DOE/RL-99-28
Revision 0

Hanford Site Environment, Safety and Health Fiscal Year 2001 Budget — Risk Management Summary

United States
Department of Energy
Richland, Washington

DOE/RL-99-28
Revision 0
UC-2000

Hanford Site Environment Safety and Health Fiscal Year 2001 Budget — Risk Management Summary

I. E. Reep
T. W. Noland
Fluor Daniel Hanford, Inc.

Date Published
May 1999

United States
Department of Energy
Richland, Washington

Approved for Public Release

RELEASE AUTHORIZATION

Document Number:	DOE/RL-99-28, Rev. 0
Document Title:	Hanford Site Environment, Safety and Health Fiscal Year 2001 Budget-Risk Management Summary

This document, reviewed in accordance with DOE Order 241.1, "Scientific and Technical Information Management," and DOE G 241.1-1, "Guide to the Management of Scientific and Technical Information," does not contain classified or sensitive unclassified information and is:

APPROVED FOR PUBLIC RELEASE

Christine Willingham
C. Willingham
Lockheed Martin Services, Inc.
Document Control/Information Release

5/12/99
Date

EXECUTIVE SUMMARY

E1.0 INTRODUCTION

The Hanford Site Environment, Safety and Health (ES&H) Budget-Risk Management Summary report is prepared to support the annual request to sites in the U.S. Department of Energy (DOE) Complex by DOE, Headquarters. The request requires sites to provide supplementary crosscutting information related to ES&H activities and the ES&H resources that support these activities. The report includes the following:

- A summary status of fiscal year (FY) 1999 ES&H performance and ES&H execution commitments.
- Status and plans of Hanford Site Office of Environmental Management (EM) cleanup activities.
- Safety and health (S&H) risk management issues and compliance vulnerabilities of FY 2001 Target Case and Below Target Case funding of EM cleanup activities.
- S&H resource planning and crosscutting information for FY 1999 to 2001
- Description of indirect-funded S&H activities.

The ES&H Budget-Risk Management Summary report is primarily devoted to EM cleanup activities. Activities that support the privatization of tank waste disposal are included in this report, but funding of the private vendors is not included. Other DOE-funded activities are also addressed in the appendices as noted below.

- The DOE Office of Science (SC) funds the environmental science and technology programs at the Hanford Site. The ES&H budget-risk management summary for SC-funded activities is included as Appendix A for Activity Data Sheets (ADSs) RL-A93D0016 and 17, RL-A96D0013, RL-A98D0001 and RL-A98D0003 through 14, and RL-A990002 and 03.
- The DOE Office of Nuclear Energy, Science and Technology (NE) funds activities associated with maintaining the Fast Flux Test Facility Complex as an option for the production of radioisotopes for medical, industrial, and space applications and for nuclear research. Activity Data Sheet RL-A97D0015, Fast Flux Test Facility Complex, which describes the NE activities, is included in this report as Appendix B.

- The DOE Office of Management and Finance (EM-10) funds the DOE, Richland Operations Office Program Direction/General Support Services Contract (GSSC). This activity is reported in ADS RL-A99D0001, Program Direction/GSSC, which is included in this report as Appendix C.

This report was prepared in accordance with the guidance given for developing the ES&H Supplementary Budget Submission described in Chapter IV of Attachment E, DOE Handbook of the *FY 2001 Field Budget Call* (DOE 1998a). The submittal consists of this report and the supporting documentation contained in the Part B Safety & Health Direct Cost and [Full-Time Equivalent] FTE Data and the Safety and Health Narratives for EM funded projects. The supporting documentation was prepared in accordance with the data requirements identified in the EM Integrated Planning, Accountability, and Budgeting System (IPABS) (DOE 1998b). Supporting documentation for SC, NE and EM-10 ES&H activities is provided in ES&H Management Plan Information System ADSs in Appendices A, B and C, respectively.

E2.0 ENVIRONMENT, SAFETY AND HEALTH PERFORMANCE

This section provides a Sitewide summary of S&H performance and the status of FY 1999 ES&H execution commitments.

E2.1 SAFETY AND HEALTH PERFORMANCE

The *2006 Plan Guidance* (DOE 1997a) identified that a major goal of EM is to achieve "Best in Class" S&H performance within 5 years. The S&H achievements at the Hanford Site play an important role in reaching the overall EM goal.

Two nationally recognized measures of S&H performance are the U.S. Occupational Safety and Health Administration (OSHA) Recordable and the OSHA Lost/Restricted Workday Case Rates. Hanford Site performance with respect to these two measures has been consistently better than the DOE average for all sites in the DOE Complex for the past 30 months. The DOE average is the average of all sites in the DOE Complex as compiled in the DOE Performance Indicators – Environment, Safety & Health quarterly report (DOE 1998c). The most recent Hanford Site long-term OSHA Recordable Case Rate of 2.5 cases per 200,000 hours is 45 percent better than the October 1994 to August 1996 rate of 4.5 and 26 percent below the DOE average rate of 3.4. The most recent Hanford Site long-term OSHA Lost/Restricted Workday Case Rate of 0.91 cases per 200,000 hours is 52 percent better than the October 1994 to August 1996 rate of 1.92 and 46 percent below the DOE benchmark rate of 1.6.

These reductions are the direct result of better communicating accident prevention practices and the institution of policies and procedures on injury case management among the contractors on the Project Hanford Management Contract (PHMC) team and the Hanford Environmental Health Foundation (HEHF). The PHMC prime contractor believes that all accidents are preventable. The contractors on the PHMC team share this philosophy and support

it by vigilant case management of existing injuries, effective corrective measures, and a strong management commitment to preventing injuries.

E2.2 STATUS OF FISCAL YEAR 1999 ENVIRONMENT, SAFETY AND HEALTH EXECUTION COMMITMENTS

The status of all Hanford Site FY 1999 ES&H execution commitments is included in this report. Ninety-three ES&H execution commitments are being worked in FY 1999, these include *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) (Ecology et al. 1998) milestones and other regulatory commitments and Defense Nuclear Facility Safety Board (DNFSB) Recommendation commitments. The overall status of these milestones and commitments is shown in Table ES-1. Of these, 37 milestones have been completed. Of the milestones in progress, 2 are ahead of schedule, 42 are on schedule, and 12 are behind schedule. One milestone, not included in the total, has been deleted by change request. Six milestones were carried over from FY 1998 or earlier.

Table ES-1. Summary Status of Fiscal Year 1999 Environment, Safety and Health Execution Commitments for Hanford Site Project Missions.

Site Project Mission	Completed[a]			In Progress[a]		
	A/S	O/S	B/S	A/S	O/S	B/S
Tank Waste Remediation System	4	0	1	0	10	7
Waste Management	1	0	0	0	6	0
Spent Nuclear Fuel	1	0	0	0	0	1
Facility Transition[b]	5	6	0	1	2	1[c]
Environmental Restoration	8	0	0	1	2	1
Science and Technology[d]	0	0	0	0	0	0
Mission Support and Other Projects	6	5	0	0	22	2
Total	**25**	**11**	**1**	**2**	**42**	**12**

[a] A/S = ahead of schedule; O/S = on schedule; B/S = behind schedule.
[b] Includes Advanced Reactor Transition Project (RL-TP11).
[c] Milestone is on hold pending a mission decision for the Fast Flux Test Facility.
[d] EM-30 funded Project Baseline Summary RL-ST01.

E3.0 CLEANUP PROGRESS TO DATE

The focus of cleanup activities has been on reducing urgent risks to workers, the public, and the environment and on reducing costly mortgages. Four important ES&H-related risks have been reduced.

- Significant quantities of highly radioactive waste have been moved from the 300 Area to safer storage on the more remote 200 Area Plateau.

- Waste tank safety issues have been mitigated or resolved for 26 tanks. Of the 54 tanks placed on the Watch List since 1991, only 28 remain.

- Single-shell tank (SST) C-106 retrieval by sluicing is under way to remove about 750 thousand liters (197 thousand gallons) of high-heat waste and pump it to a double-shell tank (DST) where an active ventilation system will keep the waste within safe temperature limits.

- Successfully restarted stabilization of nuclear materials at the Plutonium Finishing Plant (PFP).

Hanford Site mortgages continue to be reduced. The Uranium Trioxide Facility was the first large-scale facility to complete transition; it is being maintained at a significantly reduced cost. In 1997, the Plutonium-Uranium Extraction (PUREX) Plant was fully deactivated at a cost saving of $75 million; in 1998 B Plant was deactivated with a cost saving of $100 million. These and other facilities are being deactivated on accelerated schedules that will result in future cost reductions that free money for further cleanup. Additionally, some SST tank farms have been interim stabilized, isolated, freed of surface area contamination, and fitted with automated tank- monitoring devices to eliminate labor-intensive surveillance and maintenance.

E4.0 FY 2000 BUDGET PLANNING

A key tool used in the FY 2001 EM budget planning process is the Integrated Priority List and its supporting documentation, including Project Baseline Summaries. The approach used in developing the FY 2001 Integrated Priority List is to balance priorities so resources are effectively allocated to address safety, programmatic, and operational considerations. The underlying value used in developing the Hanford Site's Integrated Priority List is risk. This means that the safety and health of the workers and public will not be compromised, and a high priority is placed on managing and reducing risks in the workplace, as well as reducing risks to the public and environment. As shown in Figure ES-1, the methodology employs five well-defined prioritization categories that are subcategories of two major groupings of activities on the Integrated Priority List: Base Operations and Cleanup Progress.

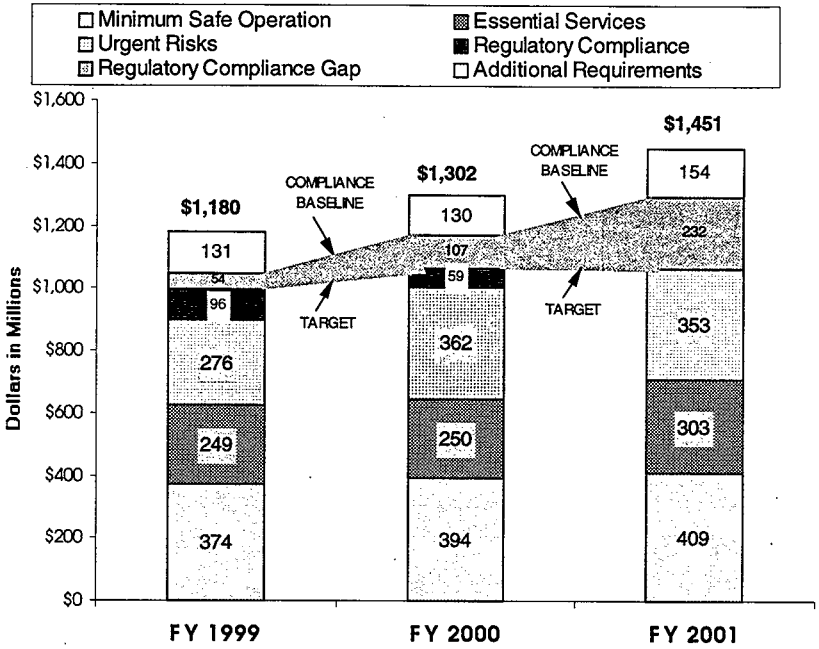
- Base Operations
  - Minimum Safe Operation
  - Essential Services

- Cleanup Progress
  - Urgent Risks (high-risk activities)
  - Regulatory Compliance
  - Additional Requirements.

Urgent Risks is a special category containing those Regulatory Compliance activities that pose the greatest ES&H risk to the workers, the public, and the environment. They include

remediation, stabilization, or disposal of corroded spent nuclear fuel, high-level tank waste, and unstabilized plutonium.

Figure ES-1. Hanford Site Office of Environmental Management Fiscal Year 1999-2001 Integrated Priority List Funding Summary.



Target funding is $1,065 million, which is $232 million (18 percent) lower than the Compliance Baseline of $1,297 million. In addition, a second-lower budget case is usually evaluated to gain a better understanding of the ES&H impacts to a lower planning case. In FY 2001 the Below Target Case is $905 million, which is $392 million (30 percent) lower that the Compliance Baseline.

The differences between the Compliance Baseline and target budget levels for the period FY 1999 to FY 2001 illustrate a significant trend. This trend is seen in the Figure ES-1 in the

gray area between the Compliance Baseline and the Target Case funding levels. These values represent a Compliance Baseline funding shortfall "bow wave" which builds from a modest $54 million in FY 1999 to a substantial $232 million in FY 2001. The $232 million Compliance Baseline funding gap in FY 2001 will have a potential for significant increases in management risk and compliance vulnerabilities. The following sections cover the management risk and compliance vulnerabilities and analysis of the FY 2001 budget.

E5.0 MANAGEMENT RISK AND COMPLIANCE VULNERABILITIES

The management risk and compliance vulnerabilities of two budget cases that are lower than the Compliance Baseline are discussed in this section. Table ES-2 presents a crosscutting matrix of priority category by Site project mission to assist in assessing the impacts to the Site projects at the defined budget cases. The $1,297 million Compliance Baseline fully funds all ES&H execution commitments scheduled for FY 2001. Additional funding of $154 million for the Additional Requirements identified in Figure ES-1and Table ES-2 could help beyond FY 2001 to reduce management risk in meeting regulatory requirements and the cost of maintaining old facilities (mortgage reduction) that are no longer needed.

The Target Case does not provide adequate funding to achieve FY 2001 ES&H commitments (Tri-Party Agreement milestones and other regulatory commitments and DNFSB commitments) with a high degree of confidence. The management risk and vulnerability to compliance issues at this funding level are potentially high, although risks to the workers, the public, and the environment can continue to be reduced at a higher life-cycle cost. Life-cycle cost of environmental cleanup at the Hanford Site would increase because of a decrease in mortgage reduction activities and costs associated with subcontractor terminations and closeouts. The next two sections present the impacts to management risk and compliance vulnerability of the FY 2001 Target Case and Below Target Case.

E5.1 FISCAL YEAR 2001 TARGET CASE ($1,065 million)

The proposed Target Case provides $1,065 million for EM cleanup activities in FY 2001 (Table ES-2). At this level, a compliance shortfall of $232 million (18 percent lower than Compliance Baseline of $1,297 million) would exist in FY 2001 to meet the ES&H execution commitments identified in the Integrated Project List (IPL) and Project Baseline Summaries (PBS). This shortfall follows other funding shortfalls being projected for FY 2000 as reported in the FY 2000 ES&H Budget-Risk Management Summary issued last year (RL 1998a).

At the target case level, efforts would be focused on resolution or mitigation of Urgent Risks, but no additional regulatory compliance would be accomplished. Not included in the Target Case are two major Urgent Risks in the Facility Transition Project that are unfunded. These are PFP stabilization and 324 Building closure plan for B Cell cleanout. As noted in Table ES-2, the FY 2001 Target Case leaves $232 million of regulatory compliance activities

Table ES-2. Funding of Hanford Site Office of Environmental Management Project Missions by Priority Categories-Fiscal Year 2001 (dollars in millions).

Priority Category	Site Project Mission[a,b]							Total
	TW	WM	SF	TP[c]	ER	ST	MS	
Minimum Safe Operations	112.8	87.9	35.4	131.9	24.8	5.0	11.2	409.1
Essential Services	50.2	43.1	44.3	17.2	71.2[d]	11.0	65.8	302.8
Urgent Risks	219.1	0.0	111.6	12.2	10.3	11.0	0.0	353.2
Subtotal Urgent Risks (Target)	**$382.1**	**$131.0**	**$191.3**	**$161.3**	**$106.3**	**$16.1**	**$77.0**	**$1,065.1**
Regulatory Compliance Gap[e]	64.0	20.2	0.0	37.2	97.7	3.0	9.9	232.0
Subtotal Compliance	**$446.1**	**$151.2**	**$191.3**	**$198.5**	**$204.0**	**$19.1**	**$86.9**	**$1,297.1**
Additional Requirements	78.9	9.0	0.0	31.8	0.0	0.0	34.5	154.2
Total Requirements	**$525.0**	**$160.2**	**$191.3**	**$230.3**	**$204.0**	**$19.1**	**$121.4**	**$1,451.3**

[a] The $905 million Below Target Case is not depicted in the table since the Integrated Priority List is developed to analyze Target Case and Compliance Baseline funding requirements. Accurate analysis of project impacts at the $905 million Below Target Case is not possible without restructuring the site strategy and associated Integrated Priority List.

[b] TW = Office of River Protection/Tank Waste Remediation System; WM = Waste Management; SF = Spent Nuclear Fuel; TP = Facility Transition (including Advanced Reactor Transition); ER = Environmental Restoration; ST = Science and Technology; and MS = Mission Support and Other Projects.

[c] Includes Advanced Reactor Transition (TP11).

[d] Includes a $20 million allowance in the Target Case for Environmental Restoration Project subcontractor terminations/closeouts. The $20 million allowance is not needed and is **NOT** included in the $204 million Compliance Baseline.

[e] Includes some incremental Essential Services in the Waste Management Project and Urgent Risks in the Office of River Protection/Tank Waste Remediation System and Facility Transition Projects which are unfunded in the FY 2001 Target Case.

unfunded. The most significant impacts of Target Case funding would be to the Environmental Restoration, Office of River Protection/Tank Waste Remediation System (ORP/TWRS) and Facility Transition Projects, which account for 86 percent of the $232 million unfunded Regulatory Compliance activities shown in Table ES-2. Following is a summary of the major impacts and required actions for the Target Case. The proposed FY 2001 Target Case would result in potentially significant management risk and compliance vulnerabilities with respect to delays in completing Tri-Party Agreement and DNFSB commitments as noted in the following paragraphs.

- Office of River Protection/Tank Waste Remediation System disposal activities would proceed on the currently planned vitrification approach with a 90 percent confidence of achieving the Compliance Baseline schedule. The less than full confidence schedule results

from the approximately 11-percent funding reduction in Readiness to Proceed activities in support of Phase Ib Privatization (Tri-Party Agreement Milestones M-45-00, M-50-00, M-51-00 and M-60-00). In addition, tank waste characterization would not fully support Privatization Phase I disposal or evaluation of inactive miscellaneous underground storage tanks (MUST) (DNFSB 93-05, Hanford Tank Waste Characterization Studies). The Tank SY-101 Unreviewed Safety Question (USQ) related to level growth would remain open, as would the outstanding organic complexant USQ for TWRS ancillary facilities.

- The Waste Management Project's solid waste treatment activities would be significantly reduced because of a 28 percent funding shortfall in FY 2001, in addition to a 20-percent shortfall in FY 2000. This would delay the schedule for completion of construction and operation of the contact-handled transuranic (TRU)/TRU mixed waste retrieval facility (Tri-Party Agreement M-91-04).

- The Spent Nuclear Fuel Project schedule would not be impacted and would proceed on the Compliance Baseline schedule (TPA Milestone M-34-00 series).

- The Facility Transition Project would experience serious delays in meeting the Compliance Baseline schedule. Target Case funding would support Minimum Safe Operation and Essential Services. Full funding of Urgent Risk activities is not supported in the FY 2001 Target Case. The following impacts would be incurred if the funding received in FY 2000 is at the current planned level and Target Case funding is received in FY 2001. Stabilization of plutonium compounds and deactivation of the PFP would be delayed at least 2 years (DNFSB 94-01). Containment and removal of B Cell dispersible radioactive materials, excess equipment and debris would be delayed up to 2 years (Tri-Party Agreement M-89-02).

- The Environmental Restoration Project's $97.7 million (48 percent) reduction from Compliance Baseline to Target Case funding would seriously affect remedial actions and environmental restoration at the Hanford Site. The impact of the $97.7 million Compliance Baseline funding shortfall in FY 2001 would be much greater because cleanup funds would be reallocated to pay for subcontractor terminations and closeouts. Contaminated waste site remedial actions along the Columbia River would be discontinued, and the ERDF would cease operations. The groundwater plume remedial actions and characterization of waste sites in the 200 Areas would be discontinued, as would reactor interim safe storage activities. The following Tri-Party Agreement milestones would be affected: submit one 200 Area National Priorities List RI/FS (RFI/CMS work plan (M-13-00K) and install RCRA groundwater monitoring wells at the rate of up to 50 in calendar year 2001 (Tri-Party Agreement M-24-00L).

- The EM-30-funded Science and Technology Project activities affected by the Target Case are management and disposal of Pacific Northwest's legacy waste.

- Mission Support and Other Projects activities affected by a Target Case are incremental funding of environmental monitoring, vadose zone/groundwater integration, and mitigation

of hazardous surplus facilities. The ability to provide safe and reliable site infrastructure (roads, water, telecommunications, emergency services, etc.) is impacted by continued limitations of funding for these activities. The aging water systems are corroding and the number of breaks are continuing to increase which could cause spread of contamination if near a contaminated area. Deferring demolition of the 272E Building carries a safety risk to workers due to flying roof and siding materials.

E5.2 FISCAL YEAR 2001 BELOW TARGET CASE ($905 million)

The FY 2001 Below Target Case provides $905 million for EM cleanup, which is $392 million (30 percent) less than needed to meet the ES&H execution commitments identified in the $1,297 million Compliance Baseline. This case has not been fully analyzed with respect to the IPL because the IPL is developed to analyze Target and Compliance Baseline funding requirements and this low level of funding would require a total restructuring of the Site strategy and associated IPL. However, an order of magnitude estimate of Below Target Case management risk and compliance vulnerabilities can be developed by referring to Table ES-2 as a starting point and recognizing that the funding impact would be far greater than the $392 million that the numbers indicate. The following impacts would be in addition to the $392 million Below Target Case impact to the Compliance Baseline.

- First, significant cost impacts would be associated with the termination or relocation of up to 2,000 contractor employees. The loss of direct funding base would result in increased overhead rates to fund indirect activities, including S&H activities, which, in turn, would reduce the amount of funding for direct-funded cleanup activities.

- Second, the loss of core competency, mainly in the ORP/TWRS Disposal Project, would severely impact the Tri-Party Agreement tank waste disposal schedule because of the time lag required to later hire and assign new staff. In addition, the Below Target Case would require funding and restaffing to develop and implement the Alternate Path for tank waste disposal required by the Tri-Party Agreement.

- Third, redirecting the projects to replan their missions at the Below Target level would add schedule delays and increased life-cycle costs to the accomplishment of nearly every Tri-Party Agreement milestone, DNFSB Recommendation, and consent order commitment at the Hanford Site.

Given these impacts to the direct funding base for cleanup activities, the strategy and approach would be on reducing risks to the workers and the public to the maximum extent possible. Compliance with environmental cleanup regulatory requirements would occur only in those exceptional cases where mitigating the highest priority urgent risks are covered by environmental regulations (e.g., Spent Nuclear Fuel Project). The following is a summary of major impacts and actions that would be implemented by the projects in the event that Below Target funding is received instead of Compliance Baseline funding.

- The ORP/TWRW Project disposal program would be placed on hold starting in FY 2001 and ongoing vitrification contracts would be terminated, resulting in unplanned termination costs (Tri-Party Agreement Milestones M-45-00, M-50-00, M-51-00, and M-60-00). The loss of project momentum and core competency would add several years to the tank waste disposal schedule whenever activities were restarted. Work on an Alternate Path to Privatization would have to be initiated. Significant unrecoverable costs would be incurred to pay for contract and staff terminations. In addition, delays would occur for characterization to support safety screening (DNFSB Recommendation 93-5), Project W-314, Tank Farms Upgrades (Tri-Party Agreement M-43-00, M-43-14, M-43-15 and M-43-16, and the EM-30-funded Hanford Tanks Initiative (Tri-Party Agreement Milestone M-45-00).

- The Waste Management Project's impacts are the same as those described for the Target Case in Section E5.1.

- The Spent Nuclear Fuel Project would proceed on the Compliance Baseline schedule discussed in Section E5.1 (TPA Milestone M-34-00). This effort would continue to be given the priority needed to maintain progress. However, the impacts of Below Target Case funding may impede progress on this project. As noted earlier, an accurate impact analysis is not possible without restructuring the Site strategy and the IPL.

- The Facility Transition Project would remain at the Minimum Safe Operations and Essential Services level discussed in Section E5.1.

- The Environmental Restoration Project would be reduced to less than 40 percent of the funding needed to achieve the Compliance Baseline. The project would be reduced to the Base Operations level of surveillance and maintenance. Additional costs would be incurred to restructure the Environmental Restoration contract as a result of contract cancellations and employee terminations and relocations. Remediating the urgent risk associated with radioactively contaminated groundwater would continue, but well decommissioning activities would be terminated (Tri-Party Agreement Milestone M-16-00 and DNFSB 94-2). Remaining regulatory-compliance-driven cleanup activities would be placed on hold.

- The EM-50 funded Science and Technology Project and Mission Support and Other Projects would support base operations only. Incremental funding of Regulatory Compliance activities would be severely curtailed or eliminated.

As a result of these scenarios, the time during which radioactive wastes would continue to be stored in the Hanford Site's aging underground waste tanks would be extended and cleanout and deactivation of other aging and radioactively contaminated facilities (e.g., PFP, B Cell) would be delayed for many years. Such delays in cleanup activities would extend the time during which workers and the public are exposed to the risks posed by these aging facilities and increase the risk of impacting the environment.

From a compliance vulnerability perspective, the Below Target Case scenarios described earlier would place the Hanford Site in a serious noncompliant status with Washington State, the

EPA, and the DNFSB. Nearly every major and interim Tri-Party Agreement milestone, DNFSB commitment, and consent order would be affected. The management risk of having to expend unplanned and limited resources to handle enforcement and litigation actions brought by both the regulating agencies and the public also must be considered. A potential also exists for unplanned reallocation of funding to accommodate the commitments required to address noncompliance and corrective actions required by regulatory enforcement actions (e.g., implementation of the Alternate Path for tank waste disposal).

E6.0 BUDGET ANALYSIS

Funding of ES&H activities for the FY 1999 to 2001 planning period according to DOE Secretarial Office is summarized in Table ES-3. Funding of EM-funded ES&H activities for the FY 1999 to 2001 planning period according to S&H functional category and Site project mission is shown in Tables ES-4 and ES-5, respectively.

As shown in Table ES-3, the planned FY 2001 funding of EM, EM-10, NE, and SC S&H activities is $219.1 million of which $144.9 million is direct funded and $74.2 million is indirect funded. All Hanford Site S&H resources increase by about 10 percent from FY 1999 to 2001. The FY 2001funding requirements of $128.0 million for EM direct funded S&H activities is based on a Target Case funding level of $1,065.1 million.

Table ES-3. Secretarial Office Safety and Health Funding Requirements for Fiscal Years 1999 to 2001 Activities (dollars in millions).

DOE Secretarial Office	FY 1999	FY 2000	FY 2001[a]
Direct EM S&H Funding Requirements	111.6	124.4	128.0
Direct EM-10 S&H Funding Requirements[b]	12.6	11.9	12.3
Direct NE S&H Funding Requirements[c]	2.3	2.5	2.5
Direct SC S&H Funding Requirements[d]	2.0	1.9	2.0
Total Hanford Site Direct S&H	**$133.5**	**$140.7**	**$144.9**
Indirect EM S&H Funding Requirements	56.5	57.0	58.4
Indirect SC S&H Funding Requirements[d]	14.5	15.6	15.8
Total Hanford Site Indirect S&H	**$71.0**	**$72.6**	**$74.2**
Total Hanford Site S&H	**$199.5**	**$213.3**	**$219.1**

[a]Based on Target Case funding in FY 2001.
[b]Office of Management and Finance (ADS A99D0001)
[c]Office of Nuclear Energy, Science and Technology (NE) funds the Fast Flux Test Facility Complex (ADS A97D0015) starting in FY 1999.
[d]Office of Science (SC) programs managed by Pacific Northwest National Laboratory.

Table ES-4. Summary of Fiscal Years 1999 to 2001 Environmental Management Safety and Health Resource Requirements by Functional Category (dollars in millions).[a]

Safety and Health Functional Category	Fiscal Year			FY 1999-2001 Change
	1999	2000	2001[b]	
Emergency Preparedness	7.3	7.3	5.9	-1.4
Fire Protection	4.5	5.4	5.6	+1.1
Industrial Hygiene	3.1	3.5	3.1	0.0
Industrial Safety	8.2	8.7	8.7	+0.5
Occupational Medical Services	1.2	1.3	0.9	-0.3
Nuclear Safety	15.5	14.7	14.5	-1.0
Radiation Protection	44.7	52.9	57.1	+12.4
Transportation Safety	2.9	4.6	6.1	+3.2
Management and Oversight	24.2	25.9	26.1	+1.9
Total Direct EM S&H	**$111.6**	**$124.3**	**$128.0**	**$+16.4**
Total Indirect EM S&H	**$56.5**	**$57.0**	**$58.4**	**$+1.9**
Total EM S&H	**$173.1**	**$181.4**	**$186.4**	**$+18.3**

[a] Does not include Office of Management and Finance (EM-10) S&H resources.
[b] Based on Target Case funding in FY 2001.

Table ES-5. Summary of Fiscal Years 1999 to 2001 Safety and Health Resource Requirements for Hanford Site Project Missions (dollars in millions).[a]

Site Project Mission	Fiscal Year			FY 1999-2001 Change
	1999	2000	2001[b]	
Tank Waste Remediation System	23.3	25.0	27.8	+4.5
Waste Management	9.3	12.6	13.3	+4.0
Spent Nuclear Fuel Project	11.6	13.9	17.7	+6.1
Facility Transition	16.8	17.4	17.5	+0.7
Environmental Restoration	23.0	23.4	15.8	-7.2
Science and Technology[c]	3.2	2.9	4.5	+1.3
Mission Support and Other Projects[d]	24.4	29.2	31.4	+7.0
Total EM Direct S&H	**$111.6**	**$124.4**	**$128.0**	**$16.4**
Total S&H EM Indirect	**$56.5**	**$57.0**	**$58.4**	**$+1.9**
Total EM S&H	**$173.1**	**$181.4**	**$186.4**	**$+18.3**

[a] Does not include funding of Office of Science, Office of Nuclear Energy, Science and Technology or Office of Management and Finance programs.
[b] Based on Target Case funding in FY 2001.
[c] EM-30 funded Project Baseline Summary RL-ST01.
[d] Includes Hazardous Materials Management and Emergency Response; Planning and Integration; Hanford Environmental Management Program; Effluent and Environmental Monitoring; Site Systems Engineering; Pacific Northwest National Laboratory Public Safety and Resource Protection; U.S. Department of Energy, Richland Operations Office-Directed Support; Tank Waste Remediation System Regulatory Unit; and Landlord.

In last year's report, total funding requirements for all Hanford Site S&H activities were identified as $204.0 million and $209.1 million for FY 1999 and 2000, respectively.

The total S&H values for FY 1999 and 2000 in this year's report show a modest decrease to $199.5 million for FY 1999 and a modest increase to $213.3 million for FY 2000.

As noted in Tables ES-4 and ES-5, overall S&H funding requirements trend upward about 10 percent from FY 1999 to 2001. Three of the S&H functional categories, Fire Protection, Radiation Protection and Transportation Safety, have large percentage increases. Five of the S&H functional categories have relatively small or no change in value. One functional category, Emergency Preparedness, has a large percentage decrease. The major increases in S&H resources are associated with ORP/TWRS, Waste Management, Spent Nuclear Fuel and Landlord Project activities. The large percentage reduction in S&H resources for Emergency Preparedness is associated with FY 2001 funding reductions in the Environmental Restoration Project and completion of Emergency Preparedness upgrades in FY 1999 and 2000.

Major contributors to the increase in S&H funding requirements are as follows:

- Initiation of construction of AZ Tank Farm upgrades and design and construction of equipment for sludge washing in Tank AZ-101by the ORP/TWRS Project.

- Increased Waste Receiving and Processing (WRAP) production by the Waste Management Project to treat low-level mixed waste (LLMW) and to process TRU waste for shipment to the Waste Isolation Pilot Plant (WIPP).

- Increase in Spent Nuclear Fuel Project staffing to support movement of spent nuclear fuel from the K Basins starting in FY 2001.

- Transfer of Office of SC 300 Area facilities to the Office of EM for surveillance and maintenance until they are deactivated.

- Addition of integration of vegetation and animal control to the Landlord Project which increases S &H requirements.

- Increased assessment of groundwater resources and integration of groundwater/ vadose zone activities.

The increases are partially offset by large decreases of S&H resources in the Environmental Restoration Project from FY 1999 to 2001. These decreases are the result of impacts of FY 2001 Target Case planning to emphasize reduction of Urgent Risks.

E7.0 REFERENCES

10 CFR 834, "Radiation Protection of the Public and the Environment," *Code of Federal Regulations,* as amended.

DOE, 1998a, *FY 2001 Field Call*, December 1998, U.S. Department of Energy, Washington, D.C.

DOE, 1998b, *Integrated Planning, Accountability, and Budgeting System*, U.S. Department of Energy, Office of Environmental Management, Washington, D.C.

DOE, 1998c, DOE Performance Indicators – *Environment, Safety & Health*, Period Ending March 1998, DOE/EH-0531 (1Q98), U.S. Department of Energy, Washington, D.C.

Ecology, EPA, and DOE, 1996, *Hanford Federal Facility Agreement and Consent Order,* 2 vols., Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington.

