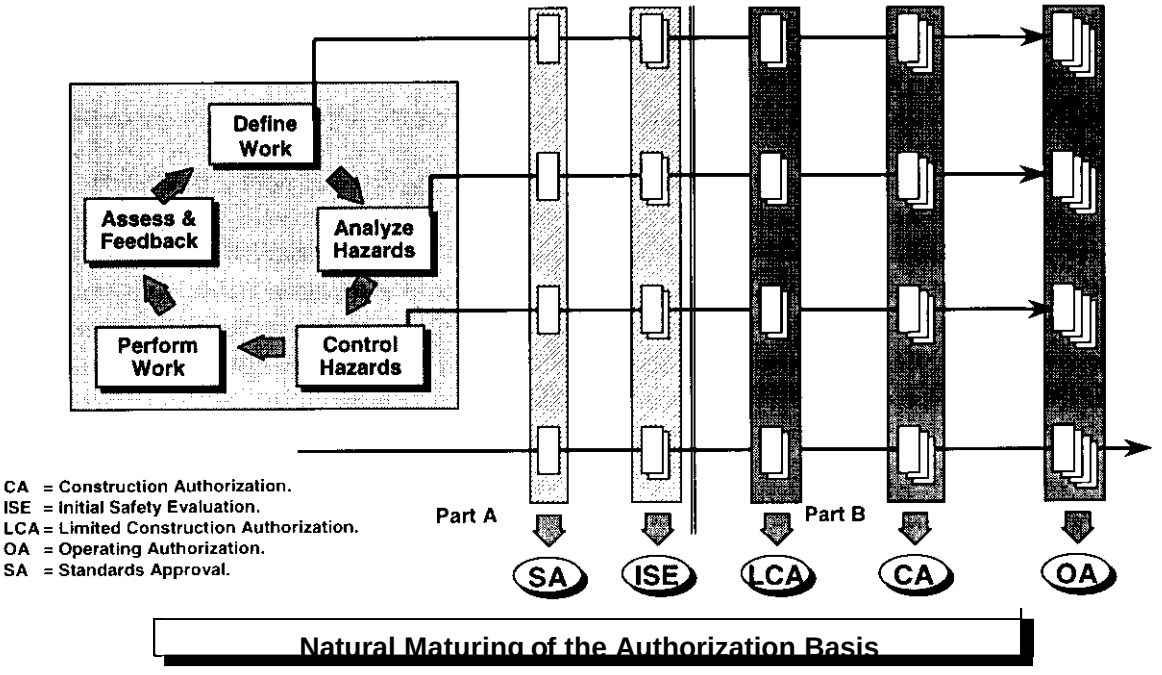
- Standards Approval, including Authorization Basis Amendment Requests, which occurs after the contractor has tailored its recommended standards and requirements using a contractually-prescribed process of hazards-based, ISM

- Verification and Confirmation --the execution of a comprehensive Inspection Program including Enforcement and Corrective Action

- Recommendation of Major Milestone Authorizations including Limited Construction, Construction, Operations, and Deactivation.

The above regulatory actions are supported by Regulatory Program administration and by Safety Management activities including the observation of design reviews, the conduct of topical meetings, and the performance of ISM reviews. RPP contractors are contractually required to develop and maintain their own nuclear safety program, and comply with respective nuclear safety requirements.

Figure 5-3. Integrated Safety Management: The Foundation of Authorization Basis.



- **Radiological Safety**

The RPP conducts radiological operations in accordance with 10 CFR 835, "Occupational Radiation Protection," and in a manner that ensures radiation exposures to its workers, the public, and the environment are maintained within regulatory limits. In addition, the RPP takes deliberate actions to reduce exposures and releases to **As** Low **As** Reasonably Achievable

The RPP conduct of operations for radiological safety includes the following:

- Establishing and maintaining regulatory policy and guidance reflective of national and international radiation protection standards and recommendations

- Training and qualifying personnel who perform radiological work

- Monitoring of radiological operations performance to control the spread of radioactive materials

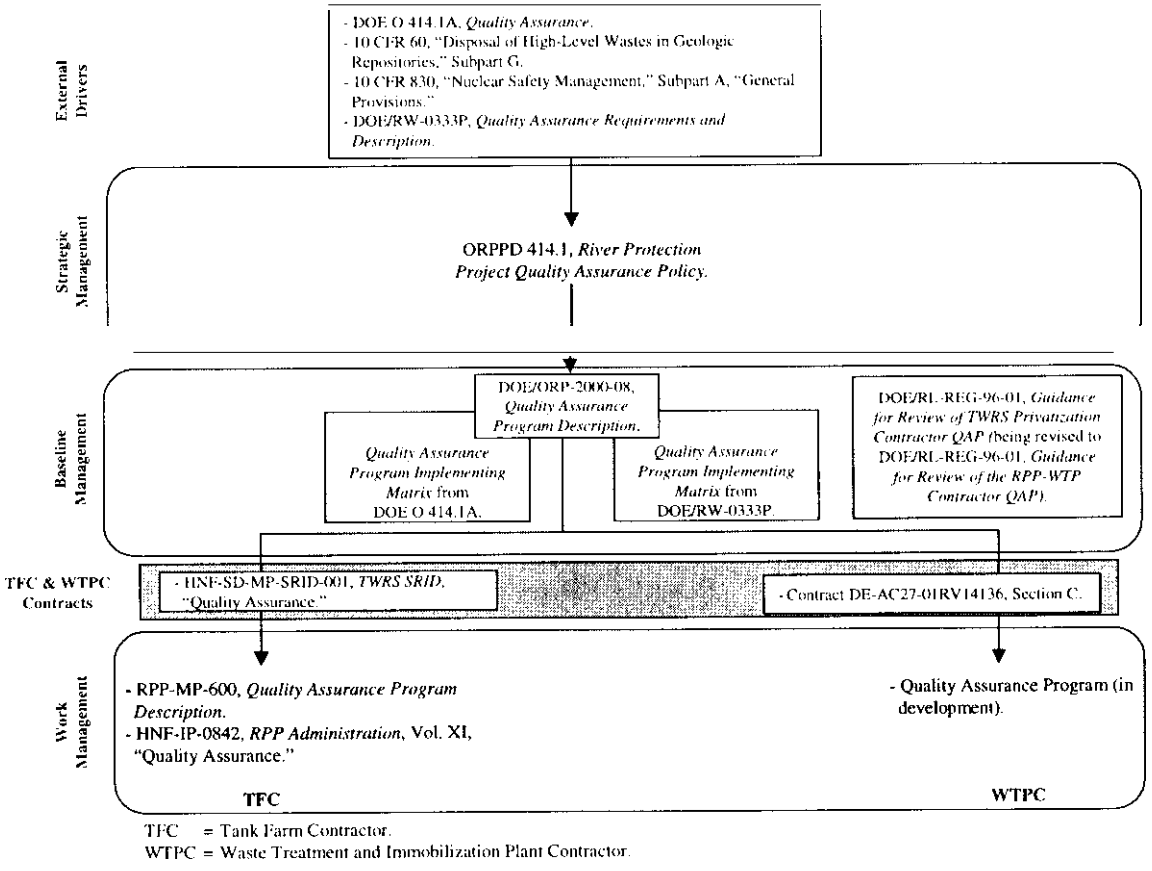
- Incorporating dose reduction, contamination reduction, and waste minimization features into the design of new facilities and significant modifications to existing facilities in the earliest planning stages.

RPP contractors are contractually required to develop, implement, and maintain a radiological safety program and be responsible for their internal conduct of radiological operations processes. The RPP contractors are required to develop and maintain a radiological safety program in accordance with radiological safety requirements.

5.1.2 Quality Assurance

The RPP QA Program is implemented in accordance with requirements and procedures described in ORPPD 4 14.1, ***River Protection Project Quality Assurance Policy,*** and DOE/ORP-2000-08, ***Quality Assurance Program Description,*** and the principles of configuration management (see Figure 5-4). This Program implements the requirements of 10 CFR 830, "Nuclear Safety Managcment," Subpart A, "General Provisions;" DOE/RW-0333P, ***Quality Assurance Requirements and Description;*** and DOE O 414.1**A**, ***Quality Assurance.***

Figure 5-4. Quality Assurance Document Hierarchy.



TFC = Tank Farm Contractor.
WTPC = Waste Treatment and Immobilization Plant Contractor.

The ORP and the RPP contractors are required to develop QA programs that comply with the above QA requirements. These programs are applied to nuclear and non-nuclear facilities and

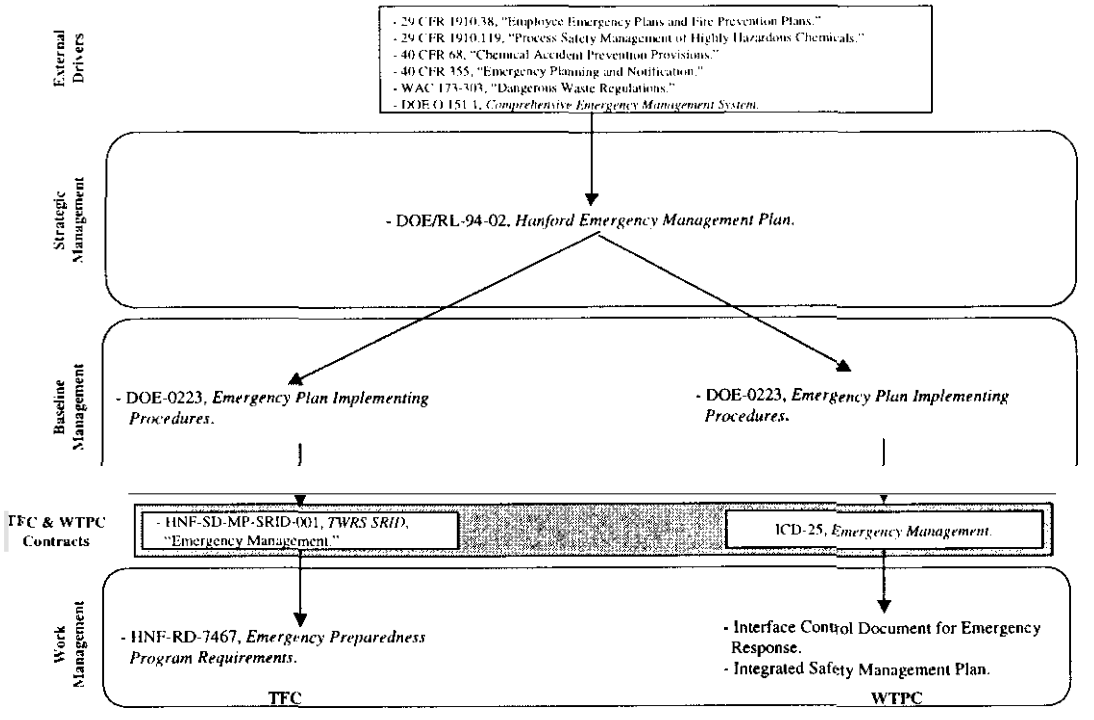
activities, using a graded approach. The graded approach shall be used to evaluate hazards or risks and to determine the appropriate controls. The varying degrees of controls applied should depend on function, complexity, consequence of failure, reliability, repeatability of results, and economic considerations. Risk is a fundamental consideration in determining to what extent controls are applied. That is, as the complexity of safety, design, construction, operations, and radiological hazards or risks increase, so do the QA requirements that ensure proper controls are applied.

