

ABOUT THE COVER:

The two photos on the cover show a comparison between the current view of the Site and a conceptual view of the end state of the Site. The end state photo shows that all Site facilities would be demolished. The photo also shows the outlines of four capped areas which would cover an old landfill and some remaining demolition debris and low-level contamination. The caps would prevent water infiltration and mitigate contaminant migration.

Foreward

The Rocky Flats Environmental Technology Site (the Site) developed a plan to achieve closure and cleanup of Rocky Flats using sound project management principles and practices. Guided by the vision and principles embodied in the Rocky Flats Cleanup Agreement, this plan was developed in conjunction with our stakeholders and regulators.

The Secretary of Energy, Federico Peña, has challenged the Rocky Flats Field Office, the Department of Energy Headquarters, and the Site integrating management contractor to close Rocky Flats by 2006, four years ahead of our baseline schedule. In order to achieve this goal, Headquarters and the Rocky Flats Environmental Technology Site realize that a number of key internal and external activities must take place.

The report, *Accelerating Cleanup: Path to Closure*, reiterates the 2006 target for closure and describes our current baseline for the cleanup and closure of Rocky Flats as a single project, complete by 2010 at a cost of \$7.3 billion (\$6.3 billion constant 1998 dollars). This baseline is a detailed scope, schedule and cost for each of the 29 projects which comprise 20,000 work elements. We are currently in the process of working some key issues related to waste and material disposition to meet the 2006 goal. We are also updating our baseline to reflect our commitment to the goal of the 2006 completion.

The Department, the Site management and staff, and I, personally, are committed to the challenge of closing Rocky Flats by 2006. The *Accelerating Cleanup : Path to Closure* strategy outlines the complexity of the closure project and our path forward.

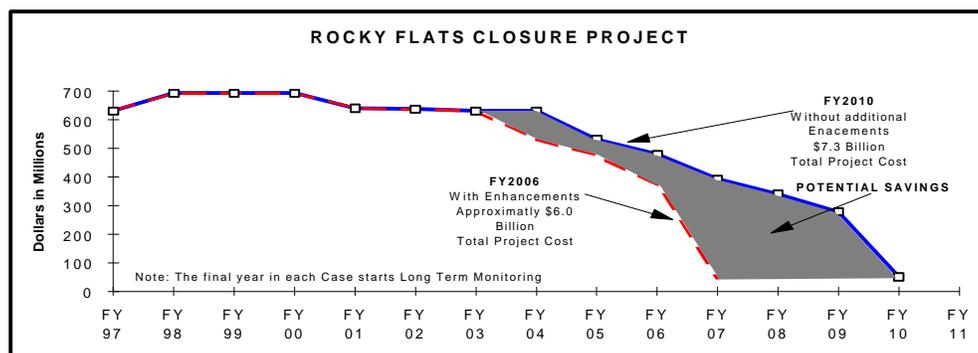
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Accelerating Cleanup: Defining Path to Closure, Rocky Flats Abstract

This Document, *Accelerating Cleanup: Path to Closure* (hereinafter referred to as Document), was previously referred to as the *Draft 2006 Plan*. The Environmental Management (EM) program decided to change the name of the draft “strategy” and the document describing it in response to a series of stakeholder concerns, including the practicality of achieving widespread cleanup by 2006. Also, EM was concerned that calling the document a “plan” could be misconstrued to be a proposal by the Department of Energy (DOE) or a decision-making document. The change in name, however, does not diminish the 2006 vision. To that end, *Paths to Closure* retains a focus on 2006, which serves as a point in time around which objectives and goals are established.

The Rocky Flats Environmental Technology Site (RFETS) has developed an aggressive, innovative, and credible plan to cleanup the RFETS as outlined in the legally binding Rocky Flats Cleanup Agreement (RFCA). This accelerated closure plan not only reduces the time required to close the Site by over 30 years from earlier plans, but saves approximately \$14 billion at the same time. This Document describes how a significant technical challenge and long-term financial responsibility of the DOE and the taxpayer can be essentially eliminated. It also describes the cleanup and closure of Rocky Flats as a single project with an attainable end state, rather than an ongoing operation as in the past. The technical basis of this plan includes a complete suite of project management elements which encompass work scope, schedule, and cost estimates based on a solid foundation of regulatory compliance and stakeholder involvement.

The Site is aggressively pursuing a goal of closure by the end of 2006 provided certain assumptions take place. The current Closure Project Baseline (CPB) describes a plan for achieving the end state in 2010 at a total project cost of \$7.3 billion in current dollars (\$6.3 billion in constant 1998 dollars). We are revising the baseline to reflect the 2006 goal once the key assumptions are realized and expecting a savings of \$1.3 billion (see figure below). The dismantlement and closure of this key site in the former weapons complex by 2010 would be a significant achievement for DOE and its stakeholders. Although the processes required to attain this goal are not yet clearly defined, breakthroughs in technology, productivity, contract incentives, and project management that have happened in the last two years give hope and confidence that continued improvements in these and other areas can help achieve the goal. The challenges posed by the accelerated closure of Rocky Flats and other DOE sites will require the collective resources of DOE to solve. The payoff, however, is significant. Accelerated closure of Rocky Flats not only significantly reduces a hazard to the Denver metropolitan area, but every day that Rocky Flats closes early results in \$1.5 million that the Federal Government no longer needs to spend on a site whose mission is complete.



The technical development of this plan is based on traditional, proven project management approaches. The closure of the Site has been subdivided into 29 individual subprojects. These subprojects each include a detailed life-cycle work scope, schedule, and cost estimate built from over 20,000 individual work elements which are integrated into a single Critical Path schedule. The entire work scope is prioritized to assure highest risk contributors and highest return on investment work are performed first. The RFETS has identified understandable and meaningful metrics to bring the Site to closure and to provide a basis for enhanced performance goals.

The RFETS has committed to trying to achieve the 2006 closure goal. The commitment is intimately tied to DOE’s ability to overcome complex-wide barriers, and to facilitate resolution of national issues of intersite integration for offsite shipment of Special Nuclear Materials and radioactive waste for storage, treatment or disposal. The RFETS anticipates that with completion of these Headquarters actions, the Site will meet its goal of reaching the intermediate site condition by 2006 at planned funding levels.

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ACCELERATING CLEANUP: PATH to CLOSURE

Rocky Flats Environmental Technology Site

1.0 INTRODUCTION/OVERVIEW OF DOCUMENT

This Document, *Accelerating Cleanup: Path to Closure* (hereinafter referred to as Document), was previously referred to as the *Draft 2006 Plan*. The Environmental Management (EM) program decided to change the name of the draft “strategy” and the document describing it in response to a series of stakeholder concerns, including the practicality of achieving widespread cleanup by 2006. Also, EM was concerned that calling the document a “plan” could be misconstrued to be a proposal by the Department of Energy (DOE) or a decision-making document. The change in name, however, does not diminish the 2006 vision. To that end, *Paths to Closure* retains a focus on 2006, which serves as a point in time around which objectives and goals are established.

This Document describes how the Rocky Flats Environmental Technology Site (Rocky Flats or Site) can achieve accelerated and realistic risk reduction and cleanup of the Site, permitting the eventual reuse of the Site for open space or commercial development. The Document is a strategic planning document which serves as a focal point for planning and budgeting efforts and as a blueprint for achieving the intermediate site condition as described in the Rocky Flats Cleanup Agreement (RFCA).

A reasonable and foreseeable future for the Site as described in the Vision and Preamble to the RFCA and this Document is one in which:

- All Special Nuclear Materials (SNM) are shipped to offsite repositories.
- All radioactive waste is shipped offsite for disposal.
- All facilities are demolished except facilities contracted for commercial reuse.
- Environmental remediation of contaminated areas is complete to the extent that future land use is enabled and downstream water supplies are protected.
- Land use enabled by cleanup levels would permit open space use of the Site’s Buffer Zone and either open space or industrial reuse of the Site’s Industrial Area. The nature of open space use has yet to be determined through consultation with local governments and stakeholders.

Also, the Site senior management has made several commitments toward achieving closure project goals. The commitments are principally in the areas of waste management, and SNM stabilization, consolidation and shipment. Furthermore, these commitments are intimately tied to concomitant agreements with DOE, Headquarters (HQ) to overcome complex-wide barriers, and to facilitate resolution of national issues before they can be achieved. EM/HQ, Rocky Flats Field Office (RFFO) and Kaiser-Hill management formally signed and agreed to this on November 14, 1997.

1.0.1 IMPROVEMENTS FROM PREVIOUS DOCUMENT

The Site continues to improve cost, scope and schedule estimates and refine the closure strategy. The Site is also actively managing programmatic risks and pursuing a number of strategic initiatives designed to compress the critical path schedule. These opportunities lie in the proposed accelerated shipment of plutonium metals and oxides to the Savannah River Site (SRS), and the application of streamlined disposition methods to the solid residue program. A discussion of these opportunities is found in sections 3.3 and 3.4 of this document, but remain to be incorporated in the Project Baseline Summaries.

1.1 Overview of Site and Environmental Management Mission

Guiding Principles

The development of the Document was guided by seven principles published by the DOE Assistant Secretary for EM Al Alm on June 20, 1996:

1. Eliminate the most urgent risks
2. Reduce mortgage and support costs to free up funds for further risk reduction
3. Protect worker health and safety
4. Reduce the generation of wastes
5. Create a collaborative relationship between DOE and its regulators and stakeholders
6. Focus science and technology development on cost and risk reduction
7. Integrate waste treatment and disposal across sites

These guiding principles were combined with a set of Site specific assumptions (see Section 1.3) to develop the Document around major projects. Ten Year Plan 1.0 (published July 1996) introduced 12 major projects which were the focus of the plan at that time. However, with continued development of the Site Work Breakdown Structure (WBS), (a hierarchy of work which describes the Site mission, major objectives, and integration of activities), and the transition to a single closure project orientation, have resulted in the delineation of the current 29 Project Baseline Summaries (PBSs).

Projectization

Viewing the Site as a collection of major projects, sometimes referred to as the “projectization” of the Site, is a significant shift in the way of doing business at Rocky Flats from the former Management & Operating (M&O Contractor) culture. Previously, planning work at the Site was generally organized into five major categories. These included SNM Management; Environmental Restoration (ER); Waste Management; Deactivation, Decontamination and Decommissioning (D&D); and Infrastructure Management. This planning structure still exists in some forms at the Site. However, as Site projectization continues, the focus of the work planning and implementation will continue to shift to individual projects and away from the functional departmental structure. Projectization is intended to focus management attention on accomplishing measurable progress towards Rocky Flats closure. Management responsibility for each project is assigned to a Project Manager who is accountable for achieving clearly defined cost, schedule, and performance objectives. The project approach reinforces the commitment to accelerate the clean up of Rocky Flats with a measurable and cost effective program.

Current Baseline

The Site is aggressively pursuing a goal of closure by the end of 2006 provided certain assumptions take place. However, the current baseline consisting of detailed scope, schedule, and cost for each project for the Rocky Flats Closure Project, shows the Site will complete its intermediate site condition activities by the end of Fiscal Year (FY) 2010 (see Figure 1-1) at a cost of \$7.3 billion (including \$0.5 billion in DOE program direction) in current dollars (\$6.3 billion in constant 1998 dollars). We are revising the baseline to reflect the 2006 goal once the key assumptions are realized. This goal may be attained through a concerted effort of DOE, HQ, State and Federal regulators and the Sites to focus on eliminating identified barriers to offsite shipments and disposition of wastes and SNM.