RL, 1998a, Hanford Site Environment, Safety and Health Fiscal Year 2000 Budget-Risk Management, DOE/RL-98-26, Revision 0, December 1998, U.S. Department of Energy, Richland, Washington.

WAC 173-303-640, "Dangerous Waste Regulations, Tank Systems," *Washington Administrative Code.*

CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF TERMS

ADS	activity data sheet
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
CSB	Canister Storage Building
CVD	Cold Vacuum Drying
D&D	decontamination and decommissioning
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
DOE-HQ	U.S. Department of Energy, Headquarters
DST	double-shell tank
Ecology	Washington State Department of Ecology
EM	Office of Environmental Management (DOE)
EPA	U.S. Environmental Protection Agency
EPCRA	*Emergency Planning and Community Right-to-Know Act of 1986*
ERDF	Environmental Restoration Disposal Facility
ES&H	Environment, Safety and Health
FDH	Fluor Daniel Hanford, Inc.
FEB	Facility Evaluation Board
FFTF	Fast Flux Test Facility
FSAR	Final Safety Analysis Report
FY	fiscal year
HAMMER	Hazardous Materials Management and Emergency Response
HEHF	Hanford Environmental Health Foundation
HEPA	high-efficiency particulate air (filter)
HLW	High-Level Waste

IPL	Integrated Project List
ISA	Interim Storage Area
ISMS	Integrated Safety management System
LLMW	Low-Level Mixed Waste
LLW	Low-Level Waste
MCO	Multiple Canister Overpack
MUST	Miscellaneous Underground Storage Tanks
NE	Office of Nuclear Energy, Science and Technology (DOE)
NEPA	*National Environmental Policy Act of 1969*
NESHAP	"National Emission Standards for Hazardous Air Pollutants"
NPDES	National Pollution Discharge Elimination System
OS&H	Occupations Safety and Health
OSHA	Occupational Safety and Health Administration
Pacific Northwest	Pacific Northwest National Laboratory
PBS	Project Baseline Summaries
PFP	Plutonium Finishing Plant
PHMC	Project Hanford Management Contract
PRTR	Plutonium Recycle Test Reactor
PTS	Progress Tracking System
PSRP	Public Safety & Resource Protection
PUREX	Plutonium Uranium Extraction (Facility)
ORP/TWRS	Office of River Protection/Tank Waste Remediation System
RCRA	*Resource Conservation and Recovery Act of 1976*
REDOX	Reduction Oxidation (Facility)
RL	U.S. Department of Energy, Richland Operations Office
RPL	Radiochemical Processing Laboratory
S&H	Safety and Health
SST	single-shell tank
SC	Office of Science (DOE)
TPA	Tri-Party Agreement
TRU	transuranic
TSCA	*Toxic Substances Control Act of 1976*
TSR	Technical Safety Requirements
UA	Unit of Analysis
USQ	Unreviewed Safety Question
WESF	Waste Encapsulation and Storage Facility
WRAP	Waste Receiving and Processing (Facility)

This page intentionally left blank.

HANFORD SITE ENVIRONMENT, SAFETY AND HEALTH FISCAL YEAR 2001 BUDGET – RISK MANAGEMENT SUMMARY

1.0 INTRODUCTION

This report is prepared in support of the annual request to sites in the U.S. Department of Energy (DOE) Complex by DOE, Headquarter (DOE-HQ). The request requires sites to provide supplementary crosscutting information related to Environment, Safety and Health (ES&H) activities and the ES&H resources that support these activities. The report includes the following information.

- A summary status of fiscal year (FY) 1999 Safety and Health (S&H) performance and ES&H execution commitments (Section 2.0).
- Status and plans of FY 2000 and FY 2001Hanford Site Office of Environmental Management (EM) cleanup activities (Section 3.0).
- S&H risk management issues and compliance vulnerabilities of receiving proposed Target Case funding of $1,065.1 million and Below Target Case funding of $905.3 million for EM cleanup activities in FY 2001 instead of Compliance Baseline funding of $1,297.1 million (Section 4.0).
- S&H resource planning and crosscutting information for FY 1999 to 2001 (Section 5.0).
- Description of indirect-funded S&H activities (Section 6.0).

1.1 BACKGROUND

Most of Hanford Site's activities are related to its cleanup mission funded by the DOE Office of EM. The main body of this report focuses primarily on this mission. Other DOE-funded activities are also addressed in the appendices as noted below.

- The DOE Office of Science (SC) funds the environmental science and technology programs at the Hanford Site. Appendix A presents the ES&H budget-risk management summary for SC-funded Activity Data Sheets (ADSs) RL-A93D0016 and 17, RL-A96D0013, RL-A98D0001 and RL-A98D0003 through 14, and RL-A990002 and 03.
- The DOE Office of Nuclear Energy, Science and Technology (NE) funds the activities associated with maintaining the Fast Flux Test Facility (FFTF) Complex as an option for producing radioisotopes for medical, industrial, and space applications

and for nuclear research. This activity is reported in ADS RL-A97D0015, Fast Flux Test Facility Complex, which is included in this report as Appendix B.

- The DOE Office of Management and Finance (EM-10) funds DOE, Richland Operations Office Program Direction/General Support Services Contract (GSSC). This activity is reported in ADS RL-A99D0001, Program Direction/GSSC, which is included in this report as Appendix C.

This report was prepared in accordance with the guidance given for developing the ES&H Supplementary Budget Submission described in Chapter IV of Attachment E, DOE Handbook of the *FY 2001 Field Budget Call* (DOE 1998a). The submittal consists of this report and the supporting documentation contained in the Part B Safety & Health Direct Cost and FTE Data and the Safety and Health Narratives for EM-funded Project Baseline Summaries (PBSs). The supporting documentation was prepared in accordance with the data requirements identified in the EM Integrated Planning, Accountability, and Budgeting System (IPABS) (DOE 1998b). Supporting documentation for SC, NE and EM-10 ES&H activities is provided in ES&H Management Plan Information System ADSs in Appendices A, B and C, respectively.

A key guiding principle used in preparing the PBSs and Integrated Project List (IPL), from which much of this report is derived, is "balanced priorities." This principle is one of the seven guiding principles of integrated safety management identified in DOE P 450.4, *Safety Management System Policy* (DOE 1996a) and the *Department Implementation Plan, Integrated Safety Management (Implementation Plan for Defense Nuclear Facility Safety Board Recommendation 95-2, Safety Management)* (DOE 1996b). This guiding principle states that "Balanced Priorities - Resources are effectively allocated to address safety, programmatic, and operational considerations. Protecting the public, the workers, and the environment is a priority whenever activities are planned and performed."

1.2 PURPOSE

The purpose of this report is to provide crosscutting information about planned FY 2001 ES&H activities and the S&H resources needed to support those activities, and to identify any ES&H management risk and compliance vulnerabilities that may exist in Sitewide planning for FY 2001. The report also captures S&H planned resource expenditures to ensure that the priorities of S&H activities are balanced and systematically integrated into all project work across the Site.

1.3 OBJECTIVE

The primary objective of this report is to identify ES&H vulnerabilities early in the FY 2001 planning process to allow the DOE and contractor managers to examine the potential ES&H vulnerabilities and risks associated with the Site's mission activities at anticipated funding levels. If necessary, priorities and S&H functional resources can be rebalanced to effectively allocate resources to address S&H, programmatic, and operational considerations in advance of work execution.

1.4 SCOPE

This report covers all S&H activities performed by staff in the nine S&H functional categories employed in the performance of activities funded by the following DOE Secretarial Offices:

- EM activities associated with cleanup of the Hanford Site. These activities are conducted under the Project Hanford Management Contract (PHMC) managed by Fluor Daniel Hanford, Inc. (FDH), and a team of major subcontractors. Bechtel Hanford Inc. manages the Environmental Restoration Contract portion of Hanford Site cleanup and the Pacific Northwest National Laboratory (Pacific Northwest) manages the EM-funded science and technology project.

- SC activities associated with environmental science and technology programs managed by Pacific Northwest.

- NE activities associated with maintaining the FFTF Complex as an option for the production of isotopes for medical, industrial and space applications and for nuclear research. These activities also are managed by FDH.

Activities supporting privatization of tank waste disposal are included in this report, but funding of the private vendors is not included.

This report covers both direct- and indirect-funded (overhead) S&H activities. The Hanford Site EM project missions included in the scope are as follows:

- Office of River Protection/Tank Waste Remediation System Project
- Waste Management Project
- Spent Nuclear Fuel Project
- Facility Transition Project
- Environmental Restoration Project
- Science and Technology Project
- Mission Support and Other Projects.

This page intentionally left blank.

2.0 FISCAL YEAR 1999 ENVIRONMENT, SAFETY AND HEALTH PERFORMANCE AND EXECUTION STATUS SUMMARY

The following sections provide an overview of the FY 1999 mid-year status of ES&H performance, as well as the status of ES&H execution commitments. ES&H execution commitments include *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) (Ecology, et. al., 1998) milestones, other regulatory commitments, and Defense Nuclear Facilities Safety Board (DNFSB) commitments.

2.1 ENVIRONMENT, SAFETY AND HEALTH PERFORMANCE

This section provides the status of S&H performance and PHMC Facility Evaluation Board results through March 1999.

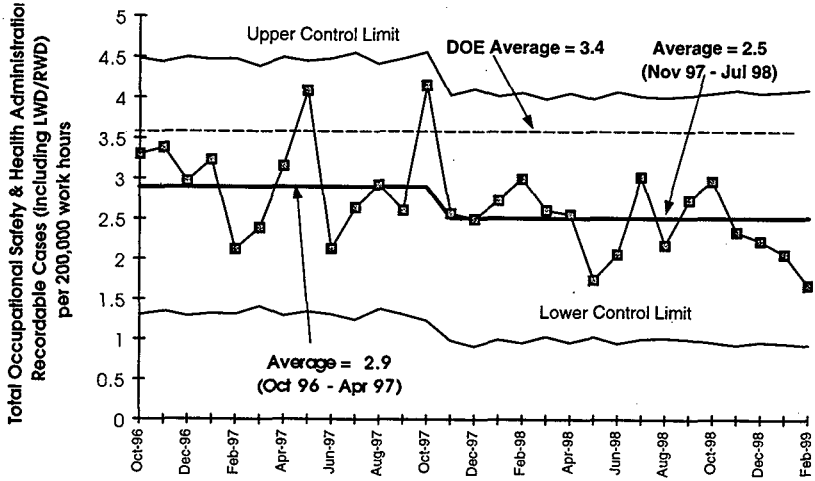
2.1.1 Safety and Health Performance

The *2006 Plan Guidance* (DOE, 1997a) identified that a major goal of EM is to achieve "Best in Class" S&H performance within 5 years. The achievements in S&H performance at the Hanford Site play an important role in achieving the overall EM goal of "Best in Class."

Two nationally recognized measures of S&H performance are the U.S. Occupational Safety and Health Administration (OSHA) Recordable Case Rate and the OSHA Lost/Restricted Workday Case Rate. These measures provide an indication of how safe environmental cleanup is being accomplished. The status of S&H performance provided in the following paragraphs is summarized from the *Hanford Site Performance Report - March 1999* (RL 1999a). Additional detail on the status of performance indicators can be obtained monthly from this report. The reported performance indicators are based on a population that includes all employees of the PHMC team, their subcontractors, and lower tiered subcontractors; the Environmental Restoration Contractor and its subcontractors; and Pacific Northwest.

The OSHA Recordable Case Rate measure tracks the number of work-related deaths and illnesses and those work-related injuries that result in loss of consciousness, restriction of work or motion, transfer to another job, or that require treatment beyond first aid, per 200,000 hours worked. After falling below the DOE average rate 30 months ago, the average Hanford Site OSHA Recordable Case Rate has remained lower than the earlier Site rate and the DOE average rate as seen in Figure 2-1. The most recent Hanford Site long-term rate of 2.5 cases per 200,000 hours is 45 percent below the October 1994 to August 1996 rate of 4.5 and 26 percent below the DOE average rate of 3.4. The DOE average is the average of all sites in the DOE Complex as compiled in the DOE Performance Indicators – Environment, Safety & Health quarterly report (DOE 1998c).

Figure 2-1. Occupational Safety and Health Administration Recordable Case Rate for all Hanford Site Projects.

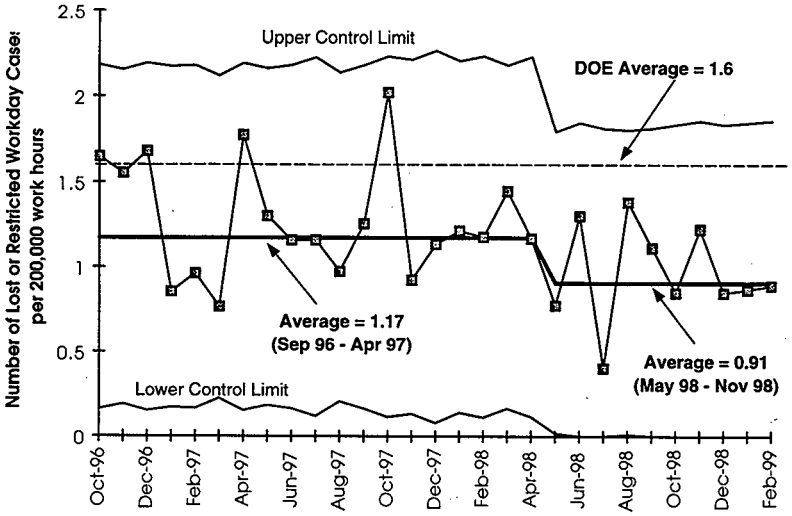


The OSHA Lost/Restricted Workday Case Rate measure tracks the number of work-related injuries or illnesses that involve days away from work or days of restricted work activity or both, per 200,000 hours worked. After falling below the DOE average rate 27 months ago, the average Hanford Site OSHA Lost/Restricted Workday Case Rate has remained lower than the earlier Site rate and the DOE average rate, as seen in Figure 2-2. The most recent Hanford Site long-term rate of 0.91 cases per 200,000 hours is 52 percent below the October 1994 to August 1996 rate of 1.92 and 46 percent below the DOE average rate of 1.6. The DOE average is the average of all sites in the DOE Complex.

2.1.2 Occupational Safety and Health Administration Case Rate Reductions

Significant reductions in all measures of Hanford Site occupational injuries, including OSHA Recordable Case and Lost/Restricted Work Day Case Rate, have taken place over the past 30 months. This is the direct result of improved communication of accident prevention practices and the institution of policies and procedures on injury case management among the contractors on the PHMC Team and the cooperation and support of the Hanford Environmental Health Foundation (HEHF). The PHMC prime contractor believes that all accidents are preventable.

Figure 2-2. Occupational Safety and Health Administration Lost/ Restricted Workday Case Rate for all Hanford Site Projects.



This philosophy has been shared by the contractors on the PHMC team and is manifested by vigilant case management of existing injuries, effective corrective measures for high-risk situations, and a strong management commitment to injury prevention.

2.1.3 Facility Evaluations

In 1996, the Facility Evaluation Board (FEB) was formed to measure the effectiveness of facilities in completing their assigned mission while ensuring adherence to applicable conduct-of-operations, ES&H and quality assurance, and other requirements. The FEB provides senior management with accurate, timely, and consistent information on a facility's effectiveness by assessing its performance with respect to the evaluation areas identified in Table 2-1.

The objectives of performing facility evaluations are to communicate consistent, well-defined, high performance standards; grade the performance of PHMC facilities against performance standards; identify performance improvement opportunities; and identify Site trends and program improvement opportunities.

Table 2-1. Facility Evaluation Performance for Hanford Site Facilities Through March 31, 1999.

Evaluation Area	Performance Level*					Number of Evaluations
	1	2	3	4	5	
Organization and Administration	0	6	12	8	0	26
Operations	0	4	17	4	0	25
Radiological Control	0	4	8	11	2	25
Environment	0	9	10	6	1	26
Quality Assurance	0	3	11	10	2	26
Engineering	0	3	19	3	0	25
Maintenance	0	5	16	4	0	25
Occupational Safety and Health	1	12	7	6	0	26
Training	0	6	8	11	1	26
Emergency Preparedness	0	2	13	9	1	25

*1 = exceeds expectations; 2 = meets expectations; 3 = meets basic expectations; 4 = below expectations; and 5 = significantly below expectations.

Since its inception, the FEB has completed 26 facility evaluations, 11 of which were performed in FY 1998. In Table 2-1, the results of FEB assessments are graded using the Institute of Nuclear Power Operations scale of performance levels, on a scale of Level 1 (exceeds expectations) through Level 5 (significantly below expectations) for each of the 10 evaluation areas. The numbers in the boxes in the table indicate the number of facilities receiving that grade for that evaluation area. For example, the Radiological Control program was assessed in 25 facility evaluations. Performance-level grades for Radiological Control were as follows: 4 facility evaluations received a Level 2, 8 received a Level 3, 11 received a Level 4, and 2 received a Level 5. The evaluation areas receiving the lowest performance grades of 4 and 5 are Radiological Control, Quality Assurance, Training, and Emergency Preparedness. Evaluation areas having the highest performance-level grades of 1 or 2 are Environment and Occupational Safety and Health.

Trending analysis of facility performance since inception of the FEB in 1996 show improvement in all evaluation areas in facilities that have had more than one facility evaluation, except for Operations. On the other hand, Operations is one of the evaluation areas with the best performance-level grades of 1, 2 or 3.

2.2 STATUS OF FISCAL YEAR 1999 ENVIRONMENT, SAFETY AND HEALTH EXECUTION COMMITMENTS

This section summarizes the ES&H commitments planned for execution in FY 1999 for each Hanford Site project mission. The summary includes a status of planned ES&H commitments, a summary of major accomplishments, and cost and schedule performance as of March 31, 1999. The status information is summarized from the *Hanford Site Performance Report - March 1999* (RL 1999a) and the Hanford Site Progress Tracking System (PTS).

Additional detail on the schedule status of ES&H execution commitments is available from the Hanford Site PTS report provided electronically to DOE-HQ each month.

2.2.1 Status of Office of River Protection/Tank Waste Remediation System Environment, Safety and Health Execution Commitments

- **Status of ES&H Commitments.** A detailed status of Office of River Protection/Tank Waste Remediation System (ORP/TWRS) Project FY 1999 ES&H execution commitments is provided in Table 2-2. The project has 22 ES&H commitments in FY 1999 of which 6 are carried over from FY 1998 or earlier. Of these commitments, 4 are complete, 10 are on schedule, 6 are behind schedule, one was completed late, and one is forecasting a delay.

Table 2-2. Status of Fiscal Year 1999 Office of River Protection/Tank Waste Remediation System Environment, Safety and Health Commitments. (2 sheets)

Milestone description	Commit. ID number	Due date	Status		
			A/S	O/S	B/S
RL-TW01, Tank Waste Characterization					
Update tank content models (I.P.5.6.3.1.i)	93-05	12/31/98	C/E		
Submit draft Waste Information Requirements Document (WIRD) for FY 2000 to Ecology	M-44-13C	06/15/99		X	
Submit final Waste Information Requirements Document for FY 2000 to Ecology	M-44-14C	08/23/99		X	
Issue characterization deliverables consistent with WIRD developed for FY 1999	M-44-15C	09/20/99		X	
Complete input for high-level waste tanks per WIRD for FY 1999	M-44-16C	09/30/99		X	
RL-TW02, Tank Safety Issue Resolution					
Complete topical report to resolve the high-heat safety issue (I.P. 5.4.3.6.d)	93-05	05/31/98			X
Letter reporting results of testing to confirm safe storage criteria, organic solubility, and aging effects	93-05	11/30/98	C/E		
Approved safety analysis report for manage tank waste function (I.P.5.4.3.1.d)	93-05	06/30/97			X
Letter reporting adequate vent path in all SSTs suspected of containing organic solvents (I.P.5.4.3.4.e)	93-05	09/30/99		X	
Resolve nuclear criticality safety issue	93-05	09/30/99		X	
RL-TW03, Tank Farm Operations					
Start interim stabilization of 6 single-shell tanks	M-41-22	09/30/97[a]			X[a]
Start interim stabilization of 8 single-shell tanks	M-41-23	03/31/98[a]			X[a]

Table 2-2. Status of Fiscal Year 1999 Office of River Protection/Tank Waste Remediation System Environment, Safety and Health Commitments. (2 sheets)

Start interim stabilization of 9 single-shell tanks	M-41-24	09/30/98[a]			X[a]
Concurrence of additional tank acquisition	M-46-01E	11/30/98	C		
Start interim stabilization of 3 single-shell tanks	M-41-25	03/31/99[a]			X[a]
Start construction for upgrades in the first Tank Farm	M-43-12	06/30/99	C/E		
Start interim stabilization of two single-shell tanks	M-41-26	09/30/99[a]			F/D
Double-shell tank space evaluation	M-46-00F	09/30/99		X	
RL-TW04, Retrieval					
Initiate sluicing retrieval of Tank C-106 (I.P.5.4.3.6.e)	M-45-03A 93-05	10/31/97			C/L
Submit annual progress report on waste tank leak monitoring/detection and mitigation	M-45-09D	09/30/99		X	
Submit annual update to single-shell tank retrieval sequence for Ecology approval	M-45-02D	09/30/99		X	
RL-TW09, Immobilized Tank Storage and Disposal					
Revise canister storage facility Part A Dangerous Waste Permit application	M-90-12	06/30/99		X	

[a] These milestones are being changed by a Consent Decree rendered in March 1999. New milestones will be identified after expiration of the 60-day public comment period.

- **Major Accomplishments.** Major FY 1999 through March 31 ES&H-related accomplishments are as follows:

  - Closed the safety issue associated with potentially explosive organic compounds, which allowed 18 waste tanks to be removed from the waste tank Watch List.

  - Completed DOE Phase I verification of the ORP/TWRS Integrated Safety Management System.

  - Initiated removal of high-heat generating sludge from Tank C-106 by sluicing. The sluiced waste is being transferred through a new specially designed pipeline to Tank-AY-102, which has a ventilation system designed for removing heat.

  - Released an approved safety analysis report (SAR) for tank farm facilities.

  - Initiated first waste transfer through the newly constructed cross-site transfer line.

- Pumped approximately 861,800 liters (228,000 gallons) of liquid from 6 single-shell tanks (SSTs) to date this fiscal year under the Interim Stabilization Project.

- Completed sampling and analysis of high-priority tanks, update of tank contents model, and testing to confirm safe storage criteria (DNFSB 93-05).

- Completed Tri-Party Agreement Milestones M-46-01E, "Concurrence of Additional Tank Acquisition," and M-43-12, "Start Construction for Upgrades in the First Tank Farm."

- **Cost and Schedule Performance.** The ORP/TWRS Project is 12 percent behind schedule and 1 percent under cost. The unfavorable schedule variance is caused by the following:

  - Delays in tank waste core sampling resulting from equipment problems and high winds,

  - Retrieval engineering work started late due to diversion of resources and delays in the 222-S Laboratory.

  - Delays in double-shell tank (DST) integrity assessment caused by critical skills being diverted to support cross-site transfer and Tank C-106 sluicing,

  - Interim stabilization is behind schedule due to work being measured against the old baseline. Consent Decree negotiations to rebaseline the project are underway.

2.2.2 Status of Waste Management Environment, Safety and Health Execution Commitments

- **Status of ES&H Commitments.** A detailed status of Waste Management Project FY 1999 ES&H execution commitments is provided in Table 2-3. The project has seven ES&H commitments in FY 1999. Of these commitments, one was completed early and six are on schedule.

- **Major Accomplishments.** Major 1999 fiscal year through March 31 ES&H-related accomplishments are as follows:

- Initiated processing of contact-handled low-level mixed waste at the Waste Receiving and Processing (WRAP) facility ahead of schedule (Tri-Party Agreement Milestone M-91-02).

Table 2-3. Status of Fiscal Year 1999 Waste Management Project Environment, Safety and Health Execution Commitments.

Milestone description	Commit. ID number	Due date	Status		
			A/S	O/S	B/S
RL-WM04, Solid Waste Treatment					
Initiate processing of contact handled low-level mixed waste	M-91-02	12/31/98	C/E		
Submit low-level mixed waste and GTC3 project management plan to Ecology	M-91-10	06/30/99		X	
Complete identified dangerous waste tank corrective actions	M-32-00	09/30/99		X	
Complete T-Plant actions	M-32-03	09/30/99		X	
Initiate treatment of contact handled low-level mixed waste	M-19-01	09/30/99		X	
RL-WM05, Liquid Effluents Project					
Submit to EPA and Ecology evaluation of development status of tritium treatment technology	M-26-05F	08/31/99		X	
RL-WM06, Analytical Services					
Complete 219-S tank interim status actions	M-32-02	06/30/99		X	

- Completed process test of N-Basin water and Environmental Restoration Disposal Facility (ERDF) leachate at the 200 Area Effluent Treatment Facility.
  - Completed transfer of the 224-T Building to Transition Projects for deactivation.
  - Completed construction of Project W-259, T Plant Secondary Containment.

- **Cost and Schedule Performance.** The Waste Management Project is 6.0 percent behind schedule and 11 percent under cost. The favorable cost performance is attributed to a $2.4 million passback and targeted reductions required to offset FY 1999 funding reductions.

2.2.3 Status of Spent Nuclear Fuel Project Environment, Safety and Health Execution Commitments

- **Status of ES&H Commitments.** Status of the Spent Nuclear Fuel Project FY 1999 ES&H execution commitments is provided in Table 2-4. The project has two ES&H commitment in FY 1999, one was completed early and one is forecasting a delay.

Table 2-4. Status of Fiscal Year 1999 Spent Nuclear Fuel Project Environment, Safety and Health Execution Commitments.

Milestone description	Commit. ID number	Due date	Status		
			A/S	O/S	B/S
RL-WM01, Spent Nuclear Fuel Project					
Submit a proposed plan and feasibility study for remedial action for the K Basins	M-34-03	11/30/98	C/E		
Complete K West cask facility modifications	M-34-14A	09/30/99			F/D

- **Major Accomplishments.** Major FY 1999 through March 31 ES&H-related accomplishments are as follows:

  - Submitted a proposed plan and feasibility study for remedial action for the K Basin ahead of schedule (Tri-Party Agreement Milestone M-34-03).

  - The Canister Storage Building (CSB) is 83 percent complete compared to 83 percent planned.

  - The Cold Vacuum Drying (CVD) Facility is 68 percent complete compared to 75 percent planned.

  - Started installation of under water components of the fuel removal systems in the K West Basin.

  - Formally closed the final key technical issue for implementation of interim storage of N Reactor spent nuclear fuel.

- **Cost and Schedule Performance.** Spent Nuclear Fuel Project is 2.1 percent over cost and 9 percent behind schedule. The cost variance is within the reporting threshold. The schedule variance is mainly a result of delayed starts in CVD procurements, Integrated Waste Treatment System (IWTS) construction, and Multiple Canister Overpack (MCO) testing and qualification.

2.2.4 Status of Facility Transition Project Environment, Safety and Health Execution Commitments

- **Status of ES&H Commitments.** A detailed status of the Facility Transition Project FY 1999 ES&H execution commitments is provided in Table 2-5. Included is the status of one milestone carried over from the previous fiscal year. The project has 15 ES&H commitments in FY 1999. Of these commitments, 11 are complete, 2 are

on schedule, 1 is forecasting early completion, and 1 is on hold awaiting a mission decision for the Fast Flux Test Facility.

Table 2-5. Status of Fiscal Year 1999 Facility Transition Project Environment, Safety and Health Execution Commitments.

Milestone description	Commit. ID number	Due date	Status		
			A/S	O/S	B/S
RL-TP01, B Plant Subproject					
Complete decoupling of Waste Encapsulation & Storage Facility from B Plant	M-82-09	12/31/98	C/E		
Submit a B Plant pre-closure work plan to Ecology	M-20-21A	03/31/99	C/E		
Complete deactivation of the B Plant Canyon	M-82-10	09/30/99	C/E		
Complete B Plant facility transition phase and initiate the surveillance and maintenance phase	M-82-00	09/30/99	F/E		
RL-TP05, PFP Deactivation					
Initial thermal stabilization of Pu oxides and MOX greater than 50 wt. % Pu and/or U (I.P. 107 Rev. 1)	94-01	01/31/99	C		
Documented approach for ash disposition (I.P. 112 Rev. 1)	94-01	01/31/99		C	
Decision on shipping and/or processing approach for select 94-1 material at alternate site (I.P. 101, Rev. 1)	94-01	02/28/99		C	
Documented categorization plan (I.P. 102, Rev. 1)	94-01	02/28/99		C	
Decision on process selection for solutions that cannot be processed untreated ..... (I.P. 103, Rev. 1)	94-01	02/28/99		C	
Documented approach to establish interim capability to meet long-term requirements...(I.P. 108, Rev. 1)	94-01	02/28/99		C	
Milestone Description	**Commit. ID number**	**Due Date**	**Status**		
			A/S	**O/S**	**B/S**
Documented analysis and decision for processing the inventory of unalloyed plutonium...(I.P. 109, Rev. 1)	94-01	02/28/99		C	
Initiate operation of the prototype vertical denitration calciner (I.P. 105, Rev. 1)	94-01	05/31/99		X	
Complete installation of the production vertical denitration calciner (I.P. 105, Rev. 1)	94-01	09/30/99		X	
RL-TP08, 324/327 Facility Transition Project					
Complete transfer of all 300 Area cesium/strontium to WESF/and or an approved storage location	M-92-04	12/31/98	C/E		
RL-TP11, Advanced Reactor Transition (Fast Flux Test Facility)					
Submit Hanford Site sodium PMP to Ecology pursuant to agreement action plan Section 11.5	M-92-10	10/31/98	Milestone is on hold.		

- **Major Accomplishments.** Major 1999 fiscal-year-to-date ES&H accomplishments are as follows:

  - Completed decoupling of Waste Encapsulation and Storage Facility (WESF) from B Plant ahead of schedule (Tri-Party Agreement Milestone M-82-09).

  - Completed deactivation of B Plant Canyon ahead of schedule (Tri-Party Agreement Milestone M-82-10).

  - Completed transfer of all 300 Area cesium and strontium to WESF and/or an approved storage location ahead of schedule (Tri-Party Agreement Milestone M-92-04).

  - Initiated thermal stabilization of plutonium oxides and mixed oxides (MOX) having greater than 50 percent by weight plutonium or uranium (DNFSB 94-01).

  - Completed six additional DNFSB Recommendation 94-01 commitments related to Plutonium Finishing Plant (PFP) deactivation (DNFSB 94-01).

  - Completed submittal of B Plant pre-closure plan to Ecology (Tri-Party Agreement M-20-21A).

- **Cost and Schedule Performance.** The Facility Transition Project is 25 percent behind schedule and has no cost variance. The current schedule variance is associated with performance against the original FY 1999 baseline. A change request is in the approval process to reflect the FY 1999 funding and work scope associated with this project. The unfavorable schedule variance is caused by delays in the following three activities

  - B Cell clean out is experiencing delays because of the inability to ship remote-handled transuranic (TRU) waste containers to the 200 Area Burial Grounds.

  - Project W-460, Plutonium Stabilization and Handling is being re-evaluated to determine a more cost-efficient method of stabilizing and packaging plutonium for long-term storage.

  - Delays with venting and sampling of Tank 241-Z-361.

  - The Hanford Site sodium PMP submittal to Ecology is behind schedule because the mission decision for the Fast Flux Test Facility will significantly impact this management plan.

2.2.5 Status of Environmental Restoration Project Environment, Safety and Health Execution Commitments

- **Status of ES&H Commitments.** A detailed status of the Environmental Restoration Project FY 1999 ES&H execution commitments is provided in Table 2-6. The project has 12 ES&H commitments in FY 1999. Of these commitments, eight have been completed, three are on or ahead of schedule, and one is forecasting a delay. One milestone was deleted by change request.

Table 2-6. Status of Fiscal Year 1999 Environmental Restoration Project Environment, Safety and Health Execution Commitments.

Milestone description	Commit. ID number	Due date	Status		
			A/S	O/S	B/S
RL-ER01, 100 Area Remedial Action					
Initiate remedial action in the 100-HR-1 Operable Unit	M-16-26A	03/31/99	C/E		
Complete remediation and backfill of 19 liquid waste site/process effluent lines (100-BC-1/BC-2)	M-16-08B	09/30/99			F/D
RL-ER02, 200 Area Remedial Action					
Submit 200 Area North Pond cooling water group work plan	M-13-19	02/28/99	C/E		
Submit Gable Mountain/B Pond and ditch cooling water group work plan	M-13-20	04/30/99	X		
Submit chemical sewer group work plan	M-13-21	08/31/99		X	
RL-ER03, 300 Area Remedial Action					
Complete remediation of the waste sites in the 300-FF-1 Operable Unit	M-16-03D	05/31/99	Milestone Deleted[a]		
RL-ER06, Decontamination and Decommissioning					
Submit 105-B hazards assessment and characterization report to EPA	M-93-04	06/30/99		X	
RL-ER08, Groundwater Management					
Install one (1) replacement RCRA well for the 216-U-12 Crib	M-24-36	12/31/98	C/E		
Install one (1) additional RCRA well for the SST Waste Management Area (WMA) B-BX-BY	M-24-40	12/31/98	C/E		
Install two (2) RCRA wells (one new and one replacement) for SST WMA U	M-24-39	12/31/98	C/E		
Install four (4) replacement RCRA wells for the SST WMA TX-TY	M-24-38	12/31/98	C/E		
Install two (2) replacement RCRA well for the SST WMA T	M-24-37	12/31/98	C/E		
Install RCRA groundwater monitoring well at the rate of up to 50 in CY 1993 (if required)	M-24-00J	12/31/98	C/E		

[a] Milestone was deleted by TPA Change Request M-16-98-05. New milestones have been proposed.