The contractors' QA programs are internally reviewed and revised periodically to accommodate changes in requirements, activities, organization changes, and continuous improvement recommendations. RPP contractors are contractually required to implement the QA requirements. Contractor QA programs require DOE approval.

5.1.3 Emergency Management

The RPP emergency management system functions within the requirements of DOE/RL-94-02, *Hanford* ***Emergency Management Plan*** and DOE-0233, ***Emergency Plan*** *Implementation* ***Procedures*** (see Figure 5-5). This plan defines the response procedures and responsibilities of the federal, state, and regional entities that would he involved in an emergency on the Hanford Site. This includes RL; Hanford Site contractors; Energy Northwest; U.S. Ecology; the State of Washington; and Benton, Franklin, and Grant Counties. All RPP contractors are contractually obligated to comply with DOE/RL-94-02 and supporting procedures.

Figure 5-5. Emergency Management Document Hierarchy.



TFC = Tank Farm Contractor.
WTPC = Waste Treatment and Immobilization Plant Contractor.

5.1.4 Safeguards and Security

The RPP will operate within the objectives of the DOE Safeguards and Security Program as delineated in DOE O 470.1, *Safeguards and Security Program*. Several objectives outlined within this Order and other related Orders apply specifically to the RPP, including:

- Program Management and Administration
- Protection Program Operations
- Information Security
- Personnel Security.

The ORP is responsible for implementation and oversight of all applicable DOE Orders for the ORP and the RPP contractors in coordination with the RL Safeguards and Security organization. The ORP uses the existing RL Safeguards and Security organization and processes as appropriate to accomplish these objectives. The ORP and RL will develop an agreement that identifies the safeguards and security roles and responsibilities of each in relation to the RPP. The ORP will fully comply with the Safeguards and Security requirements implemented by RL, and will contractually obligate its contractors to do the same.

5.2 MANAGEMENT SYSTEMS

This section describes the primary management systems the ORP uses to maintain control of the RPP during each phase of its life cycle. These processes are integrated with each other such that management information flows seamlessly across the process boundaries. The processes are defined and implemented through the policies, procedures, and manuals that are referenced in their respective descriptions and associated diagrams. The management processes include the following:

- Systems Engineering Management
- Configuration Management
- Contract Management
- Baseline Change Control
- Risk Management
- Interface Management
- Human Resources Management
- Communications and Stakeholder/Public Involvement
- Performance Measurement and Reports.

5.2.1 Systems Engineering Management

Systems Engineering is a proven disciplined approach that supports management in clearly defining the mission, managing systems functions and requirements, identifying and managing risk, establishing a basis for informed decision making, and verifying that products and services meet mission needs. The general Systems Engineering process used for this project is:

1.0 *Perform Mission Analysis.* An RPP mission analysis is performed and maintained to transform strategic goals delineated into a set of top-level technical requirements which, when fully implemented in a physical system, will accomplish the strategic goals.

2.0 *Decompose Top-Level Technical Functions nnd Requirements.* The top-level functions and requirements are decomposed and allocated into sets of functions and requirements for the physical system. Performance, reliability, maintainability, human factors, and other engineering specialties are integrated into the requirements.

3.0 *Establish Physical Configuration.* The Systems Engineering process of top-down iterative functional analysis, requirements development and allocation, and optimization, results in **a** physical configuration that will satisfy the requirements is applied.

4.0 *Control Physical nnd Functional Configuration.* The configuration of requirements, form, fit, function, and technical interfaces among subsystems and components is controlled to ensure the overall system operates in a single, coordinated manner

5.0 *Verify Physical System Performance Against Requirements.* System performance is verified against requirements through analysis or test and evaluation.

Other functions classically within Systems Engineering, such as risk management, configuration management, and interface management are described in separate sections of the PMP. The RPP mission has been analyzed and mission level functions and requirements are documented in DOE/ORP-2000-10, *River Protection Project Mission Analysis Report.* As this project has activitics that span the entire life cycle, these functions and requirements have been decomposed to varying levels.

The external requirements for Systems Engineering are in DOE **O** 413.3, *Program and Project Management for Acquisition of Capital Assets,* and DOE **O** 430.1**A,** *Life-Cycle Asset Management.* The TFC and WTPC are required by contract to apply Systems Engineering consistent with these Orders.

5.2.2 Configuration Management

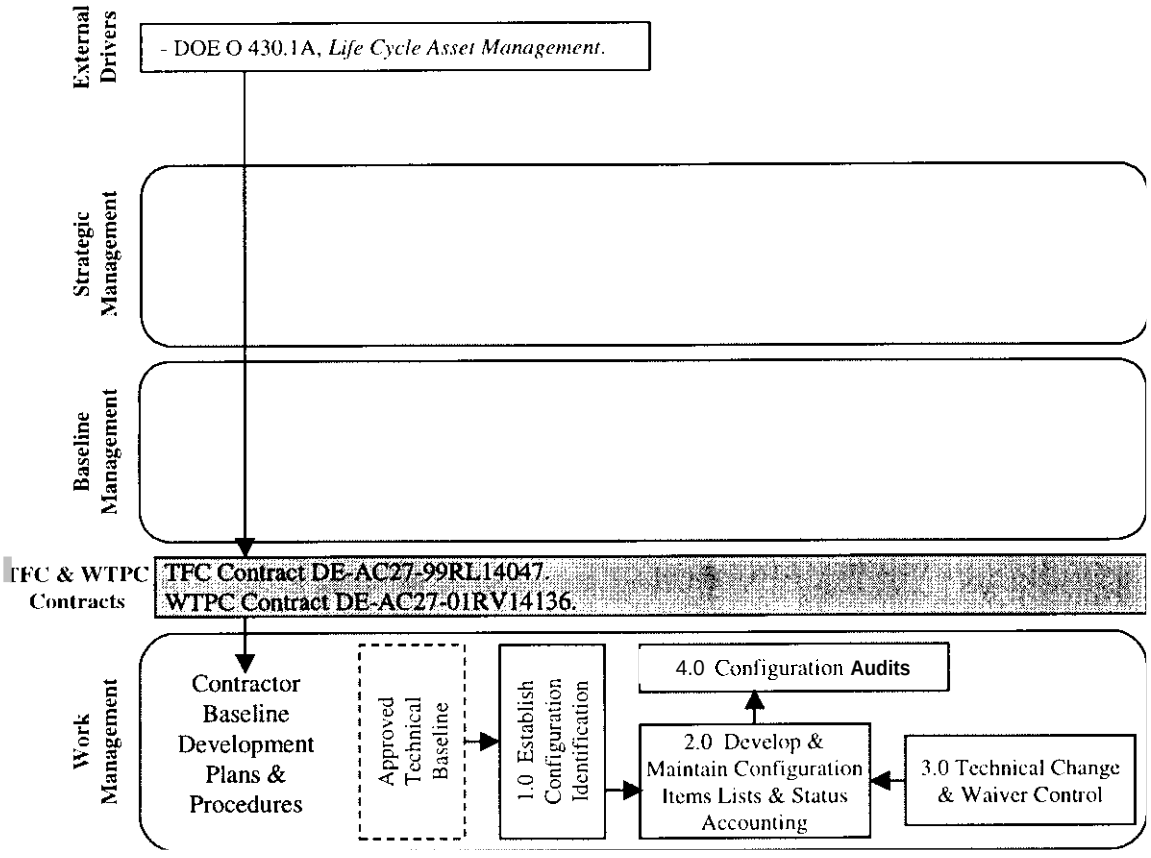
Configuration Management is the system for establishing and maintaining consistency of a product's performance, functional, and physical attributes with its corresponding requircrnents, design, and operational information throughout its life. The Configuration Management discipline is integrated with the Systems Engineering and baseline change control functions to ensure the integrity of the technical baseline and that changes to that baseline are controlled. ICDs are the primary technical interface control tools that ORP uses to formally establish and control the physical and functional interfaces between the two ORP Prime Contractors, i.e., the TFC and the WTPC.

Configuration Management is imposed through DOE **O** 430.1A, *Life Cycle Asset Management.* The RPP uses GPG-FM-012, *Configuration and Data Management*, and ANSI/EIA-649,

National Consensus Standard for Configuration Management, as guidance for the Configuration Management System.

Figure 5-6 shows the document hierarchy and process for Configuration Management

Figure 5-6. Configuration Management Document Hierarchy and Process.



TFC = Tank Farm Contractor.
WTPC = Waste Treatment and Immobilization Plant Contractor.

General Process - The general process is shown in Figure 5-6 and described as follows:

1.0 *Establish Configuration Identification.* The physical structures, systems, components, products, and processes (Configuration items) are uniquely identified using a graded approach. Unique configuration identification relates the configuration of the items to technical baseline documentation, actual item configuration as acquired, and associated attributes. Proper identification and documentation relationships provide a known configuration of the operational systems to ensure safe operation and maintenance. In addition, configuration item identification is used to control the evolving design, procurement, and installation/startup of the physical systems and components. The RPP Configuration Management functions establish the configuration item identification criteria. The criteria enable Configuration Management early in the requirements development and design phases of the project.