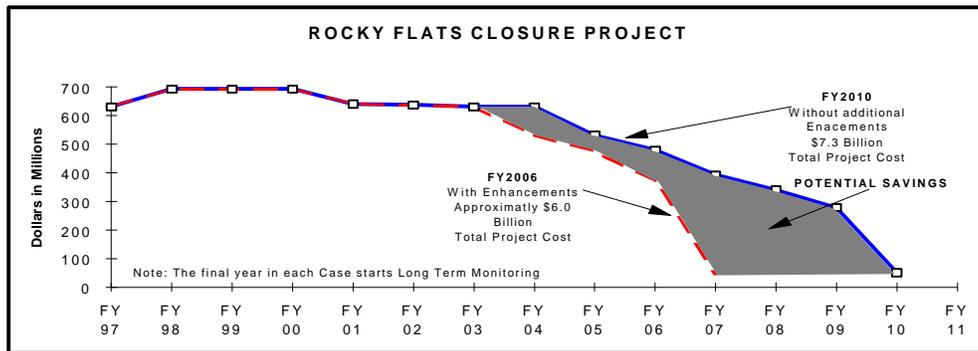


Figure 1-1
Rocky Flats Closure Project - Total Project Cost

1.2 Environmental Management Policies

A cornerstone of accelerated closure is reducing costs and increasing project management flexibility by applying necessary and sufficient strategies to policies, as well as work requirements. Necessary and sufficient policy implementation assists us in accelerating our closure schedule. This policy implementation must focus on regulatory compliance, management of risk to acceptable levels, implementation of an overall integrated safety management process, and cost-effective and efficient management of departmental and human resources.

1.2.1 Compliance

The RFFO and its contractors are fully committed to regulatory compliance at Rocky Flats. Programs are in place to support compliance with environmental regulations, finalized agency agreements, consent orders, applicable DOE Orders, and Defense Nuclear Facility Safety Board (DNFSB) recommendations.

Achieving accelerated and safe closure of the Site is not only completely consistent with maintaining regulatory compliance, but it is required by current agency agreements, consent orders, and DNFSB recommendations which drive aggressive and safe cleanup of the Site. Substantial time and resources are committed to an ongoing dialogue with all regulatory authorities to assure miscommunication does not slow the closure schedule. Further, performance enhancements relating to reducing project costs and accelerating the closure project schedule actually improve the Site compliance posture by stabilizing and removing nuclear materials from the Site and accelerating environmental remediation.

As funding and technical scope assumptions change, different approaches to compliance in terms of strategy, tactics, and timing may be required. Compliance strategies may be adjusted to alter the time distribution of resources required for compliance. Better technical solutions may also lead to a change in compliance strategy. In some cases, re-negotiation of commitments, performance measures, and milestones may be necessary to properly balance the need to maintain compliance with the cleanup of the Site in a cost-effective and safe manner. Relief from negotiated milestones is not a certainty and must be approved by regulators. The case presented in this Document fully funds all recently negotiated Defense Board commitments and RFCA milestones, thus no renegotiation of compliance milestones is currently anticipated.

1.2.2 Risk

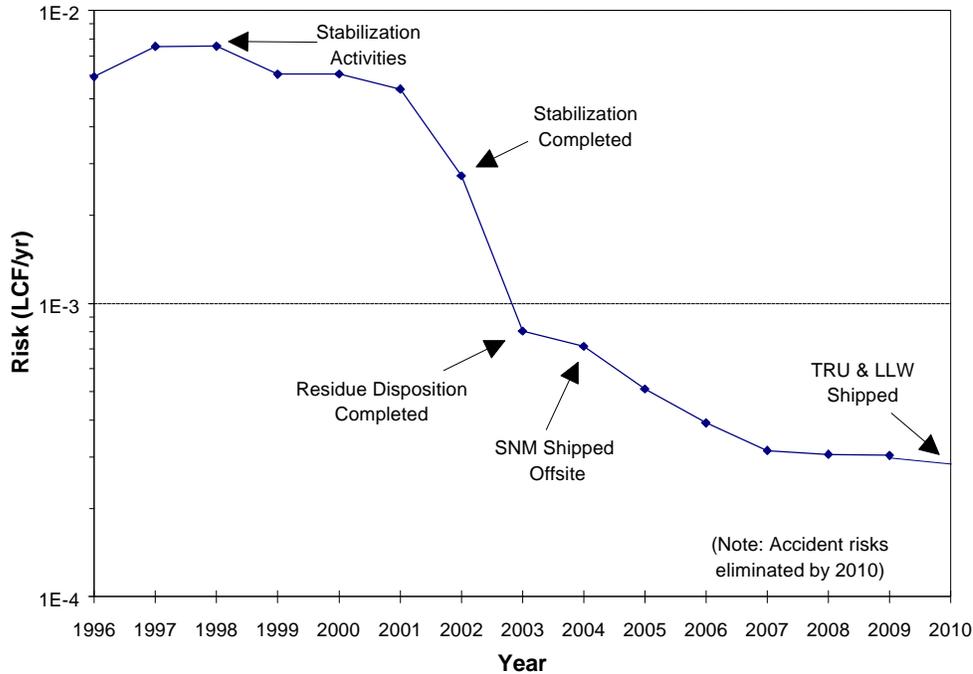
Risk can take many forms including health and safety for both the public and worker sectors, environmental, financial, compliance, security, and political and public acceptance. Rocky Flats has identified a number of potential health and safety risks and other liabilities associated with maintaining the Site in a safe, secure, and environmentally acceptable manner. Although PBSs completed December 19, 1997, do not indicate any “urgent” risks to the public, worker or environment as defined below, risk management is an integral part of establishing Site strategies, setting priorities and sequencing of work. Rocky Flats has incorporated a major project risk in this Document by assuming maintenance and repair costs for the buildings, which are well beyond their design life, will not increase.

Two of the major strategies employed in the development of the Document are to: (1) maintain the Site’s safety envelope ensuring the continued safety of Site workers, the public, and the environment and therefore avoiding the development of future “urgent” risks; and (2) eliminate the Site’s highest priority risks first. Those activities required to maintain the Site’s safety envelope are preferentially funded over all other activities. These activities include building landlord functions and corrective maintenance, operation and maintenance of utilities, and other basic infrastructure requirements (e.g., security). The next activities to be funded include the Site’s highest priority risks. The combination of maintaining the safety envelope and management of the Site’s highest priority risks comprise the minimum operating level for the Site.

In 1994, the *Plutonium Working Group Report on Environmental, Safety and Health Vulnerabilities Associated with the Department’s Plutonium Storage* stated that “Rocky Flats has many of the most significant plutonium vulnerabilities in the DOE complex.” Since the report was issued, the accomplishments to date (venting of drums, tank draining, liquid stabilization, repackaging of plutonium, SNM consolidation, etc.) have made significant progress towards reducing the plutonium related safety and health vulnerabilities.

Activities currently underway addressing the Site’s highest priority risks identified by the Site WBS Prioritization process (see Section 3.1) include development and operation of the SNM liquid stabilization process, SNM consolidation, development and operation of existing and new plutonium metal/oxide stabilization processes, development and operation of the solid residue elimination process, installation and operation of an enriched uranium decontamination process, and operation of an enriched uranium removal process. Completion of these activities will significantly reduce the potential risk to health and safety of the workers, public and environment posed by the presence of large amounts of SNM in various forms at the Site.

Recently, RFFO completed the Cumulative Impacts Document (CID) for the Site to provide an updated baseline of the cumulative impacts to the worker, public, and environment due to Site operations, activities, and environmental conditions in light of the Site’s change in mission. Specifically, the Site has gone from production of nuclear weapons components to materials and waste management, accelerated cleanup, reuse and closure of the Site. The CID serves as an updated baseline of activities and associated environmental impacts reflected in the April 1980 *Final Environmental Impact Statement for the Rocky Flats Plant Site* (DOE 1980). This document projects the cumulative impacts to the worker, public, and environment due to implementing the Site’s Closure Plan. An illustration of the latent cancer fatalities per year (LCF/yr) for the public and co-located worker, within a 50 mile radius, due to accidents over the duration of the closure project is provided at Figure 1-2.



**Figure 1-2
Public Risk Profile Due to Accidents**

1.2.3 Integrated Safety Management

Safety of workers, the public, and the environment is considered in every aspect of work on the Site. Currently, the Site is implementing the Integrated Safety Management (ISM) process for the protection of the workers, public, and environment. The framework for environment, safety and health across the DOE complex, called ISM, is based upon a set of written policies, rules, orders, and standards. These standards are intended to establish a safe and healthful workplace by providing for the protection of the worker, the public, and the environment. The development of worker protection programs using these standards is intended to provide an appropriate level of protection and control for the conduct of work.

The ISM process systematically integrates safety into management and work practices at all levels. The ISM integrates the identification, analysis, and control of hazards and provides feedback for continuous improvement in work definition, planning, and safe performance of work. Five core safety management functions collectively integrate safety management at the Site. These core functions are described below:

1. **Define the Scope of Work.** Define the scope of work focuses on the hazard or hazards associated with the activity being conducted. Specifically, the scope of work must be defined to the point that project personnel understand the qualitative nature or the hazards posed by the work. The quantitative nature of the hazards must be understood insofar as it affects the planning of the task. The activity has been defined in enough detail when project personnel have high confidence that they have identified hazards well enough to assess them; and have established sufficient controls to protect the public, the environment, the co-located worker, and the immediate worker.
2. **Identify and Analyze the Hazards.** Identification of the hazards is performed in sufficient detail to establish proper controls to prevent or mitigate the hazards to an acceptable level. Worker and operations personnel are involved in identifying potential hazards along with subject matter experts from the safety disciplines. This step includes both identification and analysis of hazards. The

analysis is performed to determine the potential severity of the consequences of the hazard, which determines the nature of the controls required (graded according to the severity of the consequences). Analysis must be graded according to the severity of the scenarios and mechanisms which place the hazards in contact with people or property. Simple, straight-forward scenarios and mechanisms require little or no analysis, and complex and/or uncertain scenarios require expert analysis and modeling. The hazards have been identified when project personnel have high confidence that all of the hazards are known and understood, and the hazard consequences to the public, the environment, the co-located worker, and the immediate worker are known and understood. The hazards have been analyzed appropriately when project personnel have high confidence that they can develop necessary and sufficient controls to prevent or mitigate the hazards.