- **Major Accomplishments.** Major 1999 fiscal year-to-date accomplishments are as follows:

  - Remediation work continued at the B/C, D, DR, and 300 Areas, where soil excavation proceeded on schedule. Through March, nearly 1.4 million metric tons of contaminated material has been dispositioned at ERDF, inception to date. Over 2 million miles have been driven transporting waste without an accident.

  - Soil remediation commenced at H Area on March 17, two weeks ahead of Tri-Party Agreement Milestone M-13-19.

  - Construction of two new cells at ERDF began on schedule and by mid-year, excavation was completed and installation of soil/groundwater protection systems was initiated.

  - Five groundwater pump-and-treat systems are operating, mitigating the spread of contaminants toward the Columbia River. All pump-and-treat units have operated at or above planned availability levels. To date, nearly 2.3 billion liters of groundwater have been processed through the pump-and-treat systems.

  - The 200-ZP-2 vapor extraction system, which removes carbon tetrachloride from the vadose zone, was restarted on March 29, after the planned winter shutdown.

  - The groundwater/vadose zone integration *Baseline, Long Range Plan* and *Project Specification* draft documents were completed and issued for public review. System Assessment Capability and Science & Technology Plan & Roadmap activities continue as planned. Peer review and public involvement activities are on going.

  - The scheduled FY 1999 interim safe storage (ISS) work at F Reactor was completed in March, three weeks ahead of schedule. Because of cost underruns on the ISS projects, additional work scope is being accelerated from FY 2000 into FY 1999. Structural demolition for ISS of DR Reactor facilities was started three weeks early.

  - Decommissioning of the 108-F Biology Laboratory began in March.

  - Decommissioning of the 233-S Plutonium Concentration Facility is continuing.

  - Electrical upgrades to the 221-U Canyon crane were completed allowing work to continue on the Canyon Disposition Initiative (CDI). The CDI project is being performed to assess the feasibility of utilizing the canyon facilities on the Hanford Site as waste disposal sites.

- B Plant procedure review continued for transition of the facility to the ER Project in July. Formal Plutonium-Uranium Extraction (PUREX) Facility transition is expected in April.

- Assessment activities for establishing B Reactor as a museum were initiated in February.

- ERC has gone over 12 months without a lost-time accident. Over 18 months of decommissioning activities, more than 90,000 hours have been worked without a skin contamination or recordable injury.

- **Cost and Schedule Performance.** The Environmental Restoration Project is 7 percent behind schedule and 7 percent under cost. The cost variance is within the variance threshold. The schedule variance is a combination of a number of smaller impacts. Major contributors to the schedule variance are as follows:

  - Discovery of additional plumes at 300 Area liquid waste Remedial Action excavation sites

  - Delays in approval to dispose of lead-contaminated soil

  - Later-than-planned start of groundwater routine maintenance

  - Slips in completion of GW/VZ documents and decommissioning delays at the 233-S Plutonium Concentration Facility.

Recovery schedules have been implemented as appropriate and schedule recovery is anticipated. Offsetting these schedule impacts are early completions of 100 B/C Area liquid waste site excavations, and progress at the F and DR Reactors ISS Projects, where activities are proceeding approximately three weeks ahead of schedule through March 31, 1999.

2.2.6 Status of Science and Technology Project Environment, Safety and Health Execution Commitments

The Science and Technology Project has no ES&H commitments in FY 1999.

2.2.7 Status of Mission Support and Other Projects Environment, Safety and Health Execution Commitments

- **Status of ES&H Commitments.** Mission Support and Other Projects consists of five PBSs as shown in Appendix C, Table C-1. Only one PBS, RL-OT01, Mission Support has FY 1999 ES&H execution commitments, which are shown in Table 2-7.

Of the 35 ES&H commitments identified in Table 2-7 for FY 1999, 11 have been completed, 22 are on schedule, and 2 are behind schedule.

- **Major Accomplishments.** Major 1999 fiscal year through March 31 ES&H-related accomplishments are as follows:

  - Submitted first- and second-quarter Hanford Facility *Resource Conservation and Recovery Act of 1976* (RCRA) permit Class 1 modification notifications and annual permit non-compliance report.

  - Issued third- and fourth-quarter "National Emission Standards for Hazardous Air Pollutants" (NESHAP) status to U.S. Environmental Protection Agency (EPA).

  - Completed stack reassessments for the B-28 and P-16 stacks.

  - Completed annual asbestos notification of intent.

  - Issued annual portable and temporary radioactive air emissions report.

  - Issued EPCRA 312 tier-two emergency and hazardous chemical inventory report.

  - Issued 1998 Hanford Site annual dangerous waste report.

- Cost and Schedule Performance. Mission Support is 1 percent behind schedule and 2 percent under cost. These variances are within acceptable reporting thresholds.

Table 2-7. Status of Fiscal Year 1999 Mission Support and Other Projects Environment, Safety and Health Execution Commitments. (2 sheets)

Milestone description	Commit. ID number	Due date	Status		
			A/S	O/S	B/S
RL-OT01, Mission Support					
Hanford Facility RCRA permit Class 1 modification notification – Quarter 1	ECP-99-302	10/01/98	C/E		
Issue CY 1998 third quarter NESHAP status to EPA	ECP-99-901	10/23/9	C/E		
Update estimate of closure and post-closure costs	ECP-99-702	10/23/98		C	
Annual asbestos notification of intent	ECP-99-306	12/31/99	C/E		
Hanford Facility RCRA permit Class 1 modification notification – Quarter 2	ECP-99-303	01/01/99	C/E		
Issue CY 1998 fourth quarter NESHAP status to EPA	ECP-99-902	01/22/99		C	
Annual portable and temporary radioactive air emissions report to DOE-RL	ECP-99-410	01/31/99		C	
EPCRA 312 Tier Two emergency and hazardous chemical inventory report	ECP-99-501	02/22/99		C	
1998 Hanford Site annual dangerous waste report	ECP-99-503	02/22/99		C	
Annual report of Hanford Facility RCRA permit non-compliance	ECP-99-701	02/24/99	C/E		
Complete stack reassessments for the B-28 and P-16 stacks	ECP-99-903	02/28/99	C/E		
Issue CY 1998 nonradioactive airborne emissions report to Ecology	ECP-99-802	04/01/99			X
Transmit EIS Onsite Discharge Information System data to Idaho National Engineering Laboratory	ECP-99-801	04/01/99			X
Hanford Facility RCRA permit Class 1 modification notification – Quarter 3	ECP-99-304	04/02/99		X	
Issue CY 1999 first quarter NESHAP status to EPA	ECP-99-904	04/23/99		X	
Submit annual Hanford land disposal restrictions report IAW LDR Plan	M-26-01I ECP-99507	04/23/99		X	
Deliver final risk management plan to DOE-RL	ECP-99-419	06/07/99		X	
Issue annual radionuclide air emissions report	ECP-99-803	06/15/99		X	
EPCRA 313 toxic chemical release inventory report	ECP-99-502	06/24/99		X	
1998 Hanford Site annual polychlorinated biphenyl document log	ECP-99-504	06/24/99		X	

Table 2-7. Status of Fiscal Year 1999 Mission Support and Other Projects Environment, Safety and Health Execution Commitments. (2 sheets)

Milestone description	Commit. ID number	Due date	Status		
			A/S	O/S	B/S
Concrete pad for Stack 296-T-18 (244-TX DCRT)	ECP-99-116	06/30/99		X	
Concrete pad for Stack 296-S-22 (244-S DCRT)	ECP-99-115	06/30/99		X	
Concrete pad for Stack 296-C-5 (244-CR Vault)	ECP-99-113	06/30/99		X	
Concrete pad for Stack 296-A-25 (244-A DCRT)	ECP-99-111	06/30/99		X	
Submit letter on Project W-420 start of construction	ECP-99-905	06/30/99		X	
Concrete pad for Stack 296-B-28 (244-BX DCRT)	ECP-99-112	06/30/99		X	
Concrete pad for Stack 296-P-16 (244-C Tank Farm)	ECP-99-114	06/30/99		X	
Hanford Facility RCRA permit Class 1 modification notification – Quarter 4	ECP-99-305	07/02/99		X	
1998 Hanford Site annual polychlorinated biphenyl report	ECP-99-505	07/08/99		X	
Issue CY 1998 second quarter NESHAP status report to EPA	ECP-99-906	07/23/99		X	
Coordinate RCRA pipe mapping and marking	ECP-99-703	09/21/99		X	
Integrated air operating permit semiannual report	ECP-99-417	09/30/99		X	
Complete identified dangerous waste tank corrective actions	ECP-99-022	09/30/99		X	
RCRA general facility inspections	ECP-99-301	09/30/99		X	
Complete shoreline inspections	ECP-99-409	09/30/99		X	

This page intentionally left blank.

3.0 HANFORD SITE FISCAL YEARS 2000-2001 PLAN OVERVIEW

This section provides a brief description of the Hanford Site project missions, summarizes cleanup progress to date, and provides major mission planning assumptions and key ES&H-related planning information for FY 2000 and 2001. A summary status of FY 1998 ES&H execution commitments and accomplishments and FY 1999 plans and ES&H management risk and compliance vulnerabilities is provided in a companion report issued in December 1998 (RL 1998a). A summary of FY 1999 ES&H execution commitment plans, progress, and performance toward completing those commitments is included in Section 2.0 of this report.

3.1 HANFORD SITE PROJECTS

Hanford Site projects use direct and indirect S&H resources to accomplish their assigned missions. The following sections provide a brief description of the EM-funded project missions. The PBSs for each project mission are listed in Table D-1 of Appendix D.

3.1.1 Office of River Protection/Tank Waste Remediation System Project

The ORP/TWRS Project provides for the safe, continued storage of waste in the existing SSTs and DSTs including stabilization of tanks, resolution of tank safety issues, and characterization of the waste. The scope of this project also includes the removal, treatment, and ultimate onsite disposal of immobilized low-activity waste and offsite disposal of immobilized high-level waste. In the interim, the operation and maintenance of tanks continue to ensure the safety of onsite workers and the public and protection of the environment pending final disposition of the tank waste and the tanks, and cleanup of the area. The ORP/TWRS Project consists of 10 EM-funded PBSs.

3.1.2 Waste Management Project

The Solid Waste, Liquid Waste, and Analytical Services activities provide for the safe storage, treatment, and disposal of solid and liquid waste, both legacy and newly generated, in accordance with applicable federal and state laws and regulations. Some types of solid waste are directly disposed of without treatment, whereas others (e.g., TRU) are stored and treated before disposal. Processing of contact handled TRU/transuranic mixed (TRUM) waste at Module 1 of the WRAP facility 1 has been initiated in FY 1999 (Tri-Party Agreement Milestone M-91-02). The Waste Management Project consists of four EM-funded PBSs in FY 2001; Solid Waste Storage and Disposal, Solid Waste Treatment, Liquid Effluent Treatment, and Analytical Services.

3.1.3 Spent Nuclear Fuel Project

The Spent Nuclear Fuel Project consists of one EM-funded PBS. The project is a major ongoing effort to transfer approximately 2,100 metric tons (2,300 tons) of spent nuclear fuel from water storage basins along the Columbia River to interim dry storage on the 200 Area Plateau. The project addresses the urgent need to move metallic spent nuclear fuel from the present deteriorating storage conditions in basins along the banks of the Columbia River to safe, interim storage on the Hanford Site Central Plateau.

3.1.4 Facility Transition Project

The Facility Transition Project transitions nuclear facilities from costly maintenance conditions to a surveillance and maintenance state that is safe and cost effective ("cheap to keep") while awaiting final disposition. The project includes the stabilization of the 4.4 metric tons (4.9 tons) of plutonium stored in more than 8,000 separate containers, glove boxes, tanks, and piping in the PFP. This includes providing safe and secure management of nuclear materials awaiting final disposition. Specific ongoing projects include cleaning and deactivating inactive facilities that no longer have a mission. Completing these projects and transitioning them to the Environmental Restoration Project, commonly called "mortgage reduction," makes funds available for additional Site cleanup efforts. The Facility Transition Project consists of nine EM-funded PBSs in FY 2001. The PBSs for the Plutonium Uranium Extraction (PUREX) Subproject, RL-TP03 and the B Plant Subproject, RL-TP01 were deactivated in FY 1997 and 1998, respectively.

3.1.5 Environmental Restoration Project

The Environmental Restoration Project provides for interim and final cleanup of waste sites and contaminated groundwater and final decontamination and decommissioning (D&D) of surplus facilities. In addition, this project provides surveillance and maintenance of facilities after transfer from the Facility Transition Project. Waste site and facility remediations are regulated under the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) and RCRA. Cleanup standards and subsequent end states are established through these regulatory processes. The Environmental Restoration Project consists of nine EM-funded PBSs active in FY 2001. One of the ten PBSs, RL-VZ01, Site-Wide Groundwater/Vadose Zone Integration Project, was recently formed to address the cumulative impacts of all Hanford Site waste in support of cleanup decisions.

3.1.6 Science and Technology Project

Pacific Northwest manages the Science and Technology Project, which provides waste management services and compliant operations in support of science and technology development for the multi-program needs of the DOE Complex. The Science and Technology Project consists of one EM-30 funded PBS, RL-ST01, PNNL Waste Management.

In addition, under the direction of the DOE-RL, Pacific Northwest manages specific EM-50 funded environmental management and technology development projects, which address future cleanup needs with the emphasis on reducing the cost and schedule of cleanup. These EM-50 activities include the National Tank Focus Area technology development activities. Pacific Northwest also manages energy research activities under the direction of SC. Appendix A provides information on ES&H-related activities funded by SC.

3.1.7 Mission Support and Other Projects

Mission Support and Other Projects consists of five EM-funded projects and programs; these are summarized in the following paragraphs:

The Hazardous Materials Management and Emergency Response (HAMMER) (RL-HM01) program provides a premier hands-on training center for health and safety, emergency operations, fire operations, occupational safety and health law enforcement, and associated technologies. The HAMMER provides training critical to the cleanup activities at the Hanford Site and the DOE Complex.

The Mission Support Project (RL-OT01) provides Sitewide crosscutting support to all Hanford Site project missions. This project consists of Site Planning and Integration, the Hanford Environmental Compliance Program, Site Systems Engineering, and the Pacific Northwest Public Safety and Resource Protection Program.

The DOE Richland Operations Office (RL) Directed Support Project (RL-OT04) PBS provides for various RL activities, most of which are essential services to the Site. Other activities include: grants to Washington State for enhanced emergency preparedness and independent oversight; a grant to Oregon State for technical oversight of public information. This PBS also includes emergency preparedness; payment of Ecology fees for RCRA hazardous and/or mixed waste management activities; and a grant to the Washington State Department of Health for radiation protection, air monitoring, and independent oversight. Stakeholder involvement includes the continued participation of the Hanford Advisory Board.

The Office of Radiological, Nuclear, and Process Safety Regulation of the ORP/TWRS Privatization Contractors (RL-RG01) provides RL with independent safety regulation of the ORP/TWRS Privatization Contractors. The objective is to establish a regulatory environment that will permit privatization to occur on a timely, predictable, and stable basis with attention to safety consistent with what would occur from regulation by an external agency.

The Landlord Project (RL-TP13) provides replacements, major maintenance, and upgrades of the core infrastructure functions to facilitate the Hanford Site cleanup mission. In addition, the Landlord Project is responsible for surveillance and maintenance and final disposition of infrastructure facilities, systems, and equipment no longer required to support the

cleanup mission. The Landlord Project is also responsible for integration of vegetation and animal control on the Hanford Site.

3.2 SUMMARY OF CLEANUP PROGRESS TO DATE

This section provides a brief summary of cleanup progress achieved over the past several years.

3.2.1 Important Risk and Costly Mortgages Reduced

Four important ES&H risks have been reduced.

- Significant quantities of highly radioactive waste have been moved from the 300 Area to safer storage on the more remote 200 Area Plateau.
- Waste tank safety issues have been mitigated or resolved for 26 tanks. Of the 54 tanks placed on the Watch List since 1991, only 28 remain.
- Tank C-106 retrieval by sluicing is under way to remove about 750 thousand liters (197 thousand gallons) of high-heat waste and pump it to a DST where an active ventilation system will keep the waste within safe temperature limits.
- Successfully restarted stabilization of nuclear materials at the PFP.

Hanford Site mortgages continue to be reduced. The Uranium Trioxide (UO_3) facility was the first large-scale facility to complete transition; it is being maintained at a significantly reduced cost. In 1997, the PUREX Plant was fully deactivated at a cost saving of $75 million followed by B Plant in 1998 at a cost saving of $100 million. These and other facilities are being deactivated on significantly accelerated schedules that will result in future cost reductions, releasing money for further cleanup. Additionally, some SST tank farms have been interim stabilized, isolated, freed of surface contamination, and fitted with automated tank-monitoring devices to eliminate labor-intensive surveillance and maintenance.

3.2.2 More Cleanup Funds Applied to Field Work

In FY 1994, 35 percent of the Environmental Restoration funds were being applied to actual cleanup work and 65 percent to planning and management. Now, 80 percent of Environmental Restoration funds are being applied to cleanup work. A large waste disposal facility on the 200 Area Plateau, the ERDF, began operation in 1996 and is receiving contaminated materials and soil from the 100 Areas along the Columbia River. Over 1,300,600 metric tons (1,400,000 tons) of contaminated soil have been remediated and sent to the facility. The cost of operating this facility is among the lowest in the DOE Complex.

Groundwater is being remediated with emphasis on protecting the Columbia River by removing contaminants using five pump-and-treat systems. The C Reactor has been placed in an interim safe storage mode by demolishing all but the reactor block and stabilizing the reactor with an enclosure. The DR and F Reactors interim safe storage activities are well under way.

3.2.3 Cost Efficiencies Realized and Future Expectations

A major effort during the last few years has been directed toward reducing the cost to clean up the Hanford Site, recognizing that limited funds will be available each year. The following list highlights some significant achievements and future expectations.

- The annual operating cost of facility infrastructure has been reduced by 60 percent ($280 million) since FY 1995.
- Acceleration of the PUREX Facility and B Plant deactivation saved $175 million. In addition to the $175 million of project savings, surveillance and maintenance costs were reduced from $54 million per year to less than $1.5 million per year.
- The annual cost for waste management has been reduced by approximately 50 percent since 1994 without affecting output.
- Awarding the immobilization of the low-activity waste and high-level tank waste to a private contractor may save up to 30 percent in overall life-cycle cleanup costs for that activity.
- By improving performance criteria, accelerating work scope, and re-estimating costs, the Environmental Restoration Project life-cycle cost estimates were reduced by $8.1 billion and the schedule for remediation was reduced by 12 years.
- The annual cost of the TWRS operations program has been reduced by approximately 35 percent since 1994.
- Transfer of the 1100 Area railroad to the Port of Benton IN 1998 created non-Hanford business opportunities and saves $1 million in operating costs annually.

In addition, Hanford Site PHMC contractors have achieved significant reductions in indirect costs. A 42.4 percent reduction of indirect costs was achieved from FY 1994 to 1999. This has allowed more funds to be applied to cleanup activities without adversely affecting ES&H.

3.3 MAJOR HANFORD MISSION PLANNING ASSUMPTIONS AND STRATEGIES

3.3.1 Major Planning Assumptions

The following major assumptions were used as the basis for preparing the PBSs, including S&H cost and FTE data, and the FY 2001 Budget-Risk Management Summary report. These assumptions apply to planning for the Compliance Baseline and Target Cases.

- Planning for FY 2001 cleanup activities is based on Target Case and Compliance Baseline funding levels of $1065.1 million and $1,297.1 million, respectively.
- The DOE will continue to manage the Hanford Site.
- The Site will continue those operations that are designed and carried out with the specific purpose to reduce the level of worker, public, and environmental risk.
- Cleanup activities at the Hanford Site will be driven primarily by the Tri-Party Agreement and its amendments.
- Site budgets are based on an annual escalation rate of 2.1 percent in FY 2000 and 2.2 percent in FY 2001.
- Surveillance and maintenance costs will continue to decrease as former production facilities are driven to complete deactivation.
- Current stakeholders and the general public will continue to be involved and keenly interested in the cleanup and associated decisions at the Hanford Site, and funding will be available to support that involvement.

3.3.2 Planning Strategies and Constraints

Strategies and overarching constraints and guidelines used for developing the priorities for accomplishing the FY 2000-2001 Compliance Baseline planned actions are as follows.

- Urgent Risks, including moving spent nuclear fuel away from the Columbia River, ORP/TWRS urgent storage risks and the disposal strategy, 324 B Cell cleanup, PFP plutonium stabilization, and vadose zone/groundwater management are the highest programmatic priorities. The specific strategies are to
  - Fully fund the Spent Nuclear Fuel Project's "working baseline."

- Fully support the ORP/TWRS interim stabilization Consent Decree.
- Support ORP/TWRS Phase I Privatization infrastructure projects.
- Support the PFP DNFSB 94-01 commitment to complete packaging of oxides by December 2004.
- Continue vadose zone/groundwater management integration.

- Legally enforceable regulatory compliance activities, Tri-Party Agreement compliance agreements and DNFSB Implementation Plan commitments take priority over other commitments.
- Provide preferential support to activities on the Site's critical path to closure. Defer activities that are not on the critical path.
- Programs are to work with the EPA and Ecology to compile priority lists for individual projects or programs.
- HAMMER and the ORP/TWRS regulatory unit will not automatically share in RL target funding reductions.

3.4 PLANNED ACTIONS FOR FISCAL YEARS 2000 TO 2001

The following sections provide a summary of planned actions for the EM-funded Hanford Site project missions for FY 2000 and 2001. The planned actions are based on a Hanford Site Compliance Baseline funding level of $1,297 million for FY 2001.

3.4.1 Office of River Protection/Tank Waste Remediation System Project Planned Actions for Fiscal Years 2000 to 2001

The following planned actions assume Compliance Baseline funding of $1,297 million in FY 2001 which is $232 million greater than the proposed Target Case of $1,065 million.

- Pump liquids from 6 additional SSTs to reach 124 of 149 SSTs (Tri-Party Agreement Milestone M-41-00 series).
- Characterize waste in an additional 7 waste tanks, for a total of 132 of 177 tanks (Tri-Party Agreement Milestone M-44-00).
- Complete sluicing of high-heat sludge from Tank C-106 and resolve the high-heat safety issue.

- Continue interim stabilization activities to include initiation of salt well pumping (SWP) of 7 SSTs; complete SWP of 1 SST (Tri-Party Agreement M-41-00 series).

- Complete monitoring replacement upgrades to improve tank level monitoring.

- Issue the FY-2001 Tri-Party Agreement required waste information requirements document to Washington State (Tri-Party Agreement M-44-00 series).

- Conduct cross-site transfers in support of interim stabilization, pumping of Tank SY-101, 242 A Evaporator campaigns, and tank space evaluation (Tri-Party Agreement M-46-00G and M-46-00H).

- Commence construction of the pretreatment module, HLW immobilization facility and the balance of plant facilities needed to support Phase I Privatization.

- Initiate construction for Project W-211, Tanks AP-102 and 104 retrieval systems. Complete retrieval system design for Tank AP-108 and initiate construction. Initiate retrieval system design for Tank AY-102.

- Complete process testing on the remaining HLW/LLW feed batches for Phase IB Privatization.

- Mitigate/resolve tank safety issues for high-priority Watch List tanks (M-40-00).

- Complete award of construction contract for Liquid Effluent Project, construction and startup of site development, and startup of electrical systems for Project W-519 to provide infrastructure to support Phase I waste disposal activities.

3.4.2 Waste Management Project Planned Actions for Fiscal Years 2000-2001

The following planned actions assume Compliance Baseline funding of $1,297 million in FY 2001, which is $232 million greater than the proposed Target Case of $1,065 million.

- Complete construction of the contact-handled TRU/TRUM waste retrieval facility (Tri-Party Agreement M-91-04).

- Initiate disposal of contact-handled low-level mixed waste (LLMW) (Tri-Party Agreement M-91-13).

- Submit the TRU/TRUM waste Project Management Plan (PMP) to Ecology (Tri-Party Agreement M-91-03).

- Initiate thermal treatment of contact-handled LLMW (Tri-Party Agreement M-91-12).
- Initiate disposal of contact-handled LLMW (Tri-Party Agreement M-91-13).
- Submit evaluation of development status of tritium treatment technology (Tri-Party Agreement M-26-05H).

3.4.3 Spent Nuclear Fuel Project Planned Actions for Fiscal Years 2000 to 2001

The Spent Nuclear Fuel Project is fully funded at both the Compliance Baseline and the proposed Target Case.

- Complete fabrication and installation of plugs, impact absorbers, weld station, and pre-operational testing in the CSB.
- Complete procurement and construction of K East Basin integrated water treatment system.
- Complete modifications and systems installation for fuel removal from K East Basin.
- Complete management self-assessment and operational readiness review (ORR) for start of fuel removal from K West Basin.
- Complete construction acceptance and pre-operational testing of CVD.
- Initiate shipment of naval reactor Test Reactor and Isotope Production General Atomics (TRIGA) spent nuclear fuel to the 200 Area Interim Storage Area.
- Dispose of K Basins Legacy ion exchange columns.
- Initiate transfer of FFTF fuel to the 200 Area interim storage area.
- Acquire pressurized water reactor (PWR) Core 2 canister and equipment.
- Initiate removal of spent nuclear fuel from the K Basins.
- Develop sludge treatment definitive design.
- Perform initial transition planning.
- Initiate welding of MCOs at the CSB.

- Initiate procurement of MCOs and baskets.

3.4.4 Facility Transition Project Planned Actions for Fiscal Years 2000 to 2001

The following planned actions assume Compliance Baseline funding of $1,297 million in FY 2001 which is $232 million greater than the proposed Target Case of $1,065 million.

- Complete RCRA waste acid treatment system (WATS), Phase III.
- Submit the final report on WATS closure activities.
- Complete the size reduction and shipment of 324 B Cell racks 1A and 2A and low-level waste to burial grounds.
- Remove spent fuel assemblies and fuel pieces from the 327 facility.
- Remove remaining legacy fuel waste containers from the 327 facility.
- Complete demolition of 303K Building.
- Complete 313S Building isolation and disposition of special nuclear material (SNM).
- Complete removal of 324 Building radiochemical engineering cells (REC) B Cell mixed waste and equipment (M-89-02).
- Commence operation of the production-scale denitration calciner at PFP.
- Restart PFP cementation operations.
- Complete the ORR and startup of the stabilization packaging system at PFP.
- Maintain the nuclear energy legacy facilities and the Plutonium Recycle Test Reactor (PRTR) in a safe and compliant condition.

3.4.5 Environmental Restoration Project Planned Actions for Fiscal Years 2000 to 2001

The FY 2000 planned actions for the Environmental Restoration Project are as follows. The proposed President's Budget for FY 2000 does not fully fund these planned activities.

- Complete remediation of 18 waste sites
- Complete construction of cells 3 and 4 and interim cover of cells 1 and 2 at the ERDF

- Continue DR and F Reactors interim safe storage activities
- Dispose of 195,000 cubic meters of additional contaminated waste at the ERDF
- Continue monitoring and treating groundwater
- Continue Hanford Site groundwater and vadose zone integration activities
- Complete D&D of the 108-F Biology Laboratory
- Continue D&D of 233-S Plutonium Concentration Facility and begin assessment of the 224-B Plutonium Concentration Facility
- Commence 100 N Area Ancillary Facility assessments
- Continue surveillance and maintenance of waste sites and facilities.

The FY 2001 Compliance Baseline planned actions for the Environmental Restoration Project are as follows. The proposed $1,065 million Target Case funds only about 40 percent of the scope for the Compliance Baseline planned actions listed below for FY 2001.

- Complete remediation of two waste sites
- Continue D&D of 233-S and 224-B Plutonium Concentration Facilities
- Commence 100-N Ancillary Facility demolition
- Dispose of 245,000 cubic meters of additional contaminated waste at the ERDF
- Continue monitoring and treating groundwater and integration of Hanford Site groundwater and vadose zone activities
- Continue surveillance and maintenance of waste sites and facilities.

3.4.6 Science and Technology Project Planned Actions for Fiscal Years 2000 to 2001

The following FY 2000 to 2001 planned actions for EM-30-funded activities assume Compliance Baseline funding of $1,297 million in FY 2001, which is $232 million greater than the proposed Target Case of $1,065 million.

- Continue the base operations surveillance and maintenance program to ensure minimum safe conditions in the Radiochemical Processing Laboratory (RPL) and miscellaneous laboratory facilities for carrying out science and technology

development operations and safe containment of radioactive materials. The as-built drawings for the RPL gas, vacuum, and fire sprinkler piping systems will be generated, completing the essential ES&H drawings task. In addition, surveillance and maintenance activities will be performed on approximately 38 DOE excess laboratory facilities.

- Continue essential services and base operations program for waste and effluent management.

- Continue base program regulatory compliance activities.

- Continue activities to identify, characterize, and remediate DOE Legacy waste and contamination issues at Pacific Northwest-managed facilities and sites. Complete projects started in FY 2000 to dispose of highly radioactive and special case waste from the 300 Area and clean out the RPL Room 604 glove box. Remove the contaminated liquid waste from the 331 Animal Waste Septic Tank. Remove 170 liters (45 gallons) of mixed waste sludge from the (RPL) bowling-ball cask. Perform the surveillance and maintenance required to mitigate the risks associated with the remaining legacy waste and contamination.

3.4.7 Mission Support and Other Projects Planned Actions for Fiscal Years 2000 to 2001

The following planned actions assume Compliance Baseline funding of $1,297 million in FY 2001, which is $232 million greater than the proposed Target Case of $1,065 million.

- Submit the annual radionuclide air emissions report to the EPA

- Continue implementation of the Chemical Management System

- Prepare and submit Hanford Site environmental compliance reports mandated by RCRA, *Washington Administrative Code* (WAC), *Emergency Planning and Community Right-to-Know Act of 1986* (EPCRA), and *Toxic Substances Control Act* (TSCA) regulations and Tri-Party Agreement Milestone M-26-01

- Diversify HAMMER client and revenue base to capitalize on economics of scale, thereby decreasing training costs for the Hanford Site

- Increase retention of S&H training through interactive and hands-on training at HAMMER

- Issue annual climatological data summary with historical data

- Complete compliance-driven Stack Monitoring System Upgrades (Project W-420)

- Submit the annual radionuclide air emissions report to the EPA
- Run baseline ecological survey for 100, 200, and 300 Areas
- Issue monitoring plan FY 1999 and 2000 for the steelhead recently listed to the endangered species list for
- Conduct minimum safe air, river, community, and agricultural products environmental surveillance and oversight activities
- Operate the Hanford Meteorological Station and provide weather data to support emergency response and programmatic needs
- Conduct priority ecosystem monitoring activities and identify, evaluate, and document impacts of Site activities on sensitive ecological resources for the 100 and 200 Areas
- Manage Hanford Site cultural resources to comply with the *National Historic Preservation Act*, the *American Indian Religious Freedom Act*, and the *Archaeological Resources Protection Act*
- Develop a summary of current Site information (geology, hydrology, ecology, populations, etc.) for *National Environmental Policy Act of 1969* (NEPA) documentation and review and track progress of NEPA documents for Hanford Site programs
- Complete documenting approximately 180 buildings as a representative sample of the facilities associated with the Manhattan Project and Cold War activities at the Site.
- Continue to upgrade and maintain Hanford Site roadways, water systems, telecommunication systems, and other infrastructure systems in a safe condition.
- Integrate vegetation and animal control thereby reducing the number of contaminated tumbleweeds and pests on the Hanford Site.

This page intentionally left blank.

4.0 ENVIRONMENT, SAFETY AND HEALTH MANAGEMENT RISK AND COMPLIANCE VULNERABILITIES

The ES&H management risk and compliance vulnerabilities for EM-funded ES&H activities scheduled to be performed in FY 2001 are summarized in this section. The risk-related challenges being managed at the Hanford Site are summarized in Section 4.1. Sections 4.2 and 4.3 provide a summary analysis of the management risk and compliance vulnerabilities for two FY 2001 planning cases (Target and Below Target, respectively) with respect to the Compliance Baseline. Sections 4.4 through 4.8 discuss key topics related to ES&H management risk and compliance vulnerability for each Site project mission if the Site receives Target Case funding of $1,065 million instead of Compliance Baseline funding of $1,297 million in FY 2001. The topics discussed are as follows:

- Discussion of most important risk management issues being addressed (Section 4.4)
- Discussion of significant risks not adequately addressed (Section 4.5)
- Identification of highest ranking unfunded activities (Section 4.6)
- Identification of unfunded or underfunded activities that address emerging issues (Section 4.7)
- Identification of unfunded or underfunded activities that represent good investments in risk management or prevention (Section 4.8).