2.0 *Develop and Maintain Configuration Items Lists and Status Accounting.* The configuration item lists and associated status accounting are an essential part of the RPP Configuration Management system and represent the life-cycle repository for the configuration items and their relationships. Immediately following approval, the configuration item entries are systematically captured (i.e., as configuration items are acquired or characterized during the life cycle of the RPP) in their respective list or database along with related technical document information.

3.0 *Technical Change and Waiver Control.* The RPP Configuration Management system shares a common baseline change control process with RPP change control (see Section 5.3). The ICDs are central to maintaining control of changing technical interfaces between the ORP Prime Contractors. Section 5.2.6 describes interface management.

4.0 *Configuration Audits.* The configuration established in configuration item lists and status accounting system is periodically audited against the technical baseline and actual configuration as installed.

5.2.3 Contract Management

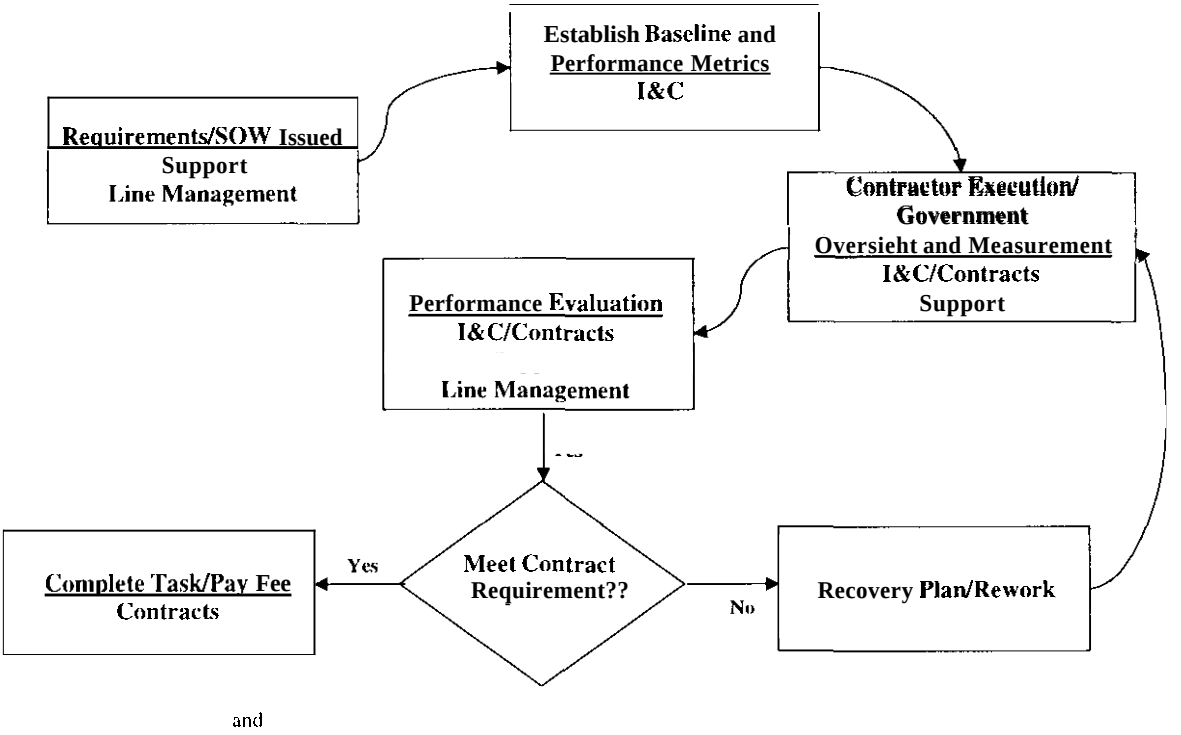
Various contractors execute the RPP work scope throughout the RPP life cycle. Major contracts currently in place are the WTPC contract and the TFC contract.

- WTPC contract--Beginning with the government-furnished conceptual design, the contractor will complete the process and facility design; manage construction and procurement; conduct acceptance testing; sclcct and integrate a subcontractor into the projcct team to provide the operability and commissioning capability; and conduct all required environmental, safety, quality, and health actions to complete the WTP by 2011. The contract is a cost-plus-incentive fee type with cost, schedule, and operational performance incentives.

- TFC contract--This is a cost-reimbursement, performance-based management contract. The contractor will maintain the tank farm waste in a safe and stable condition, retrieve tank wastc for tank closure and delivery to the WTPC, dispose of ILAW, provide interim storage of IHLW, incorporate cesium/strontium capsules into the HLW process, and permanently close the Hanford Site tank farms.

The HCA, through the Contracting Officer, is responsible for the award, administration, and management of all RPP-contracted work scope in accordance with the FAR and DEAR, starting with the Request for Proposal through the contract closeout, covering change requests, performance incentives, etc. The Director of Contracts (part of the AMI&C) assumes the management lead for all contractual interface activities with the contractors, employing participation and resources from the AMI&C and other direct functional Assistant Managers, as required, to ensure timely successful execution of each contract (see Figure 5-7).

Figure 5-7. Tank Farm Contract Management



Contract Management lead responsibilities and control include, but are not limited to, the following:

- Ensure that RPP requirements are totally defined by WBS
- Define formal contract baseline document and control through Configuration Management.
- Establish and implement an integrated contract management plan that includes Change Control, and Performance Measurement via Variance Reporting.
- Execute, measure, maintain, and report contract management progress to the Office of Project Integration and Control in accordance with the plan through completion of the contract.
- Conduct and document contract closeout in accordance with the FAR

There is a flowdown to the Prime Contractors of these contract management requirements

The WTP contract under Section C, "Statement of Work," Standard 1, "Management Products and Controls," requires a project execution plan, project control system, WTP baseline, change control, and Performance Reporting System to comply with the above contract management requirements. Work requirements are defined in Section C of the Statement of Work. **All** fee payments during contract performance are provisional and are not earned until successful

completion of contract requirements (which includes successful hot commissioning). Provisional fee payments will be made quarterly based on the measured cost and schedule performance against the WTP project baseline.

The TFC contract, under Clause H.10, "Project Controls," is required to establish a project control system that supports the tank farm portion of the integrated Hanford Site WTC baseline to comply with the above contract management requirements. The baseline shall be established and maintained in a manner that defines work, measures accomplishment, and manages baseline changes.

5.2.4 Baseline Change Control

The change control process ensures all work being performed is consistent with the RPP baseline, that the configuration control of the baseline is maintained, and that the impacts of changes to the baseline are adequately considered before actions are taken. Changes to the RPP baseline (i.e., scope, schedule, and cost) are to be managed through Change Control Administration and the Contracting Officer. ORPID 413.3-I, *Baseline Change Control*, has specific guidance and is under development.

RPP project managers initiate, process, and implement changes. The process is maintained, coordinated, tracked, and measured by Change Control Administration, an element of the Contracting Officer function. Proposed changes are documented on a *Baseline Change Request* form and subjected to **a** detailed evaluation for life-cycle technical scope or requirements, schedule, and cost impacts, as well as interfaces among all RPP functions and organizations.

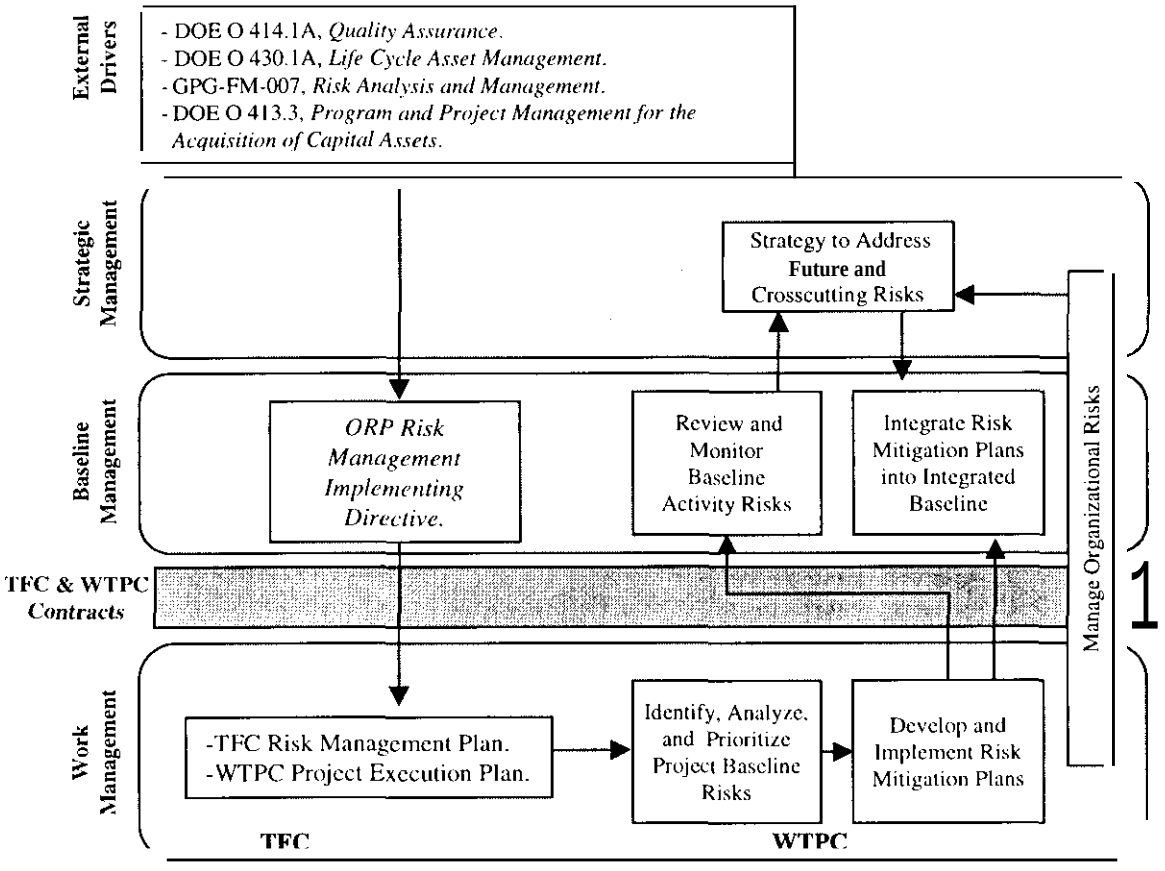
Baseline changes are processed and approved at defined threshold levels in the referenced procedure. DOE and Contractor Change Control Boards review and approve changes within these designated classifications. **All** approved changes must be conveyed to the contractors through the Contracting Officer.