3. **Identify and Implement Controls.** This step is the culmination of the first two steps. Establishing the controls for the hazards posed by the activity is a major task. Controls must be focused on the ability to do work safely. This optimizing process will not occur reliably unless all the stakeholders and customers of the control set can participate in selecting and discussing the controls. It is critical that establishing controls involve both floor-level workers who perform work of the type in the activity and personnel expert in developing controls for a particular hazard (or hazards). Otherwise, the likelihood is high that a set of controls will be established that will actually detract from safety, because they may be overly conservative or inappropriate for the activity or task. Teams are involved in determining the controls for high-consequence, high-complexity, or high-uncertainty hazards. Experience shows that teams of appropriately qualified people make better decisions than individuals do under these circumstances. Every effort is made to include floor-level workers on every team. Their perspective on the accomplishment of activities is especially helpful in developing the controls for hazards associated with those activities. The controls have been identified when project personnel have high confidence that the controls will protect the public, the environment, the co-located worker, and the immediate worker. The controls have been implemented when project personnel have high confidence that the responsible facility or organization can and will conduct the activity with the control set. Authorization for the work and site-specific standards application is required.
4. **Perform the Work.** The preceding three steps constitute the infrastructure for safely performing the work. This infrastructure is graded to the severity of the consequences of the hazards. Depending on the nature and complexity of an activity and where it is being conducted, many other requirements may need to be met before work can be performed. Personnel must be trained and qualified. Equipment must be tested, prepared for operation, and assessed to determine its readiness to perform the activity. Special conditions required for the activity may need to be set in place and confirmed. As specified in the controls, safety precautions must be confirmed to be in place. In addition, a new activity is evaluated in combination with existing ongoing activities for safety. Other activities that could affect this activity must be addressed, halted or modified if necessary. If work is performed safely and in such a way that builds confidence, it will continue to be performed safely. Off-normal conditions or circumstances are dealt with in a controlled fashion with safety uppermost in the behavior of the work force.
5. **Feedback/Improvement.** Past work activity feedback is used throughout task planning, to learn from previous experience. The objective of this step is continual process improvement through incorporation of past and in-process lessons learned from work being done, and re-use of past lessons from the activity in future process improvements and the safe performance of work. Feedback occurs during all of the functions to provide improvement and arrive at the optimum safety controls for the activity to be performed.

They are a linked, interdependent collection of activities that may occur simultaneously. Outcomes during the accomplishment of one function may affect other functions and potentially the entire system.

The same elements of the ISM process are addressed for both nuclear and RFCA Site closure activities with the recognition that more extensive evaluation is required for nuclear activities. The details of the ISM process are described in other Site documents but are an internal part of the Work Controls narrative for each closure project shown in the PBS. The feedback element also provides a source for efficiencies described in other sections of this report on similar follow-on activities.

1.2.4 Work Force Retraining and Transition

Execution of this Document will require the management of significant annual fluctuations in the work force within specific programmatic areas. For example, the estimated work force required to perform D&D operations will more than double within one to two years. This could present serious problems with the training, coordination, and learning curves required to efficiently perform the work. An effective management plan for the mobilization of the needed work force will be developed. The plan will include elements of the following actions:

- Rescheduling work when possible to support a more level labor force.
- When feasible, time will be allowed prior to the start of a new program to transfer and train as many current employees as possible as they complete one program and move to another.
- Well planned acquisition schedules for the subcontractor work force to ensure that the work force obtained is properly trained and qualified. Any Request For Proposal must be processed and published well ahead of the planned work to allow sufficient time for evaluating subcontractors' training and qualification plans, and time to implement those plans prior to the start of work.
- Restructuring actions to accomplish reductions in force or to change the Site's required skill mix will be done according to the provisions of the Work Force Restructuring Plan in place at that point in time.
- Outsourcing of activities to contractors outside of the Kaiser-Hill Team will be done to offset fluctuating staffing levels after a "make or buy" cost evaluation has been done. Staffing flexibility, avoidance of capital expenditures, increased efficiency, or access to expertise not available at the Site will be important considerations when making outsourcing decisions.
- All actions taken will be done in accordance with DOE policies and procedures and existing collective bargaining agreements.

The development of an effective overall sitewide work force mobilization plan will commence as soon as the Draft Document is approved for implementation.

1.3 Planning Assumptions

The following assumptions were used to develop the Document and will impact most or all of the 29 PBSs. Additional assumptions that apply to specific projects are detailed in Section A.7 of each of the PBS spreadsheets submitted with this Document. If proven invalid, these assumptions, either sitewide or project-specific, will likely have an impact on the plan or project's scope, cost, or schedule. Assumptions may also form a significant part of the basis for a schedule or cost estimate.

Some of these assumptions may not be consensus across the entire community, but all assumptions have been discussed over the past year and a half with Rocky Flats stakeholders. Where unresolved issues

remain, stakeholder involvement will continue to be solicited and incorporated into future planning efforts and annual updates to the Document. Major changes or departures from initial planning assumptions will warrant significant public involvement.

General Assumptions

The project scope and schedule are based on the Site Closure Project Baseline. Reduced HQ budget targets will impact the ability to close by 2010 or accelerate closure to 2006.

The Site will maintain compliance with all laws, regulations, and legally binding agreements.

The regulatory framework established in the Final RFCA, dated July 19, 1996, will be followed. The Site is to comply with negotiated RFCA milestones.

The baseline approach is to conduct risk reduction as the first step toward mortgage reduction. Resources freed up from mortgage costs will be reallocated to achieve the critical path schedule earlier.

Infrastructure and management costs will be reduced on the average, five percent a year from the FY1998 baseline.

The availability of receiver sites for SNM waste and other materials to be shipped offsite will not be delayed.

Contractor work force reduction in force will be conducted according to Section 3161 of the Defense Authorization Act and the approved RFETS Work Force Restructuring Plan for those who are eligible.

DOE, RFFO will not assume the role as Site integrator.

Special Nuclear Material Assumptions

No new significant DNFSB recommendations will be received that negatively impact current SNM stabilization, storage or disposition plans.

The technical scope in the Site Integrated Stabilization Management Plan (SISMP), Rev. 7, for stabilization of SNM will be implemented.

A new interim storage vault will not be constructed. Building 371 will be used as the temporary repository for all SNM until the material is shipped offsite.

An adequate supply of certified SNM shipping containers and Safe Secure Transports will be available.

Rocky Flats will not bear the costs of offsite SNM transportation and disposition.

Waste Management Assumptions

A significant quantity of excavated Site soils will be treated to meet cleanup limits prescribed in RFCA and returned to the excavation site (i.e., no offsite disposal if it meets current interim radioactive soil action levels). Excavated soils below the radioactive soil action levels will remain onsite.

Clean D&D construction debris will be managed as solid waste. All debris without radiation added by Site operations will be considered clean debris.

Hazardous, Low Level Waste/Low Level Mixed Waste (LLW/LLMW), Transuranic/Transuranic Mixed (TRU/TRM), and sanitary waste will be disposed offsite. This includes existing remaining pondcrete inventories.

LLW/LLMW remediation waste generated in excess of shipping and current storage capacity will be managed on an interim basis in an onsite storage Corrective Action Management Unit(s).

The Waste Isolation Pilot Plant (WIPP) will open in May of FY1998 and will receive Rocky Flats' TRU waste. Rocky Flats will not bear the costs of TRU waste transportation and disposal.

No changes will be made to applicable disposal site waste acceptance criteria or transportation requirements.

Decontamination and Decommissioning Assumptions

All facilities will be demolished and only foundations and/or utilities will be left in place, unless contractual obligations are in place for future economic development. In such cases, the Document will be adjusted to reflect these contracts.

Removal of utilities in order to remediate contaminated areas will be performed as required. The subsurface utilities between facilities that are outside the facility footprints will be capped and left in place. Uncontaminated underground storage tanks (USTs) and utility systems will be left in place.

Building structures and equipment will either be decontaminated to the requirements of DOE Order 5400.5, "Radiation Protection of the Public and the Environment," or managed as radioactive waste. All radioactive wastes generated by D&D will be containerized.

Environmental Restoration Assumptions

Only the Individual Hazardous Substance Site (IHSS)/Potential Area of Concern (PAC)/ Under-Building Contamination shown on the ER Ranking List in Attachment 4 of RFCA will require remediation.

ER soil action levels will conform to the final *Action Levels for Radionuclides in Soils for the Rocky Flats Cleanup Agreement*, October 18, 1996.

All soils with radioactivity less than the Tier 2 levels, as defined in RFCA, Attachment 5, will be returned to the remediation site.

Engineered caps will be used as an integral part of the Site's environmental closure strategy, and the regulatory agencies will agree to the use of the closure caps.

The ER Program will proceed with a reasonably level funding profile in the near-term addressing one or more priority IHSSs each year.

Economic Conversion Assumptions

Buildings 125, 130, 131, 460, 850, or any other potential reuse candidate will be scheduled for D&D in accordance with Site priorities. The DOE will assume responsibility for the expenditures associated with demolition, waste, and remediation activities for these buildings. Economic conversion may occur in these buildings if they are leased or conveyed to another owner before they are decommissioned according to

schedule. Potential economic conversion of these buildings will not be a driver for sustaining infrastructure services.

End State/Future Assumptions

Site monitoring operations will continue for a minimum of 30 years following the Site closure Record of Decision determination. Preliminary estimates for post closure stewardship costs, including surveillance and monitoring, are \$20 million per year in FY98 constant dollars. No post closure stewardship costs are included in the total closure project cost.

Surface water will be returned to a naturalized flow-through system at closure after D&D has been completed.

The future land use planning process will ultimately determine future use in the Buffer Zone and the Industrial Area. For purposes of this Document, future land use will allow for open space in the Buffer Zone and restricted open space or industrial use for the Industrial Area in accordance with requirements and existing statutes.

Twenty thousand gallons of water per day will be provided to the Buildings 060 and 061 area as specified in the Settlement Agreement (Court Order) unless other arrangements are made.

Business and industry will have limited interest in reuse of the Industrial Area. Infrastructure will be reduced in harmony with the Site closure plan unless local governments or future landowners contractually require and financially support upgrades or other infrastructure scenarios.

1.4 Major Changes in the Document

The major distinction between this Document and the Discussion Draft submitted in June 1997 is this Document focuses on a single scenario or “case” for Site closure instead of comparison and analysis of five separate cases as in the Discussion Draft. This Document is based on a case which is very similar to Case 5 (closure in 2010) as presented in the Discussion Draft with the following changes:

- FY1997 actual expenditures and FY1998 DOE approved work plan were incorporated into the plan.
- Three projects (Building 779 D&D Project, Building 886 D&D Project, and Radioactive Waste Water Treatment System Project) originally designated for privatization funding have been incorporated into other projects (Building 779 Cluster Closure Project, Miscellaneous Production Zone Cluster Closure Project, and Waste Management Project respectively).
- Buildings previously slated for economic conversion have been included in the cost estimate and schedule for D&D prior to 2010.
- A rebaselined Residue Elimination Project will be incorporated.
- Minor scheduling and sequencing changes of activities.

The Site considers this case to be the most attractive scenario since it enables the acceleration of critical path work, meets regulatory compliance commitments, and has the lowest life-cycle cost of all previously analyzed alternatives. This case also provides the maximum opportunity of accelerating the achievement of

the end state by 2006, although many uncertainties and technical issues must be resolved before 2006 can become a reality.

1.5 Life-Cycle Cost and Closure Dates

This Document describes how cleanup of Rocky Flats can be accomplished by FY2010 with a total life-cycle cost of \$7.3 billion. For purposes of this Document, the FY2010 cleanup is referred to as the plan “without enhancements”, although a significant number of actual performance enhancements have already been included. Detailed key activity life-cycle costs and completion dates are shown in Table 1-1.

Table 1-1
Life-Cycle Costs and Completion Dates

KEY ACTIVITY	LIFE-CYCLE COSTS	COMPLETION DATE
Plutonium Offsite Shipment	\$31M	FY2004
Pu Metal and Oxide Stabilization	\$66M	FY2004
Pu Liquid Stabilization	\$42M	FY1999
Pu Residue Stabilization	\$477M	FY2003
Nuclear Facilities Demolished	\$451M	FY2008
Environmental Remediation	\$194M	FY2010

The Site has a goal of achieving the same cleanup (i.e., reaching the same end state) by 2006. In order to achieve this ambitious goal, a number of significant breakthroughs must take place. The goal of achieving closure by 2006 is referred to as the plan “with enhancements.” The term “with enhancements” is indicative of the estimated \$1.3 billion savings that could be realized if cleanup could be achieved by the end of 2006.