4.1 SUMMARY OF HANFORD SITE RISK-RELATED CHALLENGES

The Draft Hanford Site Risk Prospectus provides a broad perspective on the major risk related challenges being managed at the Hanford Site (RL 1998b). These risk-related challenges are as follows. The metrics for some of the values has been updated to reflect the most recent information.

- Approximately 204 million liters (54 million gallons) of HLW are contained in 149 SSTs and 28 DSTs. Some of the tanks are over 50 years old and have exceeded their design life. Sixty-seven of the SSTs are known to have leaked. Nearly 3.8 million liters (1 million gallons) of the tank waste have spilled into the soil of the vadose zone below the tanks since the first leak occurred. Recent information indicates that tank waste radionuclides have moved through the vadose zone and now have reached the groundwater that flows under the Hanford Site and connects with the Columbia River (DOE 1998d).

- Approximately 2,100 metric tons (2,300 tons) of metallic uranium spent nuclear fuel and sludge are stored underwater in the deteriorating K Basins. This highly radioactive material is stored approximately 400 meters (1,300 feet) from the Hanford Reach of the Columbia River. The fuel cladding, designed to contain the radioactivity, is deteriorating. In addition, approximately 30 metric tons (33 tons) of non-defense spent nuclear fuel is stored at the Hanford Site.

- Approximately 4.4 metric tons (4.9 tons) of plutonium compounds in various forms (not including spent fuel forms) resulting from operation of the PFP are stored in aging facilities. These plutonium compounds are stored in more than 8,000 separate containers or retained as hold-up material under inherently unstable conditions in aging facilities and equipment. An increasing number of containers are exhibiting both bulging and buckling because of a documented hydriding deterioration process.

- Approximately 2,000 radioactive cesium chloride and strontium fluoride capsules containing about 150 million curies of radioactivity recovered from tank waste are stored at the Hanford Site. The capsules are doubly encapsulated and stored in water basins in the 25-year-old WESF.

- Approximately 16,000 cubic meters (21,000 cubic yards) of TRU and suspect TRU waste are stored in the LLW Burial Grounds and Central Waste Complex in drums and boxes, which are nearing the end of their design life. An additional 1,500 cubic meters (1,960 cubic yards) of transuranic waste are anticipated from Environmental Restoration operations.

- A large number of aging facilities and support infrastructure is being transitioned to a safe surveillance and maintenance mode. These aging facilities include nine production reactors, radiochemical-processing buildings, underground waste storage tanks and associated waste transfer systems and laboratories.

- Approximately 140,000 cubic meters (180,000 cubic yards) of LLW and 53,000 cubic meters (68,000 cubic yards) of MLLW are forecast to be received for processing.

The hazards associated with these risk-related challenges are many and varied. The FY 2001 compliance schedules on work toward eliminating or mitigating these hazards to the workers, the public, and the environment require Compliance Baseline funding of $1,297 million in FY 2001. The following two sections summarize the ES&H management risk and compliance vulnerabilities of two budget cases, the $1,065 million Target Case and the $905 million Below Target Case, which are lower than the Compliance Baseline by $232 million and $392 million, respectively.

4.2 SUMMARY OF MANAGEMENT RISK AND COMPLIANCE VULNERABILITIES OF THE $1,065 MILLION TARGET CASE

The proposed Target Case provides $1,065 million for EM cleanup activities in FY 2001 (Table 4-1). At this level, a compliance shortfall of $232 million (18 percent lower than Compliance Baseline of $1,297 million) would exist in FY 2001 to meet the ES&H execution commitments identified in the IPL and PBSs. This shortfall follows other funding shortfalls being projected for FY 2000 as reported in the FY 2000 ES&H Budget-Risk Management Summary issued last year (RL 1998c).

Table 4-1. Funding of Hanford Site Office of Environmental Management Project Missions by Priority Categories - Fiscal Year 2001 (dollars in millions).

Priority Category	Site Project Mission[a,b]							Total
	TW	WM	SF	TP[c]	ER	ST	MS	
Minimum Safe Operations	112.8	87.9	35.4	131.9	24.8	5.0	11.2	409.1
Essential Services	50.2	43.1	44.3	17.2	71.2[d]	11.0	65.8	302.8
Urgent Risks	219.1	0.0	111.6	12.2	10.3	11.0	0.0	353.2
Subtotal Urgent Risks (Target)	**$382.1**	**$131.0**	**$191.3**	**$161.3**	**$106.3**	**$16.1**	**$77.0**	**$1,065.1**
Regulatory Compliance Gap[e]	64.0	20.2	0.0	37.2	97.7	3.0	9.9	232.0
Subtotal Compliance	**$446.1**	**$151.2**	**$191.3**	**$198.5**	**$204.0**	**$19.1**	**$86.9**	**$1,297.1**
Additional Requirements	78.9	9.0	0.0	31.8	0.0	0.0	34.5	154.2
Total Requirements	**$525.0**	**$160.2**	**$191.3**	**$230.3**	**$204.0**	**$19.1**	**$121.4**	**$1,451.3**

[a] The $905 million Below Target Case is not depicted in the table since the Integrated Priority List is developed to analyze Target Case and Compliance Baseline funding requirements. Accurate analysis of project impacts at the $905 million Below Target Case is not possible without restructuring the Site strategy and associated Integrated Priority List.

[b] TW = Office of River Protection/Tank Waste Remediation System; WM = Waste Management; SF = Spent Nuclear Fuel; TP = Facility Transition (including Advanced Reactor Transition); ER = Environmental Restoration; ST = Science and Technology; and MS = Mission Support and Other Projects.

[c] Includes Advanced Reactor Transition Project (RL-TP11).

[d] Includes a $20 million allowance in the Target Case for Environmental Restoration Project subcontractor terminations/closeouts. The $20 million allowance is not needed and is **NOT** included in the $204 million Compliance Baseline.

[e] Includes some incremental Essential Services in the Waste Management Project and Urgent Risks in the Office of River Protection/Tank Waste Remediation System and Facility Transition Projects which are unfunded in the FY 2001 Target Case.

At the Target Case level, efforts would be focused on resolving or mitigating Urgent Risks, but no additional regulatory compliance would be accomplished. Not included in the Target Case are two major Urgent Risks in the Facility Transition Project that are unfunded. These are PFP stabilization and 324 Building and associated areas closure plan for B Cell cleanout (RL 1996a). As noted in Table 4-1, the FY 2001 Target Case funds IPL priority categories up through Urgent Risks but would leave unfunded the $232 million of remaining regulatory compliance activities. The most significant impacts of Target Case funding would be to the Environmental Restoration, ORP/TWRS and Facility Transition Projects, which account for 86 percent of the $232 million unfunded Regulatory Compliance activities shown in Table 4-1. Following is a summary of the major impacts and required actions for the Target Case. The proposed FY 2001 Target Case would result in potentially significant management risk and compliance vulnerabilities with respect to delays in completing Tri-Party Agreement and DNFSB commitments as noted in the following paragraphs.

- Office of River Protection/Tank Waste Remediation System disposal activities would proceed on the currently planned vitrification approach with 90 percent confidence of achieving the Compliance Baseline schedule. The less than full confidence schedule results from the approximately 11-percent reduction in Readiness to Proceed activities in support of Phase Ib Privatization (Tri-Party Agreement Milestones M-45-00, M-50-00, M-51-00 and M-60-00). In addition, tank waste characterization would not fully support Privatization Phase I disposal or evaluation of inactive miscellaneous underground storage tanks (MUST) (DNFSB 93-05, Hanford Tank Waste Characterization Studies). The Tank SY-101 Unreviewed Safety Question (USQ) related to level growth would remain open, as would the outstanding organic complexant USQ for ORO/TWRS ancillary facilities.

- The Waste Management Project's solid waste treatment activities would be significantly reduced because of a 28 percent funding shortfall in FY 2001, in addition to a 20-percent shortfall in FY 2000. This would delay the schedule for completion of construction and operation of the contact-handled TRU/TRUM waste retrieval facility (Tri-Party Agreement M-91-04).

- The Spent Nuclear Fuel Project schedule would not be impacted and would proceed on the Compliance Baseline schedule (TPA Milestone M-34-00 series).

- The Facility Transition Project would experience serious delays in meeting the Compliance Baseline schedule. Target Case funding would support Minimum Safe Operation and Essential Services and only partially fund Urgent Risks. Full funding of Urgent Risk activities is not supported in the FY 2001 Target Case. The following impacts would be incurred if the funding received in FY 2000 is at the current planned level and Target Case funding is received in FY 2001.

- Stabilization of plutonium compounds and deactivation of the PFP would be delayed at least 2 years (DNFSB 94-01).

- Containment and removal of B Cell dispersible radioactive materials, excess equipment and debris would be delayed up to 2 years (Tri-Party Agreement M-89-02).

- The Environmental Restoration Project's $97.7 million (48 percent) reduction from Compliance Baseline to Target Case funding would seriously affect remedial actions and environmental restoration at the Hanford Site. The impact of the $97.7 million Compliance Baseline funding shortfall in FY 2001 would be much greater because cleanup funds would be reallocated to pay for subcontractor terminations and closeouts. Contaminated waste site remedial actions along the Columbia River would be discontinued, and the ERDF would cease operations. The groundwater plume remedial actions and characterization of waste sites in the 200 Areas would be discontinued, as would reactor interim safe storage activities. The following Tri-Party Agreement milestones would be affected:

  - Submit one 200 Area National Priorities List RI/FS (RFI/CMS work plan (M-13-00K).

  - Install RCRA groundwater monitoring wells at the rate of up to 50 in calendar year 2001 (Tri-Party Agreement M-24-00L).

- The EM-30-funded Science and Technology Project activities affected by the Target Case are management and disposal of Pacific Northwest's Legacy waste.

- Mission Support and Other Projects activities affected by a Target Case are incremental funding of environmental monitoring, vadose zone/groundwater integration, and mitigation of hazardous surplus facilities. The ability to provide safe and reliable Site infrastructure (roads, water, telecommunications, emergency services, etc.) are impacted by continued limitations of funding for these activities. The aging water systems are corroding and the number of breaks are continuing to increase which could cause spread of contamination if near a contaminated area. Deferring demolition of the 272E Building carries a safety risk to workers due to flying roof and siding materials.

At this funding level, the ability to achieve efficiencies, stretch-goals, breakthroughs, and mortgage reductions is severely restricted, which ultimately will result in extended schedules and increased life-cycle costs for cleanup. Stretched schedules, continued high costs for facility mortgages, and projects operating at less than optimum levels would result in inefficiencies that translate into higher costs and less funds that can be applied to future cleanup efforts. These funding shortfalls and inefficiencies create a funding "bow wave" that would have to be addressed in the future. In the meantime, major issues over noncompliance with the regulators

and the DNFSB would require expending resources that could best be applied to cleanup activities.

4.3 SUMMARY OF MANAGEMENT RISK AND COMPLIANCE VULNERABILITIES OF THE $905 MILLION BELOW TARGET CASE

The FY 2001 Below Target Case provides $905 million for EM cleanup, which is $392 million (30 percent) lower than that needed to meet the ES&H execution commitments identified in the $1,297 million Compliance Baseline. This case has not been fully analyzed with respect to the IPL because the IPL is developed to analyze Target Case and Compliance Baseline funding requirements. To provide an accurate analysis at this low level of funding would require a total restructuring of the Site strategy and associated IPL. However, an order of magnitude estimate of Below Target Case management risk and compliance vulnerabilities can be developed by using Table 4-1 as a starting point and recognizing that the funding impact would be far greater than the $392 million the numbers indicate. The following impacts would be in addition to the $392 million Below Target Case impact to the Compliance Baseline . These added costs would further reduce the amount of funding available to address mitigation of items in the Urgent Risks category of the IPL.

- First, significant cost impacts would be associated with the termination or relocation of up to 2,000 contractor employees. The loss of a direct funding base would result in increased overhead rates to fund indirect activities, including S&H activities, which in turn would reduce the amount of funding for direct-funded cleanup activities.

- Second, the loss of core competency, mainly in the TWRS Disposal Project, would severely delay the Tri-Party Agreement tank waste disposal schedule because of the time lag required to later hire and assign new staff. In addition, the Below Target Case would require funding and restaffing to develop and implement the alternate path for tank waste disposal required by the Tri-Party Agreement.

- Third, redirecting the projects to replan their missions at the Below Target Case level would add schedule delays and increased life-cycle costs to the accomplishment of nearly every Tri-Party Agreement milestone, DNFSB Recommendation, and consent order commitment at the Hanford Site.

Given these impacts to the direct funding base for cleanup activities, the strategy and approach would be to reduce risks to the workers and the public to the maximum extent possible. Compliance with environmental cleanup regulatory requirements would occur only in those exceptional cases where mitigating the highest priority urgent risks are covered by environmental regulations (e.g., the Spent Nuclear Fuel Project). The following is a summary of major impacts and actions that would be implemented by the projects in the event that Below Target funding is received instead of Compliance Baseline funding. None of these impacts accounts for the additional impacts that may follow from funding shortfalls in FY 2000.

- The ORP/TWRW Project disposal program would be placed on hold starting in FY 2001 and ongoing vitrification contracts would be terminated, resulting in unplanned termination costs (Tri-Party Agreement Milestones M-45-00, M-50-00, M-51-00, and M-60-00). The loss of project momentum and core competency would add several years to the tank waste disposal schedule whenever activities were restarted. Work on an Alternate Path to Privatization would have to be initiated. Significant unrecoverable costs would be incurred to pay for contract and staff terminations. In addition, delays would occur for characterization to support safety screening (DNFSB Recommendation 93-5), Project W-314, Tank Farms Upgrades (Tri-Party Agreement M-43-00, M-43-14, M-43-15 and M-43-16, and the EM-30-funded Hanford Tanks Initiative (Tri-Party Agreement Milestone M-45-00).

- The Waste Management Project's impacts are the same as those described for the Target Case in Section 4.2

- The Spent Nuclear Fuel Project would proceed on the Compliance Baseline schedule discussed in Section 4.2 (TPA Milestone M-34-00). This effort would continue to be given the priority needed to maintain progress. However, the impacts of Below Target Case funding may impede progress on this project. As noted earlier, an accurate impact analysis is not possible without restructuring the Site strategy and the IPL.

- The Facility Transition Project would remain at the Minimum Safe Operations and Essential Services level discussed in Section 4.2.

- The Environmental Restoration Project would be reduced to less than 40 percent of the funding needed to achieve the Compliance Baseline. The project would be reduced to the Base Operations level of surveillance and maintenance. Additional costs would be incurred to restructure the Environmental Restoration contract as a result of contract cancellations and employee terminations and relocations. Remediating the urgent risk associated with radioactively contaminated groundwater would continue, but well decommissioning activities would be terminated (Tri-Party Agreement Milestone M-16-00 and DNFSB 94-2). Remaining regulatory-compliance-driven cleanup activities would be placed on hold.

- The EM-30 funded Science and Technology Project and Mission Support and Other Projects (MS) Site project mission areas would support base operations only. Incremental funding of Regulatory Compliance activities would be severely curtailed or eliminated.

As a result of these scenarios, the time during which radioactive waste would continue to be stored in the Hanford Site's aging underground waste tanks would be extended and cleanout and deactivation of other aging and radioactively contaminated facilities (e.g., PFP, B Cell) would be delayed for many years. Such delays in cleanup activities would extend the time during which workers and the public are exposed to the risks posed by these aging facilities and would increase the risk of contaminating the environment.

From a compliance vulnerability perspective, the Below Target Case scenarios would place the Hanford Site in a serious noncompliant status with Washington State, the EPA, and the DNFSB. Nearly every major and interim Tri-Party Agreement milestone, DNFSB commitment, and consent order would be delayed. The management risk of having to expend unplanned and limited resources to handle enforcement and litigation actions brought by both the regulating agencies and the public also must be considered. A potential also exists for unplanned reallocation of funding to accommodate the commitments required to address noncompliance and corrective actions required by regulatory enforcement actions (e.g., implementation of the alternate path for tank waste disposal).

4.4 MOST IMPORTANT RISK MANAGEMENT ISSUES BEING ADDRESSED

This section addresses the most important ES&H risk management issues addressed by the Site project missions at the $1.065-million Target Case funding level in FY 2001.

4.4.1 Tank Waste Remediation System Project

The most important ES&H risk management issue being addressed in the Target Case are the Base Operations activities of maintaining the 12 SST and 6 DST tank farms in a safe storage condition. Activities that support continued safe storage of tank waste include operations and maintenance, waste characterization, resolution of tank safety issues, and characterization of the vadose zone.

Next in importance is addressing the Urgent Risk of continuing to store radioactive waste in aging waste tanks. This risk is being addressed by Readiness to Proceed activities in support of Phase I Privatization facilities for vitrification of tank waste.

4.4.2 Waste Management Project

Solid and liquid waste, waste minimization, and analytical laboratories provide services to the other PHMC activities and the DOE Complex. This service allows the other contractors and customers to meet their ES&H objectives in a safe and environmentally compliant manner. For example, the correct handling of waste allows contractors to meet DOE objectives safely and in an environmentally compliant manner. Performance of analytical services allows the contractors to address their needs for disposal, treatment, and discharge of solid and liquid waste in conformance with the ES&H requirements. The inventory of stored waste at the Central Waste Complex remains at over 50,000 fifty-five gallon drum equivalents.

4.4.3 Spent Nuclear Fuel

The most important risk management issues being addressed are removal of deteriorated metallic spent nuclear fuel (SNF) from its present location in degraded storage basins along the Columbia River and conditioning for safe storage. The degraded condition of the SNF in the Hanford Site K Basins is generally considered to be among the most serious public and environmental safety concerns in the DOE Complex. The Spent Nuclear Fuel Project was formed specifically to address the urgent need to remove the metallic uranium fuel from its present location in the K Basins along the banks of the Columbia River and place it in safe interim storage on the 200 Areas Plateau. Removal of the fuel from the K Basins is required to mitigate the continuing gradual degradation of the basin structure, corrosion of the fuel, and buildup of sludge and associated radioactivity. Continuing degradation of the fuel and the basin gradually increases the risk of serious impact to workers, Columbia River users, the downstream pubic, and the environment.

4.4.4 Facility Transition Project

The most important risk management issues being addressed at PFP are related to the wide-ranging vulnerabilities associated with the inventory of plutonium compounds in various forms that are stored or retained as hold-up material under inherently unstable conditions in aging facilities and equipment. Because these materials pose significant criticality, chemical, and radiological hazards to workers, the public, and the environment, the DNFSB included remediation of these materials in Recommendation 94-01, Improved Schedule for Remediation in Defense Nuclear Facilities Complex. In addition, remediation of Tank 241-Z-361, which contains an estimated 80,000 liters (21,200 gallons) of plutonium-bearing sludge, is also identified as a high risk ES&H issue in the Plutonium Vulnerabilities Management Plan (DOE 1995a).

The inventory of PFP material requiring stabilization includes 4.4 metric tons (4.9 tons) of plutonium stored in more than 8,000 separate containers including glove boxes, tanks, and piping. Current storage hazards include an increasing number of containers that exhibit both bulging and buckling caused by a documented hydriding deterioration process. This process is the result of the original packaging being in contact with plastic material and the off gassing of plutonium solutions while awaiting stabilization. Loss of containment integrity or fire could result in extensive radioactive contamination and expose workers to unacceptable risks. Nuclear criticality and seismic vulnerabilities are examples of less likely but potentially more severe consequences. The continuing build-up of americium-241, with associated build-up in decay heat and higher radiation levels, is further exacerbated by the projected delays in stabilization at the FY 2001 Target Case budget.

The 324 B Cell presents a high radiological risk to the worker, public, and environment that urgently requires cleanup. The cell contains over 6 million curies of legacy nuclear material that pose an unacceptable potential risk to the public and currently exceeds the DOE guidance for an offsite consequence. Tri-Party Agreement milestones have been established for containment and removal of all B Cell dispersible material, excess equipment, debris and complete closure of non-permitted mixed waste units in the 324 Building as described in the 324 Building and associated areas closure plan (RL 1999a) (Tri-Party Agreement M-89-00 series). Attempts to revitalize the 300 Area for commercial use are severely hampered by the delay in removing this radiological hazard.

One of the highest inventories of radionuclides on the Hanford Site is managed at the WESF. This project maintains the safety systems that prevent releases of contamination to Site workers, the public, and the environment.

The most important risk being managed by the Advanced Reactors Transition Project is the 11,350 liters (3,000 gallons) of metallic sodium in the NE legacy test loops being maintained in a solid state under a nitrogen gas atmosphere to prevent reaction with oxygen and moisture in the air. The radiological contamination in the Plutonium Recycle Test Reactor (PRTR) is being monitored. Connections to the 300 Area water and sewer systems have been cut and capped. The building exhaust from contaminated areas is through high-efficiency particulate air (HEPA) filters.

4.4.5 Environmental Restoration Project

The most important risks being addressed are the interception/containment of contaminated groundwater plumes (100 Area) from reaching the Columbia River, and the cumulative risks of all Hanford Site wastes. While cleanup progress is being made, there is a high degree of risk that the individual endpoints will not result in an acceptable end state for the Hanford Site. A goal of the Groundwater/Vadose Zone integration project is to ensure that the project endpoints are assessed in a cumulative fashion to address the overall Hanford Site public, environmental, social and cultural risks. Of secondary importance is ensuring that groundwater monitoring, reporting, and well maintenance activities continue along with essential Site surveillance and maintenance activities and D&D of the 233-S Plutonium Concentration facility.

4.4.6 Science and Technology Project

The most important ES&H risk management issues being addressed at Pacific Northwest are the base operations including facility surveillance and maintenance activities to maintain safety envelopes for radioactive materials and radiation areas within the 325 Building and the 300 Area laboratory buildings. This includes preparing as-built drawings to show the facility's current configuration. It also includes the waste operations and management activities that provide the infrastructure (acceptance, handling, storage, packaging, and shipment) needed to disposition newly generated laboratory waste in compliance with environmental requirements.

This includes effluent monitoring that provides radiological air emissions sampling and monitoring of facility emission points to meet requirements and standards.

4.4.7 Mission Support and Other Projects

The most important ES&H issues being addressed under Mission Support are by the Pacific Northwest's Public Safety and Resource Protection organization and the PHMC's Effluent and Environmental Monitoring organization. Pacific Northwest provides environmental monitoring in and around the Hanford Site to help assess health and safety impacts to workers and the public. Program activities are aimed at monitoring and tracking the movement of radioactive materials in pathways leading to potential human exposure. The PHMC monitors radioactive contamination in the air, vegetation, wildlife, and in the Columbia River. Also included are localized weather forecasting services and information that supports emergency management activities and is also useful in carrying out tank farm, well drilling, and construction activities safely.

4.5 SIGNIFICANT RISKS NOT ADEQUATELY ADDRESSED

This section identifies significant ES&H risks not adequately addressed by the Site project missions at the $1,065 million Target Case funding level for FY 2001.

4.5.1 Tank Waste Remediation System Project

Minimum Safe Operations is funded within both the EM Compliance Baseline and Target Cases. No new risks to human health or the environment will occur; however, risk reduction activities such as immobilizing HLW (including Project W-464) are not funded to support full compliance and schedule acceleration requirements. In addition, Tank SY-101 level growth USQ closure, final safety analysis report (FSAR) implementation and organic operations (analyses to close the outstanding organic complexant USQ for the ORP/TWRS ancillary facilities) are not funded to fully compliant levels. This will result in increased worker, public, and environmental risk over time. Characterization support to high priority tank sampling and characterization support to Tri-Party Agreement milestones are not funded in the Target Case. The associated delays will result in increased environmental impacts and failure to meet specific commitments associated with Tri-Party Agreement Milestone M-44-00 and DNFSB Recommendation 93-05.

4.5.2 Waste Management Project

At both the Target Case and Compliance Baseline, near-term ES&H risks are addressed. There are three FY 1999 activities that are not addressed at these levels: TRU programmatic activities are delayed one to three years, TRU retrieval operations are delayed, and TRU processing proceeds at a reduced rate. All other activities associated with Tri-Party Agreement

M-91-00 series milestones are delayed at least one to three years. While each of these activities is required to reduce ES&H risks, the delays are becoming significant by increasing worker risk and storage capacity requirements. The completion of these additional activities would also meet other EM program objectives.

4.5.3 Spent Nuclear Fuel

All significant ES&H risks are adequately addressed at both the Target Case and Compliance Baseline funding levels.

4.5.4 Facility Transition Project

Significant risks not adequately addressed in the Facility Transition Project are described below. With respect to plutonium solution stabilization, there will be a minimum of a 2 to 3 year delay in completion of DNFSB Recommendation 94-1 Implementation Plan commitments. Delays in plutonium stabilization will result in increased risk to facility workers resulting from a failure to properly mitigate the hazards from unstabilized plutonium materials in inventory at the PFP Complex. In addition, a corresponding delay in deactivation of the PFP Complex would occur resulting in an increased life cycle cost of approximately $75 million per year. In addition the following DNFSB 94-1 Implementation Plan activities are not supported.

- **Plutonium Stabilization** – Target Case funding will result in inadequate operational staff, which will delay completion of stabilization.

- **PFP Oxides/Metals/Stabilization** – Target Case funding does not support full staffing for oxides/metal stabilization resulting in inefficient operations due to daily startup/shutdown of system. These inefficiencies will result in schedule delays and increased cost and risk to the workers.

- **PFP Polycubes Stabilization** - Lack of staff to complete this work will delay stabilization of Polycubes at PFP. This will cause a delay in completion of DNFSB Recommendation 94-1.

- **Project W-460, Plutonium Stabilization & Handling System (PuSH)** – If this project is not completed, PFP will not be able to complete all required facility modifications to support efficient utilization of the plutonium stabilization and packaging system.

- **Plutonium Stabilization & Handling System Operations** - If not completed, PFP will be unable to efficiently operate the plutonium stabilization and packaging system to be installed by Project W-460 in FY 2001 resulting in schedule delays and increased cost to re-package stabilization material.

- **Cementation** - If not completed, there will be a delay in completion of plutonium

stabilization and DNFSB Recommendation 94-1 Implementation Plan commitments.

Delaying B Cell cleanout per the 324 B Cell closure plan (RL 1996a) will impact completion of Tri-Party Agreement Milestone M-89-00 series. Hiring and retraining will also be delayed which will extend the current schedule for the completion of deactivation of the 324 Facility. This will cause an increase in the cost of the Minimum Safe Operations budget category.

4.5.5 Environmental Restoration Project

The minimum levels (Essential Services and Urgent Risk activities noted above) of ES&H risk management activities are addressed at the Target Case funding level. Significant risks not addressed include discontinuing contaminated waste site remedial actions along the Columbia River and operation of the Environmental Restoration Disposal Facility (ERDF) at the end of FY 2000. The 200 Area groundwater plume remedial actions will cease. Assessment and characterization of waste sites in the 200 Area will not continue in FY 2001. Reactor interim safe storage (ISS) activities will be discontinued.

4.5.6 Science and Technology Project

The following significant ES&H risks are not adequately addressed at the Target Case funding level. There has been a continued delay in identifying adequate priority funding for disposing of existing DOE Legacy waste and contamination in facilities assigned to Pacific Northwest. The proposed investment to dispose of these wastes at Pacific Northwest is not commensurate with the investments being made in disposing of other Hanford Site wastes. Delaying the remediation of Legacy wastes and contamination consequently delays reducing the safety risks posed by abandoned radiological and hazardous materials in these DOE facilities. These wastes pose increased risk to onsite workers, the public, and the environment. The continued safe conduct of laboratory operations is threatened as long as legacy wastes remain undisposed. The funding shortfall also delays improving ES&H compliance for the science and technology development mission operations. Compliance with Tri-Party Agreement Milestone M-92-00 series, which specifically governs the schedule for removing legacy issues from the 300 Area, will be delayed. The impact of funding reductions not only delays reducing safety and compliance risks, but also delays making more effective use of laboratory spaces and facilities. Laboratory operations cannot be conducted efficiently while legacy wastes remain in the facilities. Additionally, full funding for disposition of Pacific Northwest legacy wastes and contamination would reduce mortgages with potential average savings of greater than $1million per year. It would also accelerate cleanup of DOE facilities assigned to Pacific Northwest to support revitalization of the 300 Area for commercial or other uses. These savings could then be made available in the future for other critical needs across the Site.

4.5.7 Mission Support and Other Projects

Several environmental monitoring activities are not funded including Hanford

Environmental Dose Overview, which ensures consistency in dose calculation methodology and interpretation. This service is necessary to support Hanford activities for calculating radiological doses to the public, workers and environment and also supports a pending regulatory requirement for high priority/urgent risk Hanford projects/programs. Monitoring of nearby food products for possible Hanford contaminants and collection of necessary data to assess ecological risks within the Columbia River is also not funded. Additionally, support to RL on the development of a Site wide Environmental Radiation Protection Plan to comply with the anticipated promulgation of 10 CFR 834 is unfunded.

Certain activities established to comply with federal laws and environmental regulations concerning the protection and management of ecological resources on the Hanford Site will not be maintained. The Biological Resources Management Plan cannot be implemented that otherwise would allow cleanup activities and the future development of Hanford to proceed while minimizing the damage to sensitive species and habitat. Required data on the distribution of plants and animals will not be gathered to support mitigation of Hanford impacts. This approach would minimize the potential for future natural resource damage assessments against the DOE and would also minimize the need for specific consultations with federal agencies regarding impacts to endangered species. In addition, sensitive ecological resources in the 300 Area will not be assessed in compliance with the National Environmental Policy Act (NEPA). Management and control of increasing elk herds on the Hanford Site in collaboration with the Washington State Fish and Wildlife Department will also not be supported. The risk of elk-vehicle collisions for commuters on local highways going through Hanford and ecological damage on the Arid Lands Ecology Lab will continue to increase.

Activities to characterize the Columbia River environment and develop credible models to describe and predict Hanford contaminant migration and fate in the river environment are also not supported. The ultimate objective of this activity would be to efficiently reduce potential public safety risks. These activities include gathering the baseline data on the distribution of plants and animals needed to support impact mitigation designed to minimize environmental restoration project costs at Hanford and that would provide the basis for future decisions on land use. This will result in a delay to the schedule for completion of the Groundwater / Vadose Zone Integration (GW/VZ) Project which would determine future potential impacts to the Columbia River and the selection of appropriate cleanup alternatives.

4.6 IDENTIFICATION OF HIGHEST RANKING UNFUNDED ACTIVITIES

Identification of the highest ranking unfunded activities from the IPL are noted in this section for the Site project missions, assuming that Target Case funding of $1,065 million is received in FY 2001.

4.6.1 Tank Waste Remediation System Project

Based on the Site IPL, funding for acceleration of ORP/TWRS immobilized high-level waste is not included in the FY 2001 Target Case. Additionally, Tank SY-101 level growth USQ closure and ORP/TWRS FSAR Implementation are not included in the Target Case. These unfunded activities may result in delays to the start of hot operations to process high-activity waste in vendor-owned and -operated facilities by December 2002 (Tri-Party Agreement Milestone M-60-12). This in turn would result in increased risk to the public and the environment. Not funding Tank SY-101 level growth may result in operation of the tank outside of the authorization basis (AB) and violation of Washington Administrative Code (WAC) 173-303-640 (4)(e)(iii) concerning double-containment and leak detection. Funding the FSAR will result in a more definitive, DOE Order 5480.23 compliant, TWRS AB with enhanced controls, reduced calculated risk, and expanded facility and program definition.

4.6.2 Waste Management Project

TRU programmatic activities are the highest unfunded environmental risk. Currently, aging drums and limited TRU processing will increase worker risk in handling and processing of this waste stream. A 1-year delay to this project may lead to continuous delays.

4.6.3 Spent Nuclear Fuel Project

All necessary activities are funded at the Target Case.

4.6.4 Facility Transition Project

The $1,297 million Compliance Baseline Case does not fund the following activities;

- 327 Legacy Waste Removal
- 327 Liquid Waste Handling System
- 324 B-Cell Closure
- Roof repairs for B Plant, PUREX and the 300 Area
- WESF Facility Modifications
- PFP Deactivation
- 300 Area shutdown non-RCRA work scope
- Deactivation of 200 and 300 Area Contaminated Facilities.

At the $1,065 million Target Case the following activities are not funded:

- PFP stabilization activities [solution stabilization, polycubes, plutonium stabilization and handling system operations, cementation, Line Item Project W-460, Plutonium Stabilization and Handling (PuSH), and oxides/metal stabilization]
- 324 closure plan
- 300 Area shutdown RCRA work scope.

In addition, neither the Compliance Baseline Case nor the Target Case funds remediation of Tank 241-Z-361 in FY 2001. While resolution of the USQ for this tank is anticipated by actions to be completed in FY 1999, a third core sample and subsequent remediation efforts on this tank are not funded until FY 2002.

4.6.5 Environmental Restoration Project

The following are the highest ranking unfunded candidates at the Target Funding Case level: 100 and 300 Area waste site remedial actions and operation of ERDF, 200 Area assessment and characterization, reactor interim safe storage activities, and 200 Area groundwater remedial actions.

4.6.6 Science and Technology Project

The highest-ranking unfunded activity is management and disposal of Pacific Northwest legacy waste and contamination, allowing radioactive and hazardous material to remain in locations where there is little control over public access creating a potential for contamination spread to the public.