5.2.5 Risk Management

Managing risk is a critical element of successful project management. Risks are events, situations, or uncertainties that potentially can have an adverse effect on the RPP baseline cost and schedulc. The RPP will apply a standardized and structured process for identifying, analyzing, and proactively managing these project risks.

The ORP is in the process of developing ORPID 430.1-2, *River Protection Project Risk Management*, to define the specific requirements and processes for managing RPP risk. This implementing directive will satisfy the risk management requirements of DOE **O** 430.**IA** and DOE **O** 413.3, and will define responsibilities for the ORP and its contractors. RPP contractors are responsible for developing their own risk management procedures, consistent with ORPID 430.1-2 and with each other. The implementing directive will also specify risk data and data collection requirements to ensure a consistent risk approach across the RPP. Figure 5-8 illustrates the flowdown of requirements and the flowup of risk information.

Figure 5-8. Risk Management Document Hierarchy and Process.



TFC = **Tank** Farm Contractor.
WTPC = Waste Treatment and Immobilization **Plant** Contractor.

Two primary products are used to describe and monitor RPP risk. **A** crosscutting critical risk list describes risks that cut across multiple RPP functions or organizations and the actions being taken to manage them. It includes organizational and baseline activity risks, and is reviewed and updated monthly during the crosscutting risk meeting among the DOE, the TFC, and the WTPC.

Two types of project risks have been identified, and processes are established to manage each type and integrate them:

- **Baseline activity risks** are uncertainties in the ability to perform the scope, within the identified cost and schedule, of the integrated baseline. These risks are analyzed quantitatively (particularly for potential cost and schedule impacts), management plans are identified, and responsible project managers closely monitor risk status.

- **Organizational risks** are qualitative and not directly tied to specific project baseline activities. These risks may include stakeholder, funding, workforce, regulatory, or contractual issues and concerns. The RPP management team maintains and monitors prioritized risk information (organizational risks and quantitative baseline activity risks) to focus on the highest risks and those with impacts cutting across the project.

Quantitative analysis of baseline activity risks is performed and updated with major baseline changes, e.g., the baseline revision reflecting the new WTPC. Baseline activity risk inanagement uses a four-step process to identify, analyze, prioritize, and manage risks contained within project activitics.

Identification of risks is accomplished through face-to-face interviews with the project management team and other individuals knowledgeable of the tasks to be performed. Specific uncertainties in technology, work scope, and interfaces are identified and discussed.

The analysis process evaluates each uncertainty for its potential impact on schedule and cost. The effect on the project completion date and total cost estimate is developed using a proven Monte Carlo simulation technique. The main output of the analysis and prioritization process is a list of risks in project activities based on technology, work scope, and interfaces. The activity uncertainties are then ranked in order of their potential impact on schedule or cost.

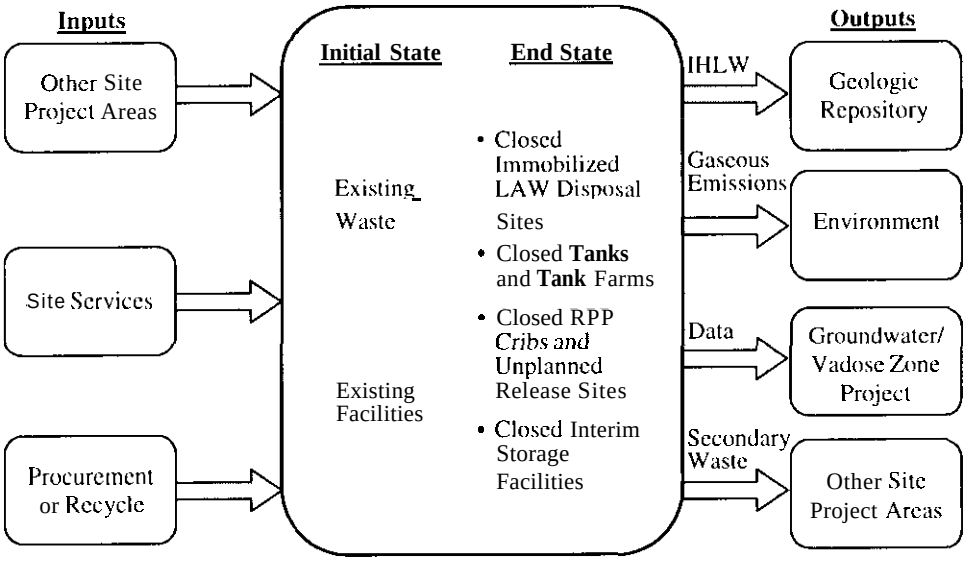
The final step, management of risks, includes the development of risk mitigation plans for activities with high-ranking uncertainties. The risk mitigation plan documents how the project plans to avoid or mitigate the effect on schedule, technical performance, or cost. The risk mitigation plan includes "cost to benefit" information that the project manager needs in order to make informed decisions regarding the risk mitigation plan implementation.

5.2.6 Interface Management

The complexity and organizational nature of the RPP creates critical connections between distinct organizations and physical boundaries that need to be managed. Interface management is a significant aspect of ensuring overall program success. Interface among the DOE contractors at the Hanford Site and with RL and DOE-HQ is an integral part of the RPP. Interface with other agencies and organizations is also necessary, as the ORP is committed to comply with federal, state, and local regulations pertaining to protecting workers, the public, and the environment. Many of these regulations have provisions that require establishment of interfaces bctwccn organizations providing or receiving infrastructure, engineering, or services.

Interface Management ensures that infrastructure, engineering, or other services necessary and critical to the RPP arc provided in an adequate, efficient, economical, and reliable manner, and that the timely cooperation and integration of these provisions with regulatory/safety requirements occur. It is not the intent to incorporate common interfaces (such as administrative) that are conducted through existing processes and are a normal part of doing business. Refer to Figure 5-9 for RPP critical physical interfaces.

Figure 5-9. River Protection Project Physical Interfaces



IHLW = Immobilized High-Level Waste.
LAW = Low-Activily Waste.
RPP = River Protection Project.

C0102-04.PPT

RPP interfaces of particular concern are those that:

- Define the functional, physical, or performance relationships between facilities, hardware, software, and/or external systems within or between contractors.
- Deal with onsite/offsite services required to operate the project, which originate or are provided outside the project.
- Address relationships between the contractor(s) and external (to RPP) entities,

As part of the RPP, the interface management process shall integrate with baseline change control, risk management, and configuration management through such vehicles as ICDs. The ORP is the decision authority for any interface issues that are not resolvable between the other parties. Disputes regarding external agreements are resolved in accordance with the terms of each external interface agreement (e.g., Tri-Party Agreement).

An Interface Management Implementing Directive will define interfaces and give guidance to the management and implementation of interfaces of the RPP between the ORP and its Prime Contractors, the TFC, and the WTPC, and in conjunction with other critical entities such as RL and its Prime Contractor providing site services, DOE-HQ, and the State of Washington Departments of Ecology and Health. RPP contractors are required to develop their own interface management procedures, consistent with the ORP Interface Management Implementing Directive.

5.2.7 Human Resources Management

The objective for ORP Human Resources is to maintain a fully staffed office that is highly qualified, motivated, and properly assigned. To achieve its goals and objectives, the ORP is developing Human Resource performance measures to be tracked and reported regularly, and customer surveys to help focus on quality and customer service improvement efforts. A major emphasis will be placed on training to transition the workforce through the major phases of the Initial Quantity (Phase 1) RPP life cycle. DOE policies and procedures for Human Resource management can be found in ORP M 411.1-1, *Safety Management Functions, Responsibilities, and Authorities Manual for the U.S. Department of Energy. Office of River Protection.*

From FY 2001 to FY 2003, the ORP will be in a major recruitment phase to build a workforce capable of continuing with tank farm operations while the design and construction phase of the new treatment facilities are underway. Between FY 2005 and FY 2012, the major increase in staffing capability will be accommodated by transitioning RL federal employees to the ORP. This will aid in necessary downsizing in RL and meet a temporary increased need in the ORP.

5.2.8 Communications and Stakeholder/Public Involvement

The RPP is of great importance to a number of regional and national interest groups and the public due to the waste threatening the Columbia River and high cleanup costs. Informing and involving these groups and the public is an important aspect of the project.

Working with the ORP Manager and contractor staff, the Office of Intergovernmental Affairs coordinates events for the ORP and the RPP. The overall communications effort covers various aspects ofcornmunication-related activities and outreach efforts. Efforts are coordinated with DOE staff (at the Hanford Site and DOE-HQ): the Hanford Advisory Board; Tribal Nations; Hanford communities; local media: Congressional and appropriation committees; and other local, regional, and national interested parties.

Specific activities of the communications function within the RPP include the following:

- Interact with the Hanford Advisory Board and associated committees and members through regularly scheduled meetings and presentations at meetings, public question and answer sessions, and one-on-one discussions.

- Coordinate and implement public involvement efforts with Ecology and the EPA for Tri-Party Agreement and permitting issues, and provide public opportunities to comment on key project decisions. Maintain liaison with the State of Oregon as key stakeholders in ORP decisions.

- Maintain a web site on the Internet, and seek innovative techniques to effectively communicate with diverse stakeholder and Tribal Nation interest groups.

- Coordinate with the media to issue timely information; develop and issue press releases; arrange and conduct media events, such as editorial boards and press conferences: and respond to inquiries from the media.

- Keep DOE management and spokespersons apprised of issues of greatest concern to interested audiences by providing current, accurate information.