1.6 Relationship Between 2006 Planning Process and the Budget Formulation Process

The Rocky Flats Closure Project, closure project baseline (CPB) drives Site planning and budgeting activities. The CPB is a non-constrained technical, cost, and schedule baseline providing detailed planning and cost estimates for all work required to achieve the Site end state, as described in the RFCA vision statement.

The Document is based on the CPB overlaid with a prescribed set of assumptions and funding constraints. This Document represents what could be accomplished over the next 13 years under that set of assumptions. The Document is produced as input to the Department's budgeting cycle, while the CPB remains unchanged. Revised funding guidelines and revised planning/technical assumptions do not alter Closure Project baseline requirements.

Upon approval of the new budget based on the Document, the CPB is updated through a formal change control process (see Section 4.5) to incorporate the impacts of revised funding and revised technical assumptions. Thus, until the next planning cycle begins, the Document and CPB are the same.

It is expected the Document input will satisfy all DOE budgeting and planning information needs and crosscut (Environmental Health & Safety, Safeguards & Security) and special interest budget documents prepared in the past to satisfy individual organizational element needs will no longer be required or requested.

2.0 END STATE, FUTURE USE AND STEWARDSHIP

2.1 Introduction

There is a great deal of interest in the intermediate site condition and future use of the Site among stakeholders and Site employees. Although Site closure is planned for 2010, discussions with stakeholders on future use started in early 1994. These discussions led to the formation of the Rocky Flats Future Site Use Working Group (FSUWG) which spent approximately a year gathering data from the stakeholder community and preparing recommendations for DOE. The group made formal recommendations to DOE in a July 1995 report. The recommendations made by the FSUWG regarding end state uses were to manage the Buffer Zone as open space and to reuse suitable facilities in the Industrial Area for environmental technology activities.

When the FSUWG recommendations were made, Site plans for completing closure extended up to 75 years in the future. Intermediate site condition uses have not been further defined since the FSUWG recommendations were received. Now that the Site is firmly on a course to closure on a more predictable schedule, it is time to discuss long term stewardship and future use issues in more detail for the next round of decision making. The Site has recently reopened internal and external discussions about the timing of decisions, the level of public interest in reuse of the Site, and the strategy for public involvement. Discussions on the process for determining future use and defining long term stewardship roles and responsibilities are in the early stages of planning. The Site anticipates small group discussions with stakeholders, regulators, and trustees to determine the future use path forward.

Stakeholders have initiated discussions on the principles for creation of a new entity to oversee the transition of the Site to the local community. This entity would facilitate participation and negotiation among local governments and stakeholders and represent the Site's interests in regional planning.

2.2 Intermediate Site Condition and Future Use

An intermediate site condition for the Site is described in the Vision and Preamble to the RFCA. The RFCA describes the intermediate site condition as follows:

- All SNM is shipped to an offsite repository.
- All radioactive waste is shipped offsite.
- All facilities are demolished except facilities contracted for commercial reuse.
- Environmental remediation of contaminated areas is complete to the extent that future land uses are enabled and downstream water supplies are protected.
- Land use enabled by cleanup levels would permit open space uses of the Site's Buffer Zone and either open space or industrial reuse of the Site's Industrial Area. The nature of open space use has yet to be determined through consultation with local governments and stakeholders.

While the RFCA preamble does describe an intermediate site condition, additional details have been added so detailed planning can be accomplished. For example, in order to continue refinement of environmental restoration planning efforts, the intermediate site condition description includes several potentially capped areas.

The areas to be capped include the former production areas. These areas will be capped as it is anticipated that contaminated areas will remain where it is technically or economically unfeasible to remove the contamination (e.g., the original process waste lines). Also as defined in RFCA, two other areas to be capped include the solar ponds and the existing sanitary landfill. The waste would be left in place and the area capped according to industry standard practice. The waste that remains will be municipal waste with some hazardous waste. The former solar ponds would also be capped.

The contamination that would remain under the cap is isolated hot spots remaining since the 1994 pond remediation (sludge removal). In all of these areas the caps will reduce water infiltration and direct runoff in the areas to prevent contaminant migration.

Other disturbed industrial and protected areas that are not capped will be regraded and revegetated as part of Site closure. Also, the capped areas would likely be vegetated.

Surface water from the Site will be managed by converting the existing pond system to a flow through system using wetlands to immobilize any remaining sediments and enhance the overall ecological system. Contaminated groundwater will continue to be collected and treated as appropriate.

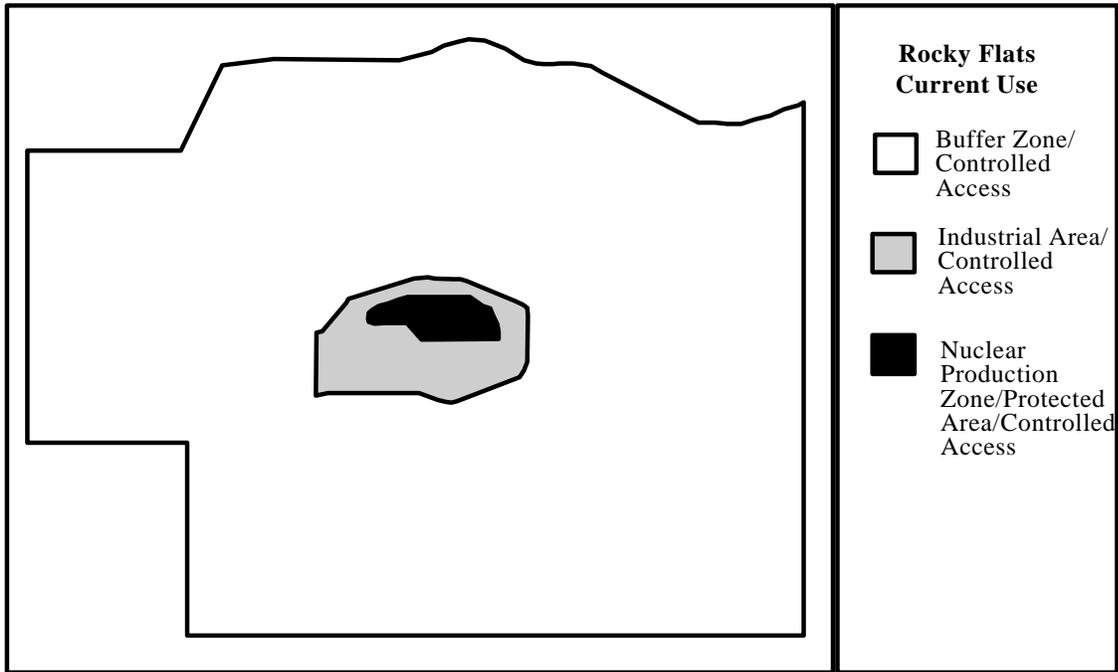
There are policy and technical issues that must also be addressed.

- The exact status of Site closure cannot be determined for utilities, infrastructure, and long term ownership until RFETS has accomplished a significant portion of the closure project. Therefore, the parameters of real property disposition have not been determined, including:
 - a. Disposition as a single unit or not;
 - b. Disposition to a single entity or not;
 - c. Deed Restrictions that may be required;
 - d. Potential long term ownership of any facilities or land by DOE;
 - e. Transfer of buildings or leases to entities for reuse;
 - f. Transfer of the jurisdiction of the Site to another Federal entity
- Resolution of the 20,000 gallons per day Condemnation Settlement requirement may effect real property
- Other contractual obligations that may appear during closure.

Cleanup levels will be chosen in the Corrective Action Decision Document/Record of Decision for the Buffer Zone and industrial area operable units. While the cleanup program is not used for restoring natural resources, it may be used to prevent further injuries to natural resources.

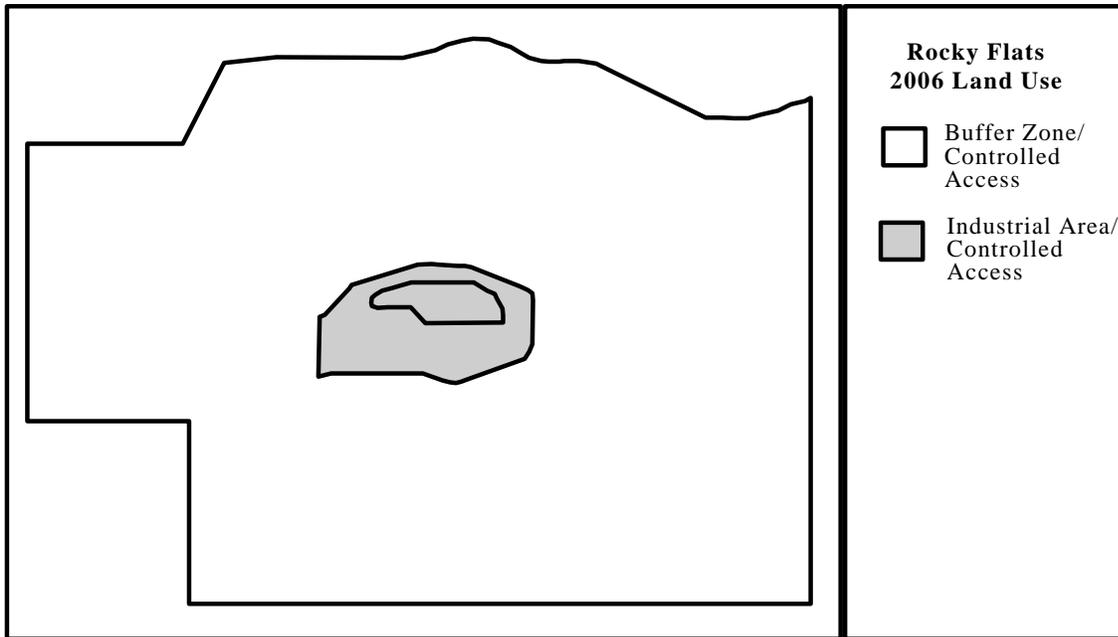
The **Final** End State for the Site has yet to be determined. Additional cleanup and removal activities may be conducted as funding, technology and political opportunities allow. While recognizing that some members of the public prefer cleanup to background levels, the DOE, the Environmental Protection Agency (EPA), and the Colorado Department of Public Health and Environment (CDPHE) are currently unable to commit to this goal. These Agencies will continue to explore new technologies to make further cleanup possible. The Agencies have agreed to avoid taking actions that would, as a practical matter, preclude further cleanup in the long-term future. Activities beyond this document's intermediate site condition are to be determined, and are therefore not described.

Figure 2-1 shows the three major land use areas currently at the Site. These are the Buffer Zone which covers the vast majority of the Site, the Industrial Area which encloses the developed portion of the site, and the Nuclear Production Zone or Protected Area (PA). Note that all three of these areas exercise controlled access.