4.6.7 Mission Support and Other Projects

The highest-ranking unfunded activity is implementing a biological resources management approach to minimizing the impact of future work on Hanford Site biological resources.

4.7 IDENTIFICATION OF UNFUNDED AND UNDERFUNDED ACTIVITIES THAT ADDRESS EMERGING ISSUES

Identification of the highest unfunded and underfunded activities that address emerging ES&H issues are noted in this section for the Site project missions based on receiving $1,065 million Target Case funding in FY 2001.

4.7.1 Tank Waste Remediation System Project

The Target Case results in limited funding available to support emergent ES&H regulations and requirements and a comparable reduction in ES&H resources and professional staff necessary to define and manage a proactive ES&H program. Activities impacted at the Target Case include waste characterization, DST integrity inspections, Readiness to Proceed support to Phase I Privatization and closure of the outstanding organic complexant USQ for TWRS ancillary facilities (Tri-Party Agreement Milestones M-41-00, M-45-00, M-50-00, M-51-00, M-60-00 and DNFSB Recommendation 93-5). As building and design reconstitution are regulatory commitments under the *Price-Anderson Amendments Act* and Title10 of the U.S. Code of Federal Regulations, Section 830.210, "Quality Assurance" which also address emerging issues. Additionally, resolution of environmentally noncompliant systems and structures continue to be deferred in the FY 2001 Target Case.

4.7.2 Waste Management Project

Delay in radioactive mixed waste treatment increases the age of the waste stored at the Central Waste Complex.

4.7.3 Spent Nuclear Fuel

There are no additional unfunded or underfunded activities that address emerging issues.

4.7.4 Facility Transition Project

Remediation of Tank 241-Z-361, which contains an estimated 80,000 liters (21,200 gallons) of plutonium-bearing sludge, is identified as a high risk ES&H issue in the Plutonium Vulnerabilities Management Plan and is a potential emerging issue (DOE 1995a).

4.7.5 Environmental Restoration Project

No emerging issues have been identified.

4.7.6 Science and Technology Project

There are no additional unfunded or underfunded activities that address emerging issues.

4.7.7 Mission Support and Other Projects

There are four emerging issues that are unfunded. (1) Implementation of the

Environmental Radiation Protection law (10 CFR 834), which has yet to be promulgated, is unfunded. Noncompliance may result in fines or penalties. (2) The elk population on the Hanford Site is increasing, and management and control for both public safety and for protection of ecological resources is unfunded. (3) Collecting baseline data and developing credible models are unfunded activities that address the emerging Groundwater/Vadose Zone Integration Project objective of determining appropriate clean-up alternatives for achieving the end state established for the Columbia River. (4) Delaying repair/replacement of the aging infrastructure systems could result in emerging risks to workers.

4.8 IDENTIFICATION OF UNFUNDED OR UNDERFUNDED ACTIVITIES THAT REPRESENT GOOD INVESTMENTS IN RISK MANAGEMENT/PREVENTION

The highest-ranking unfunded or underfunded activities that represent good investment in risk management or prevention are identified in this section for the Site project mission areas.

4.8.1 Tank Waste Remediation System Project

The Tank SY-101 level growth USQ closure, ORP/TWRS FSAR implementation and cesium and strontium capsule disposition are not funded in the Target Case. Funding Tank SY-101 USQ closure will result in lower operating costs by not requiring operation of the mixer pump. Funding the FSAR implementation provides a number of distinct benefits for the Site including more robust USQ screening and better integration of the authorization basis with safety management.

Failure to fund cesium and strontium capsule disposition will delay processing the capsules in a manner that is acceptable for final disposal in the geologic repository. This will increase the risk of capsule failures, resulting in potential environmental contamination and exposure to workers and the public. Processing of the capsules during Phase I Privatization, rather than later, provides the following benefits:

- Almost two-thirds of the Hanford Site radioactive inventory would be immobilized during Phase I instead of later.
- The Phase I cost of treating Hanford tank waste would be reduced from ~$250 to ~$50 per curie.
- Operating costs associated with the continued operations and life-extension upgrades of WESF are reduced by ~$125 million, while the cost of capsule disposition is estimated at ~$50 million.
- A significant source of potential environmental risk to the Hanford Site (greater than140 megacuries of radioactive cesium and strontium) would be converted from a waste form

intended for short-term storage (capsules) to a waste form qualified for permanent off-site disposal (glass encased in canisters).

- The set of Tri-Party Agreement milestones associated with capsule disposition would be completed ahead of schedule.

Mortgage reduction efforts such as reduction of radiological contaminated areas, remote automation of tank monitoring and surveillance requirements, facility closure and turnover for decontamination and decommissioning, and as-building of facility systems and structures are not funded or are under funded in the FY2001 Target Case.

4.8.2 Waste Management Project

Radioactive mixed waste contracts are inefficiently used. Existing contracts have expensive guaranteed minimums. Follow-on treatment, especially for thermal treatment, is 5 to 10 times cheaper at volumes over the guaranteed minimum.

4.8.3 Spent Nuclear Fuel

No additional unfunded or underfunded activities have been identified that represent good investments in risk management and prevention.

4.8.4 Facility Transition Project

Unfunded and underfunded activities that could represent a good investment in risk management or prevention include the following.

- Accelerated procurement of containers for plutonium shipments.
- Fully staffing of stabilization crews (DNFSB Recommendation 94-1).
- PFP duct remediation and glovebox cleanout.
- PFP facility vulnerability mitigations (i.e., chemical vulnerabilities).
- PRF deactivation.
- 200 Area miscellaneous facilities deactivation.

4.8.5 Environmental Restoration Project

The candidates listed in Section 4.6.5 represent good investments in risk management and prevention in that they all reduce the exposure to environmental risk earlier than planned and reduce the life cycle Hanford Site cleanup costs.

4.8.6 Science and Technology Project

No additional unfunded or underfunded activities have been identified that represent good investments in risk management and prevention.

4.8.7 Mission Support and Other Projects

Support to the Hanford Environmental Dose Overview Panel, which would ensure appropriate, consistent environmental dosimetry calculations and common understanding of the results across the Hanford Site, is unfunded. This service is necessary to support calculation of radiological doses to the public, workers and environment and accurately characterize safety risks. This activity is also a critical function in a successful Groundwater/Vadose Zone Integration Project. In addition, the ecological compliance assessment activity in the 300 Area to comply with NEPA would be a good investment to reduce regulatory risks.

5.0 SAFETY AND HEALTH BUDGET PLANNING AND ANALYSIS SUMMARY

This section includes a budget analysis overview, major planning assumptions, and an analysis of S&H direct funding requirements. Indirect funding requirements for S&H activities are provided in Section 6.0.

5.1 BUDGET ANALYSIS OVERVIEW

This section presents an overview of the planning process and an analysis of FY 2001 cleanup funding requirements with respect to the major priority categories identified on the IPL and by Site project mission for EM-funded activities.

5.1.1 Planning Process

The ES&H Supplementary Budget Submission described in Chapter IV of Attachment E, DOE Budget Handbook of the *FY 2001 Field Budget Call,* identifies the required information to be included in the ES&H budget-risk management summary for sites in the DOE Complex (DOE 1998a). For the Hanford Site, the submittal consists of this report and the supporting documentation contained in Part B Safety & Health Direct Cost and FTE Data and the Safety and Health Narratives of prepared for each of the over 40 EM-funded project baseline summaries (PBSs). The supporting documentation was prepared in accordance with the data requirements identified in the EM Integrated Planning, Accountability, and Budgeting System (IPABS) (DOE 1998b). Activity data sheets were used to provide equivalent information for SC, NE and EM-10 funded programs.

Annual mission planning guidance and the *Hanford Risk Management Plan* (FDH 1998) define the approach to be used for establishing prioritization of EM-funded work scope. The process used to develop the FY 2001 IPL was a continuation of the process used to develop earlier IPLs based on risk data sheets. Risk attributes of units of analysis (UA) were reviewed and evaluated for consistency by DOE and contractor representatives as well as by the Hanford Advisory Board, the EPA, Ecology, and the Tribal Nations.

The IPL is used to rank all direct-funded EM cleanup work at the Hanford Site. It is based on a Sitewide process to rank the over 400 individual scopes of work defined as UA. The approach is to group UA work elements into major priority categories and sub-categories to facilitate analysis of ES&H risk management and compliance vulnerabilities and impacts to the cleanup schedule at various funding levels. The five major priority categories used in developing the Hanford Site cleanup funding requirements are as follows:

- Minimum Safe Operations

- Essential Services
- Urgent Risks (high-risk activities)
- Regulatory Compliance
- Additional Requirements.

Appendix E provides additional information on the IPL and the planning process used to develop it. Indirect-funded activities are ranked within each organizational function using "building blocks" of work scope based on "zero-based budgeting" of overhead activities.

5.1.2 Analysis of Fiscal Year 2001 Cleanup Funding Requirements

An overview of Hanford Site FY 1999 to 2001 EM cleanup funding requirements for the Compliance Baseline, Target Case, and Below Target Case is presented in Table 5-1 according to the five major prioritization categories: Minimum Safe Operations, Essential Services, Urgent Risks, Regulatory Compliance, and Additional Requirements. Environmental Management funding of the major Hanford Site project missions for the FY 1999 to 2001 planning period is summarized in Table 5-2.

Three budget cases (Compliance Baseline, Target, and Below Target) are identified for FY 2001 planning analysis (Table 5-1). The FY 2001 Compliance Baseline, Target, and Below Target cases are funded at $1,297.1 million, $1,065.1 and $905.3 million, respectively. The Target and Below Target Cases are $232.0 million (18 percent) and $391.8 (30 percent) below the Compliance Baseline, respectively. Cleanup Progress requirements (defined as the combined Urgent Risks and Compliance increments in Appendix E) total $585.2 million in FY 2001. The proposed Target and Below Target Cases would result in Cleanup Progress funding reductions of 40 percent and 67 percent, respectively, from the Compliance Baseline. The FY 2001Target Case cleanup budget of $1,065.1 million is the same as the FY 2000 Target Case budget.

The differences between the Compliance Baseline and Target Case budget levels for the period FY 1999 to FY 2001 illustrate a significant trend. This trend is seen in the Table 5-2 values on the line titled "Compliance Baseline to Target Reduction." These values represent a Compliance Baseline funding shortfall "bow wave" which builds from a modest $54.0 million in FY 1999 to a substantial $232.0 million in FY 2001. As noted in the major planning assumptions in Section 5.2, efforts will continue in reducing overhead and facility surveillance and maintenance costs. These and other efficiencies will help in the attempt to offset some of the impacts of not receiving full Compliance Baseline funding in FY 2001. However, the significant savings and cost reductions achieved in earlier years have already been factored into the planning for FY 2001 and the out years. This means that only modest savings should be expected in future years, unless progress on eliminating Urgent Risks and reducing mortgages on old nuclear facilities continues at planned levels.

Table 5-1. Funding Requirements for Hanford Site Environmental Management Prioritization Categories for Fiscal Years 1999 to 2001 (dollars in millions)[a]

Integrated Priority List Category	FY 1999	FY 2000	FY 2001
Minimum Safe Operations	374.1	394.5	409.1
Essential Services	254.0	255.1	302.8
Urgent Risks Increment 1	271.1	356.5	193.4
Below Target Case	**N/A**	**N/A**	**$905.3**
Urgent Risks Increment 2	0.0	0.0	159.8
Regulatory Compliance Increment 1	95.9	59.0	0.0
Target Case	**$995.1**	**$1,065.1**	**$1,065.1**
Regulatory Compliance Increment 2 (Compliance Gap)	54.0	106.5	232.0
Compliance Baseline	**$1,049.1**	**$1,171.6**	**$1,297.1**
Additional Requirements	131.2	130.3	154.2
Total Requirements	**$1,180.3**	**$1,301.9**	**$1,451.3**

[a] Does not include funding of Office of Nuclear Energy, Science and Technology; Office of Environmental Management Phase 1 Privatization contractors; Office of Science programs; or Office of Management and Finance.

Table 5-2. Funding Requirements for Fiscal Years 1999 to 2001 Hanford Site Environmental Management Project Mission Activities (dollars in millions).[a]

Site Project Mission	FY 1999	FY 2000	FY 2001
Office of River Protection/Tank Waste Remediation System	342.7	386.4	446.1
Waste Management	120.3	134.3	151.2
Spent Nuclear Fuel	170.4	190.9	191.3
Facility Transition[b]	175.2	207.6	198.5
Environmental Restoration	146.0	157.3	204.0
Science and Technology	17.6	17.0	19.1
Mission Support and Other Projects[c]	76.9	78.1	86.9
Compliance Baseline	**$1,049.1**	**$1,171.6**	**$1,297.1**
Compliance Baseline to Target Reduction	54.1	106.5	232.0
Target Case	**$995.0**	**$1,065.1**	**$1,065.1**
Target to Below Target Reduction	N/A	N/A	159.8
Below Target Case	**N/A**	**N/A**	**$905.3**

[a]Based on Compliance Baseline funding in FY 2001. Does not include funding of Office of Nuclear Energy, Science and Technology; Environmental Management Privatization; Office of Science programs; or Office of Management and Finance.

[b]Includes Advanced Reactor Transition Project.

[c]Includes Hazardous Materials Management and Emergency Response; Planning and Integration; Hanford Environmental Management Program; Effluent and Environmental Monitoring; Site Systems Engineering; Pacific Northwest National Laboratory Public Safety and Resource Protection; U.S. Department of Energy, Richland Operations Office-Directed Support; Tank Waste Remediation System Regulatory Unit; and Landlord.

5.1.3 Analysis of Priority Category Funding Requirements

The $409.1 million for Minimum Safe Operations in FY 2001 accounts for a sizeable fraction of the Hanford Site cleanup budget. The FY 1999 to 2001 IPL shows an increase of about 5 percent in the Minimum Safe Operations budget from FY 1999 to 2001 adjusting for inflation (Table 5-1).

The Essential Services priority category increases from $254.0 million in FY 1999 to $302.8 million in FY 2001. The increases are needed to support the following activities:

- Increased production at the WRAP to treat stored contact-handled MLLW and newly generated LLW and contracts for thermal treatment of waste
- Increased groundwater/vadose zone remediation activities by the Environmental Restoration Project
- Increased support of Readiness to Proceed with tank waste disposal activities by the ORP/TWRS Project
- Funding of $20 million for subcontractor terminations and closeouts, primarily in the Environmental Restoration Project, if proposed Target Case funding is received in FY 2001.

Cleanup Progress, which includes the Urgent Risks and all Regulatory Compliance priority category increments listed in Table 5-1, increases 38 percent from $421.0 million in FY 1999 to $585.2 million based on Compliance Baseline funding of $1,297.1 million in FY 2001. Over two-thirds of this increase is for the ORP/TWRS Project Readiness To proceed with tank waste disposal and Environmental Restoration Project cleanup activities.

5.1.4 Analysis of Fiscal Year 2001 Safety and Health Funding Requirements

As shown in Table 5-3, the planned FY 2001 funding of EM, EM-10, NE, and SC S&H activities is $219.1 million of which $144.9 million is direct-funded and $74.2 million is indirect-funded. The FY 2001 funding requirements of $128.0 million for EM-funded S&H activities is based on a Target Case funding level of $1,065.1 million.

In last year's report, total funding requirements for all Hanford Site S&H activities were identified as $204.0 million and $209.1 million for FY 1999 and 2000, respectively. The total S&H values for FY 1999 and 2000 in this year's report show a modest decrease to $199.5 million for FY 1999, and a modest increase to $213.3 million for FY 2000.

With respect to EM-funded S&H activities only, the upward trend is about a 15 percent increase in S&H resources from FY 1999 to 2001. The upward trend is primarily caused by the increased resources being applied to eliminating the Urgent Risks associated with the Spent Nuclear Fuel and ORP/TWRS Projects and increased levels of mixed waste and TRU waste processing for shipment to the WIPP by the Waste Management Project, as explained further in Section 5.3.

Table 5-3. Secretarial Office Safety and Health Funding Requirements for Fiscal Years 1999 to 2001 Activities (dollars in millions).

DOE Secretarial Office	FY 1999	FY 2000	FY 2001[a]
Direct EM S&H Funding Requirements	111.6	124.4	128.0
Direct EM-10 S&H Funding Requirements[b]	12.6	11.9	12.3
Direct NE S&H Funding Requirements[c]	2.3	2.5	2.5
Direct SC S&H Funding Requirements[d]	2.0	1.9	2.0
Total Hanford Site Direct S&H	**128.5**	**$140.7**	**$144.9**
Indirect EM S&H Funding Requirements[e]	56.5	57.0	58.4
Indirect SC S&H Funding Requirements[d]	14.5	15.6	15.8
Total Hanford Site Indirect S&H	**$71.0**	**$72.6**	**$74.2**
Total Hanford Site S&H	**$199.5**	**$213.3**	**$219.1**

[a]Based on Target Case funding in FY 2001.
[b]Office of Management and Finance (ADS A99D0001).
[c]Office of Nuclear Energy, Science and Technology (NE) funds the Fast Flux Test Facility Complex (ADS A97D0015) starting in FY 1999.
[d]Office of Science (SC) programs managed by Pacific Northwest National Laboratory.
[e] Includes indirect S&H resources that support Office of Nuclear Energy, Science and Technology (NE) activities.

5.2 ANALYSIS OF SAFETY AND HEALTH FUNDING REQUIREMENTS

This section provides a more detailed analysis of S&H FY 2001 funding requirements using a crosscutting approach from the perspectives of both the S&H functional categories and the EM-funded Site project missions. Direct and indirect S&H FY 1999 to 2001 funding requirements for EM-funded program activities are summarized for the nine S&H functional categories in Table 5-4. Total S&H resources required for the EM-funded Site project missions are summarized in Table 5-5 for FY 1999 to 2001.

5.2.1 Analysis of Funding Requirements for Safety and Health Functional Categories

As noted in Table 5-4, overall S&H funding requirements trend upward about 15 percent from FY 1999 to 2001. Three of the S&H functional categories: Fire Protection, Radiation Protection and Transportation Safety, have large percentage increases. Five of the S&H functional categories have relatively small or no change in value. One functional category, Emergency Preparedness, has a large percentage decrease.

The major increases in S&H resources are associated with ORP/TWRS, Waste Management, Spent Nuclear Fuel and Landlord Project activities. The large percentage reduction in S&H resources for Emergency Preparedness is associated with FY 2001 funding reductions in the Environmental Restoration Project and completion of Emergency Preparedness upgrades and integration of vegetation and animal control by the Landlord Project. Reasons for the changes in S&H resources from FY 1999 to 2001 are given in Table 5-6 at the end of this section.

Table 5-4. Summary of Fiscal Years 1999 to 2001 Environmental Management Safety and Health Resource Requirements by Functional Category (dollars in millions).[a]

Safety and Health Functional Category	Fiscal Year			FY 1999-2001 Change
	1999	2000	2001[b]	
Emergency Preparedness	7.3	7.3	5.9	-1.4
Fire Protection	4.5	5.4	5.6	+1.1
Industrial Hygiene	3.1	3.5	3.1	0.0
Industrial Safety	8.2	8.7	8.7	+0.5
Occupational Medical Services	1.2	1.3	0.9	-0.3
Nuclear Safety	15.5	14.7	14.5	-1.0
Radiation Protection	44.7	52.9	57.1	+12.4
Transportation Safety	2.9	4.6	6.1	+3.2
Management and Oversight	24.2	25.9	26.1	+1.9
Total Direct EM S&H	**$111.6**	**$124.3**	**$128.0**	**$+16.4**
Total EM S&H Indirect[c]	**$56.5**	**$57.0**	**$58.4**	**$+1.9**
Total EM S&H				**$+18.3**

[a] Does not include Office of Management and Finance (EM-10) S&H resources.
[b] Based on Target Case funding in FY 2001.
[c] Includes indirect S&H resources that support Office of Nuclear Energy, Science and Technology (NE) activities.

5.2.2 Analysis of Safety and Health Resource Requirements for Hanford Site Project Missions

Direct and indirect S&H resource requirements are summarized in Table 5-5 for each of the six EM-funded Hanford Site project missions for FY 1999 to 2001. Overall direct S&H resource requirements trend upward by about 15 percent from $111.6 million in FY 1999 to $128.0 million in FY 2001. Reasons for major changes in S&H resource requirements from FY 1999 to FY 2001 are summarized in Table 5-6 for each Site project mission. Major contributors to the increase in S&H funding requirements are as follows:

- Initiation of construction of AZ Tank Farm upgrades and design and construction of equipment for sludge washing in Tank AZ-101 by the ORP/TWRS Project.

- Increased WRAP production by the Waste Management Project to treat MLLW and to process TRU waste for shipment to the WIPP.

- Spent Nuclear Fuel Project staffing increase to support movement of spent nuclear fuel from the K Basins starting in FY 2001.

- Transfer of Office of SC 300 Area facilities to the Office of EM for surveillance and maintenance until they are deactivated.

- Increased assessment of groundwater resources and integration of groundwater/ vadose zone activities.

The increases are offset by large decreases of S&H resources in the Environmental Restoration Project from FY 1999 to 2001. These decreases are the result of the effects of FY 2001 Target Case funding. Additional details, including identification of PBS code, S&H functional category code, and amount of change in S&H funding between FY 1999 and 2001, are provided in Table 5-6. PBS codes are identified in Appendix D and S&H functional category codes are identified and described in Appendix E.

Table 5-5. Summary of Fiscal Years 1999 to 2001 Safety and Health Resource Requirements for Hanford Site Project Missions (dollars in millions).[a]

Site Project Mission	Fiscal Year			FY 1999-2001 Change
	1999	2000	2001[b]	
Tank Waste Remediation System	23.3	25.0	27.8	+4.5
Waste Management	9.3	12.6	13.3	+4.0
Spent Nuclear Fuel Project	11.6	13.9	17.7	+6.1
Facility Transition	16.8	17.4	17.5	+0.7
Environmental Restoration	23.0	23.4	15.8	-7.2
Science and Technology[c]	3.2	2.9	4.5	+1.3
Mission Support and Other Projects[d]	24.4	29.2	31.4	+7.0
Total EM Direct S&H	**$111.6**	**$124.4**	**$128.0**	**$16.4**
Total S&H EM Indirect	**$56.5**	**$57.0**	**$58.4**	**$+1.9**
Total EM S&H	**$173.1**	**$181.4**	**$186.4**	**$+18.3**

[a]Does not include funding of Office of Science or Office of Nuclear Energy, Science and Technology programs.

[b]Based on Target Case funding in FY 2001.

[c] EM-30 funded Project Baseline Summary RL-ST01.

[d] Includes Hazardous Materials Management and Emergency Response; Planning and Integration; Hanford Environmental Management Program; Effluent and Environmental Monitoring; Site Systems Engineering; Pacific Northwest National Laboratory Public Safety and Resource Protection; U.S. Department of Energy, Richland Operations Office-Directed Support; Tank Waste Remediation System Regulatory Unit; and Landlord.

[e] Includes indirect S&H resources that support Office of Nuclear Energy, Science and Technology (NE) activities.

Table 5-6. Reasons for Major Changes in Safety and Health Funding Requirements for the Fiscal Years 1999 to 2001 Planning Period.[a] (2 sheets)

PBS Code	Amount ($000)	Reason for Change[b]
Office of River Protection/Tank Waste Remediation System Project		
RL-TW03	+4,138	Initiation of construction of AZ Tank Farm upgrade by Project W-314, Tank Farm Upgrades. **-EP -FP -IH +IS +NS +RP +MO**
RL-TW04	+726	Initiation of design and construction of additional equipment required for sludge washing in Tank AZ-101 and initiation of construction of Tank AP-102/104 retrieval systems. **-NS +RP +MO**
Waste Management Project		
RL-WM03	+965	Transfer of transportation and packaging oversight for solid waste shipments from indirect to direct funding. **-EP +IS +RP +TS +MO**
RL-WM04	+2,064	Increased Radiation Protection and Management Oversight to support increased levels of mixed waste processing and TRU processing for shipment to the WIPP. **+FP +IH –NS +RP +TS +MO**
RL-WM06	+798	Additional Radiation Protection support required at the 222-S Laboratory to implement the Radiation Improvement Plan and initiate radiation screening requirements. **+EP +RP**
Spent Nuclear Fuel Project		
RL-WM01	+6,078	Rampup of staff to support movement of spent nuclear fuel from the K Basins. **-FP –NS +RP**
Facility Transition Project		
RL-TP01	-351	Closeout activities associated with completion of safety analysis report punch list items. **-NS –RP –MO**
Environmental Restoration Project		
RL-ER01	-3,103	Shut down of remedial action of 100 Area waste sites at the end of FY 2000 caused by FY 2001 funding constraints. **-EP –IH –IS –MS -NS -RP –TS –MO**
RL-ER03	-559	Shut down of remedial action of 100 Area waste sites at the end of FY 2000 caused by FY 2001 funding constraints. **-EP –IH –IS –MS -NS -RP –TS –MO**
RL-ER04	-4,548	Shut down of remedial action of 100 Area waste sites at the end of FY 2000 caused by FY 2001 funding constraints. **-EP –IH –IS –MS -NS -RP –TS –MO**
RL-ER05	-536	Represents about a 7-percent reduction in needed support to facility surveillance and maintenance activities. **-EP –FP –IH –IS +MS -NS -RP +TS –MO**

Table 5-6. Reasons for Major Changes in Safety and Health Funding Requirements for the Fiscal Years 1999 to 2001 Planning Period.[a] (2 sheets)

PBS Code	Amount ($000)	Reason for Change[b]
RL-VZ01	+1823	Increased assessment of groundwater resources and Columbia River ecosystem and integration of Hanford Site core projects with respect to ground water/vadose zone activities. **+EP +IH +IS +MS +NS +RP +TS +MO**
		Science and Technology Project
ST01	+1,282	Increased cost to provide facility surveillance and maintenance of 25 Office of Science facilities being transferred to DOE Office of EM. **+RP**
		Mission Support and Other Projects
RL-HM01	+1,246	Increased scope as a result of Hazardous Materials Management and Emergency Response taking on responsibility for the Learning Resource Center, Safety Resource Center, Computer-Based Training Center, and multipoint distance learning in FY 1999. **+EP +IH +IS +MS +RP +TS +MO**
RL-OT01	+505	Increased support for environmental compliance inspections, follow-up activities, and consequent enforcement actions by regulatory agencies. **+RP +MO**
RL-RG01	+1,485	Increase is caused by ORP/TWRS Privatization Phase IB contract revisions that will require review of additional safety documentation. **+MO**
RL-TP13	+3,761	Completed Emergency Preparedness upgrades. Start construction of fire station and road safety upgrades. Evaluate and/or replacement of the chlorine water purification system with safer chemicals. Integration of vegetation and animal control. **-EP +FP +IS +RP +TS**

[a] Includes EM-funded programs only.

[b] Safety and Health functional codes are identified as follows: EP = Emergency Preparedness; FP = Fire Protection; IH = Industrial Hygiene; IS = Industrial Safety; MS = Occupational Medical Services; NS = Nuclear Safety; RP = Radiation Protection; TS = Transportation Safety; and, MO = Management Oversight.

This page intentionally left blank.

6.0 HANFORD SITE ENVIRONMENTAL MANAGEMENT INDIRECT FUNDED SAFETY AND HEALTH FISCAL YEAR 1999 TO 2001 ACTIVITIES

6.1 INTRODUCTION

The Hanford Site EM indirect budget supports many ES&H activities such as the Hanford Fire Department, emergency preparedness and services, environmental protection, industrial hygiene, industrial safety, radiation protection programs, S&H training, medical services, dosimetry, independent assessments, and ES&H program management. The EM indirect budget also includes a proportionate NE contribution for support of indirect S&H activities. The EM indirect budget also supports many non-S&H-related activities, such as project management, planning, human resources, payroll, legal, utilities, and computing fee. All DOE direct-funded activities on the Hanford Site are taxed to provide the funding for indirect activities. This section summarizes the indirect-funded S&H resources required and S&H work activities planned to support EM-funded programs.

6.2 DESCRIPTION OF INDIRECT SAFETY AND HEALTH FUNCTIONAL CATEGORY ACTIVITIES

Projected expenditure for EM indirect-funded S&H activities is $56.5 million in FY 1999. These same activities are projected to cost $57.0 million in FY 2000 and $58.4 million in FY 2001. Tables 6-1 and 6-2 summarize the FY 1999 to 2001 requirements for indirect S&H funding and staffing, respectively. The indirect-funded S&H programs have had significant budget reductions in past years as part of the Sites's success in reducing overhead costs to free up funds for cleanup activities. These S&H budgets have already been eroded to a level where further cuts would seriously curtail program activities. Safety and Health management is holding the line on further indirect-funded S&H program budget reductions other than those realized by efficiency improvements.

6.2.1 Emergency Preparedness

The indirect-funded Emergency Preparedness functional area includes those activities that maintain the readiness of the Project Hanford contractors to respond to an emergency event. These activities include maintenance of emergency plans and procedures; conduct of drills, exercises, and training; preparation of hazards assessments; and maintenance of emergency facilities and equipment. This functional area also includes administration of the PHMC occurrence reporting program activities.

Table 6-1. Summary of Fiscal Year 1999 to Fiscal Year 2001 Hanford Site Funding Requirements* for Environmental Management Indirect Safety and Health Activities (dollars in thousands).

Safety and Health Functional Category	FY 1999	FY 2000	FY 2001
Emergency Preparedness	3,568	3,424	3,527
Fire Protection	16,493	17,234	17,543
Industrial Hygiene	1,501	1,489	1,534
Industrial Safety	1,991	1,880	1,934
Occupational Medical Services	9,804	9,633	9,894
Nuclear Safety	2,732	2,917	3,013
Radiation Protection	10,567	10,408	10,681
Transportation Safety	677	695	714
Management and Oversight	9,133	9,294	9,555
Total Safety and Health Indirect	**$56,466**	**$56,974**	**$58,395**

* Includes NE contribution for support of indirect safety and health activities.

Table 6-2. Summary of Fiscal Year 1999 to Fiscal Year 2001 Hanford Site Staffing Requirements for Environmental Management Indirect Safety and Health Activities*

Safety and Health Functional Category	FY 1999	FY 2000	FY 2001
Emergency Preparedness	29.0	29.0	29.0
Fire Protection	134.0	134.0	134.0
Industrial Hygiene	10.1	12.1	12.1
Industrial Safety	17.7	17.6	17.6
Occupational Medical Services	94.0	94.0	94.0
Nuclear Safety	16.2	19.0	19.0
Radiation Protection	44.6	41.9	41.9
Transportation Safety	11.0	11.0	11.0
Management and Oversight	60.1	67.7	67.7
Total Safety and Health Indirect	**416.7**	**426.3**	**426.3**

*Based on full-time equivalents.

6.2.2 Fire Protection

The Fire Protection functional area includes the Hanford Fire Department activities, which are indirect funded. The Hanford Fire Department activities include 24-hour-a-day, 7-day-a-week emergency services, fire protection system testing and maintenance, fire prevention, and management and administrative activities associated with maintaining the department. Emergency services activities include Incident Command for all site incidents. Also included are en route treatment and transport of sick or injured personnel to a medical facility; extinguishment of structural, wild land, and special material fires; control and containment of spilled or leaking hazardous materials to include overpacking if necessary; monitoring to detect chemical and

biological warfare agents and treatment and decontamination of contaminated personnel; and rescue of personnel from buildings, trenches, confined spaces, water, or high places. Fire protection system testing activities include operational testing of fire alarm and fire suppression systems and Site breathing air equipment. Fire protection system maintenance activities include repair of the Site's fire alarm, fire suppression, and fire water distribution systems. Fire prevention activities include permitting, fire protection engineering design reviews, hazardous and reactive material inspections, and fire protection assessments. Management and administrative activities include direction of Fire Department activities, planning, budgeting, and training.

6.2.3 Industrial Hygiene

The indirect-funded Industrial Hygiene functional area provides the mechanisms to identify chemical, biological, physical, and physiological hazards in the planning and execution of work. The Industrial Hygiene activities support development and maintenance of the Automated Job Hazard Analysis. This functional area funds the Occupational Medical Contractor to support development and maintenance of the Employee Job Task Analysis, which is a critical component of the Integrated Safety Management System (ISMS). This area provides employee exposure monitoring, and provides funding for the Occupational Medical Surveillance Program. This functional area also provides the funding to operate a PHMC-wide Industrial Hygiene Equipment Laboratory. The staff at this laboratory maintains all exposure-monitoring equipment for distribution and use by PHMC Industrial Hygiene personnel and performs analyses of breathing air used for air-supplied respirators.

6.2.4 Industrial Safety

The indirect-funded Industrial Safety functional area provides for those activities intended to protect personnel from physical trauma. The Industrial Safety program includes evaluation and resolution of employee safety concerns; aviation safety activities; preparation and maintenance of the OS&H policies and procedures included in the FDH Policies and Procedure System; OS&H safety training overview; and recordkeeping related to occupational injuries and illnesses. The Industrial Safety functional area also includes preparation of the monthly S&H reports, development of performance objectives and criteria for the Facility Evaluation Board OS&H assessments, and OSHA Voluntary Protection Program activities. The firearms safety program activities conducted by the Site security forces are also an indirect-funded Industrial Safety activity.