- Integrate project public relations activities with the RPP and RL and complying with ORP communication protocols and requirements.

5.2.9 Performance Measurement and Reporting

Measuring and reporting project performance on a regular schedule is a key project management responsibility. This measurement and reporting process demonstrates progress toward accomplishing project goals, and helps project management do the following:

- Assess the results of work activities compared to plans
- Identify problems and develop corrective action plans.
- Improve performance at all organizational levels.

A fundamental aspect of how ORP measures RPP performance began with establishing the project's life-cycle scope, schedule, and cost baseline and placing it under change control. A critical path was also defined on the schedule baseline. An important ORP undertaking for defining and controlling top-level baseline scope was developing the project WBS. The TFC and WTPC are now extending the WBS down to lower levels of detail for their work activities. **All** work will be identified on the WBS and each WBS element will have a scope, schedule and cost baseline. Performance measurenient and reporting will be by WBS elements, rolled up to the reporting Icvcl.

The ORP measures RPP performance by receiving status reports from its contractors and conducting regularly scheduled performance reviews. These provide visibility of project performance and allow for corrective action plans to be developed when performance is unacceptable. An Earned Value Management System (EVMS) that meets the best business practice guidelines provided in ANSI/EIA-748, *Earned Value Management System*, is the primary system for measuring and reporting project performance for the RPP. The EVMS is an accepted and documented process for relating cost and schedule performance to technical accomplishments. Variances to the baseline are quantified and explained, identifying where corrective action plans may be needed. The TFC and WTPC are required by contract to use earned value in analyzing and reporting performance.

Other performance measurement techniques are also used to determine if the contractors are making satisfactory progress. These include critical path analysis to monitor the status of key activities, estimates of work remaining, projection of costs through completion, forecasts of work to be done in next 90 days, and identification of potential problems. Forecasting is an important element of project management as it enables management to address future problems and eliminate them or lessen their impact.

Performance is reported on several project functions. These include performance against the baseline; ES&H performance; and occurrence reporting.

Performance against the baseline is reported in writing and verbally. RPP contractors arc required to provide written monthly status reports using the EVMS and to make other project assessments. More extensive quarterly reports are also required. Monthly project review meetings are held so that project status can be more fully discussed and issues addressed. These reviews are attended by ORP and contractor Project Managers.

The contractors are required by laws, regulations, and DOE Orders to report ES&H performance. These include the ***Occupationul Safety and Heulth Act of 1970;***.the ***Price Anderson Amendments Act of 1988*** (10 CFR 820); and DOE **O** 231.1, ***Environment, Safety and Health Reporting.*** Performance indicators; such as lost workday rate, number of skin contaminations, collective radiation dose, and environmental releases, are tracked and trended. RPP contractors are also required to report unusual occurrences in accordance with DOE **M** ***232.1-1A***, ***Occurrence Reporting*** *and* ***Processing of Operations Information.*** Occurrence reporting must also meet the requirements of the Hanford-Site specific requirements and methods for notification.

The ORP measures the contractors' and project's performance by assessing these reports, having ORP staff located at the project work sites, conducting audits, and having outside independent teams assess the project. **All** of these techniques are important in managing the RPP.

6.0 REFERENCES

Acts

Clean Air Act of 1977, 42 USC 7401, et seq

Clean Water Act of 1977, as amended, 33 USC 1251, et seq

Comprehensive Environmentul Response, Compensation, and Liability Act of 1980, as amended, 42 USC 9601, et seq.

Endangered Species Act of 1973, 16 USC 1531, et seq.

Emergency Plunning and Community Right-to-Know Act of 1986, 42 USC 11001, et seq.

Federul Insecticide, Fungicide, and Rodenticide Act of 1972, 7 USC 135, et seq.

National Environmental Policy Act of 1969, as amended, 42 USC 4321, et seq.

National Historic Preservation Act of 1966, as amended, 16 USC 470, et seq.

Pollution Prevention Act of 1990, 42 USC 13101, et seq.

Resource Conservation and Recovery Act of 1976, Public Law 94-580, 90 Stat. 2795, 42 USC 6901 et seq.

Safe Drinking Water Act of 1974, 42 USC 300f, et seq

Strom Thurmond National Defense Authorization Act for Fiscal Yeur 1999, as amended. Public Law 105-261.

Toxic Substances Control Act of 1976, 15 USC 6921, et scq.

Washington State Hazardous Waste Management Act, as amended, RCW 70.105

Code of Federal Regulations

10 CFR 60, "Disposal of High-Level Wastes in Geologic Repositories," *Code of Federal Regulations*, as amended.

10 CFR 830, "Nuclear Safety Management," Subpart A, "General Provisions," *Code of Federul Regulations*, as amended.

10 CFR 835, "Occupational Radiation Protection," *Code of Federul Regulations*, as amended.

29 CFR 1910.38, "Employee Emergency Plans and Fire Prevention Plans," *Code of Federal Regulations*, as amended.

29 CFR 1910.119, "Process Safety Management of Highly Hazardous Chemicals," *Code of Federul Regulations*, as amended.

40 CFR 68, "Chemical Accident Prevention Provisions," *Code of Federal Regulations*, as amended.

40 CFR 355, "Emergency Planning and Notification," *Code of Federal Regulations*, as amended.

DEAR 970.5204-2, 2000, "Integration of Environment, Safety, and Health into Work Planning and Execution," *Department of Energy Acquisition Regulation*, as amended.

Federal Register

62 FR 8693, 1997, "Record of Decision for the Tank Waste Remediation System, Hanford Site, Richland, WA," *Federul Register*, Vol. 62, pp. 8693-8704 (February 26).

Documents

DOE/EIS-0189, 1996, *Tank Wuste Remediation System, Hanford Site, Richland, Washington, Final Environmental Impact Statement*, Washington State Department of Ecology, Olympia, Washington, and U S . Department of Energy, Washington, D.C.

DOE/EIS-0212, 1995, *Safe Interim Storage of Hanford Tunk Wastes, Final Environmental Impact Statement, Hanford Site, Richland, Washington*, U.S. Department of Energy, Washington, D.C.

Hanford Federal Facility Agreement and Consent Order, 1996, 2 vols., Washington State Dcpartinent of Ecology, Olympia, Washington; U.S. Environmental Protection Agency, Washington, D.C.; and U.S. Department of Energy, Washington, D.C.

WHC-EP-0616, 1993, *Tank Waste Technical Options Report*, Wcstinghouse Hanford Company, Richland, Washington.

Standards

ANSI/EIA-649, 1998, *National Consensus Standard for Configuration Management*, American National Standards Institute/Electronic Industries Alliance, Arlington, Virginia.

ANSI/EIA-748, 1998, *Earned-Value Management System*, American National Standards Institute/Electronic Industries Association, New York, New York.

U.S. Department of Energy

Delegation of Authority/Designation Head of Contracting Activity (HCA), 2000, Memorandum from Acting Director, Office of Procurement and Assistance Management (MA-5) to Manager, U.S. Department of Energy, Office of River Protection, February 26, U.S. Department of Energy, Washington, D.C.

DOE/EIS-0222F, 1999, *Final Comprehensive Luncl-Use Plan Environmentul Impact Statement*, U.S. Department of Energy, Washington, D.C.

DOE M 140.I-1A, 1999, *Interface with the Defense Nuclear Facilities Sqfety Board*, U.S. Department of Energy, Washington, D.C.

DOE M 232.I-1A, 1997, *Occurrence Reporting and Processing of Operations Information*, U.S. Department of Energy, Washington, D.C.

DOE O 151.1, 1995, *Comprehensive Emergency Management System*, U.S. Department of Energy, Washington, D.C.

DOE O 231.1, 1995, *Environment, Safety, and Health Reporting*, U.S. Department of Energy, Washington, D.C.

DOE O 413.3, 2000, *Program and Project Management for the Acquisition of Capital Assets*, U.S. Department of Energy, Washington, D.C.

DOE O 414.1A, 1999, *Quality Assurance*, U.S. Department of Energy, Washington, D.C.

DOE O 430.1A, 1998, *Life Cycle Asset Muncigement*, U.S. Department of Energy, Washington, D.C.

DOE O 435.1, 1999, *Radioactive Waste Management*, U.S. Department of Energy, washington, D.C.

DOE O 440.1A, 1998, *Worker Protection Management for DOE Federul and Contractor Employees*, U.S. Department of Energy, Washington, D.C.

DOE O 470.1, 1995, *Safeguards cind Security Program*, U.S. Department of Energy, Washington, D.C.

DOE O 541.1A, 2000, *Appointment of Contracting Officers and Contractor Officer Representatives*, U.S. Department of Energy, Washington, D.C.

DOE P 411.1, 1997, *Safety Mrinagement Functions, Responsibilities, and Authorities Policy*, U.S. Department of Energy, Washington, D.C.

DOE P 413.3, 2000, *Program and Project Management Policy for the Planning, Programming, cind Acquisition of Capital Assets*, U.S. Department of Energy, Washington, D.C.

DOE P 450.4, 1996, *Safety Management System Policy*, U.S. Department of Energy, Washington, D.C.

DOE P 450.5, 1997, *Line Environment, Safety and Health Oversight*, U.S. Department of Energy, Washington, D.C.

DOE P 450.6, 1998, *Environment, Safety and Health*, U.S. Department of Energy, Washington, D.C.

DOE/RW-0333P, 1998, *Quality Assurance Requirements and Description,* U S . Department of Energy, Washington, D.C.

GPG-FM-007, 1996, *Risk Analysis and Management*, Life Cycle Asset Management, Good Practice Guide, U.S. Department of Energy, Washington, D.C.

GPG-FM-010, 1996, *Project Execution and Engineering Mrinagement* ***Planning,*** Life Cycle Asset Management, Good Practice Guide, U.S. Department of Energy, Washington, D.C.

GPG-FM-012, 1996, *Configuration und Data Management*, Life Cycle Asset Management, Good Practice Guide, U.S. Department of Energy, Washington, D.C.

Justification of Mission Need, Hanford Site Tank Waste Remediation System to the Energy System Acquisition Advisory Board, 1993, U.S. Department of Energy, Washington, D.C.