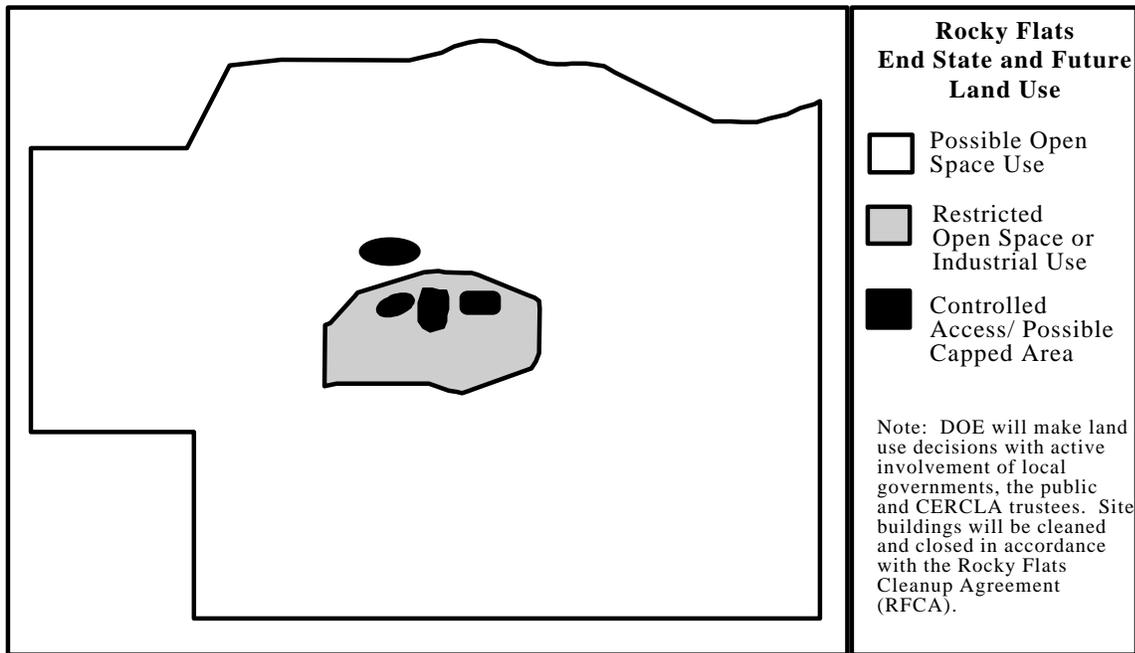
**Figure 2-1
Rocky Flats Current Land Use Areas**

Figure 2-2 shows the two major land use areas that are anticipated in 2006. The Buffer Zone will remain and cover the majority of the Site. The Industrial Area will also remain, but the PA will be gone since all SNM will have been shipped offsite. The process of capping part of the PA will be underway.



**Figure 2-2
2006 Land Use Areas**

Figure 2-3 shows the three major land use areas that are anticipated (for planning purposes) when the Site reaches the intermediate site condition. In this scenario, the Buffer Zone becomes open space. The Industrial Area is available for industrial use and/or restricted open space use. The PA is partially capped with controlled access as is the landfill. For current planning purposes, the intermediate site condition and future land use are assumed to be the same although no decisions have been made.



**Figure 2-3
Intermediate Site Condition Land Use Areas**

2.3 Future Use Plans for the Site

The DOE will develop the Site future use plans based on the RFCA Vision, FSUWG recommendations, and discussions among DOE, CDPHE, EPA, and other, stakeholders including local elected officials, and Natural Resource Trustees. A dialogue among all interested future use participants will help identify and resolve outstanding issues and develop a process for comprehensive land use planning decisions.

2.4 Long-Term Stewardship Issues

Scope, roles, and responsibilities for future Site stewardship remain undetermined. Outstanding long-term stewardship issues may include: (1) determination of a Future Use Management entity responsible for land use activities; (2) long-term Site monitoring requirements; (3) determination of facility and land disposition, leasing, sale, and transfer requirements; (4) long-term surveillance and maintenance costs; (5) future use legislation; (6) public access restrictions and future managed public use areas; (7) regional transportation corridors; (8) water management and air monitoring requirements for the interim and long term; (9) effects of subsurface mineral ownership; (10) trustee roles and responsibilities; and (11) long-term institutional controls.

3.0 STRATEGIES AND PRIORITIZATION

3.1 Cleanup Approach

Strategies

In developing the Document for the Site, a number of major strategies were used in the construction of the work scope and logic, schedules and costs. These strategies embody the seven guiding principles contained in Assistant Secretary Alm's December 1996 *Guidance on the Ten Year Plan* (see Section 1.1), the *RFCA* requirements finalized on July 19, 1996, and the Site's own work on an accelerated cleanup plan known as the *Accelerated Site Action Project (ASAP)*.

The major strategies employed in the Document are described below.

- Maintain the Site's safety envelope ensuring the continued safety of Site workers, the public and the environment during closure activities.
- Eliminate the highest priority risks first. Necessary activities primarily encompass the accelerated stabilization, consolidation, and early shipment of the Site's SNM, including plutonium and enriched uranium.
- Comply with environmental, health and safety laws, regulations, and agreements.
- Treat plutonium process residues to meet the WIPP's Waste Acceptance Criteria and to enable accelerated offsite shipment of resulting TRU wastes.
- Reduce the Site's high nuclear facility baseline costs by accelerating deactivation of these facilities through expedited stabilization and removal of SNM.
- Rely on other DOE and commercial sites to assist Rocky Flats in the timely removal of the Site's SNM and radioactive wastes, providing significant mortgage and infrastructure cost savings. In the interim, provide cost-effective storage facilities for these materials until they can be shipped offsite.
- Demolish Site facilities and infrastructure to eliminate future funding and safety liabilities, ongoing surveillance and maintenance, and residual radiological contamination management.
- Treat and ship TRU and LLW/LLMW offsite as quickly as possible to reduce safety and regulatory risks, and the significant mortgage costs associated with the onsite management of these wastes.
- Clean up environmentally contaminated areas to the extent that sources of contamination which pose a significant risk are mitigated and controlled. Higher risk areas are preferentially cleaned up over lower risk areas. Site cleanup is performed to the extent necessary to support future open space use. Future land use designation is assumed to occur as described in RFCA.
- Reduce infrastructure and management costs at a steady pace. Transition service and support activities to offsite sources as quickly as possible.

Projectization

Viewing the Site as a collection of major projects, sometimes referred to as the “projectization” of the Site, is a significant shift in the way of doing business at Rocky Flats from the program culture. Previously, planning work at the Site was generally organized into five major categories. These included SNM Management; ER; Waste Management; D&D; and Infrastructure Management. This planning structure still exists in some forms at the Site. However, as Site projectization continues, the focus of the work planning and implementation will continue to shift to individual projects and away from the functional departmental structure and programs. Projectization is intended to focus management attention on accomplishing measurable Rocky Flats closure. Management responsibility for each project is assigned to a Project Manager who is accountable for achieving clearly defined cost, schedule, and performance objectives. The project approach reinforces the commitment to clean up Rocky Flats with a measurable and cost effective program.

Prioritization

The Site developed a qualitative prioritization system which was designed and established consistent with DOE Assistant Secretary Al Alm’s seven guiding principles and the major strategies employed in this Document.

The purpose of the prioritization system is to establish a tool to support Site decisions on project funding, scopes, schedules and logic sequences needed as the result of budgetary constraints or surpluses while maintaining project and end state integrity, and ensuring the safety of Site workers and the public. Prioritization is a key Site management system as it affects the ability to perform meaningful work, reduce risk and mortgage costs, maintain regulatory compliance, and to reach the identified intermediate site condition.

The use of prioritization systems for the budget process is not new to Rocky Flats. The current system has been based on the experience gained with previous systems. For the FY1998 budget submission, RFFO used a multi-factored, weighted, numerical ranking system in order to develop a prioritized listing of the WBS level 4 elements. This listing identified WBS elements classified as “Basic Operating and Essential Services” (BOES) and exempted these from any further prioritization. Prioritization was then applied to the non-BOES WBS elements and summarized to the Activity Data Sheet (ADS) level creating a list of “FY98 Discretionary Funding With Optimization Recommendation” and providing funding priorities for a planning case, target case, and decrement case. This level of detail was adequate to set the Site toward the direction of closure. Actual implementation of the Rocky Flats Closure Project requires a system applied at a lower level of the WBS that includes greater differentiation and in depth consideration of logic ties among WBS elements.

For FY1999, the Site increased the prioritization sensitivity by developing a similar prioritization method, but applied it at WBS level 6 using six prioritization categories. This system considers risk as an integral part of setting priorities, and correlates to the risk discussions provided in the PBSs included with this Document. Under this new prioritization methodology, a Minimum Operating Level (MOL) that provides for maintenance of the Site in a safe, secure, and compliant state with little or no risk reduction or mortgage reduction work taking place. This MOL was composed of those level 6 WBS elements that provide the essential functions required by regulatory drivers (compliance) and by the requirement to maintain facilities in a safe and secure state. The MOL elements were the first five categories below (in no rank order). Category 6 elements were funded by limited discretionary funding and must be prioritized.

MOL	Category 1	Legacy Costs
MOL	Category 2	Fixed Activity Costs
MOL	Category 3	Urgent Risk Mitigation Costs
MOL	Category 4	Corporate Operating Costs
MOL	Category 5	Enforceable Compliance Costs
	Category 6	Risk and Mortgage Reduction, Closure Costs & Other Discretionary Items

3.2 Activities Remaining With and Without Enhancements

This Document discusses how cleanup of Rocky Flats can be accomplished by FY2010. In order to achieve this FY2010 cleanup, certain assumptions were made regarding annual funding levels, availability of repositories for nuclear materials and radioactive wastes, and annual efficiencies that would be assumed in Site support costs. As stated earlier for purposes of this Document, the FY2010 cleanup is referred to as the plan “without enhancements.”

The Site has a goal of achieving the same cleanup (i.e., reaching the same end state) by 2006. In order to achieve this ambitious goal, a number of significant breakthroughs must take place. Although a plan to reach cleanup by 2006 has yet to be constructed, a number of critical path activities must take place sooner than identified in the current Document (FY2010 closure). For example, it appears certain that the Site’s plutonium metals and oxides must be removed from the Site at least two years earlier than current projections (i.e., FY2002 instead of FY2004). Additionally, the schedule to process the Site’s large inventory of plutonium residues must also be accelerated by at least two years (i.e., FY2000 instead of FY2002). Further, the average estimated length of time it takes to D&D the major nuclear facilities must be improved by at least one year compared to the current plan. The goal of achieving closure by 2006 is referred to as the plan “with enhancements.” The term “with enhancements” is indicative of the estimated \$1.3 billion savings that could be realized if cleanup could be achieved four years earlier (i.e., the end of 2006 instead of FY2010).

To better understand what activities are remaining after 2006 with and without enhancements, Table 3-1 describes what the estimated percent complete for key activities would be for both scenarios.

Table 3-1
Status of Site in 2006
(Estimated % complete of key activities)

KEY ACTIVITY	WITH ENHANCEMENTS	WITHOUT ENHANCEMENTS
Plutonium offsite shipment	100%	100%
Pu Liquid and Pu metal and oxide stabilization	100%	100%
Pu residue stabilization	100%	100%
TRU waste shipments to WIPP	100%	99%
LLW shipments offsite	100%	75%
Estimated percent complete of nuclear facilities deactivated	100%	100%
Nuclear facilities demolished	100%	70%
Total environmental remediation actions	100%	85%

The activities remaining after 2006 assuming the plan with enhancements, are best described as long-term stewardship activities such as, but not limited to, groundwater and surface water monitoring, and long-term performance monitoring of the closure caps. Additional environmental remediation activities could be taking place depending on the availability of future funding and technologies, and sociopolitical desires.

The activities remaining after 2006 assuming the plan without enhancements are: (1) deactivation, decontamination and demolition of several major nuclear facilities including, but not limited to, Buildings 371 and 559, (2) remediation of a number of environmentally contaminated sites including the soil beneath the major nuclear facilities described in (1), and (3) offsite shipment of TRU waste and LLW resulting from facility demolition and environmental remediation activities. Following completion of these activities, long-term stewardship activities would be taking place such as ongoing groundwater and surface water monitoring, and long-term performance monitoring of the closure caps. Additional environmental remediation activities could be taking place depending on the availability of future funds, technologies, and sociopolitical desires.