6.2.5 Occupational Medical Services

The indirect-funded Occupational Medical Services functional area consists of the Hanford Site occupational health services currently provided by the Hanford Environmental Health Foundation (HEHF). The HEHF operates three health care centers and one clinic and maintains the Emergency Decontamination Facility. Services include employee preplacement,

qualification and separation health examinations; return to work, work restriction, and fitness-for-duty assessments; diagnosis and treatment of occupational illnesses and injuries; employee health counseling; wellness work conditioning; infection control; case management; work site assessments; and maintenance of medical records for Site employees. This functional area also maintains the Site Employee Job Task Analysis (EJTA) database and the electronic interface for the EJTA. This functional area also provides medical surveillance, health analysis and trending.

6.2.6 Nuclear Safety

The indirect-funded Nuclear Safety functional area includes those programmatic activities that serve to maintain or improve the level of worker and public safety associated with the Site's radioactive and fissionable materials activities. These Nuclear Safety activities include interpreting nuclear safety requirements; developing and maintaining PHMC Nuclear Safety policies and procedures; assisting facilities in the development of facility-specific nuclear safety programs; reviewing Authorization Basis documents, evaluating facility Nuclear Safety program effectiveness, and maintaining the Authorization Basis document list for all facilities and projects; administration of the FDH Standards/Requirements Identification Document (S/RID) Program by maintaining configuration control of S/RID requirements to support the revision of the FDH S/RID and revisions to the project/facility S/RIDs; and maintaining the reporting process to provide prompt identification and reporting of potential nuclear safety requirements noncompliance issues.

Also included in the indirect-funded Nuclear Safety functional area is the Nuclear Criticality Safety Program. This program is responsible for procedures/directives and oversight function to the PHMC Criticality Safety Program implemented by FDH Project Directors. FDH Criticality Safety is responsible for defining roles and responsibilities; setting criteria for document content, preparation and review; and overseeing the proper and adequate implementation of the Project Hanford Criticality Safety Program. FDH Criticality Safety verifies that quality documents are developed to support project activities; that integration of the necessary elements of program (e.g. CSERs, CPSs postings, procedures) are occurring within the facilities; and that all criticality safety staff and management are trained, understand their roles and responsibilities, and are carrying out those responsibilities.

This functional area also provides for DNFSB liaison activities, including DNFSB commitment tracking, DNFSB Site visit coordination, responding to DNFSB information requests, and providing guidance to Project Hanford subcontractors on DNFSB interface issues.

6.2.7 Radiation Protection

The Radiation Protection functional area provides the indirect funds to maintain the PHMC Radiation Protection Program. This program provides site-level expertise to the Project Hanford contractors regarding the interpretation of Radiation Protection requirements; development, maintenance, and implementation of the sitewide Radiation Protection Emergency Response program; sitewide management and coordination of the occupational As Low As

Reasonably Achievable (ALARA) program; administration of the sitewide ALARA Center of Technology; manages sitewide internal and external radiological bioassay services; and provides oversight of subcontracted dosimetry and instrumentation calibration and maintenance services. This activity also establishes a radiological biological control program that provides a unified and centralized approach to controlling the spread of radioactive contamination due to biological vectors at the Hanford Site. This includes management integration of PHMC potentially contaminated sites; surveillance of sites to detect contamination and subsequent inspections for determining adequacy of control measures and the methodology for removal; prevention and long-term management; reporting; and identifying cost and environmental impacts.

6.2.8 Transportation Safety

The indirect-funded Transportation Safety functional area provides the resources for the Hanford Patrol to staff the Site barricades. The area on the Hanford Site between the Wye and Yakima Barricades is controlled to limit access to the Site, thereby reducing public exposure to hazardous materials during transportation. By limiting the public's access to the Site, the packaging and shipping activities of hazardous materials onsite are recognized by the U.S. Department of Transportation as not "in commerce" and therefore not subject to public highway hazardous material shipping and packaging requirements. Hazardous materials movement onsite is direct-funded by the projects moving the materials. The Site barricades function also reduces the number of prohibited articles from entering the site, which enhances the safety of the Hanford workforce.

6.2.9 Management and Oversight

The indirect Management and Oversight functional area includes all those activities intended to coordinate, direct, integrate, and control Project Hanford S&H activities across multiple functional areas. Activities in this area include overall Project Hanford S&H program management, management and administration for implementing the ISMS, budget preparation and control, contract management including performance fee tracking, regulatory liaison, S&H management assessments, performance indicators reporting, and S&H training management and coordination. This area also includes Quality Assurance S&H-related activities, such as Quality Assurance Program management, corrective action management including deficiency tracking and trending, and Facility Evaluation Board assessments.

This page intentionally left blank.

7.0 REFERENCES

DOE, 1995a, *Plutonium Vulnerability Plan for the Environmental, Safety, and Health Vulnerabilities Associated With the Department's Plutonium Storage*, DOE/EM-0199, March 1995, U.S. Department of Energy, Washington, D.C.

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

DOE, 1996b, *Department Implementation Plan, Integrated Safety Management (Implementation Plan for Defense Nuclear Facility Safety Board Recommendation 95-2, Safety Management)*, U.S. Department of Energy, Washington, D.C.

DOE, 1997a, *2006 Plan Guidance*, Update Version 5.0, October 20, 1997, U.S. Department of Energy, Washington, D.C.

DOE, 1998a, *FY 2001 Field Call*, December 1998, U.S. Department of Energy, Washington, D.C.

DOE, 1998b, *Integrated Planning, Accountability, and Budgeting System*, U.S. Department of Energy, Office of Environmental Management, Washington, D.C.

DOE, 1998c, DOE Performance Indicators – *Environment, Safety & Health*, Period Ending March 1998, DOE/EH-0531 (1Q98), U.S. Department of Energy, Washington, D.C.

DOE, 1998d, *Report to Congress, Treatment & Immobilization of Hanford Radioactive Waste*, July, 1998, U.S. Department of Energy, Washington, D.C.

Ecology, EPA, and DOE, 1998, *Hanford Federal Facility Agreement and Consent Order*, 2 vols., Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington.

10 CFR 834, "Radiation Protection of the Public and the Environment," *Code of Federal Regulations*, as amended.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 USC 9601, et seq.

Emergency Planning and Community Right-to-Know Act of 1986, 42 USC 1101, et seq.

FDH, 1998, *Hanford Risk Management Plan*, HNF-MP-005, Rev. 0, Fluor Daniel Hanford, Inc.,

Richland, Washington.

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

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

Resource Conservation and Recovery Act of 1976, 42 USC 6901, et seq.

RL, 1996a, *324 Building Radiochemical Engineering Cells, High-Level Vault, and Associated Areas Closure Plan*, DOE/RL-96-73, Revision 1, March 1996, U.S. Department of Energy, Richland, Washington.

RL, 1998a, *Hanford Site Fiscal year FY 1998/1999 Environment, Safety and Health Execution Commitment Summary*, DOE/RL-98-84, Revision 0, December 1998, U.S. Department of Energy, Richland, Washington.

RL, 1998b, *Draft Hanford Site Risk Prospectus*, August 1998, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

RL, 1998c, *Hanford Site Environment, Safety and Health Fiscal Year 2000 Budget-Risk Management*, DOE/RL-98-26, Revision 0, December 1998, U.S. Department of Energy, Richland, Washington.

RL, 1999a, *Hanford Site Performance Report - March 1999*, DOE/RL-99-03, Rev. 5, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Toxic Substances Control Act of 1976, 15 USC 2601, et seq.

WAC 173-303-640, *Dangerous Waste Regulations, Tank Systems*, Washington Administrative Code.

APPENDIX A

PACIFIC NORTHWEST NATIONAL LABORATORY OFFICE OF SCIENCE ENVIRONMENT, SAFETY AND HEALTH MANAGEMENT PLAN SUMMARY FOR ACTIVITY DATA SHEETS RL-A93D0016/17, RL-A96D0013, RL-A980003-14 AND RL-A990002/3

This page intentionally left blank.

PACIFIC NORTHWEST NATIONAL LABORATORY OFFICE OF SCIENCE ENVIRONMENT, SAFETY AND HEALTH MANAGEMENT PLAN SUMMARY FOR ACTIVITY DATA SHEETS RL-A93D0016/17, RL-A96D0013, RL-A980003-14 AND RL-A990002/3

I. Introduction

The Pacific Northwest National Laboratory (Pacific Northwest) is composed of approximately 332 acres of semiarid desert on the Hanford Site and various offsite locations in southeastern Washington State. Most Department of Energy (DOE)-owned, Pacific Northwest-occupied facilities are located in the southern part of the Hanford Site's 300 Area. The DOE-leased space associated with Pacific Northwest is located south of the 300 Area and adjacent to the Battelle private facilities in the Richland North Research Complex. A Battelle private marine research laboratory in Sequim, Washington is also part of Pacific Northwest.

Six key facilities have been identified for Pacific Northwest in the DOE-EH's PNNL Site Profile. All of these facilities are located in the 300 Area. A brief description of these buildings is as follows:

· 305B Building--Hazardous Waste Storage Building consists of a high-bay dry laboratory space with associated Resource Conservation and Recovery Act (RCRA)-permitted storage space.

· 325 Building—Radiochemical Processing Laboratory consists of general-purpose laboratories modified for low-level radiochemical work and hot cells to perform remote manipulation for high-level radiochemical work.

· 326 Building--Materials Sciences Laboratory consists of wet chemistry laboratories and electronic laboratories.

· 329 Building--Chemical Sciences Laboratory consists of wet chemistry laboratories and dry laboratories and offices. Some laboratories are capable of nuclear chemistry work.

· 331 Building--Life Sciences Laboratory consists of wet chemistry laboratories, electronic laboratories, a vault for exposing various samples to cobalt, animal quarters for housing small animals during research projects, and fish ponds to research water-use practices on fisheries.

· 3020 Building--W.R. Wiley Environmental Molecular Sciences Laboratory (EMSL), which consists of experimental laboratories (dry, wet, and filtered) and office and other support areas. This facility is located in an extension of the 300 Area adjacent to the Richland North Research Complex.

Pacific Northwest aspires to be the premier environmental science and technology laboratory in the world. Pacific Northwest can not achieve this aspiration without achieving excellence in

Environment, Safety, Health and Infrastructure (ESH&I) protection. Our ES&H and Facilities and Operations (F&O) organizations and management systems must provide the highest quality, most cost-effective products and services to Pacific Northwest's mission and to the satisfaction of our customers.

Pacific Northwest is an Office of Science (SC) Multiprogram National Laboratory under the program "landlordship" of the Office of Biological and Environmental Research (OBER). This summary reflects the ESH&I programs necessary to support all work conducted as part of our SC operations (including work for others). Tables A1 through A3 provide a summary of this funding. In addition, funding to support specific Environmental Management (EM) related activities, such as those conducted in the 325 Building, is provided directly by EM and is covered in the Hanford Site Summary. For completeness, Attachment B contains an overview of the Pacific Northwest information submitted in the Hanford Site Summary.

II. ESH&I Goals and Performance Objectives

Pacific Northwest has established four Critical Outcomes. One of these Critical Outcomes is Operational Excellence, which states:

Battelle will conduct all work and operate Laboratory facilities with distinction, fully supportive of and integrated with the Laboratory's science and technology mission and fully protective of workers, the public and the environment.

This Critical Outcome is supported by two objectives and underlying performance indicators. These objectives and their corresponding performance indicators were negotiated with and agreed to by the DOE, Richland Operations Office (RL), before being included in the Appraisal Plan and incorporated into the operating contract. They also provide the vehicle for Pacific Northwest to communicate its strategic ESH&I goals to all staff and incorporate appropriate performance indicators into organizational performance objectives, work plans, and individual staff performance and development goals.

III. ESH&I Philosophy and Approach

ESH&I management is carried out through an established set of management systems by which Pacific Northwest operates. These management systems work together to provide an operating environment that is fully compliant with the Integrated Safety Management System (ISMS) requirements incorporated into Pacific Northwest's operating contract with DOE, specifically Modification M255, Clause I-64, DE-AC06-76RL01830, entitled "Integration of Environment, Safety, and Health into Work Planning and Execution." As described in Pacific Northwest Integrated Environment, Safety and Health Management (IESHM) Program Description, Pacific Northwest's Management Systems provide the basis for fully deploying systematic, integrated ESH&I activities into management and work practices at all levels to enable missions to be

efficiently and effectively accomplished while protecting the worker, the public, and the environment. The ESH and Infrastructure Management Systems include Worker Safety and Health, Facility Safety, Integrated Environment, Safety and Health, Training and Qualification, Radiological Safety, Environmental Management Services, Quality, Standards-Based Management System, Integrated Assessment, Facility Acquisition & Disposition Management, Facility Operations, and Emergency Preparedness & Occurrence Reporting. The Core ESH&I activity data sheets provide the work scope, budget, skill mix, risk management, and commitment information for these management systems.

All work conducted within Pacific Northwest has potential ESH&I hazards, risks, and consequences. Each manager (line and project managers) responsible for work must understand the ESH&I hazards associated with the work being performed and ensure that appropriate mitigation strategies are used to control the risks that the hazards present. A broad spectrum of support infrastructure, such as field-deployed ESH&I technical expertise, is available to assist managers in carrying out these responsibilities. The entire spectrum of activities, from general administrative functions to operation of a nuclear facility, currently exists within Pacific Northwest. Work at Pacific Northwest runs from bench-level activities to large demonstration-scale Research and Development (R&D) activities involving the use of highly radioactive or hazardous materials/devices, paper studies conducted in general office environments, construction of new facilities, installation of new equipment, maintenance of existing facilities and equipment, delivery of core support services such as dosimeters, environmental monitoring, instrumentation calibration, maintenance and calibration, grounds activities, general administrative management activities, etc.

External requirements necessary to meet the business needs of Pacific Northwest are documented by agreement between Pacific Northwest and DOE. The DEAR 970.2504-78, Laws, Regulations and DOE Directives (June 1997) has been incorporated into Pacific Northwest's Contract (Modification M255). The contract clause allows environmental, safety and health (ES&H) requirements appropriate for work conducted to be determined by a DOE-approved process to evaluate the work and the associated hazards and identify an appropriately tailored set of standards, practices, and controls. An example of such a tailoring process is included in a DOE approved Safety Management System implemented under 48 CFR (DEAR) 970.5204-2. Pacific Northwest has tailored our set of external requirements to the work associated with the hazards. These external requirements and policies establish Pacific Northwest standards of conduct and flow down the information contained in external requirements in a Pacific Northwest-specific fashion. The requirements apply to all work within Pacific Northwest, regardless of the performer of the work, including subcontractors, visitors, consultants, and co-occupants from other organizations, such as research partners, DOE, users, and post-docs. A Requirements Management function within the Standards-Based Management System maintains the configuration of this system.

Pacific Northwest now operates and budgets on the basis of these Management Systems. Key to that process is a "Core-Plus" funding model. With the exception of EM direct-funded environmental management services (see below), Core services are funded out of Laboratory-

level overhead to provide specific results or sets of services to the entire Laboratory (e.g. services associated with maintaining the ESH&I programs, or central services such as accident/injury reporting). "Plus," or "purchased," services are those that are funded out of resources managed by the purchaser, such as project funds or organizational overhead. Much of the ES&H and the F&O organizations are part of the purchased service. The ESH&I technical experts have been infused into (and are purchased by) the line organizations and become part of the team that plans, designs, and conducts the work of Pacific Northwest to ensure that it is done safely. The impact of this strategy is that the Laboratory line management owns the responsibility for funding safety. Pacific Northwest believes this approach is appropriate as it provides the tools and services necessary to enable line management to be successful in executing their ESH&I roles and responsibilities. This service provides management with resources needed for them to carry out their activities and responsibilities in a safe and cost effective manner. Providers of both core and purchased services are responsible for defining the service to be provided based on the purchaser's stated needs and the strategy for delivering and improving that service. In addition, providers of purchased services are responsible for understanding the customer demand for that service and for managing their resources in line with that demand. In accord with our philosophy of line ownership, our intent is to provide project managers and line organizations with the maximum possible control over their costs and at the same time ensuring that operations are carried out in a safe manner.

Beginning in FY 1998 Pacific Northwest's Five-Year Plan submittal changed to directly reflect Pacific Northwest's Management Systems approach to operating and budgeting for ESH&I. The Core activity data sheets (ADSs) provide the work scope and actual budgeting data for the respective management systems. This approach of aligning our planning data submittal with our actual business processes greatly improves the efficiency by which Pacific Northwest provides the information needed to support the Five-Year Plan.

IV. Pacific Northwest Improvement Initiatives

Key improvement initiatives include:

· Configuration Management (CM) Program--The Configuration Management processes continue to mature during FY 1999. The goal for FY 1999 is to institutionalization the formal programs, defining overall strategies, goals and objectives for the Configuration Management system. The Configuration Management implementation plan and Program Description was completed March 1, 1999. Development of the operating manual, change control process, and the consolidated list of essential equipment will be completed by the end of FY 1999. Once these tasks have been completed and implemented, Pacific Northwest National Laboratory (Pacific Northwest) will have a documented Configuration Management Program that will refine the current system and processes.

· Exporting Integrated Ops (IOPS)--The initiative will continue the export of the Environmental Molecular Sciences Laboratory (EMSL) Operations concept and tools (IOPS) to the Research

Technology Laboratory (RTL) Building and the Physical Sciences Laboratory (PSL) Building. Pacific Northwest National Laboratory has implemented a tool set that enables the work environment by establishing a conduct of operations philosophy that focuses on people safely doing work at the bench top. This electronic, web delivered tool, called Integrated Operations (IOPS) covers hazard identification, mitigation, and self assessment after the institutional definitions of acceptable work have been met and work is now proceeding at the task level into the work place. The process centers on the definition of a workspace, defining the hazards, creating the self-assessment checklist, and participation in self-assessment and worker registration with the associated creation of individual training matrices. The process covers:

- hazard assessment conducted in the individual workspace;
- hazard assessment automatically links to consensus based work practices that provide mitigation of the hazard;
- training and laboratory access are linked to an individuals requested level of interaction with hazards in the workplace;
- IOPS self assessment process drives hazard inventory update and continuous evaluation;
- roles and authorities transfer from line management to the individual;
- automated facility level operational boundaries are visually communicated, managed, documented, and evaluated using map tools;
- automated work control features improve the communication process and link to the hazard inventory of IOPS to reduce the time for planning and implementation of maintenance and construction activities; and,
- feedback and performance mechanisms in/of IOPS get information back into the system, provide customer information to management in the completion of work, and close the loop in the process of "doing work safely."

· Facility and Site Legacy and Vulnerability Reviews--A review was conducted to assess and document conditions contributing to radiological and chemical vulnerabilities and legacies. The assessment included a review of the radiological and chemical material inventory, and the administrative and engineered controls that are in place for containment and regulatory compliant safe storage of the material.

Specific assessments completed during the review included risk from the material, the effectiveness of the controls preventing release, potential for unmonitored release of material to the environment or exposure to staff, and regulatory compliance. An update of FIMS legacy conditions (contamination and waste) data fields was also completed.

To assure that an objective, thorough, and consistent review was done on the various sites and facilities, the review and assessment was conducted by qualified staff using a checklist containing specific questions. The review was documented and archived, to provide information for future risk evaluation and facility transition. Identified vulnerabilities and legacies were prioritized, and are being worked in priority order in accordance with available funding.

· Facility Transition--In 1995, Pacific Northwest reviewed its facility holdings revealing that approximately one half of the 206 facilities were candidates to be vacated over the next five

years. Subsequent to this review, actions were taken to consolidate operations for full use of the strategic facilities and closure of non-strategic, uneconomical, or under used facilities. The facility transition team was established to manage the reconfiguration of space and the relocation of staff and equipment. They ensure that each facility transition is accomplished safely, efficiently, and in compliance with all applicable requirements. The team's current responsibility is to expedite the final disposition of the excess facilities and assure that the facilities are appropriately surveyed and maintained until disposition actions are complete. Seventy facilities have been physically removed or transferred to a new operator. Laboratory level overhead and EM direct funding support the transition effort. Two concerns related to the progress of transitioning facilities are; 1) cost of the disposition and 2) the final agreement on DOE landlord responsibilities for the contaminated surplus facilities. The following table summarizes the status of the facility transition effort.

Facility Action	**Number of Facilities**
Removed or transferred	70
Now in Standby	26
Additional facilities to be vacated	5
Total facilities to be vacated by 2002	101

Of the 26 inactive surplus facilities, 9 are known to be radiologically contaminated. The majority of contamination in surplus facilities is the result of defense activities related to fuel processing and production prior to 1971. The estimated annual surveillance and maintenance budget for the surplus facilities is $90,000, but is expected to greatly increase in the near term due to roof replacements. The cost of final disposition for the clean and slightly contaminated facilities is estimated at $5.05 million and the cost for the moderately too highly contaminated facilities is in excess of $17 million. Alternatives to demolition are being sought for surplus facilities in good condition. This includes leasing them to private entities.

V. Changes During FY 1999

The redesign of Pacific Northwest's ESH&I program has had a significant impact on the way Pacific Northwest delivers ESH&I services and has allowed the overall ESH&I budget to be reduced while improving protection of the environment and the safety and health of the workers and the public as shown by our performance measures. Pacific Northwest's ESH&I programs are focused on integrating ESH&I into the planning and design of work, resulting in improved performance as evidenced by fewer accidents and incidents, reductions of injuries and illnesses, better control of hazards, and improved compliance with environmental regulations. Pacific Northwest's assessment process is maturing, with emphasis on continuously improving our

management systems, to develop leading indicators of performance, not solely relying on traditional historical trending analysis. This effort is ongoing, and part of the DOE Complex wide effort to evaluate performance under Integrated Safety Management. Pacific Northwest has accomplished this by providing managers and staff with the technical resources in ESH&I that they need to meet their responsibilities. This approach has allowed Pacific Northwest to control and reduce risk, even during difficult budget times. By incorporating performance-based measures into Pacific Northwest's contract, management has shown the commitment to improve ESH&I performance. The ESH&I programs are focused on delivering value-added services and eliminating activities that do not provide the benefit of protection of the environment and safety and health of workers and the public.

Pacific Northwest's Integrated Environment, Safety and Health Management (IESHM) System received Phase 1 and Phase 2 verification by the Safety Management Implementation Team and subsequent approval by DOE-RL on October 16, 1998. Some minor deficiencies and areas of improvement were identified during the review. As a result of the verification, corrective actions have been developed and resources have been incorporated into the ES&H planning and budgeting cycles for out years. As part of Pacific Northwest's continuous improvement process, the ISMS will undergo continuous upgrades.

VI. ESH&I Management Plan Risk-Management Issues

This section of the report addresses the risks and the approach to management of those risks that Pacific Northwest has taken.

The hazards and risks at Pacific Northwest are wide-ranging and multifaceted. Work activities include basic and applied R&D, environmental field studies, engineering and technical studies and small-scale pilot demonstrations as well as maintenance and operations of facilities and equipment. The hazards associated with these activities include chemical (toxic, carcinogenic, flammable, etc.), biological, physical (lasers, working at heights, electrical, etc.), radiological (sealed sources, radiation generating devices, and work with dispersible radioactive materials), and nuclear safety associated with the operation of one Category II nuclear facility (325 Building).

A. Risk Management Issues Currently Within the Funding Target

Pacific Northwest has three primary funding mechanisms for ESH&I activities:

· Direct from Program Offices used to perform specific ESH&I tasks (e.g., certain EM direct-funded environmental and waste management activities or SC ESH&I funding supporting EMSL). This funding mechanism generally supports two categories of ESH&I considerations:
  - funding to address significant Lab-wide compliance or operational issues that would unfairly burden any single project or program. The Facility Capital Construction Project ADS (A98D0001) in Section VI.B. is such an example. These infrastructure upgrades benefit all

programs, but cannot be addressed within the capabilities of our overhead budgets
- funding to support the ESH&I needs of a single large user facility such as EMSL as described by Environmental Molecular Sciences Laboratory ADS's; Environmental Molecular Sciences Lab ES&H Operations (A98D0006), and Environmental Molecular Sciences Lab Infrastructure Operations (A98D0014).

· Direct funding via R&D Projects used to support specific R&D project ESH&I needs (typically those projects with a scope of work that requires special ES&H considerations).

· Lab-level Overhead funding used to provide and improve "Core" (as described below) ESH&I services for the general benefit of all the individually contracted R&D programs/projects for a broad range of DOE Secretarial Offices and non-DOE clients each year (note: In FY 1998 only 7% of these projects exceed $1.0M in size, and 40% averaged only $17K). These funds are generated by set overhead burdens applied to each project. The amount for this burden is established on an annual basis driven by core requirements for conducting work.

"Core" programs are designed to control and reduce our risk and ensure the protection of workers, the public, and the environment by providing for policy interpretation, maintaining internal requirements, providing subject matter experts, and deploying technical ESH&I experts to support the line organizations. Lab-level Overhead funding for providing and improving "Core" ESH&I services is acquired through the integrated planning process. Funding is either included in the Core ADSs or is provided in conjunction with an operational improvement initiative. The Core ADSs budget provides funds to both deliver and improve services. Areas for improvement are identified by the self-assessment process. Each Management System continually performs self-assessments to ensure external requirements are analyzed and appropriately implemented, the processes are effective and efficient, and the system is being fully deployed. Annually areas for improvement are identified in these three areas. Funding for activities to improve these areas is requested during the integrated planning process. Funding for minor improvements is requested as part of the Core ADSs. Funding for major improvements is requested as an operational improvement initiative. An example an of initiatives funded in FY 1999 is:

- Export Integrated Operations (IOPs) to other facilities within the Laboratory (described in section IV. Pacific Northwest Improvement Initiatives).

The Core ADSs for the Management Systems that primarily contribute to ESH&I management are described below. The descriptions also identify the role the individual Management System plays in providing IESHM in Pacific Northwest.

ES&H - Related Core Management Systems

· Emergency Preparedness & Occurrence Reporting ADS (A96D0013)--The Emergency Preparedness & Occurrence Reporting Program Management System provides Pacific Northwest with expertise, guidance, oversight, training, and counsel related to implementing emergency

preparedness, off-normal event reporting, and analysis activities to provide for the coordination and direction of planning, preparedness, and response to emergency conditions and/or off-normal events where the potential exists for personal injury, damage to facilities or equipment, accidental release of toxic or hazardous materials to the public and environment, impact to projects or programs, and/or security events. The Emergency Preparedness & Occurrence Reporting Program's primary connection to IESHM is that it provides the primary processes for mitigating the impact of adverse events and provides lessons-learned from off-normal conditions for operations improvement.

· Environmental Management Services ADS (A98D0007)--The Environmental Management Services System enables Pacific Northwest to achieve and demonstrate environmental excellence by assessing and controlling the impact of its activities and products on the environment. The system provides processes and services focused on effectively and efficiently reducing the probability of either non-compliance with environmental regulations or unacceptable environmental impacts.

· Facility Safety ADS (A98D0003)--The Facility Safety Management System has been established to assist facility, line, and project managers with the analysis of hazards and risks, integration of safety systems into design and planning of facilities and work, and proper development and implementation of controls to manage hazards that could adversely impact the health and safety of the workers or the public. Specific services provided by the Management system are fire safety, safety analysis, criticality safety, and readiness confirmations. The system provides processes and services focused on both reducing the probability of facility-based operational events and the consequences of both routine operations and operational upsets.

· Integrated Assessment Program ADS (A98D0012)--The Integrated Assessment Program is Pacific Northwest's performance measurement system. As such, the Integrated Assessment Program 1) determines and predicts future customer requirements to improve existing products/services and enhance customer satisfaction, 2) provides Pacific Northwest and DOE staff and line management accurate technical, business, and operational performance information to help identify and resolve problems that may impact achievement of the critical outcomes and Division/Directorate objectives, 3) verifies conformance to established requirements, 4) verifies effective conduct of activities (expected by RL and Pacific Northwest senior management) to protect the environment and the health and safety of workers and the public, and 5) contributes to ongoing improvement in performance. The system provides the evaluation processes for reviewing the efficiency and effectiveness by which the appropriate hazard identification and mitigation/control activities are incorporated into business activities to ensure the protection of workers, the public, and the environment.

· Quality Management ADS (A98D0009)--The Quality Management System deploys systems and processes to support continuous improvement in all aspects of operations and to enable the delivery of products and services that meet customers' requirements. Specifically, the Quality Management System has established and it administers the formal Quality Assurance (QA) Program. This QA Program provides Pacific Northwest's approach for meeting the requirements

identified in DOE Order 5700.6C, "Quality Assurance," (Pacific Northwest acknowledges DOE Order 414.1, which will be incorporated into the Laboratory operation contract upon the next revision, and has been so noted in formal correspondence regarding implementation) and 10 CFR 830.120, "Energy/Nuclear Safety Management/Quality Assurance Requirements." The Quality Management System's primary connection to IESHM is that it provides the structure within Pacific Northwest to develop and deliver quality products. The QA Program has been designed to ensure that appropriate technical and administrative controls are applied to work activities commensurate with the risk associated with Pacific Northwest's responsibility for health and safety, environmental protection, reliability and continuity of operation, and acquisition of valid research and development data.

· Radiological Control ADS (A98D0004)--The Radiological Control Program serves several key purposes: protect staff from unnecessary exposure to ionizing radiation, protect the environment and the public from exposure to ionizing radiation, protect facilities and equipment from contamination with radioactive materials, and promote compliance with applicable regulatory and contractual requirements. The Radiological Control Management System provides processes and services that reduce the radiological risks to workers by reducing the probability that a worker will receive an unnecessary radiation exposure.

· Standards-Based Management System ADS (A98D0010)--The SBMS provides staff with Laboratory-wide standards, requirements, procedures, and guidelines that are current, accurate, and relevant to the work they perform. External drivers, including Rules and Orders, are translated into information that supports the efficient and safe operation of Pacific Northwest. The system provides management processes to ensure configuration management of the flow down of external and internal requirements necessary to ensure that appropriate requirements exist to properly control all levels of work within Pacific Northwest by reducing either the probability or the severity of adverse outcomes.

· Training and Qualification ADS (A98D0008)--The Training and Qualification Program maintains an integrated and effective training system ensuring that staff and non-staff members are appropriately trained and qualified to perform their assigned work. The objectives of the Training and Qualification Program are to 1) identify and meet client, staff, and regulatory training and qualification needs, 2) improve employee job performance in the areas of safety, laboratory operations, quality, customer satisfaction, financial performance, and employee development and opportunity, 3) provide a management system that provides consistent training and qualification policies and standards, and 4) ensure the systematic approach taken for all training and qualification programs supports the Business Model. The Training and Qualification Management System provides the means for implementing an important form of hazard controls and the ability to recognize hazards and apply appropriate controls, such as following procedures or using personal protective equipment.

· Worker Safety and Health ADS (A98D0005)--The Worker Safety and Health Management System is established to assist line and operations management in ensuring that a safe and healthful workplace is provided to all employees, visitors, vendors, and subcontractors. The

management system addresses the identification, evaluation, and control of hazards in the workplace by providing direct technical assistance to those conducting work. This includes line, facility, and project managers, as well as all staff. The objective of the program is to prevent accidents involving Pacific Northwest staff and visitors. The system provides processes and services that reduce the occupational risks to workers by reducing the probability that a worker will be exposed to uncontrolled/unmitigated hazards and controls to mitigate the consequences/severity of injuries.

Infrastructure "Core" Management Systems

· Facility Operations (A98D0013)--The Facility Operations Management System (FOMS) delivers the facility as a resource along with the implementation of systems, processes, and infrastructure to support and enhance the research and development (R&D) work activities. Pacific Northwest ensures that each facility is effectively and efficiently occupied and operated within the established operational boundaries.

The FOMS assures that Pacific Northwest facilities are operated and maintained in a manner that protects the health and safety of the staff, public, and the environment. The FOMS supports Pacific Northwest business model values and carries out the Laboratory strategic business planning objectives. This is specific to facility resources, and adopts the pertinent Laboratory critical outcomes and objectives through a Pacific Northwest and DOE Strategic Facility Plan and defined operations performance objectives and measures.

The FOMS delivers functional support capabilities to the field through the matrix teaming with and collaborative cross-assignment of staff from supporting organizations like Facility Operations, Engineering, Design & Craft Resources, Safety & Health, Environmental Management Services, and Safeguards & Security. The FOMS provides fundamental, ongoing input to the Facility Acquisition and Disposal Management System.

· Facility Acquisition and Disposition (FAD) ADS (A93D0037)--The FAD Management System adheres to the Laboratory Strategy to support the current and future business needs. This is accomplished using facility standards and space allocation to optimize assets and be the system responsible stewardship of DOE.

The FAD Management System delivers a cost-effective, safe, reliable, and responsive facility infrastructure utilizing out year facility and land use strategic plan and associated capital project proposals. The execution of the current year approved facility and strategic plans adhere to the Pacific Northwest Project Management principals. FAD Management System establishes the standards to which Pacific Northwest facilities and equipment are designed and constructed to. The CM program is an essential part of the FAD Management System. The CM program is responsible for the identification, documentation, control, and verification of facility engineering design baselines and facility use standards. The FAD Management System is responsible to overseeing the allocation of Pacific Northwest/Battelle space and managing the Pacific

Northwest/Battelle space charge back database. The system is responsible for administering facility related fixed cost budgets such as leases, utilities, depreciation, insurance, and taxes.