Memorandum of Agreement Among the Office of Environmental Management, the Office of River Protection, and the Richland Operations Office, 2000, December, U.S. Department of Energy-Headquarters, Washington, D.C.

Review and Approval Guidance for Environmental Compliance and Cleanup Agreements for the Office of Environmental Management, 1997, Memorandum to Distribution, June 16, A. L. Alm, Assistant Secretary for Environmental Management, U S . Department of Energy, Washington, D.C.

Office of River Protection

DE-AC27-99RL14047, 1999, *CH2M HILL Hanford Group, Inc., Contract*, U.S. Department of Energy, Officc of River Protection, Richland, Washington.

DE-AC27-01RV 14136, 2000, *Bechtel National, Inc., Design, Construction, and Commissioning of the Hanford Tank Waste Treatment and Immobilization Plant,* U S . Department of Energy, Office of River Protection, Richland, Washington.

DOE/ORP-2000-08, 2000, *Quality Assurance Program Description,* U.S. Department of Energy, Officc of River Protection, Richland, Washington.

DOE/ORP-2000-10, 2000, *River Protection Project Mission Antilysis Report,* U.S. Department of Energy, Office of River Protection, Richland, Washington.

DOE-ORP 2000-27, 2000, *Office of River Protection 2-Year Progress Report to Congress, December 2000,* U.S. Department of Energy, Office of River Protection, Richland, Washington.

ORP-OPD-PP-02, 1999, *Critical Decision Process,* U.S. Department of Energy, Office of River Protection, Richland, Washington.

ORP M 411.I-I, 2001, *Safety Management Functions, Responsibilities, and Authorities Manual for the U.S. Department of Energy, Office of River Protection*, U.S. Department of Energy, Office of River Protection, Richland, Washington.

ORPM 450.I, 2000, *Office of River Protection Integrated Environment, Safety and Health System Description,* U.S. Department of Energy, Office of River Protection, Richland, Washington.

ORPID 25I.1, *ORP Directives System,* 1999, U.S. Department of Energy, Office of Rivei Protection, Richland, Washington.

ORPPD 4 14.1, 2001, *River Protection Project Qualify Assurance Policy,* **U.S.** Department of Energy, Office of River Protection, Richland, Washington.

ORPPD 450.1, 2000, *River Protection Project Environment, Safety, and Health Policy,* U.S. Department of Energy, Office of River Protection, Richland, Washington.

U.S. Department of Energy, Richland Operations Office

DOE-0223, 1999, *Emergency Plan Implementing Procedures,* U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-94-02, 2001, *Hanford Emergency Management Plan*, Rev. 2, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-96-03, 1996, *DOE Regulatory Process for Radiological, Nucleur, and Process Sufety for TWRS Privutizution Contractors*, U.S. Department of Energy, Richland Operations Office, Richland, Washington (being rcviscd to DOE/RL-96-03, *DOE Regulatory Process for Rudiologicul. Nuclear. rind Process Safety for TWRS Privatization Contructors).*

DOE/RL-96-25, 1996, *Policy for Radiological, Nucleur, and Process Safety Regulation of TWRS Privutizution Contructors,* U.S. Department of Energy, Richland Operations Office, Richland, Washington (being revised to DOE/RL-96-25, *Policy for Radiological, Nucleur, and Process Safety Regulation of the RPP-WTPC).*

DOE/RL-96-26, 1996, *Memorandum of Agreement for the Execution of Radiological, Nucleur, and Process Safety Regulation of TWRS Privatization Contractors*, **U.S.** Department of Energy, Richland Operations Office, Richland, Washington (being revised to DOE/RL-96-26, *Memorandum of Agreement for the Executiori of Radiological, Nuclear, and Process Safety Regulation of TWRS Privatization Contractors),*

DOE/RL-97-55, 1999, *Hanford Sire Environmental Mantrgement Specification*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-96-92, 1996, *Hanford Strategic Plan*, Rev. *0*, **U.S.** Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-REG-96-01, 1996, *Guidance for Review of TWRS Privatization Contractor QAP,* U S . Department of Energy, Richland Operations Office, Richland, Washington (being revised to DOE/RL-REG-96-01, *Guidance for Review of TWRS Privatization Contractor QAP*).

HFID 440.1, 1999, *Federal Employee Occupational Safety and Heulth (FEOSH) Program ut Hanford*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Fluor Hanford

HNF-RD-7467, 2001, *Emergency Preparedness Program Requirements*, Fluor Hanford, Richland, Washington.

Tank Farm Contractor

HNF-IP-0842, 2000, *RPP Administration*, CH2M HILL Hanford Group, Inc., Richland, Washington.

HNF-SD-MP-SRID-001, 1999, *Tunk Wuste Remediation System Standards/Requirements Identification Document*, Rev. 2, Lockheed Martin Hanford Corporation, Richland, Washington.

HNF-SD-WM-SEMP-002, 2000, *Systems Engineering Munagement Plan for the Tunk Farm Contractor*, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-MP-003, 2001, *Integrated Environment, Health, and Safety Management System Description*, Rev. 4, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-MP-600, 2001, *Quality Assurance Program Description*, Rev. 1a, CH2M HILL Hanford Group, Inc., Richland, Washington.

Washington Administrative Code

WAC 173-303, "Dangerous Waste Regulations," *Washington Administrative Code*, as amended.

7.0 BIBLIOGRAPHY

Acts

Atomic Energy Act of 1954, as amended, 42 USC 2011, et seq

Nuclear Wuste Policy Act of 1982, as amended, 42 USC 10101, et seq

Occupational Safety und Heulth Act of 1970, as amended, 29 USC 651, et seq

Price-Anderson Amendments Act of 1988, as amended, 42 USC 2010, et seq

Code of Federal Regulations

FAR 52.237.2, "Protection of Government Buildings, Equipment and Vegetation," *Code of Federal Regulations*, as amended.

Federal Register

60 FR 61687, 1995, "Record of Decision: Safe Interim Storage of Hanford Tank Wastes, Hanford Site, Richland, WA," *Federal Register*, Vol. 60, pp. 61687-61692 (December 1)

U.S. Department of Energy

DOE G 120.1-5, 1996, *Guidelines for Performance Measurement*, U.S. Department of Energy, Washington, D.C.

DOE O 200.1, 1996, *Information Management Program*, U.S. Department of Energy. Washington, D.C.

DOE O 241.1, 1998, *Scientific and Technical Information Management*, U.S. Department of Energy, Washington, D.C.

DOE O 412.1, 1999, *Work Authorization System*, U.S. Department of Energy, Washington, D.C.

DOE O 420.1, 1995, *Facility Safety*, U.S. Department of Energy, Washington, D.C.

DOE O 471.2A, 1997, *Information Security Program*, U.S. Department of Energy, Washington, D.C.

DOE O 472.1B, 1997, *Personnel Security Activities*, U.S. Department of Energy, Washington, D.C.

DOE O 474.1, 1999, *Control and Accountability of Nuclear Materials*, U.S. Department of Energy, Washington, D.C.

DOE Order 1340.1B, 1993, *Management of Public Communications, Publications, and Scientific, Technical, and Engineering Puhlications,* U.S. Department of Energy, Washington, D.C.

DOE Order 5480.23, 1992, *Nuclear Safely Analysis Reports, U.S.* Department of Energy, Washington, D.C.

DOE-STD-1098-99, 1999, *Radiological Control,* U.S. Department of Energy, Washington, D.C.

GPG-FM-009, 1996, *Baseline Change Control,* Life Cycle Asset Management, Good Practice Guide, U.S. Department of Energy, Washington, D.C.

GPG-FM-016, 1996, *Baseline Development*, Life Cycle Asset Management, Good Practice Guide, U.S. Department of Energy, Washington, D.C.

Integrated Plunning, Accountability, and Budgeting System Handbook, 1999, U.S. Department of Energy, Washington, D.C.

Memorandum of Agreement for Acceptance of Department of Energy Spent Nuclear Fuel and High-Level Radioactive Wuste Between the Assistant Secretary for Environmental Management (EM), U.S. Department of Energy (DOE), Washington, D.C., and the Director, Office of Civilian Radioactive Waste Management (RW), 1999, Rev. 1, January, U.S. Department of Energy-Headquarters, Washington, D.C.

RL-HQ-000683, 1996, *Design Basis Threat for Department of Energy Programs and Facilities,* U.S. Department of Energy, Washington, D.C.

SEN-35-91, 1991, *Nuclear Safety Policy, U.S.* Department of Energy, Washington, D.C.

U.S. Department of Energy, Office of River Protection

DOE/ORP-2000-09, 2000, *River Protection Project Strategic Plun,* U.S. Department of Energy, Office of River Protection, Richland, Washington.

DOE/ORP-2000-13, 2000, *Office of River Protection/Information Resource Management Policy,* U.S. Department of Energy, Office of River Protection, Richland, Washington.

ORP-6126, 2000, *RPP Programmatic Risk Management Policy,* U.S. Department of Encrgy, Office of River Protection, Richland, Washington.

ORP-6127, 2000, *RPP Programmatic Risk Mantrgement Plan*, U S. Department of Energy, Office of River Protection, Richland, Washington.

RPP-5993, 2000, *PIO Administration, U.S.* Department of Energy, Office of River Protection, Richland, Washington.

U.S. Department of Energy, Richland Operations Office

DE-AC06-96RL13200, 1996, *Project Hanford Management Contract*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-96-02, 1996, *Top-Level Safeguards rind Security Requirements for TWRS Privatization*, **U.S.** Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-96-04, 1996, *Guide to Establishing a Set of Essential Rudiologicul cind Nuclear Safety Standards and Requirements for TWRS Privatization.* U.S. Department of Energy. Richland Operations Office, Richland, Washington.

DOE/RL-96-05, 1996, *Concept of the DOE Regulatory Process for Rudiologicul, Nuclear, and Process Sufety for TWRS Privatization Contractors,* U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOEIRL-96-26, 1996, *Memorandum of Agreement for the Execution of Radiological, Nuclear, cind Process Safety Regulation of TWRS Privutizution Contractors*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOEIRL-96- 109, 1999, *Hanford Radiological Control Manual,* **Rev.** 2, U S . Department of Energy, Richland Operations Office, Richland, Washington.