3.3 Critical Closure Path and Events

Key Decisions, Critical Path Closure Activities, Events, and Interfaces

High-level critical closure path activities, events, waste and material interfaces, and key decisions that need to occur in order to meet 2010 baseline closure date are listed below. Accelerating critical path activities through innovative approaches, such as accelerating shipments of Special Nuclear Material (SNM) to Savannah River Site (SRS), are being pursued in order to accelerate the 2010 baseline closure date. If the milestones identified on the Critical Path Closure Schedule (Figure 3-1) are achieved by the identified dates, the uncertainty associated with meeting the baseline 2010 closure date is reduced.

Recent events and anticipated events will bring RFETS closer to accelerating the critical path from a baseline closure date of 2010 to 2006. Chief among those events is the anticipated approval of the accelerated disposition methods for RFETS Pu residues. The key activity on the critical closure path in the early years is the stabilization and packaging of nuclear materials in configurations certified for shipping. Additional positive schedule variance could be realized by accelerating the start date for the shipment of Pu metals and oxides to Savannah River Site (SRS) to January 2000. Other efficiencies that could provide further schedule compression and cost reductions are being evaluated. While these efficiencies are being pursued, they are not reflected in this update, as they have not yet been fully incorporated into the closure project baseline nor has the baseline been validated. The next annual update of the *Rocky Flats Accelerating Closure: Path to Closure* document will reflect such changes to the RFETS baseline.

The Site's Critical Closure Path schedule is based upon the Site's Closure Project Baseline (CPB). The schedule shown is organized by major Site Projects, with fourteen of the Site's current twenty-nine projects shown. The timeline supports Site Closure in FY2010. The Critical Path begins with residue processing, stabilization, and repackaging planned in response to Defense Nuclear Facilities Safety Board (DNFSB) 94-1, and continues until May 2002. Then, shipping Special Nuclear Material (SNM, Metal/Oxide/Scrub Alloy) off-site from Building 371 becomes the critical path activity. Upon completion of SNM shipments, the critical path continues with deactivation, decommissioning, demolition, remediation, and cluster closure activities for the 371/374 Cluster. Finally, the construction of the 300 Area and 700 Area caps complete the activities critical to Site Closure.

The schedule shows three types of milestones including: (1) External to RFETS, coded as diamonds, (2) Critical Path, coded as a solid triangle, and (3) Internal to RFETS, coded as a striped triangle. External milestones are beyond RFFO's control and represent key decisions that are critical to achieving baseline objectives. Internal, critical internal and mortgage reduction milestones are also identified on the critical path schedule and represent those important critical path or near-critical path activities/events that must occur at prescribed times to assure that the closure schedule is maintained. Internal milestones representing key mortgage reduction milestones are coded with an upside-down, solid triangle and specifically identified as "MR". These milestones represent the closure of Material Access Areas and the completion of equipment stripout in the four largest Pu facilities. In addition, detailed risk information associated with successful achievement of Critical Closure Path activities is provided for selected milestones in the Programmatic Risk Management Plans found in Attachment D. Descriptions of the milestones are provided here:

External Milestones (E)

- E-1: Liquid Organic Waste Receiver Site Available
 - RFETS currently stores 17,000 gallons.
 - Two Site Treatment Plan (STP) milestones to remove this waste by the end of FY98.
 - State of Tennessee is holding up shipments to Oak Ridge's TSCA incinerator.
 - Consequence of not meeting milestone date: Results in 2 missed STP milestones and prolonged storage.
- E-2: Sand, Slag and Crucible Receiver Site Available
 - DNFSB milestone to complete stabilization in FY98.
 - RFETS plans to ship these materials to SRS by 4/98 in DOT 6Ms and 9975 containers. A baseline change is in process to disposition these materials by alternate methods. Thus, this date has been overtaken by events. A revised shipping date will be available as of the next annual update of this plan.
 - Consequence of not meeting milestone date: Results in missed DNFSB commitment, prolonged storage, and building on-site processing capability. The DNFSB has agreed to the strategy to disposition SSC by alternate methods. Consequently, once the baseline has been changed, this milestone will be eliminated.
- E-3: Record of Decision (ROD) for Residues
 - A decision rendered from the Residue Environmental Impact Statement (EIS) identifying residue processing options.
 - Consequence of not receiving timely decision: RFETS cannot ship residues off-site nor process any beyond stabilization until ROD is issued; critical path schedule negatively impacted.
- E-4: Waste Isolation Plant (WIPP) opens in May 1998
 - By FY99 or sooner, on-site storage capacity will be exceeded.
 - Consequence of WIPP not opening by May 1998: RFETS will need to construct new TRU waste storage facility in addition to the Staging/Repack Facility already planned.
- E-5: TRUPACT II Available
 - RFETS assumes adequate TRUPACT II's available to meet shipping schedules.
 - Consequence of inadequate number of TRUPACT II's available: Construction of additional new on-site TRU waste storage capacity.
- E-6: Fluoride Receiver Site Available
 - RFETS plans to repackage fluorides on-site, then ship off-site for processing. SRS wants fluorides shipped to them by the second quarter 1999, to accommodate their F-canyon schedule.

- Consequence of unavailability of receiver site: Results in prolonged storage and construction of on-site processing capability and increased RFETS worker radiation exposure.
- E-7: Low Level Mixed Waste Receiver Site Available
 - Disposal facility needed that can accept LLMW>1 nCi/gram of activity.
 - Consequence if facility unavailable: Results in construction of new on-site LLMW storage facility and prolonged site storage.
- E-8: Scrub Alloy Receiver Site Available
 - RFETS plans to ship scrub alloy off-site for processing.
 - Consequence if receiver site unavailable: Results in prolonged storage with possible new upgrades to B371 and new vault construction.
- E-9: Safe Secure Transports (SSTs) Available
 - RFETS needs an adequate supply of SSTs to meet shipping schedules
 - Consequence if adequate supply of SSTs unavailable: Results in new B371 upgrades and prolonged on-site storage of SNM.
- E-10: Metal and Oxide Receiver Site Available
 - RFETS plans to begin off-site shipments in FY02 and finish by FY04
 - Consequence if receiver site unavailable: Results in construction of new SNM vault and possible interim upgrades to B371.
- E-11: LANL Available to Receive Salts that Exceed Safeguard Termination Limits
 - After stabilization of high risk salts, RFETS plans to ship to LANL for processing.
 - Consequence if LANL unavailable: Results in developing additional processing capability to treat salts exceeding STLs on-site, and extending operation of B707.

Critical Path Milestones (C)

- 1) C-1: Complete Stabilization of 6,000 kg of High Risk Salts
 - Under DNFSB 94-1, the Site is committed to completion of milestone IP-3.3-012 to stabilize by pyrochemical oxidation and repackage 6,000 kg of higher risk Pu salts by 1/31/99.
- 2) C-2: Complete Stabilization of Remaining Higher Risk Salts (~4,000 kg)
 - Per DNFSB 94-1 milestone IP-3.3-013, the Site commits to complete pyrochemical oxidation of higher risk salts by 9/30/99.
- 3) C-3: Salt Distillation Complete
 - Per DNFSB 94-1 milestone IP-3.3 New, the Site commits to complete salt stabilization by 7/30/01.
- 4) C-4: Residue Processing Under DNFSB 94-1 Complete
 - Per DNFSB 94-1, the Site plans that residue stabilization and repackaging at RFETS will be complete by May 2002. (After May 2002, although no longer on the critical path, the residue program will continue to bear costs due to follow-up waste certification activities for TRU waste generated during residue stabilization.)
- 5) C-5: SNM Metal/Oxide/Scrub Alloy Shipments Complete
 - Shipment to SRS of SNM metals, oxides, and scrub alloy is scheduled to occur between FY2002 and FY2004.
 - Closure activities for Building 371, such as SNM Holdup Removal, Deactivation, Decontamination & Decommissioning (D&D) are constrained by completion of these off-site shipments.
- 6) C-6: 371/374 Cluster Deactivation Complete
 - B371 Deactivation is planned for completion on 9/30/04, shortly after the completion of B371 holdup removal.
- 7) C-7: 371/374 Cluster D&D Complete
 - B371 D&D, including demolition, is expected to be completed by the end of FY06.

- 8) C-8: 371/374 Cluster Closure Complete
 - The remaining 371/374 Cluster Closure activities, including remediation of any under-building contamination and project close-out are planned to be complete in FY2008.
- 9) C-9: Site Closure
 - Construction of the 300 Area Cap is scheduled to occur in FY09, and the 700 Cap in FY09 and FY10. Construction of the caps will be followed by Site post-closure environmental monitoring.

Internal Milestones

Significant milestones internal to the Site include: (1) the Rocky Flats Cleanup Agreement (RFCA) milestone to install and operate a Pu stabilization and packaging system, (2) the Site's goal to have Pu pits shipped off-site by the end of FY98, (3) construction and operation of a new TRU/TRM waste Staging/Shipping and repackaging facility, (4) commence 771/774 Cluster D&D, (5) operation of a new LLW/LLMW Facility for the storage, staging, and offsite shipment of remediation wastes, (6) commence 707 Cluster D&D, (7) commence 776/777 Cluster D&D, (8) commence 881 Cluster D&D, (9) completion of 771/774 Cluster D&D, (10) completion of 707 Cluster D&D, and (11) complete stabilization of graphite fines.

Failure to achieve these key decisions and/or critical events/activities at the times identified would significantly increase the uncertainty of meeting the 2010 baseline closure date, and negatively impact the opportunities to accelerate the schedule.

3.4 Waste and Nuclear Material Interfaces (including disposition maps)

Disposition Maps

The disposition maps shown in Figures 3-2 through Figure 3-5 are graphical representation of the Site's conceptual approach for managing wastes and nuclear material from current status through storage, treatment, and disposal, including shipping and offsite treatment. In the waste disposition maps, "TBD" may be listed in reference to a potential treatment and/or disposal option. "TBD" indicates "to be determined" and reflects the fact that the ultimate destination will be chosen from a list of locations to be consistent with the alternatives selected in the record of decision issued in response to the Waste Management Programmatic Environmental Impact Statement (WM PEIS). The Environmental Restoration disposition map (Figure 3-6) has been generated to include media/materials currently targeted for in-situ management. These summary disposition maps are preliminary and are subject to change as future alternatives are evaluated or pending decisions finalized.

A disposition map has been prepared for transuranic (TRU) waste, low-level waste (LLW), mixed low-level radioactive waste (MLLW), environmental restoration (ER) waste, and nuclear materials (NM). The disposition map format is one of a schematic diagram, with arrows representing streams of waste or material. The general flow of the disposition map represents moving from generation of waste or materials, through various processing steps, and ultimately to disposition. Generation appears on the left, processing in the center, and disposition on the right. Each waste stream is coded with a letter and a number to indicate the type of waste and the stream number on the disposition map. Facilities used to process or disposition waste are represented by boxes, which also show the input volume (on the left side of the box) and output volume (on the right). Waste volumes are in cubic meters. Nuclear material volumes may not appear on disposition maps due to classification issues.

The environmental restoration disposition map tracks waste back to the source of the contaminated media (soils, groundwater, debris, and D&D waste). It includes an estimate of the volumes of the contaminated media and an assumed response strategy that collects and treats the media to produce resulting waste streams. These waste streams then go through processing and disposition steps like waste shown on other maps.