The key elements that the FAD Management System must ensure are accurate engineered assessment of the current physical condition of buildings, building systems, site infrastructure, and grounds. The system must ensure that an integrated planning process allows for the translation of business plans and DOE, Battelle, and Pacific Northwest strategies into a facility-related strategy.

The Pacific Northwest facility and site infrastructure includes 1.4 million square feet of DOE-owned and leased facilities, 0.95 million square feet of Battelle privately owned and leased facilities, and 289 acres of Battelle privately owned land. Through a use agreement, DOE, Work for Others, and Battelle commercial work is performed in both DOE and Battelle private facilities. Operation and maintenance is funded from a jointly shared account. Capital improvements to Battelle-owned and leased facilities and land are funded by Battelle. The Hanford Site Contractor provides site and utility services to the Pacific Northwest-operated DOE-owned facility. The core budget for infrastructure includes funding for such activities as strategic planning, condition assessments, preventative maintenance, routine maintenance, major maintenance, and non-capital rehabilitation projects, building leases, and utilities.

EMSL ESH&I Costs

FY 1998 marked the first full year of operation for EMSL. The EMSL scope of work as a major User Facility is unique to Pacific Northwest. Unlike the rest of Pacific Northwest facilities, EMSL is provided with direct operating funds. A portion of these funds is used to fulfill the specific ESH&I needs of operating the facility. A breakout of these ES&H and the Infrastructure costs are provided in the EMSL program-specific Environmental Molecular Sciences Lab. ES&H Operations (A98D0006) and Environmental Molecular Sciences Lab. Infrastructure Operations (A98D0014). As presented in these ADSs, the total ESH&I costs for EMSL split approximately 37% for ES&H and 63% for Infrastructure.

· Environmental Molecular Sciences Lab. ES&H Operations ADS (A98D0006)--The EMSL Operations Office assists EMSL staff and visitors in identifying hazards, establishing safe laboratory practice, obtaining appropriate training, initiating support services, and identifying resources, training requirements, and access requirements for an efficient and productive benchmark laboratory. The office is responsible for keeping the laboratory operating safely. One mechanism used to communicate this information electronically is the EMSL Ops System. It covers the following areas:

- Safe Work Practices or Standard Practices. The practices have been developed for EMSL to guide workers in conducting their work in a uniformly safe and effective manner. The practices range from using laboratory fume hoods to the handling of cryogenic liquids and even managing toxic gasses used for research. They establish the safe way of approaching a

job, but rely on the common sense of the worker to do his/her job correctly.

- Hazard Awareness. Provides individuals with information about what kinds of hazards exist in any given space in the lab, in the form of a "Hazard Awareness Summary." These summaries cover just about every identifiable space in the lab and are generated by the Cognizant Space Manager (CSM). They are available both electronically and by hard copy in the Lab Handbooks that are assigned to the various spaces throughout the facility. The summaries explain what hazards a user (or visitor) is likely to run into in a lab or space. These hazards can range from excessive noise or rotating equipment to chemical hazards and laser exposure.

- User Access. This function allows an individual to register new users for work in EMSL. Other features of this function are requesting, modifying or revoking unescorted/escorted access for employees or visitors to the facility or any identifiable space in the lab. A request to modify access, if an employee's role regarding hazards in a space changes, can also be taken care of electronically. These changes trigger the system to see what additional training, if any, is required to obtain the change in access status and also provides the opportunity to learn more about the additional hazards that may be present.

- Training Requirements. This information is presented in the form of a "Training Matrix, or chart, showing the locations a user has access to and the training required for working with the hazards in those spaces.

- Self Assessment. The self assessment feature allows those in control of labs or facility spaces to identify and input the nature of hazards found in the areas for which they have responsibility. This information is used to create the "Hazard Awareness Summaries" described earlier.

· Environmental Molecular Sciences Lab. Infrastructure Operations ADS (A98D0014)--The EMSL Operations Office provides for the infrastructure needs of EMSL. In general, these activities include:

- Work Control. The functions of daily work planning, resources scheduling, safety review, engineering support and hazards assessment are performed using a core team concept that includes the disciplines of Building Management, Safety, Fire Protection, Maintenance Supervision, Planning, and Engineering. The work-control process is used as the mechanism to insert work activities associated with maintenance or support into the laboratories as part of a level of service definition.

- Facility Management and Maintenance Operations. These activities are delivered using a graded level of planning and rigor determined by the core team on a daily basis. Facility management provides the leadership to ensure a safe and environmentally benign operation. Functions such as building emergency preparedness, work planning and control, and craft supervision are delivered through facility management personnel. Maintenance operations

are included in the cost of infrastructure and are directed at maintaining the minimum technical performance and capacity of the utility-distribution and facility-support systems using both preventative and run-to-failure determination mechanisms.

Re-Engineering Waste Management Costs

In FY 1998, the DOE initiated the pilot Re-Engineering Waste Management Program at selected sites, Pacific Northwest was one of the sites chosen. Environmental Management (EM) is leading the development of a memorandum of understanding to transfer $1.2M from EM to the Office of Science (SC) of continuous annual budget responsibility starting in FY 2001 to dispose of user/project generated wastes.

Pacific Northwest has implemented a cost system where users of services pay directly for those services. Specific successes include our space-charging system, radiological waste disposal cost allocation to generators, and ES&H Field Service Representatives deployment. The success of these programs is based on matching services with the user requirements and, to the maximum extent possible, placement of accountability/control of the service with the user. This approach has reduced costs and maximized service provided in these programs. In an effort to continue such successes, Waste Management Services is reengineering the types and cost allocations of its services and develop appropriate systems for assigning costs directly to the users (projects) for that service. This reengineering effort will address the EM proposed transfer of budget allocation.

· Re-Engineering Waste Management ADS (A99D0002)--This ADS covers the implementation of the re-engineering waste management concept and the budget transfer between the Office of Environmental Management (EM) and the Office of Science (SC). This new concept requires each project to plan and budget for all waste disposal activities associated with the specific project. This new approach will make waste generators and their mission programs more accountable for the waste they generate by having them pay for the treatment, storage, and disposal of their newly generated wastes. The scope of this program is to consolidate those activities to assure the funding is continually available to accomplish waste disposal and to eliminate the possibility of generation of legacy wastes that the Office of Science would be responsible for in the future. (Note: This ADS does not address existing legacy waste issues. ADS A99D0003 "Facility Transition Project" has been submitted to specifically address current legacy issues. ADS A99D0003 is called out in Section B.)

B. Risk Management Issues That are Beyond the Current Budget Target

An annual funding profile of $2 million dollars in general plant projects will likely turn deferred infrastructure projects into more serious environmental, safety, and health problems. The continued pressure to reduce budgets complex wide, while facilities and infrastructure age, complicates the situation.

This pressure is evident with the submission of the FY 2001 Line Item – 320 Building Infrastructure Rehabilitation1. In FY 1996, this project was initially proposed due to the inability of the building's infrastructure to support the mission requirements and the aged systems. This condition was confirmed by an independent inspection and overview of life cycle analysis based on the nominal life expectancy of the building components. The 320 Building is one of the core facilities that focuses on analytical analysis of low-level, ultra-trace radio nuclear and chemical materials using optical and mass spectrometric equipment and procedures. If this building was to shut down, we would lose a very valuable National Resource.

The Laboratory capital facility requirements are summarized on Attachment A. The project funding profiles are developed establishing a balance between high-priority ESH&I projects, Science and Technology requirements, and other DOE and congressional priorities. DOE's Capital Asset Management Process (CAMP) is used to rank projects. The highest priority projects are recommended to and concurred by Pacific Northwest Leadership Team through the annual Facility Strategic Plan. An aggressive facility consolidation program has minimized the impact of decreasing capital investment in Pacific Northwest infrastructure. A historical trend of capital investments identifies that with less than a $5 million dollar annual investment the backlog will continue to increase. Pacific Northwest continues to investigate alternative means to invest in the critical facilities. The Energy Saving Performance Contract (ESPC) is one such mechanism that Pacific Northwest has utilized. Creative investment strategies will continue to be alternative methods to offset the reducing capital investment, while maintaining facilities to meet the Science and Technology Mission. The following projects are being submitted for supplemental funding solely as Infrastructure ADSs:

· Facility Capital Construction Project ADS (A98D0001)--This ADS covers a multiple of capital construction projects, such as Line Items (LI), General Plant Projects (GPP) and Small Projects (SP). These projects are required to meet the Laboratory's primary goal to deliver environmental science and technology in the service of the nation and humanity. Facilities & Operations (F&O) Directorate supporting goals are to demonstrate operational excellence, maintain state-of-the-art R&D facilities with constraint budgets, and prepare for growth. These goals support the continuing need to maintain and rehabilitate the DOE owned facilities and infrastructure. Maintaining the infrastructure in multi-aged facilities requires an integrated process and system to complete the critical projects in a cost effective and efficient manner. Pacific Northwest has such a process, in which the most critical requirements are established from facility core teams. These teams establish which facility asset is the most critical to be replace. This is accomplished utilizing the priority rated CAMP. Projects are compiled and evaluated by Facility Strategic Planning to ensure the projects are consistent with the Laboratory and Directorate mission and goals. These projects are presented to senior management to validate consistent thinking throughout the Laboratory.

· Facility Transition Project ADS (A99D0003)--This ADS covers the transitioning aspects of surplus SC facilities assigned to Pacific Northwest. These facilities currently are in a

1 (Based on April 12, 1999 message, DOE Office of Science to DOE-RL, requested that this project be deferred to FY 2002. [email from B. Sullivan, SC Infrastructure Div., to J. Neath, DOE-RL, AMT-STO].)

shutdown/standby mode or are in the planning stages for shutdown. The facilities present a risk to the environment, the public, and site workers. Hazards range from legacy material left at the facility, hazardous materials of construction (e.g. PCBs, asbestos, lead paint), potential release of contamination from facilities close to the Columbia River and the Richland City limits, and risk of injury to site workers from degrading facilities, e.g. roofs.

C. Emerging Issues

Pacific Northwest has identified a number of ESH&I program issues (listed below), but have determined that these improvement issues appear to be within the ability of existing resources to address.

· Environmental Management (EM) is leading the development of a memorandum of understanding to transfer $1.2M from EM to the Office of Science (SC) of continuous annual budget responsibility starting in FY 2001 to dispose of user/project generated wastes. If this MOU were to be delayed, and budget adjustments did not cover this $1.2M of project waste disposal cost, a significant impact on Waste Operations and R&D project costs would be realized. Over the past 2 to 3 years, Pacific Northwest has implemented a policy direction that emphasizes the accountability of individual users of service to pay directly for those services. Specific areas of success include the Pacific Northwest space-charging system and ES&H Field Service Representatives. The overall success of these programs is based on appropriate sizing of services matched directly with the user requirements and, to the maximum extent possible, placement of accountability/control of the service with the user. This has reduced overall costs and maximized service provided in these programs. The goal of waste management re-engineering is to continue along this path and maximize the number and type of services that are in alignment and funded by specific users of that service.

· As Pacific Northwest continues to consolidate its laboratory structure, more and more lab transfers/clean outs between buildings are expected. During lab transfers/cleanouts, the waste volumes managed by our waste system increased significantly, thus raising the opportunity for risk of failure. Pacific Northwest's waste management organization is working with the research and development organizations and the facilities and operations staff to optimize the scheduling of lab transfers/cleanouts. In addition, efforts are under way to strengthen policies on reducing long-term retention of chemical products within our labs.

· By 10/1/2001 Pacific Northwest will be required to implement all requirements of DOE's new Radioactive Waste Management order (435.1). The issuance of the order is anticipated this fiscal year. All requirements must be implemented within one year of order issuance, or be covered by waiver, implementation plan, or corrective action plan. When issued Pacific Northwest will be incorporating the new and revised requirements into its management systems and operating procedures. It is anticipated that Pacific Northwest will be able to successfully implement any of the new requirements within the one year time frame.

VII. Budget Analysis

Changes at Pacific Northwest have had a positive impact on the ESH&I program. These changes include facility transition and the redesign of the approach to delivering ESH&I services to managers and staff. The services required by the internal customer are paid for through a "purchased service" model. This requires managers and staff to pay for the services delivered to them by the ESH&I staff. Basic assumptions for planning purposes were that there will be approximately 2.1% escalation per year for labor and other costs. Excluding the effects of escalation, the ESH&I operating budget will remain reasonably flat during the next 3 years. If supported and funded, the Facility Capital Construction Project will increase from $2M annually, to $5M annually starting in FY 2000. This will reduce the $27M backlog of the capital construction projects.

Pacific Northwest was charged $1.2M in FY 1999 in support of fire department services from the Hanford Fire Department, and $1.9M for Occupational Medical services from the Hanford Environmental Health Foundation. There are also site-wide emergency preparedness costs for which Pacific Northwest was charged about $130K. The costs go to ensure that the Hanford Site is compliant with requirements and are managed by other Site Contractors. To avoid double counting, RL has directed that these costs be reported only through Fluor Daniel in the Hanford site-wide submittal. They are discussed here only to provide the Office of Science a more full accounting of Pacific Northwest's ESH&I costs.

As discussed earlier, Pacific Northwest provides ESH&I services via two mechanisms: Core services funded from overhead and Purchased Services sold to line organizations. For ESH&I support activities, the level of purchased services required is directly related to the work being conducted. A decrease in the business volume would be reflected in the budget for ESH&I. It is, therefore, likely that a decrease in budget of 10% would be directly reflected in a decrease in the ESH&I purchased services budget, unless the scope of work demands more ESH&I technical support. This method of providing core services to underpin the necessary ESH&I program elements and purchased services to meet the more dynamic line program needs helps ensure that the necessary level of ESH&I coverage is provided within Pacific Northwest.

Budget reductions will result in further reductions in the resources available to respond to unfunded mandates from DOE, audits and surveillances, and other unplanned activities. The resources remaining will be focused on ensuring the safety and health of workers and the public and protection of the environment.

VIII. FY 1999 ESH&I Commitments

Pacific Northwest's ESH&I commitments are captured in an annually negotiated Performance Evaluation Agreement supporting the operating Contract DE-AC06-76RL01830. Specifically, ESH&I commitments are contained in the Agreement's Critical Outcome 2.0 Operational Excellence: "Battelle will conduct all work and operate Laboratory facilities with distinction,

fully supportive of and integrated with the Laboratory's science and technology mission and fully protective of workers, the public and the environment." This Critical Outcome is supported by the following two Performance Objectives:

(ES&H specific)
2.1 Objective--Sustain and enhance operational excellence in safety and health, and environmental protection.

(Infrastructure specific)
2.2 Objective--Increase mission capabilities through enhancement and effective use of Laboratory facilities and assets.

Each of these objectives is supported by a suite of Performance Indicators that together comprise the Pacific Northwest FY 1999 ESH&I performance commitments and serve as the basis for objectively establishing Pacific Northwest ESH&I/Operations annual performance ratings. These performance objectives and indicators are negotiated annually and are formally monitored and tracked. Reviews include formal mid-year and year-end evaluations. Because DOE bases its annual appraisal of the Laboratory on these Objectives and criteria, the annual report will serve also as the commitment reporting required by this planning process.

In addition, the following Capital Construction Projects will be completed by year-end:
· Line Item – Multi-Program Laboratory Rehabilitation
· General Plant Project – 326 Building "C" Floor Rehabilitation
· General Plant Project – 326 Building Piping Replacement
· Several Small Projects.

IX. Conclusion

The redesigned ESH&I program has had a significant positive impact on the way Pacific Northwest delivers ESH&I services and has allowed the overall ESH&I budget to be reduced while improving the protection of the environment and the safety and health of the workers and the public. The program is focused on integrating ESH&I into the planning and design of work, resulting in improved performance, as evidenced by fewer accidents and incidents, reductions of injuries and illnesses, better control of hazards, and improved compliance with environmental regulations. Pacific Northwest's assessment process is maturing, with emphasis on continuously improving our management systems, to develop leading indicators of performance, not solely relying on traditional historical trending analysis. This effort is ongoing, and part of the DOE Complex wide effort to evaluate performance under Integrated Safety Management. This is being accomplished by providing managers and staff with the technical resources in ESH&I that

they need to meet their responsibilities. This approach has allowed Pacific Northwest to control and reduce risk even during difficult budget times. By incorporating performance-based incentives into our contract, management has shown the commitment to continually improve ESH&I performance. The ESH&I program is focused on delivering value-added services and eliminating activities that do not provide benefit to protection of the environment and safety and health of workers and the public. A risk-based approach has been adopted so that limited resources may be applied to those areas that will result in the greatest benefit.

ATTACHMENT A

Pacific Northwest's Listing of Infrastructure Needs (by Descending Priority Order)

Office of Science (SC) Backlog FY99-04
Line Item (LI) /General Plant Project (GPP) /Small Projects (SP)

TITLE	FY1999	FY2000	FY2001	FY2002	FY 2003	FY2004
320 Building Infrastructure Rehabilitation*			700,000	4,600,000	2,500,000	
TOTAL Line Items	0	0	700,000	4,600,000	2,500,000	0
GPP/Small Projects:						
326 Rehab Interior Space (D481)	466,000					
326 Piping Replacement (482)	340,000					
331 Sanitary Piping (D483)	430,000	500,000				
331Replace Coils on Supply Fan Intakes	295,000					
331H Building Roof Replacement	152,000					
336 Highbay Light Mods	46,000					
331 Replace Glass Washer	56,000					
331 Building 2nd Floor Mechanical Room Egress	80,000					
326 Replace Coils on Supply Fan Intakes	335,000					
326/329 Exterior Stairway & Walking Surfaces		70,000				
337 Sanitary Water Piping		850,000				
338 Roof Replacement		300,000				
320 Basement Laboratory Rehabilitation		150,000				
337 Elevator Replacement		150,000				
337 Mechanical Roof Replacement		400,000				
331 Replace Roof Chillers and Fans		1,500,000				
338 Electrical Switchgear Upgrade		150,000				
326 Fan Replacement		600,000				
326 Networking Chillers		100,000				
350 Roof Replacement		200,000				
331 Administrative Addition			2,500,000			
326 Laboratory Upgrades			1,800,000			
329 "C" Section Refurbishment			1,300,000			
337 Interior Refurbishment				3,400,000		
331 Laboratory Refurbishment				2,000,000		
331 Aquatic Chiller Replacement					1,000,000	
305B HVAC Replacement					100,000	
350 French Drain					100,000	
Update Emergency Contact PA System in Buildings					200,000	
337/338 HVAC Controls					120,000	
FMCS Cabeling and Controls in Buildings					200,000	
Metasys UPS Backup System in Buildings					100,000	
331 Process Water Piping Replacement					1,800,000	
338 Administrative Addition					2,000,000	
329 Building NMF Rehabilitation						500,000
Various Bldgs Safety Shower Flush Lines						350,000
350 Monorail						200,000
Refurbish Technical Library						3,500,000
TOTAL GPP/Small Projects	2,200,000	4,970,000	5,600,000	5,400,000	5,620,000	4,550,000

* (Based on April 12, 1999 message, DOE Office of Science to DOE-RL, requested that this project be deferred to FY 2002. [e-mail from B. Sullivan, SC Infrastructure Div., to J. Neath, DOE-RL, AMT-STO].)

ATTACHMENT B
EM DIRECT-FUNDED PROGRAMS AT THE PACIFIC NORTHWEST NATIONAL LABORATORY

EM ES&H Budget Formulation Plan Narrative

Funding to support specific Environmental Management (EM) related activities, such as those conducted in the 325 Building, is provided directly by EM and is covered in the Hanford Site Summary. The EM activities are being reflected here for an overall complete summary of Pacific Northwest ES&H activities.

Science and Technology, Mission Support, and Other Project Vulnerabilities

A. Important ES&H Risk Management Issues Being Addressed

The important ES&H issues being addressed at the Pacific Northwest National Laboratory (Pacific Northwest) are:

· Base operations including Facility Surveillance and Maintenance activities to maintain the safety envelopes for radioactive materials and radiation areas within the 325 Building and miscellaneous 300 Area Laboratory Buildings. This includes preparing as-built drawings to show the current configuration of the facility. Also included are the Waste Operations and Management activity that provides the infrastructure (acceptance, handling, storage, packaging, and shipment) needed to disposition newly-generated laboratory wastes to comply with environmental requirements. This includes effluent monitoring that provides radiological air emissions sampling and monitoring of facility emission points to meet requirements and standards.

· Environmental monitoring in and around the Hanford Site to help assess health and safety impacts to workers and the public and also to protect Hanford ecological and cultural resources. The Pacific Northwest Public Safety & Resource Protection (PSRP) Program activities are aimed at monitoring and tracking the movement of radioactive materials in pathways leading to potential human exposure. The PSRP Program monitors radioactive contamination in the air, vegetation, wildlife, and in the Columbia River. Also included are localized weather forecasting services and information that supports emergency management activities and is also useful to carry on tank farm, well drilling, and construction activities safely. The PSRP Program also evaluates impacts of Hanford activities to sensitive ecological and cultural resources.

B. Significant ES&H Risks Not Adequately Addressed

The following significant ES&H risks are not adequately addressed at the Target level:

Science and Technology Project

· There has been a continued delay in identifying adequate priority funding for disposing of existing DOE legacy waste and contamination in facilities assigned to Pacific Northwest. The proposed investment to dispose of these wastes at Pacific Northwest is not commensurate with the investments being made in disposing of other Hanford wastes. Delaying the remediation of legacy wastes and contamination consequently delays reducing the safety risks posed by abandoned radiological and hazardous materials in these DOE facilities. These wastes pose increased risk to onsite workers, the public, and the environment. The continued safe conduct of laboratory operations is threatened as long as legacy wastes remain undisposed. The funding shortfall also delays improving ES&H compliance for the science and technology development mission operations. Compliance with TPA Milestone M-92 series, which specifically governs the schedule for removing legacy issues from the 300 Area, will be delayed. The impact of funding reductions not only delays reducing safety and compliance risks, but also delays making more effective use of laboratory spaces and facilities. Laboratory operations cannot be conducted efficiently while legacy wastes remain in the facilities. Additionally, full funding for disposition of Pacific Northwest legacy wastes and contamination would reduce mortgages with potential average savings of greater than $1M per year. It would also accelerate cleanup of DOE facilities assigned to Pacific Northwest to support revitalization of the 300 Area for commercial or other uses. These savings could then be made available in the future for other critical needs across the Site. Note: Office of Science (SC) funding request to cover activity has been submitted in the Facility Transition Project FWP# 27559 (ADS# A99D0003).

Mission Support and Other Projects

· Several environmental monitoring activities are not funded including Hanford Environmental Dose Overview, which ensures consistency in dose calculation methodology and interpretation. This service is necessary to support the Hanford activities for calculating radiological doses to the public, workers and environment and also supports a pending regulatory requirement for high priority/urgent risk Hanford projects/programs. Monitoring of nearby food products for possible Hanford contaminants and collection of necessary data to assess ecological risks within the Columbia River is also not funded. Additionally, support to the Department of Energy Richland Operations Office (DOE-RL) on the development of a sitewide Environmental Radiation Protection Plan to comply with the anticipated promulgation of 10 CFR 834 is unfunded.

· Certain activities established to comply with federal laws and environmental regulations concerning the protection and management of ecological resources on the Hanford Site will not be maintained. The Biological Resources Management Plan cannot be implemented that otherwise would allow cleanup activities and the future development of Hanford to proceed while minimizing the damage to sensitive species and habitat. Required data on the distribution of plants and animals will not be gathered to support mitigation of Hanford impacts. This approach would minimize the potential for future natural resource damage assessments against the DOE and would also minimize the need for specific consultations with federal agencies regarding impacts to endangered species. In addition, sensitive ecological resources in the 300 Area will not be assessed in compliance with NEPA. Management and control of increasing elk herds on the Hanford Site in collaboration with the Washington State Fish and Wildlife

Department will also not be supported. The risk of elk-vehicle collisions for commuters on local highways going through Hanford and ecological damage on the Arid Lands Ecology Lab will continue to increase.

· Activities to characterize the Columbia River environment and develop credible models to describe and predict Hanford contaminant migration and fate in the river environment are also not supported. The ultimate objective of this activity would be to efficiently reduce potential public safety risks. These activities include gathering the baseline data on the distribution of plants and animals needed to support impact mitigation designed to minimize environmental restoration project costs at Hanford and that would provide the basis for future decisions on land use. This will result in a delay to the schedule for completion of the Groundwater / Vadose Zone Integration (GW/VZ) Project which would determine future potential impacts to the Columbia River and the selection of appropriate cleanup alternatives.

C. Identification of Highest Ranking Unfunded Activities

The highest ranking unfunded activities are:

· Management and disposal of Pacific Northwest legacy wastes and contamination, allowing radioactive and hazardous material to remain in locations where there is little control over public access, and a potential for contamination spread to the public.

· Implementing biological resources management approach to minimizing the impact of future work on Hanford biological resources.

D. Identification of any Unfunded (or Under Funded) Activities that Address Emerging ES&H Issues

· Implementation of the impending Environmental Radiation Protection law (10 CFR 834), which has yet to be promulgated, is unfunded. Noncompliance may result in fines or penalties.

· The elk population on the Hanford Site is increasing significantly, and management and control for both public safety and for protection of ecological resources is unfunded.

· Collecting baseline data and developing credible models are unfunded activities that address the emerging Groundwater/Vadose Zone Integration Project objective of determining appropriate clean-up alternatives for achieving the end state established for the Columbia River.

E. Identification of any Unfunded (or Under Funded) Activities that Represent Good Investments in Risk Management and Prevention

Unfunded or under funded activities that represent good investments in risk management and prevention are:

Mission Support and Other Projects

· Support to the Hanford Environmental Dose Overview Panel, which would ensure appropriate, consistent environmental dosimetry calculations and common understanding of the results across the Hanford Site, is unfunded. This service is necessary to support calculation of radiological doses to the public, workers and environment and accurately characterize safety risks. This activity is also a critical function in a successful Groundwater/Vadose Zone Integration Project. In addition, the ecological compliance assessment activity in the 300 Area to comply with NEPA would be a good investment to reduce regulatory risks.

· Ecological compliance assessment activity in the 300 Area to comply with NEPA would be a good investment to reduce regulatory risks.

FY 1999 Pacific Northwest ES&H Commitments

The FY 1999 activities of vital importance to Environment, Safety and Health (ES&H) being addressed in the Pacific Northwest National Laboratory (Pacific Northwest) Science & Technology (PBS RL-ST01) and Pacific Northwest portion of Mission Support (PBS RL-OT01) are as follows:

SCIENCE AND TECHNOLOGY PROJECT

- Continue base operations surveillance and maintenance activities in the Radiochemical Processing Laboratory (RPL/325 Building) and miscellaneous laboratory facilities; continue creating updated drawings of essential RPL facility safety systems critical to maintenance of safety and regulatory compliance; maintain physical security of the facility;

- Complete the project begun in FY 1997 to modify the RPL Radioactive Liquid Waste System (RLWS) to provide liquid waste storage and a load-out system for waste shipment to the 200 Area;

- Continue base program for proper collecting, storing, packaging and shipping of 50 metric tons of hazardous waste for disposal; manage 7 cubic meters of transuranic waste, 34 cubic meters of mixed waste, and 283 cubic meters of low level waste; verify compliance of Pacific Northwest facility air effluents. (Note: Environmental Management (EM) is leading the development of a memorandum of understanding to transfer $1.2M from EM to the Office of Science (SC) of continuous annual budget responsibility starting in FY 2001 to dispose of user/project generated wastes. If this MOU were to be delayed, and budget adjustments did not cover this $1.2M of project waste disposal cost, a significant impact on Waste Operations and R&D project costs would be realized.)

- Continue base program regulatory compliance activities to maintain compliant operations at the Lab; and,

- Continue the integrated project to identify, characterize, and remediate DOE legacy waste and contamination issues at Pacific Northwest managed facilities and sites. Complete the assessment of Pacific Northwest facilities and sites for vulnerabilities, and complete the legacy material baseline. There has been an Office of Science (SC) funding request submitted for this activity under the Facility Transition Project FWP# 27559 (ADS# A99D0003).

MISSION SUPPORT AND OTHER PROJECTS

- Conduct minimum safe air, river, community, and agricultural products environmental surveillance and oversight activities;

- Operate the Hanford Meteorological Station and provide weather data to support emergency response and programmatic needs;

- Continue documenting approximately 180 buildings as a representative sample of the facilities associated with the Manhattan Project and Cold War activities at the site;

- Conduct priority ecosystem monitoring activities and identify, evaluate, and document impacts of site activities on sensitive ecological resources for the 100 and 200 Areas;

- Manage Hanford Cultural Resources to comply with the National Historic Preservation Act (Section 106), the American Indian Religious Freedom Act, and the Archaeological Resources Protection Act; and,

- Develop summary of current site information (geology, hydrology, ecology, populations, etc.) for NEPA documentation and review/track progress of NEPA documents for Hanford programs.

APPENDIX B

ENVIRONMENT, SAFETY AND HEALTH MANAGEMENT PLAN SUMMARY FOR ACTIVITY DATA SHEET HANFS-A97D0015 FAST FLUX TEST FACILITY COMPLEX

This page intentionally left blank.

ES&H Management Plan Information System
Activity Data Sheet

ADS Identification Section

1. Facility Code: RL 2. Name: DOE OPERATIONS OFFICE - RICHLAND
ADS Number: A99D0003 3. Title: FAST FLUX TEST FACILITY - RESTART

4. Data Sheet Status Cd.: OPEN
5. Budget Identifier....:
6. Original Identifier..:
7. Work Package Number..:
8. Account Number.....:
9. Work Breakdown Struc.:
10. Reference ADS Number.:
11. Responsible SO Code..: NE-NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY
12. Resp. Contractor Code: ZZOTH-ZZ - ALL OTHER CONTRACTORS
13. Contractor Division..:
14. Contractor Department:
15. Contractor Manager...: KLOS, D.B. 16. Phone: 509-373-3574
17. DOE Manager.....: FARABEE, O.A. 18. Phone: 509-376-8089
Open Codes.....: (1) (2) (3)
Open Flags.....: (1) No (2)No (3)No

ADS Category Section

Cost Category: 12 - Environment, Safety and Health

19. FEDPLAN Activity: NO 21. Percentage of Costs to Training...: 0
20. Functional Area Breakdown: 22. Percentage of Costs to Maintenance: 0

FA.SA	Pct	Functional Area/Sub-Area Title
EP.	2	Emergency Preparedness
FP.	1	Fire Protection
IH.	3	*Industrial Hygiene*
IS.	6	Industrial Safety
MO.	13	Management And Oversight
NS.	41	Nuclear Safety
RP.	33	Radiation Protection
TS.	1	Transportation Safety

ADS Type Section

23. ADS Type: 1 - Core
24. Drivers:

P/S	Typ	Driver Code	Driver Title
Sec	LAW	CAA	Clean Air Act (CAA*) (42 USC 7401-7671); Amended 1966, 1977, 1990
Sec	LAW	CWA	Clean Water Act (CWA*) (33 USC 1251-1387)
Sec	LAW	EMERGENCY PLANNING	Emergency Planning and Community Right-to-Know Act (Pub. L. 99-499, title III)
Sec	LAW	HAZARDOUS WASTE	Hazardous and Solid Waste Amendments of 1984 (RCRA Amend)
Sec	LAW	HAZMAT TRANSPORT	Hazardous Material Transportation Uniform Safety Act
Sec	LAW	HPA	National Historic Preservation Act (HPA*) (16 USC 470)
Sec	LAW	NEPA	National Environmental Policy Act of 1969 (NEPA*) (42 USC 4321-4347)
Sec	LAW	POLLUTION PREVENTION	Pollution Prevention Act of 1990 (PPA) (42USC 13101)
Pri	LAW	PRICE-ANDERSON	Price-Anderson Act
Sec	LAW	RCRA	Resource Conservation and Recovery Act (RCRA*) (42 USC 6901 et seq)
Sec	LAW	TSCA	Toxic Substances Control Act (TSCA*) (15 USC 2601-2671)
Sec	ORD	DOE 4330.04B	Maintenance Management Program
Sec	ORD	DOE 5400.05	Radiation Protection of the Public and the Environment
Sec	ORD	DOE 5480.19	Conduct of Operations Requirements for DOE Facilities
Sec	ORD	DOE 5632.01C	Protection and Control of Safeguards and Security Interests
Sec	ORD	DOE 5633.03B	Control and Accountability of Nuclear Materials
Sec	ORD	DOE 5820.02A	Radioactive Waste Management

ES&H Management Plan Information System
Activity Data Sheet

Sec ORD DOE P 450.01	ES&H Policy for the DOE Complex
Sec REG 10CFR820	DOE - Procedural Rules for DOE Nuclear Activities
Sec REG 10CFR835	DOE - Radiation Protection for Occupational Workers

25. Compliance Comments

Completion of the Fast Flux Test Facility deactivation is a Tri-Party Agreement milestone (M-81-00) that has a due date of December 2001; however, because of the current standby directive, this milestone will have to be renegotiated based on the final decision to either initiate a NEPA review to evaluate the environmental impacts to restart the reactor, continue standby, or return to shutdown transition.