RLID 470.1, 1997, *Safeguards and Security Corrective Action Management System,* U.S. Department of Energy, Richland Operations Office, Richland, Washington

RLID 471.2B, 1999, *Information Security Program*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

RLID 473.1, 1996, *Protection of Safeguards and Security Interests,* U.S. Department of Energy, Richland Operations Office, Richland, Washington.

RLID 473.2, 1997, *Hanford Site Access Eligibility,* U.S. Department of Energy, Richland Operations Office, Richland, Washington.

RLID 5000.1, 1994, *Baseline Execution and Management Process,* U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Tank Farm Contractor

HNF-4774, 2000, *River Protection Project Environmentcil Permits arid Related Documents*, CH2M HILL Hanford Group, Inc., Richland, Washington.

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

HNF-SD-WM-TSR-006, 2000, *Tank Waste Remediation System Technical Safety Requirements*, Rev. 1, as amended, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-6017, 2000, ***Drufi Project Execution Planfor the Tank Farm Contractor,*** Rev. 0, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-POL-IRM, 2000, ***Information Resource Management Policy,*** CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-POL-SAFE, 1999, ***Safeguards and Security Policy,*** CH2M HILL Hanford Group, Inc. Richland, Washington.

RPP-POL-TRIBES, 1999, ***Tribes, Regulutors, and Stakeholders Participation Policy,*** CH2M HILL Hanford Group, Inc., Richland, Washington.

Washington Administrative Code

WAC 173-200, "Water Quality Standards for Ground Waters of the State of Washington," ***Washington Administrative Code,*** as amended.

WAC 173-2 16, "State Waste Discharge Permit Program," *Washington* ***Administrative Code,*** as amended.

WAC 173-360, "Underground Storage Tank Regulations," *Washington* ***Administrative*** *Code,* as amended.

WAC 173-400, "General Regulations for Air Pollution Sources," ***Washington Administrative*** *Code,* as amended.

WAC 173-401, "Operating Permit Regulations," ***Washington Administrative*** *Code,* as amended.

WAC 173-460, "Controls for New Sources of Toxic Air Pollutants," *Washington* ***Administrative Code,*** as amended.

WAC 246-247, "Radiation Protection Air Emissions," ***Washington Administrative*** *Code,* as amended.

APPENDIX A

MATRIX

This page intentionally **left blank.**

APPENDIX A

MATRIX

Table **A-I.** River Protection Project - Project Management Plan versus DOE O 413.3, *Program and Project Management for the Acquisition of Capital Assets*, Project Execution Plan Summary Compliance Matrix. (2 sheets)

DOE **O 413.3** Project Execution Plan elements	Met	Project Management Plan chauter	Project Management Plan section title(s)
Element a) "Title Page"	Yes	N/A	N/A
Element b) "Introduction"	Yes	1.0 Introduction	**N/A** – PMP includes an Executive Summary
Element c) "Justification of Mission"	Yes	2.0 Mission	2.1 The Challenge. Describes the mission, technical, and management challenges
			2.2. Strategy for Success. Includes project concept, goals, and objectives
Element d) "Project Description" Element f) "Work Brcakdown structure" (WBS)" Element g) "Resource Plan" Element h) "Project technical, Schedule, and Cost Life-Cycle Baselines"	Yes	3.0 Work Plan – RPP Baseline	3.1 Work to he Executed
			3.2 RPP Baseline-Definition
			3.3 Identification of Work
			3.4 Building the Work Brcakdown Structure
			3.5 Sequence of Work to bc Performed - Logic and Schedule
			3.6 RPP Schcdulc Support Tools
			3.7 Cost of Work to be Performed
			3.8 Document Hierarchy
Element e) "Management Structure and Responsibilities"	Yes	4.0 Management structure, Responsibilities, and Authorities	4.1 RPP Organization and Responsibilities
			4.2. DOE ORP Organization
			4.3 RPP Organizational Interfaces
			4.4 Contracting Authority
			4.5 Critical Decision Authority

Table A-I . River Protection Project - Project Management Plan versus DOE **O** 413.3, *Program and Project Management for the Acquisition of Capital* **Assets**, Project Execution Plan Summary Compliance Matrix. (2 sheets)

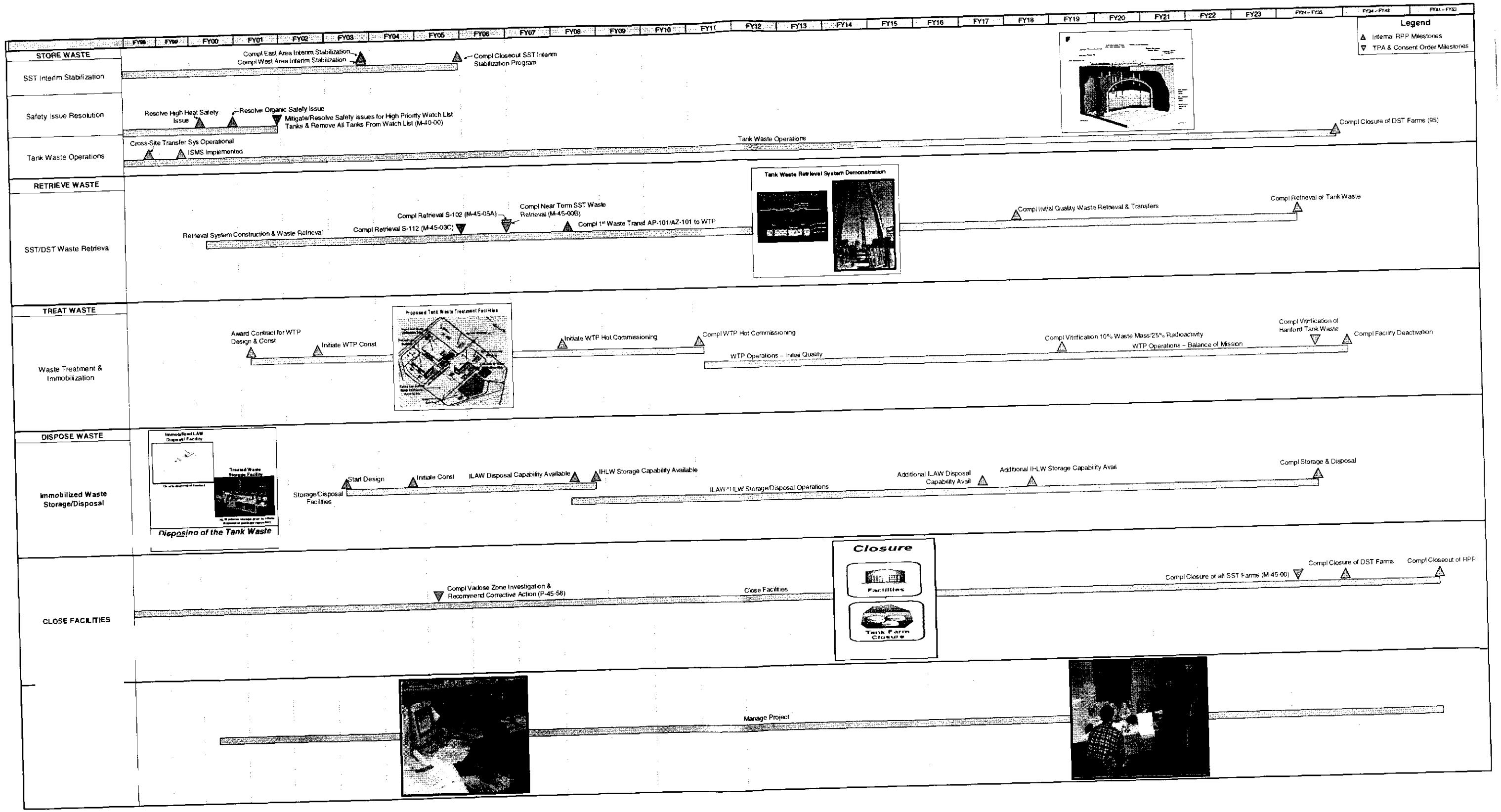
DOE **O 413.3** Project Execution Plan elements	Met?	Project Management Plan chauter	Project Management Plan section title(s)
Element i) "Baseline Change Control Approval Thresholds"	Yes	5.0 Compliance and Management Systems	5.2.4 Baseline Change Control – *section indicates thresholds to he in procedure* ***in*** *development*
Element j) "Risk Management Assessment"	Yes		5.2.5 Risk Management – *section indicates directive in development for requirements and processes for managing risk*
Element l) "Acquisition Strategy Plan"	Yes	4.0 Management Structure, Responsibilities, and Authorities	4.4 Contracting Authority
		5.0 Compliance and Management Systems	5.2.3 Contract Management
Element **k)** "Project Control System Description"	Yes	5.0 Compliance and Management Systems	5.2.9 Performance Measurement and Reporting
Element m) "Alternate, Tradeoffs"	Yes	2.0 Mission	2.I The Challenge
Element n) "Technical Considerations"	Yes		2.2 Strategy for Success

APPENDIX B

RIVER PROTECTION PROJECT SUMMARY SCHEDULE

This page intentionally left **blank**

Figure B-1. River Protection Project Summary Schedule.