The disposition maps show interfaces with other disposition maps by showing activity streams going into or out of "diamonds." The source or destination may be another Rocky Flats disposition map or other site disposition maps. In the case of Rocky Flats, there are no wastes or materials coming into the site, so diamonds represent waste transferring between site maps. For example, there are transfers of waste generated on the environmental restoration disposition map to other disposition maps (LLW on line ER 04A and TRU waste on line ER 04C). These diamonds also appear on the left side of the LLW and TRU disposition maps to indicate incoming volumes to those streams.

There are intersections, or "nodes," which represent the combination of waste streams into a single stream or the split of a single stream into separate processing or disposition steps on the disposition map. In this way all waste and material at Rocky Flats is systematically tracked from generation or inventory through disposition.

In some instances where a processing or disposition step is not known or a decision needs to be made before disposition can be determined, a "TBD" may appear. For example, some TRU waste does not have a treatment and disposition path. As the site planning evolves and decisions are made, the TBD will be changed to reflect the new strategy.

Each disposition map contains a legend at the bottom with a key to various EM sites to indicate the interfaces with other sites. For example, the MLLW map has different colors for processing at the Oak Ridge TSCA incinerator, the Idaho National Engineering and Environmental Laboratory WERF facility, and commercial treatment and disposal. Small color-coded triangles are shown near the disposition block to indicate the site of origin and the destination of wastes and materials in the streams. The site of origin is shown in the wide, or left, end of the triangle and the destination is shown in the narrow end. Color copies of the disposition maps are available at the public reading rooms and on the Rocky Flats home page.

Waste Interfaces

The Document provides a framework for completing the closure of Rocky Flats. In order for closure to be successful, Rocky Flats is highly dependent on the opportunities for waste treatment, storage, and disposal offered by DOE sites and commercial vendors.

To complete Site closure, waste will be removed from the Site to eliminate the need for long-term storage. While Rocky Flats has evaluated the various alternatives for treatment and disposal of wastes on a site specific basis, DOE, HQ has also prepared a Waste Management Programmatic Environmental Impact Statement (WM PEIS) that evaluates a set of alternatives for all waste management functions for the entire complex. In general, the Rocky Flats alternatives are consistent with the WM PEIS alternatives, but are not identical. Table 3-2 provides a summary comparison of the Rocky Flats alternative against the WM PEIS alternatives.

While the Rocky Flats preferred options provide the results of the evaluation as to what would be best for the Site, broader national discussions may alter the approach. The Site preferred approach does not indicate an official decision. However, while the specific alternatives may deviate, the overall approach remains the same and would support the conclusions of the WM PEIS.

As can be seen from the table, the main difference between the Rocky Flats baseline and the WM PEIS is in the area of LLMW treatment. Originally, the Site was planning to fully treat all LLMW onsite, consistent with the Comprehensive Treatment and Management Plan. Subsequent to development of this approach, the Site determined that significant capital investment and operating cost could be saved by minimizing onsite treatment and focusing on offsite treatment, using onsite treatment only as a contingency for small volume, difficult to treat wastes or in the event that offsite treatment no longer proved feasible. This revised approach was drafted, submitted to the regulators in the State of Colorado and approved as the new Site Treatment Plan baseline. Rocky Flats is now pursuing this revised baseline and it is reflected in the Document.

**Table 3-2
Summary Comparison Between Rocky Flats and WM PEIS Alternatives**

WASTE	WASTE MANAGEMENT FUNCTION	ROCKY FLATS PREFERRED APPROACH	WM PEIS PREFERRED APPROACH
TRU/TRM	Storage	Onsite - pending WIPP disposal	Onsite - pending WIPP disposal
	Treatment	Onsite/offsite DOE facility combination.	Onsite/offsite DOE facility combination.
	Disposal	WIPP	WIPP
Low Level	Storage	Onsite - pending offsite disposal	Onsite - pending offsite disposal
	Treatment	Onsite - minimal processing required	Onsite
	Disposal	Offsite - at NTS	Offsite - at 2 or 3 sites picked from 6 sites (Hanford, Idaho, Los Alamos, NTS, Oak Ridge, Savannah River)
Low Level Mixed	Storage	Onsite - pending offsite disposal	Onsite - pending offsite disposal
	Treatment	Offsite - at commercial and/or DOE treatment; minimal onsite treatment	Onsite
	Disposal	Offsite	Offsite - at 2 or 3 sites picked from 6 sites (Hanford, Idaho, Los Alamos, NTS, Oak Ridge, Savannah River)
Hazardous	Storage	Onsite - pending offsite treatment/disposal	NA
	Treatment/Disposal	Offsite - commercial	Offsite - commercial

Table 3-3 describes the differences between the projected waste volumes in this Document and the WM PEIS:

**Table 3-3
Comparison of Projected Waste Volumes**

Waste Type	Draft Focus on 2006 Plan (cubic meters)	WM PEIS (cubic meters)
low-level waste	65,028	41,000
low-level mixed waste	79,255	21,000
transuranic/transuranic mixed waste	9,531	6,200

The differences are apparently due to (1) the Document includes radioactive waste volumes that will be generated as a result of environmental restoration activities and the WM PEIS does not, and (2) the Document reflects more recent and better estimates of projected waste volumes, especially TRU wastes.

Nuclear Material Interfaces

Rocky Flats is highly dependent upon DOE receiver Site ability to receive SNM. Receiver Site capacity controls the rate at which the Site can ship materials, which in turn determines which facilities can be vacated, deactivated, and decommissioned. While D&D of a nuclear facility is not always on the critical path to Site closure, facility closure always reduces Site costs and is highly desirable.

Table 3-4 summarizes material streams (other than wastes) and receiver sites which are currently planned as depicted on the Figure 3-5.

**Table 3-4
Material Streams and Receiver Sites**

Material	Receiver Site	Tentative Time Frames	Comments
RFETS-NM-1 - <i>DOR salts IDCs 365, 413, 426, 427</i>	LANL	FY1999	<ul style="list-style-type: none"> • Requires preparation of shipper/receiver agreement • Requires ROD for Residue EIS
RFETS-NM-3 <i>MSE/ER salts</i>	Savannah River	FY2002-2004	<ul style="list-style-type: none"> • Separated Pu from salt residues will join Pu metal and oxide population and be shipped to SRS beginning in FY2002 and completing in FY2004 for storage in APSF pending final disposition
RFETS-NM-7 <i>SSC & PuF₄</i>	Savannah River	SSC: FY1998/99 PuF ₄ : FY1999/2000	<ul style="list-style-type: none"> • Final shipper/Receiver agreements under preparation • Requires ROD for Residue EIS
RFETS-NM-8 <i>Pu Rich Solutions >6g Pu/liter</i>	Savannah River	FY2002-2004	<ul style="list-style-type: none"> • Separated Pu from Pu rich solutions will be stabilized and then join Pu metal and oxide population and be shipped to SRS beginning in FY2002 and completing in FY2004 for storage in APSF pending final disposition
RFETS NM-10; RFETS NM-11 <i>Pu Metal and Oxide</i>	Savannah River	FY2002-2004	<ul style="list-style-type: none"> • Pu metal and oxide, repackaged into 3013 containers, will be shipped to SRS beginning in FY2002 and completing in FY2004 for storage in APSF pending final disposition
RFETS-NM-12 <i>Pu Scrub Alloy</i>	Savannah River	FY2002-2004	<ul style="list-style-type: none"> • Requires ROD for Residue EIS • Requires shipper/receiver agreement - schedule of shipment between two sites needs to be worked out

3.5 Decisions Necessary to Meet Closure Dates

Table 3-4 provides a list of the major external decisions needed to reach the cleanup goal. This list includes the major decisions outside the control and authority of the DOE, RFFO and the Integrating Management Contractor. A large percentage of these decisions will impact other DOE sites due to the strong complex-wide integration required. This list is not intended to be all inclusive, rather it provides the major decisions that have the most impact on achieving the closure goal. The dates for decisions requiring offsite shipments represent the date all roadblocks need to be removed to allow shipments to begin. Major decisions without a date in the 2010 Decision Date column are not critical to meet the 2010 closure goal.

**Table 3-5
Major Closure Decisions**

Major Decision	2010 Decision Date	2006 Decision Date
Residues PEIS Record of Decision (ROD)	May 1998	May 1998
New Residue Shipping Container Certification		December 1997
Processing location for salt residues	December 1997	December 1997
Processing location for fluoride residues	June 1999	June 1999
Offsite shipping location for scrub alloy	October 2001	October 1998
Safeguard Termination Limit waiver for residues		December 1997
Supplemental Material Disposition ROD	December 1998	December 1998
Offsite shipping location for Pu metals and oxides	October 2001	October 1998
Adequate number of Safe Secure Transports are available	October 2001	October 1998
Offsite shipping location for Enriched Uranium	March 1998	March 1998
Waste Management ROD	March 1998	March 1998
Opening of WIPP	May 1998	May 1998
Disposal location for LLMW > 1 nCi/gram	September 2000	September 1998
TRU Waste Bulk Loading Container Certification		June 1998
Adequate number of TRUPAC-IIs available	May 1998	May 1998
CAD/ROD for Buffer Zone	September 2010	December 2005
CAD/ROD for Industrial Zone	September 2010	December 2005

3.6 Mortgage Reduction Opportunities

At Rocky Flats two types of mortgage reduction are being pursued: Project life-cycle and Fixed Support. These are described below.

3.6.1 Project Life-Cycle

As discussed previously, the current baseline at the Site projects a FY2010 cleanup at an estimated total life-cycle cost of \$7.3 billion in current dollars (\$6.3 billion in constant 1998 dollars). Acceleration of that schedule means significant mortgage reduction savings must be achieved. For each day earlier Rocky Flats is closed, approximately \$1.5 million (average) in mortgage costs is saved. Thus, the shorter the baseline, the greater the potential return-on-investment and the greater the life-cycle mortgage reduction. In fact, if the Site can achieve its cleanup goal of 2006, the resultant savings are estimated to be \$1.3 billion.

The key projects (as determined analyzing the baseline critical path) that need to be significantly accelerated to achieve Site cleanup by 2006 are described in Table 3-6.

**Table 3-6
Key Rocky Flats Mortgage Reduction Projects**

Project ID	Project Title	Mortgage Reduction Activity
RF002	Waste Management	Accelerate offsite treatment and disposal of radioactive wastes at commercial and DOE sites.
RF008	Pu Metals and Oxides	Accelerate offsite shipment to another DOE site
RF009	Pu Solid Residue Stabilization	Accelerate onsite residue treatment. Accelerate shipment of residues to other DOE sites for treatment. Obtain STL variances.
RF012	SNM Shipping	Accelerate offsite shipment of Pu (see Project RF008)
RF016	Building 371 Closure	Accelerate D&D schedule of Building 371
RF017	Building 707 Closure	Accelerate D&D schedule of Building 707
RF018	Building 771/774 Closure	Accelerate D&D schedule of Buildings 771/774
RF019	Building 776/777 Closure	Accelerate D&D schedule of Buildings 776/777
RF013	Closure Caps	Accelerate construction of closure caps following D&D

3.6.2 Infrastructure and Fixed Support

At Rocky Flats, support costs account for approximately 40-60 percent of the annual Site costs. (In this instance, the term *mortgage* applies to Site support activities and associated costs.) Reduction of these costs is important to the Site and DOE because these mortgage activities alone do not directly support the cleanup of the Site. However, these activities do enable cleanup activities. Examples of these mortgage activities at Rocky Flats include DOE and Kaiser-Hill management and oversight, facility maintenance and operations, employee benefits, safeguards and security, etc.