26. ADS Description/Objective

The Fast Flux Test Facility (FFTF) and the Fuels and Materials Examination Facility (FMEF) will be maintained in accordance with its assigned mission. In the spring of 1999, the Secretary of Energy is expected to determine the path forward for FFTF and FMEF. Options are: (1) prepare an Environmental Impact Statement (EIS) to evaluate the impacts of potential, future operation; (2) resume transition to shutdown; or (3) continue in standby. For purposes of defining the base case in this proposal, Option 1 is assumed to lead to a favorable Record of Decision (ROD) followed by a 3-1/2 year restart period.

If directed to prepare for a restart, the project will prepare safety analysis reports, restore facility equipment to operation, design and implement upgrades to operate reliably, and design and install special facilities, such as a system for on-line retrieval of irradiation specimens, as required to perform the mission. The schedule for this process establishes critical reactor operation in 3-1/2 years after the ROD.

If the Secretary directs the FFTF to shut down, the project will drain sodium systems to the Sodium Storage Facility (SSF); procure 22 additional Interim Storage Casks; resume washing and packaging fueled components; transfer selected fuel to the Plutonium Finishing Plant for storage; wash and dispose of non-fueled tests; and resume the shutdown of plant support systems. Design of the Sodium Reaction Facility will be initiated. The FMEF will be transferred to alternative use or deactivated.

In FY 2001, activities in the Safety and Health areas would include:

(EP) The project provides emergency response for any potential events at the facilities. This includes first responders, facility specific procedures and facility technical support. The site emergency preparedness staff provide support for training, drills, and site procedures.

(FP) Fire Protection systems are maintained through the site essential services and overheads. However, facility staff controls facility system design, modification, and repair. Fire protection engineers provide review and approval of work packages and procedures that might impact the fire safety of the facility and they review safety analyses related to the fire safety of the facility. Fire protection engineers also perform independent assessments of facility conditions with respect to fire safety.

(IH) Industrial Hygiene staff perform activities intended to protect workers at FFTF and FMEF from chemical, physical, biological and environmental stresses in the performance of their tasks. IH personnel assist line staff in identifying and controlling hazards through operating and maintenance procedures, work package review and approval, designation of personnel protective equipment, providing employee hazard communication, and performing job site and job specific hazard evaluations.

(IS) Industrial Safety staff perform activities intended to protect workers at FFTF and FMEF from physical injury. IS personnel review procedures and work packages to ensure that work place hazards have been minimized and controlled during activities such as electrical maintenance, machine tool use, compressed gas and pressure system maintenance, rigging and hoisting activities, confined space entry, work on scaffolding, and hazardous material handling. IS personnel both advise line staff on these issues and monitor performance of activities. These activities will be especially important as equipment and systems are returned to operational condition or as additional equipment and systems are shutdown.

(MO) Management and Oversight includes both the internal management assessment program and the Facility Evaluation Board audits. These programs ensure that the applicable safety and health programs are effectively implemented.

(NS) Nuclear Safety activities will include the review of existing, updated, and new safety analyses which may be necessary in evaluating future missions and performing the assigned mission. For FY 2001, in the restart case, significant safety analyses will be prepared through outside contracts. Nuclear safety staff review work related to the FFTF and FMEF to ensure that line staff properly apply appropriate standards to analyses, procurements, and work which could affect the health and safety of the public, the workers, and the environment.

(RP) Radiation Protection activities are intended to control the exposure of FFTF workers and the public to radioactivity. RP personnel will perform routine surveys of the FFTF and support facilities; provide administrative and technical support for control of radiation sources, equipment, and procedures in order to minimize personnel exposure; and administer the ALARA program. RP will also support analyses of potential radiological impacts from future mission and their mitigation.

(TS) Transportation Safety will ensure that hazardous material shipments to or from the FFTF, either on site or off site, comply with safe packaging and shipping requirements. Shipments include regulated, hazardous wastes and may include spent nuclear fuel. Support will be provided for maintaining certification and/or licensing of approved shipping containers.

27. ADS Appraisal/Justification

It is assumed that funding will be provided to maintain the minimum surveillance and maintenance activities for the FFTF and FMEF. This funding will ensure the safe and compliant operation of the facilities. If other funding is reduced, the time

ES&H Management Plan Information System
Activity Data Sheet

required to complete the FFTF and FMEF mission will be extended. Unfunded activities would not be performed, including the related safety and health activities. However, the public, the workers and the environment would not be subjected to greater hazard as a result. The minimum safe surveillance and maintenance activities ensure that systems, equipment, and personnel are in place to maintain the FFTF and FMEF, including the sodium and fuel inventories, in a safe and compliant condition.

28. ADS Milestones and Accomplishments

If the FFTF is directed to restart for an irradiation services mission in December 2000, the reactor will be prepared for operation and critical operation will begin in July 2004. Prior to that time, the safety analyses will be updated, systems will be restored to operation, the reactor refueled, and operational readiness will be verified.

If the FFTF is directed to shut down in April 1999, the reactor and its cooling loops will be drained to the Sodium Storage Facility (SSF) by late in calendar year 2001. The remainder of the nuclear fuel will be placed in interim, dry storage estimated to complete in the middle of Fiscal Year 2004. Sodium bonded metal fuel assemblies will be processed and shipped to ANL-W for consolidation, interim storage, and final disposition. The FFTF will also disposition sodium wetted, long (28 foot and 40 foot), irradiated, non-fueled test assemblies for disposal.

In standby, the project will focus efforts on disposing of long, irradiated test assemblies in FY 2001. Systems and equipment will continue to be maintained in a condition adequate to support a restart decision.

29. ADS Scoring Section

Attribute	Cons	Mult	Prob	BEFORE VAL	Cons	Mult	Prob	AFTER VAL
Public S&H	0	0.0	0.0000	0.0000	0	0.0	0.0000	0.0000
Site S&H	0	0.0	0.0000	0.0000	0	0.0	0.0000	0.0000
Compliance	0	0.0	0.0000	0.0000	0	0.0	0.0000	0.0000
Mission	0	0.0	0.0000	0.0000	0	0.0	0.0000	0.0000
Cost-Effective	0	0.0	0.0000	0.0000	0	0.0	0.0000	0.0000
Environmental	0	0.0	0.0000	0.0000	0	0.0	0.0000	0.0000

30. Net Score (before - after): 0.0000
+ Contractor Adjustment...: 0.0000
+ Ops. Office Adjustment..: 0.0000
+ Secr. Office Adjustment.: 0.0000
= Total Adjusted Score....: 0.0000

31a. CAMP/Other Score.....: 0.0000
+ Other Contractor Adjustment....: 0.0000
+ Other Ops. Office Adjustment...: 0.0000
+ Other Secr. Office Adjustment..: 0.0000
= Total CAMP/Other Adjusted Score: 0.0000

32. Project Priority: 0.0

33. Scored by: 34. Date Scored: / /

35. Scoring Comments

This activity is not prioritized. Funding is provided by DOE Headquarters.

Resource Data Section

36. Budget Year Funding Case: 1 - Target
37. Resource Structure Code.: YA0205
Allocable Cost Pool ID..:
Source of Funding.....: 1 - Direct
38. Budget & Reporting Code.: AF8
39. Outside Funding Source..: DOE-HQ

40. Start Year: 1999 41. End Year:

FY	OE	CE	GPP	LIP	TOTAL	FED.	CONTR.
1998	0.0	0.0	0.0	0.0	0.0	0.00	0.00
1999	2,327.0	0.0	0.0	0.0	2,327.0	0.00	19.30
2000	2,188.0	0.0	0.0	0.0	2,188.0	0.00	19.30
2001	3,745.0	0.0	0.0	0.0	3,745.0	0.00	23.00
2002	4,642.0	0.0	0.0	0.0	4,642.0	0.00	25.00
2003	4,136.0	0.0	0.0	0.0	4,136.0	0.00	25.00
2004	4,126.0	0.0	0.0	0.0	4,126.0	0.00	25.00
2005	2,759.0	0.0	0.0	0.0	2,759.0	0.00	25.00
2006	2,817.0	0.0	0.0	0.0	2,817.0	0.00	25.00
TOT	26,740.0	0.0	0.0	0.0	26,740.0	0.00	186.60

Costs are escalated?: YES

ES&H Management Plan Information System
Activity Data Sheet

45. Cost Estimate Notes

For the restart case, costs and FTE estimates are based on the preliminary resource loaded schedule.

FY 2002 - 2004 are anticipated to include significant contracted scope associated with safety analyses, not direct staff.

Escalation is assumed to be 2.0% from FY 1999 to FY 2000 and 2.1% per year in out years.

48. Management Approval: NO
49. Activity In-Process: NO

50. Design Completion..: / /
51. Constr./Work Start.: / /
52. Constr./Work Cmpl..: / /
53. Compliance Required: / /
54. Fiscal Yr Completed:
55. Year Funds Required:

Status Remarks

APPENDIX C

ENVIRONMENT, SAFETY AND HEALTH MANAGEMENT PLAN SUMMARY FOR ACTIVITY DATA SHEET HANFS-A99D0001 PROGRAM DIRECTION/GSSC

This page intentionally left blank.

RL-A99D0001
Page 1

ES&H Management Plan Information System
Activity Data Sheet

ADS Identification Section

1. Facility Code: RL 2. Name: DOE OPERATIONS OFFICE - RICHLAND
   ADS Number: A99D0001 3. Title: PROGRAM DIRECTION/GSSC SUPPORT

4. Data Sheet Status Cd.: OPEN
5. Budget Identifier....: EW1000000
6. Original Identifier..: 1000-PD / 1000-SS
7. Work Package Number..:
8. Account Number.....:
9. Work Breakdown Struc.: 1.8.3
10. Reference ADS Number.:
11. Responsible SO Code..: EM-ENVIRONMENTAL MANAGEMENT
12. Resp. Contractor Code: (N/A)-(NOT APPLICABLE)
13. Contractor Division..:
14. Contractor Department:
15. Contractor Manager...: N/A 16. Phone: N/A
17. DOE Manager.....: SCOTT, WALTER B. 18. Phone: 509-372-1832
    Open Codes.....: (1) (2) (3)
    Open Flags.....: (1) No (2)No (3)No

ADS Category Section

Cost Category: 12 - Environment, Safety and Health

19. FEDPLAN Activity: NO 21. Percentage of Costs to Training...: 0
20. Functional Area Breakdown: 22. Percentage of Costs to Maintenance: 0

FA.SA	Pct	Functional Area/Sub-Area Title
EP.	4	Emergency Preparedness
FP.	2	Fire Protection
IH.	4	Industrial Hygiene
IS.	6	Industrial Safety
MO.	27	Management And Oversight
MS.	1	Occupational Medical Services
NS.	39	Nuclear Safety
RP.	15	Radiation Protection
TS.	2	Transportation Safety

ADS Type Section

23. ADS Type: 1 - Core
24. Drivers:

P/S	Typ	Driver Code	Driver Title
Sec	EO	ACQUISITION	EO 12873, Federal Aquisition, Recycling, and Waste Prevention
Sec	ORD	DOE 3790.01B	Federal Employee Occupational Safety and Health Program
Sec	ORD	DOE 5400.05	Radiation Protection of the Public and the Environment
Pri	ORD	DOE 5480.04	Environmental Protection, Safety, and Health Protection Standards
Sec	ORD	DOE 5480.19	Conduct of Operations Requirements for DOE Facilities
Sec	ORD	DOE 5480.21	Unreviewed Safety Questions
Sec	ORD	DOE 5480.22	Technical Safety Requirements
Sec	ORD	DOE 5480.23	Nuclear Safety Analysis Reports
Sec	ORD	DOE 5700.06C	Quality Assurance
Sec	ORD	DOE O 440.01A	Worker Protection Management for DOE Federal and Contractor Employees
Sec	REG	10CFR830.110	DOE - Safety Analysis Reports
Sec	REG	10CFR830.112	DOE - Unreviewed Safety Questions
Sec	REG	10CFR830.120	DOE - Quality Assurance
Sec	REG	10CFR830.320	DOE - Technical Safety Requirements
Sec	REG	10CFR834	DOE - Radiation Protection for Public and Environment
Sec	REG	10CFR835	DOE - Radiation Protection for Occupational Workers

ES&H Management Plan Information System Activity Data Sheet

Sec REG 29CFR1910	Occupational Safety and Health Standard
Sec STD OSHA 1910A	Occupational Safety and Health Standards - General
Sec STD OSHA 1926A	Safety and Health Regulations for Construction - General

25. Compliance Comments

DOE-RL and General Support Services Contractor (GSSC) ES&H staff manage the Hanford Site to maintain compliance with the Tri-Party Agreement, DNFSB Recommendations, Federal and State Regulations, and DOE Orders.

26. ADS Description/Objective

This ADS reflects the estimated funding required to support all DOE-RL staff (e.g. Salaries, Benefits, Travel, and Contractual Services) as well as, funding required to provide General Support Service Contract (GSSC) support to the DOE-RL staff.

The DOE-RL staff minimize risks posed to the safety and health of the public and site personnel by providing oversight of, administration of, technical assistance/expertise to, and independent assessment of contract operations at the Hanford Site in accordance with the Tri-Party Agreement, DNFSB recommendations, Federal and State regulations, and DOE Orders.

The GSSC staff work in support of DOE in the areas of Nuclear Safety, Firearm Safety, and Facility and Employee Safety. This includes review of safety reports, compliance with DOE regulations and Public Laws, evaluation of accident scenarios, support to EISs, and special issue studies such as groundwater vadose zone, and support to the Defense Nuclear Facility Safety Board.

The following are activities performed by DOE-RL and GSSC employees for specific functional areas covered by this ADS.

Emergency Preparedness - Emergency Preparedness personnel are responsible for maintenance of the Hanford Site Emergency Plan, inspection of emergency equipment, response team training, planning and conducting of drills and exercises, and coordination/communication with various authorities. Emergency Preparedness personnel also respond to accidents and emergencies.

Fire Protection - Fire Protection personnel are responsible for audits, surveillance, and testing of fire detection and suppression systems. Personnel also review operations, maintenance, and system-upgrade work packages.

Industrial Hygiene - Industrial Hygiene personnel are responsible for protection of employee health from chemical, physical, and biological stresses under various levels of exposures. Activities include: anticipation, recognition, measurement, evaluation, and control of health hazards; work-site and job-specific evaluations; redesign of equipment and tasks; specifying personnel protective equipment; communication of potential hazards to employees; substitution of less hazardous materials; and providing input to effect controls for ventilation, noise, illumination, toxic substance handling, and sanitation.

Industrial Safety - Industrial Safety personnel are responsible for activities which protect workers from physical harm, such as: electrical safety; machinery and machine guarding; personnel protection; accident investigation; compressed gas safety; hoisting, rigging, and material handling; lock-out/tag-out; confined space controls, platform, man-lift, and scaffolding usage; safe surfaces for walking and working; cutting, welding, and brazing safety; hand and portable power tool safety; hazardous material handling, storage, and use; construction safety; and facility egress. Industrial Safety personnel review procedures to minimize work place hazards by implementing applicable safety standards and regulations.

Management Oversight - Management Oversight personnel are responsible for the coordination and direction of safety and health activities. This includes: S&H planning, preparation of S&H documentation, S&H performance trending and analysis, S&H self-assessment, training, program management, corrective-action tracking, technical administration, lessons learned feedback and analysis, internal audits and surveillance, Operational Readiness Reviews (ORRs), voluntary protection program implementation, and coordination/communication with DOE and other government agencies.

Occupational Medical Services - Occupational Medical Services personnel are responsible for activities which ensure that medical services are in place and are kept current with Federal, State, and local standards.

Nuclear Safety - Nuclear Safety personnel are responsible for analyzing, eliminating, and controlling potential safety and health hazards through implementation of appropriate safety standards and regulations. Nuclear Safety personnel assure that components, systems, and processes are designed, developed, constructed, tested, operated, and maintained according to DOE mandatory requirements, industry-accepted standards, and technical specifications.

Radiation protection - Radiation Protection personnel are responsible for activities which control exposure of workers and the public to radioactivity. Radiation Protection personnel perform routine surveys and provide administrative and technical support for control of radiation sources, operation of equipment and implementation of procedures to minimize external exposure, ALARA administration, and measurement of contamination control.

Transportation Safety - Transportation Safety personnel are responsible for package certification, safety analysis reports for packaging needed to enable the packaging and transportation of waste in accordance with applicable laws and regulations, and independent nuclear safety review documents related to packaging and shipping (such as SARPS and SEPS).

27. ADS Appraisal/Justification

Without DOE-RL presence at the Hanford Site, there would be no RL safety and health oversight of contractor activities and increases potential for failure of institutional controls. This could result in minor exposure of hazardous materials to the public and/or serious injury or exposure to site personnel.

Without GSSC support DOE-RL employees would be forced to limit their oversight and review of contractor operations to the highest priority items only. As a result, some potential safety issues may not be caught. Without GSSC support to perform

ES&H Management Plan Information System
Activity Data Sheet

needed functions in support of DOE, there is a potential for degraded institutional controls which could result in minor exposure of hazardous materials to the public and/or serious injury or exposure to site personnel. The chances of a safety problem not being discovered and mitigated significantly decreases when GSSC staff are employed.

28. ADS Milestones and Accomplishments

This field does not apply to the subject ADS.

29. ADS Scoring Section

Attribute	Cons	Mult	Prob	BEFORE VAL	Cons	Mult	Prob	AFTER VAL
Public S&H	0	0.0	0.0000	0.0000	0	0.0	0.0000	0.0000
Site S&H	0	0.0	0.0000	0.0000	0	0.0	0.0000	0.0000
Compliance	0	0.0	0.0000	0.0000	0	0.0	0.0000	0.0000
Mission	0	0.0	0.0000	0.0000	0	0.0	0.0000	0.0000
Cost-Effective	0	0.0	0.0000	0.0000	0	0.0	0.0000	0.0000
Environmental	0	0.0	0.0000	0.0000	0	0.0	0.0000	0.0000

30. Net Score (before - after): 0.0000
+ Contractor Adjustment...: 0.0000
+ Ops. Office Adjustment..: 0.0000
+ Secr. Office Adjustment.: 0.0000
= Total Adjusted Score....: 0.0000

31a. CAMP/Other Score.....: 0.0000
+ Other Contractor Adjustment....: 0.0000
+ Other Ops. Office Adjustment...: 0.0000
+ Other Secr. Office Adjustment..: 0.0000
= Total CAMP/Other Adjusted Score: 0.0000

32. Project Priority: 0.0

33. Scored by: 34. Date Scored: / /

35. Scoring Comments

This activity is not prioritized. Funding is provided by Headquarters.

Resource Data Section

36. Budget Year Funding Case: 1 - Target
37. Resource Structure Code.: TE0105
Allocable Cost Pool ID..:
Source of Funding.....: 1 - Direct
38. Budget & Reporting Code.: EW1
39. Outside Funding Source..: DOE-HQ

40. Start Year: 41. End Year:

FY	OE	CE	GPP	LIP	TOTAL	FED.	CONTR.
1998	0.0	0.0	0.0	0.0	0.0	0.00	0.00
1999	12,642.0	0.0	0.0	0.0	12,642.0	80.50	11.50
2000	11,958.0	0.0	0.0	0.0	11,958.0	80.50	11.50
2001	12,313.0	0.0	0.0	0.0	12,313.0	80.50	11.50
2002	12,678.0	0.0	0.0	0.0	12,678.0	80.50	11.50
2003	13,054.0	0.0	0.0	0.0	13,054.0	80.50	11.50
2004	13,442.0	0.0	0.0	0.0	13,442.0	80.50	11.50
2005	13,841.0	0.0	0.0	0.0	13,841.0	80.50	11.50
2006	14,252.0	0.0	0.0	0.0	14,252.0	80.50	11.50
TOT	104,180.0	0.0	0.0	0.0	104,180.0	644.00	92.00

Costs are escalated?: YES

45. Cost Estimate Notes

Assumes DOE-RL staff levels remain constant in the outyears. Applied "Estimated costs per FTE" from FY 2001 Program Direction formulation to FTE levels to arrive at estimated Operating Expense (OE).

Assumes GSSC FTE levels remain constant in the outyears.

DOE-RL funding levels for Operating Expenses and Federal Salaries within Program Direction are escalated at different rates as outlined in OMB escalation guidance.

Per OMB escalation guidance, funding levels for GSSC ES&H are escalated at 2.1%.

48. Management Approval: NO 49. Activity In-Process: NO

50. Design Completion..: / / 53. Compliance Required: / /
51. Constr./Work Start.: / / 54. Fiscal Yr Completed:
52. Constr./Work Cmpl..: / / 55. Year Funds Required:

Status Remarks

This page intentionally left blank.

APPENDIX D

LISTING OF HANFORD SITE PROJECT BASELINE SUMMARIES

This page intentionally left blank.

Table D-1. Listing of Hanford Site Direct-Funded Project Baseline Summaries. (2 sheets)

PBS No.	PBS Title
Office of River Protection/Tank Waste Remediation System Project	
RL-TW01	Tank Waste Characterization
RL-TW02	Tank Safety Issue Resolution Project
RL-TW03	Tank Farms Operations
RL-TW04	Retrieval Project
RL-TW05	Process Waste Support
RL-TW06	Process Waste Privatization Phase I
RL-TW07	Process Waste Privatization Phase II
RL-TW08	Process Waste Privatization Infrastructure
RL-TW09	Immobilized Tank Waste Storage & Disposal Project
RL-TW10	TWRS Management Support
Waste Management Project	
RL-WM03	Solid Waste Storage and Disposal
RL-WM04	Solid Waste Treatment
RL-WM05	Liquid Effluent Project
RL-WM06	Analytical Services
Spent Nuclear Fuel Project	
RL-WM01	Spent Nuclear Fuels Project
RL-WM02	Canister Storage Building Operations
Facility Transition Project	
RL-TP01	B Plant Sub-Project (Inactive)
RL-TP02	WESF Sub-Project
RL-TP03	PUREX Sub-Project (Inactive)
RL-TP04	300 Area/SNM Sub-Project
RL-TP05	PFP Deactivation
RL-TP08	324/327 Facility Transition Project
RL-TP09	K Basin Deactivation
RL-TP10	Accelerated Deactivation
RL-TP11	Advanced Reactor Transition
RL-TP12	Transition Project Management
RL-TP14	Hanford Surplus Facility Program 300 Area Revitalization Project

Table D-1. Listing of Hanford Site Direct-Funded Project Baseline Summaries. (2 sheets)

PBS No.	PBS Title
Environmental Restoration Project	
RL-ER01	100 Area Remedial Action
RL-ER02	200 Area Remedial Action
RL-ER03	300 Area Remedial Action
RL-ER04	Environmental Restoration Disposal Facility
RL-ER05	Facility Surveillance & Maintenance - ADS 3500
RL-ER06	Decontamination and Decommissioning
RL-ER07	Post-Closure Surveillance & Maintenance
RL-ER08	Groundwater Management
RL-ER09	N Reactor Deactivation
RL-ER10	Program Management and Support
RL-VZ01	Site-Wide Groundwater/Vadose Zone Integration Project
Science and Technology Project	
RL-ST01	PNNL Waste Management
Mission Support and Other Projects	
RL-HM01	HAMMER
RL-OT01	Mission Support
RL-OT04	RL Directed Support
RL-RG01	TWRS Regulatory Unit
RL-TP13	Landlord Program

PBS = Project Baseline Summary

APPENDIX E

PLANNING PROCESS FOR DEVELOPING THE FY 2001 BUDGET

This page intentionally left blank.

APPENDIX E

PLANNING PROCESS FOR DEVELOPING THE FY 2001 BUDGET

This appendix describes the planning process used in developing the ES&H Supplementary Budget Submission described in the guidance for FY2001 Budget Formulations and Execution. The submittal consists of this ES&H budget-risk management report and the supporting documentation contained in the PBS's/ADS's. The following paragraphs describe the planning process used to prepare these products. Key elements of the planning process are Units of Analysis (UA), Integrated Priority List (IPL), PBS's, and S&H functional categories which are described in the following paragraphs.

D.1 UNITS OF ANALYSIS

Units of Analysis contain risk analysis results and describe discrete, manageable work elements of Hanford Site cleanup work scope. Each UA is traceable to a project Work Breakdown Structure (WBS) and to an activity or combination of activities on the project baseline schedule. Risks to the public, worker, and the environment; costs, and specific Executive Order or compliance drivers associated with each UA are identified. UAs function as the individual elements used to develop the site IPL. UAs are also one of the basic building blocks used to form individual PBS's.

D.2 INTEGRATED PRIORITY LIST

The process used to develop the FY 2001 IPL was a continuation of the process employed in developing earlier IPLs based on Risk Data Sheets. Risk attributes of UAs were reviewed and evaluated for consistency by DOE and contractor representatives as well as the Hanford Advisory Board (HAB), the Environmental Protection Administration (EPA), Washington State Department of Ecology (Ecology), and the Tribal Nations.

Overarching constraints and guidelines used for developing priorities of UAs are listed below.

- Legally enforceable regulatory compliance and TPA compliance agreements and DNFSB Implementation Plan commitments take priority over other commitments.

- TWRS urgent safety risks and the disposal strategy and Spent Nuclear Fuel removal from the river are the highest programmatic priorities.

- No action should be taken that further impacts the Spent Nuclear Fuel schedule based on current project knowledge. Every effort should be made to recover as much of the

14-month schedule extension as is practical.

- Provide preferential support to activities that are on the Site's critical path to closure. Defer activities that are not on the critical path.

- Programs are to work with the EPA and Ecology to set priority lists for individual projects or programs.

- HAMMER and the TWRS Regulatory Unit will not automatically share in RL target funding reductions.

D.3 PRIORITIZATION APPROACH AND STRATEGY

The strategy and approach used to prioritize cleanup work have been developed using the Hanford Strategic Planning Process. The planning process includes input from regulators, stakeholders, and Tribal Nations. The approach is to group Units of Analysis work elements into priority categories and sub-categories to facilitate analysis of ES&H risk management and compliance vulnerabilities and impacts to the cleanup schedule at various funding levels. To achieve this, work elements on the IPL are grouped into two major categories; Base Operations and Cleanup Progress activities.

D.3.1 Base Operations

Base Operations activities are those items that must be accomplished based on the proposed funding scenarios. In general, the scope, schedule, and cost of these items are established prior to setting priorities for Cleanup Progress activities. Base Operation activities consist of the following two work categories.

- **Minimum Safe Operations** - Those surveillance, maintenance, and support activities required to control existing material, waste, and facilities in a safe, stable condition.

- **Essential Services/Activities** - Those necessary services and activities required to support planned/budgeted activities within the current EM-HQ directed budget target (e.g., non-TPA regulatory requirements, waste management, infrastructure, ceded planning and integration, HAMMER, etc.).

D.3.2 Cleanup Progress

- Cleanup Progress activities are those work items required to achieve Hanford cleanup. These are the budget elements for which priority must be assessed to determine their relative importance. The priority order of these activities are used to consider incremental additions and deletions in scope to accommodate funding changes.

Included are those activities that are most vulnerable to changes in funding levels (either increases or decreases). A more refined set of guidelines is required to prescribe the trade-off decisions needed to fit a viable and logical set of activities into the target funding constraints. These guidelines are also used to define "buy-back" and "cut-back" lists used to accommodate changes in funding levels.

Cleanup Progress is grouped into three major categories; Urgent Risks, Regulatory Compliance, and Additional Requirements.

- Urgent Risks - Includes remediation, stabilization, or disposal activities that are required to mitigate an urgent risk. Urgent risks which are present at the Hanford Site include liquids in SSTs, high-level waste in tanks, corroded spent nuclear fuel, and unstabilized plutonium. Eliminating the urgent risks requires:

  - Completing work scope identified in DNFSB Implementation Plans.
  - Resolving high priority tank safety issues.
  - Moving spent nuclear fuel into safe storage away from the Columbia River.
  - Stabilizing plutonium in the Plutonium Finishing Plant (PFP).
  - Cleaning out the 324 Facility B Cell and the 300 Area legacy waste.
  - Assessing and mitigating site facilities for chemical explosion potential.
  - Protecting the Columbia River through groundwater management.

- Regulatory Compliance - Those activities that address compliance with requirements or drivers in laws, regulations, enforceable agreements, consent orders, permits and implementation plans for DNFSB recommendations. Funding of work activities in the Regulatory Compliance priority category provides a high level of confidence that all ES&H execution commitments will be met in FY 2000.

- Additional Requirements - Those activities that address improvements that would reduce future cleanup risks and costs. Although benefits in FY 2000 would be minimal, the benefit to future cleanup activities could be substantial.

D.4 PROJECT BASELINE SUMMARIES

Approximately 44 EM direct funded PBS's were prepared to support the Hanford Site FY 2001 budget planning process. The project field code and title of each PBS are listed in Table D-1, Appendix D. The PBS's were modified to include direct S&H risk narrative information for the FY 2001 update of the DOE 2006 Plan. The S&H risk narrative includes five narrative fields; hazards, controls, work performance, feedback and continuous improvement, and incremental risk reduction metrics. In addition, two S&H data fields were added to collect direct and indirect S&H resources according to the nine S&H functional categories.

Environment, Safety and Health (ESH) Activity Data Sheets (ADS) were used to collect

information and data on planned S&H resource requirements for NE and SC funded activities. The ADS for ER and SC funded activities are included in this report as Appendix A and Appendix B, respectively.

D.5 SAFETY AND HEALTH FUNCTIONAL CATEGORIES

Functional categories are defined to help classify S&H activities to assist planners and reviewers in understanding and communicating the major issues, activities, and costs associated with a project's overall program. Functional categories also provide a means for the efficient preparation of reports required by agencies external to the DOE. Nine S&H functional areas have been defined for S&H budget planning and analysis. These functional categories are described below.

- Emergency Preparedness (EP). Includes all those activities intended to provide the final barrier for ensuring the safety and health of workers and the public and for protecting property and the environment in case of an emergency.
- Fire Protection (FP). Includes all those activities intended to prevent, detect, and suppress fires.
- Industrial Hygiene (IH). Includes all those activities intended to protect workers from chemical, biological, physical, and physiological hazards.
- Industrial Safety (IS). Includes all those activities intended to protect workers from physical trauma.
- Occupational Medical Services (MS). Includes all those activities intended to provide a comprehensive occupational medical program.
- Nuclear Safety (NS). Includes those activities that serve to maintain or improve the level of safety involved with the radioactive and/or fissionable materials that exist in such form and quantity that a nuclear hazard potentially exists to the employees and the public.
- Radiation Protection (RP). Includes all those activities intended to control exposure of workers and the public to radioactivity.
- Transportation Safety (TS). Includes all those activities intended to ensure safe packaging and transportation.
- Management and Oversight (MO). Includes all those activities intended to coordinate, direct, integrate, and control Safety and Health activities across multiple functional areas.

DISTRIBUTION

Number of Copies

ONSITE

5 U.S. Department of Energy - Richland Operations Office

P. W. Kruger	A5-54
K. J. Massey	A7-89
G. H. Sanders	A5-15
W. B. Scott	A5-54
Reading Room Hanford Technical Library	P8-55

1 B&W Hanford Company

C. D. Sorensen	R3-56

5 Bechtel Hanford, Inc.

N. B. Myers	H0-14
N. J. Rayner	H0-11
J. E. Tarpinian	H0-09
J. L. Walsh	H0-11
M. R. Watson	H0-11

2 DE&S Hanford, Inc.

W. D. Adair	H6-21
P. G. LeRoy	X3-79

1 DynCorp

L. S. McDaniel	G3-25

Number of Copies

ONSITE

40 Fluor Daniel Hanford, Inc.

L. D. Arnold	H8-67
B. A. Austin	H8-67
M. A. Baumann	L5-65
P. A. Baynes	H8-71
J. W. Bosley	S7-40
R. E. DeBusk	H8-67
L. R. Hafer	B3-53
J. W. Hales	H8-67
J. S. Hertzel	H8-67
D. L. Jackson	H6-32
D. S. Kelly	H8-64
D. B. Klos	N2-51
C. G. Mattsson	N1-26
N. M. Highland	G5-51
T. W. Noland	H8-67
L. J. Olguin	N1-26
J. R. Parvis	H8-69
D. M. Reed	H8-67
I. E. Reep (12)	H8-67
B. A. Reichmuth	B3-53
L. E. Simmons	H8-68
M. C. Skriba	H8-68
A. M. Umek	S7-40
J. L. Waite	B3-53
J. L. Wells	R3-13
C. L. Whalen	A3-02
J. D. Williams	H0-21
N. H. Williams	R3-11

1 Lockheed Martin Hanford Corp.

E. E. Mayer	R2-50

DISTRIBUTION (Cont'd)

Number of Copies

ONSITE

2 Lockheed martin Services, Inc.

Central Files	B1-07
Document Processing Center	A3-94

1 Numatec Hanford Corporation

D. S. Dutt	H5-25

5 Pacific Northwest National Laboratory

K. N. Cartmell	P7-75
L. V. Kimmel	P7-75
H. D. Massey	K9-26
J. V. Stangeland	K9-26
H. T. Tilden II	P7-79

4 Waste Management Federal Services of Hanford

S. M. Joyce	H6-06
K. M. Quigley	H6-06
D. L. Renberger	T3-03
C. R. Stroup	H6-06