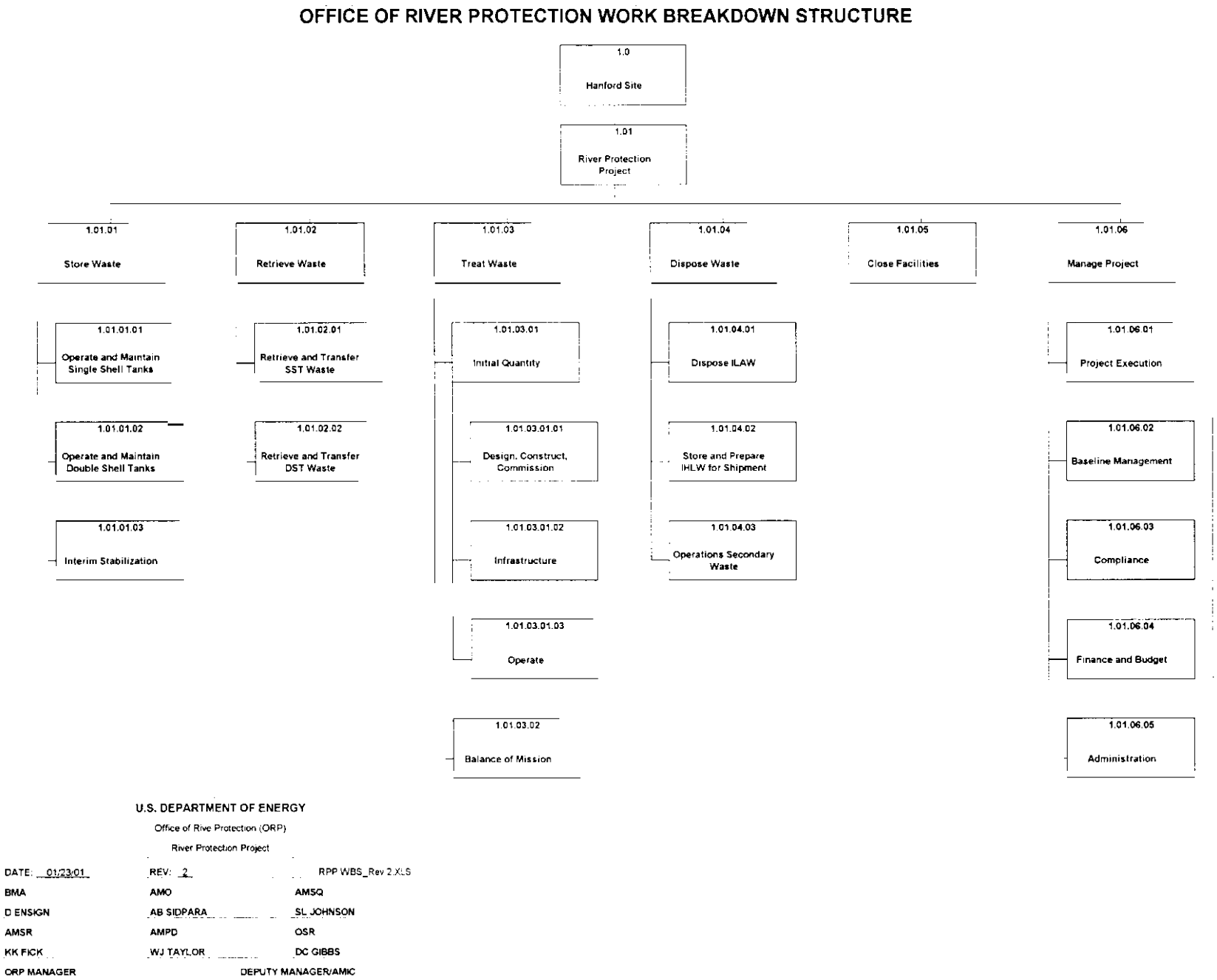


APPENDIX C

WORK BREAKDOWN STRUCTURE

This page intentionally left blank.

Figure C-1. Work Breakdown Structure.



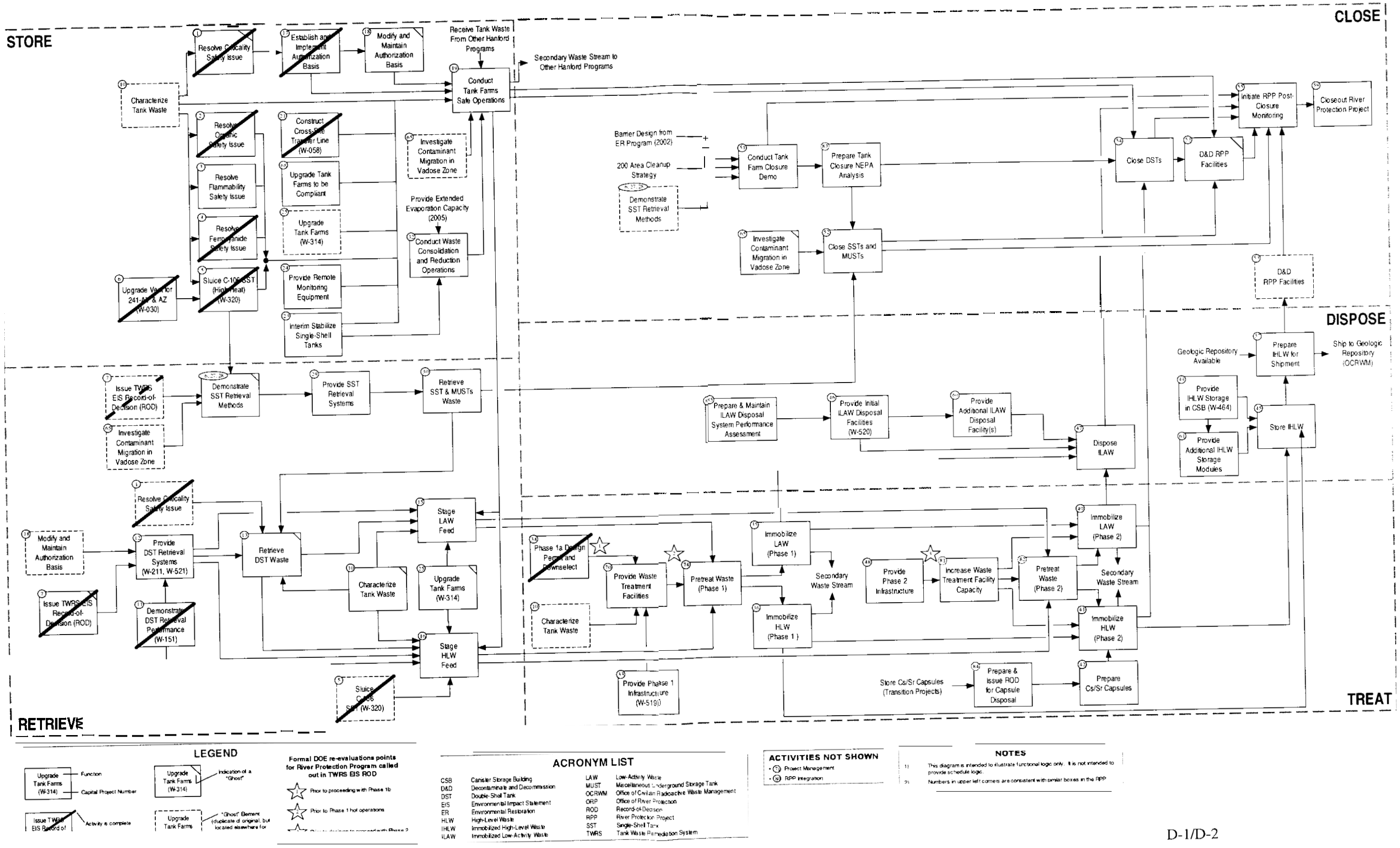
This page intentionally left **blank**

APPENDIX D

LEVEL 0 LOGIC

This page intentionally left blank

Figure D-1. Level 0 Logic Diagram.



DISTRIBUTION

Onsite

I30	U.S. Department of Energy, Office of River Protection	
	D. H. Alexander	H6-60 (H)
	R. C. Barr	H6-60 (H)
	M. K. Barrett	H6-60 (H)
	J. J. Bevelacqua	H6-60 (H)
	H. L. Boston	H6-60 (H)
	N. R. Brown	H6-60 (H)
	D. C. Bryson	H6-60 (H)
	K. R. Ensign	H6-60 (H)
	L. Erickson	H6-60 (H)
	K. K. Fick	H6-60 (H)
	P. T. Furlong	H6-60 (H)
	S. L. Johnson	H6-60 (H)
	J. E. Navarro (I 12)	H6-60 (H)
	J. A. Poppiti	H6-60 (H)
	A. B. Sidpara	H6-60 (H)
	G. D. Schein	A7-75 (H)
	S. D. Stubblebine	H6-60 (H)
	W. J. Taylor	H6-60 (H)
	S. A. Wiegman	H6-60 (H)
21	U.S. Department of Energy, Richland Operations Office	
	K. A. Klein (20)	A7-50 (H)
	DOE Public Reading Room	H2-53 (H)
I	Bechtel Hanford, Inc.	
	M. C. Hughes	H0-09 (H)
25	Bechtel National, Inc. 1300 George Washington Way	
	W. Clements	(H)
	R. Navcrti	(H)
	F. Marsh	(H)
	E. Molnar	(H)
	W. Poulson (20)	(H)
	W. Wagner	(H)

30	CH2M HILL Hanford Group, Inc.	
	D. I. Allen	SS-07 (H)
	P. R. Bemis	R2-50 (H)
	M. P. Delozier	H6-08 (H)
	J. O. Honeyman	H6-18 (H)
	C. R. Hutchins	H6-11 (H)
	M. A. Payne	H6-63 (H)
	R. E. Raymond	T4-08 (H)
	B. E. Ross	S7-83 (H)
	L. A. Shikashio	H6-64 (H)
	T. D. Taylor	H6-64 (H)
	N. C. Walker (20)	H6-63 (H)
1	Fluor Hanford	
	R. D. Hanson	H5-20 (H)
10	Pacific Northwest National Laboratory	
	R. A. Brouns	H6-61 (H)
	K. M. Cravens (5)	H6-61 (H)
	P. M. Daling	K6-04 (H)
	J. H. Holbrook	H6-61 (H)
	G. B. Mellinger	H6-61 (H)
	Hanford Technical Library	P8-55 (H)
3	Lockheed Martin Services, Inc.	
	Central Files	B1-07 (H)
	Document Processing Center	A3-94 (H)
	S. R. Nelson	G3-36 (H)

Offsite

4	U.S. Department of Energy, Office of Environmental Management	
	M. W. Frei	EM-40 (H)
	M. L. Garcia	EM-6 (H)
	C. L. Huntoon	EM-I (H)
	R. G. Lightner	EM-44 (H)
1	U.S. Department of Energy, Office of Environmental. Safety and Health	
	S. V. Cary	EH-I 1 (H)
1	U.S. Department of Energy, Office of Engineering and Construction Mgmt.	
	C. F. Gill	CR-80 (H)

This page intentionally left blank