Since July 1995, the Site has reduced these types of mortgage costs over \$100 million per year enabling more money to be spent on cleanup activities. These reductions were achieved by the following:

- Running the Site like a business (importing commercial practices) and challenging costs
- Reducing staff to reflect the new cleanup mission of the Site
- Performing cost competitive outsourcing
- Conducting business process reengineering
- Retraining and reassigning staff

According to DOE's *Functional Support Cost Reporting Systems*, which tracks mission, mission support and general support costs at all DOE sites, Rocky Flats has achieved reductions in mission support and general support from 54 percent in FY1995 to 38.7 percent in FY1998 (planned). The Site is convinced that additional reductions in annual mortgage costs can be achieved employing the past successful techniques. However, it is clear that the opportunity to achieve the greatest mortgage reduction savings is to accelerate the schedule for the cleanup of the Site.

3.7 Prior Efforts to Improve Project Performance

Prior to FY1997, the Site's emphasis on cost reduction was in two main areas. The first area was the reduction of "Mission Support" work while increasing the "Mission Direct" work. Changes in the employee benefits and employee leave categories exemplify this focus area. Over \$10 million in actual savings has resulted from benefit changes. The second area of focus was to begin implementing process changes that would accelerate the completion of our mission. The strategy to focus on these two areas has been beneficial in moving the mindset from the production mission to an accelerated cleanup mission.

3.8 Status of Environmental Management Integration Recommendations

In July of 1996, the DOE's EM Organization initiated the Complex-Wide EM Integration Project. The DOE EM chartered a government contractor led effort to develop technically defensible, integrated alternatives to promote DOE EM's goals of cost-effective, accelerated cleanup of the DOE EM sites. In May of 1997, this "Complex-Wide EM Integration Team" issued, *A Contractor Report to the Department of Energy on Environmental Management Baseline Programs and Integration Opportunities - Discussion Draft*. This report documented waste and environmental restoration baseline programs for the major DOE sites and also presented possible opportunities for accelerated cleanup and cost savings. In developing the baseline and identifying alternatives, the Team used a prescriptive systems engineering approach (defining requirements, developing alternatives and conducting trade studies).

The report recommended the following major opportunities for Rocky Flats which have not been approved but will be resolved through the WM PEIS process and subsequently the site specific NEPA process:

1. Ship 146 cubic meters of TRU waste to the Idaho National Engineering and Environmental Laboratory (INEEL) for treatment.
2. Implement use of Fourier Transform Infrared System (FTIRS) for headspace gas analysis of TRU waste.
3. Ship LLMW to Hanford for disposal if approved through the WM PEIS process and the site specific NEPA process..
4. Ship LLW to the Nevada Test Site (NTS) and direct fund NTS.
5. Treat LLMW in current DOE incinerators.
6. Implement the interim soil action level (15/85 mrem per year) for all environmental remedial actions.

Table 3-7 describes the current status of these recommendations:

**Table 3-7
Status of EM Integration Recommendations**

Opportunity	Incorporated in Document?	Est. Cost Savings (Pre-2006)	Est. Life-Cycle Savings
TRU Waste to INEEL	Yes	\$20 Million	\$20 Million
Use of FTIRS	Yes	\$22.4 Million	\$22.4 Million
LLMW to Hanford ¹	TBD	\$29 Million ²	\$39 Million
LLW to NTS	Yes	\$33 Million	\$39 Million
Treat LLMW	Yes	\$6.7 Million	\$8.9 Million
Soil Action Level	Yes	None (Already Implemented)	None (Already Implemented)

¹Must be approved through the WM PEIS process and the site specific NEPA process

²Cost savings calculation based on hypothetical shipments to Hanford

3.9 Contracting Approach

The RFFO's contracting approach fully implements Contract Reform initiatives recommending the utilization of Performance Based Management Contract (PBMC) techniques. The Site is operated under a cost-reimbursement contract with a small base fixed fee, plus a larger potential fee pool tied to the achievement of specific, objective performance based incentives. This single contract is well over 90 percent of the total RFFO procurement budget. Other contracts for support services, utilities, etc., are predominantly firm fixed price. Labor hour contracts account for less than 2 percent of the total, as do other cost reimbursement contracts. The RFFO organization is structured to foster the administration of the Rocky Flats PBMC. The procurement organization, under the Assistant Manager for Government Operations (AMGO) is responsible for general contract administration and holds contracting officer authority. Contracting officers in AMGO or the RFFO Manager lead any formal contract negotiations with the contractor, and issue any contract direction impacting cost, schedule or scope. The Assistant Manager for Program Planning and Integration (PPI) is responsible for strategic planning for Rocky Flats, including the identification, coordination and development of performance measures that can be negotiated (with the contracting officer) into the contract as performance based incentives. PPI also coordinates the Rocky Flats Site Change Control Board (SCCB), which controls budget and work authorization under the contract. The Assistant Manager for Program Assessment is responsible for monitoring contract performance, including coordination of the validation of contractor completion of performance measures completion tied to incentive fees. The validation is accomplished by subject matter experts (SMEs), while Program Assessment coordinates the validation to ensure responsible and capable SMEs are identified and assigned responsibility for such validation. All other RFFO organizations provide the needed SMEs and oversee contractor performance in their responsible functional areas.

3.10 Critical Science and Technology Development Needs and Benefits

The Site is focused on an accelerated path to Site closure. Deployment of alternative technologies is one mechanism by which to achieve enhanced performance; it is a tool to help the Site to meet its ambitious closure goal.

The Site's Technology Program is an information resource to the line programs onsite for introducing new technologies to the programs with the potential to accelerate Site closure. The Site Technology Coordination Group (STCG) is a part of the Site Technology Program responsible for information brokering and coordinating the Site technology needs and opportunities list.

Technology needs and opportunities critical to helping the Site achieve its 2006 Plan closure goal include bulk debris waste characterization techniques, improved radiological characterization techniques, and improved size reduction techniques. The primary benefits expected from the deployment of alternative technologies are reduced programmatic uncertainty, accelerated critical path schedules, and/or reduced life-cycle costs. Information on science and technology needs and opportunities as well as technologies with potential deployment at the Site in the near-term can be found in Sections O.9.1 - O.9.4 of the Operations Office Data Summary spreadsheet. Additional information regarding the function and activities of the Site Technology Program and the Site's philosophy and strategy for alternative technology application is contained in the Site Specific Technology Deployment Management Plan. (See Attachment B)

4.0 SCOPE, COST AND SCHEDULE

This section describes the scope, cost, and schedule of the Document. The methodology used to develop the cost estimate and schedule is also described. Summary costs and schedule information for the case can be found in this section.

4.1 General Site Narrative

Rocky Flats occupies an area of approximately 6,200 acres in northern Jefferson County, Colorado, approximately 15 miles northwest of Denver. From its first construction in the early 1950s, the original 2,520-acre Site developed into an industrial complex consisting of more than 700 facilities used for manufacturing, chemical processing, laboratory, support, research and development, and administrative facilities. The Site's main production and support facilities were located near the center of the Site, which occupies about 385 acres. In 1972 a surrounding 3,930-acre parcel was acquired to function as a security and safety "Buffer Zone" to "minimize problems arising from the proximity of an industrial facility to a residential community."

Land adjacent to the Buffer Zone is still used primarily for agricultural and mining purposes. In the 40 years since Rocky Flats was constructed, surrounding multi-use development has approached the Site and the population of the Denver metropolitan area has increased to approximately 2.2 million people living within a 50-mile radius of the Site.

From 1952 to 1989, the primary mission of the site (then called the Rocky Flats Plant) was the production of nuclear and non-nuclear components for nuclear weapons. During this time, activities generally consisted of radioactive (e.g., plutonium, uranium, etc.) and nonradioactive (e.g., stainless steel, beryllium, etc.) metal-working, fabrication and component assembly, and plutonium recovery and purification. Research and development in the fields of chemistry, physics, metallurgy, materials technology, nuclear safety, and mechanical engineering were conducted to advance the Site's mission.

In 1989, almost all of the Site's radioactive material production activities were suspended due to safety and environmental concerns related to Site operations. Additionally in 1989, the Site was placed on the Superfund National Priorities List. In 1992, when the production of the W-88 Trident Warhead was canceled, the nuclear weapons production role of Rocky Flats ended. Although production has ceased, many buildings store nuclear weapons components, other nuclear materials, and wastes. Extensive effort and manpower are required to maintain the facilities in a safe and secure condition.

Following cessation of production activities, the Site is challenged with the task of cleanup. Over the years, many of the facilities and much of the equipment used for the production of nuclear and non-nuclear weapons components are contaminated with radioactive materials and other hazardous materials. Further, the equipment that provides the safety envelopes for the nuclear buildings and the utility support systems are deteriorating and becoming increasingly unreliable with the passage of time.

The longer these systems are required to be maintained in an operational state, the higher the cost of repair and replacement. Additionally, as a result of past disposal practices and planned and unplanned events, there have been releases, both wind borne and water borne, of radiological materials and hazardous waste into the environment, including portions of Rocky Flats and surrounding lands.

The greatest liability at the Site is the potential risk to health and safety posed by the presence of large amounts of SNM in various forms. Rocky Flats currently stores approximately 12.9 metric tons of plutonium and over 6 metric tons of highly enriched uranium. Much of this material has been stored in temporary packaging since 1989, following the abrupt cessation of nuclear materials production activities. It is this liability that is the major, early focus of the work described in this Document.

To focus management attention on accomplishing measurable progress toward the Rocky Flats intermediate site condition, all cleanup and environmental remediation work has been organized into 29 individual but well integrated and prioritized projects. Management responsibility for each project is assigned to a Project Manager who is accountable for achieving clearly defined cost, schedule, and performance objectives. The project approach reinforces the commitment to clean up Rocky Flats with a measurable and cost effective program.

4.2 Scope of Work to be Performed to Achieve the Intermediate Site Condition

The scope of work to be performed to achieve the intermediate site condition in this Document is described below.

SNM Stabilization, Consolidation, and Storage Activities

- A total of 6,600 kilograms of plutonium metal and 3,200 kilograms of plutonium compounds would be stabilized and packaged.
- Plutonium pits and other components would be shipped to DOE's Pantex facility, and plutonium metals and oxides would be shipped to offsite repositories.
- A total of 3,100 kilograms of plutonium contained within 106,000 kilograms of residue materials resulting from past production activities would be stabilized and repackaged, and the resulting TRU waste would be shipped to DOE's WIPP for disposal.
- A total of 6,700 kilograms of enriched uranium would be packaged and shipped offsite.

Facility Decommissioning Activities

The nearly 700 facilities and structures would be deactivated and demolished. Any new facilities constructed to temporarily manage radioactive wastes and plutonium would also be deactivated and demolished once the wastes and plutonium are shipped offsite.

Waste Management Activities

- LLW and LLMW would be treated and shipped offsite to either commercial or DOE facilities.
- New LLW management facilities and a TRU/TRM waste staging/shipping facility would either be constructed onsite or existing facilities retrofitted to accommodate these activities.
- Hazardous and sanitary waste would be shipped offsite for treatment and disposal.
- Clean construction debris from demolition would either be used as clean fill and disposed onsite, or disposed offsite as industrial fill.

- Some TRU waste would be shipped offsite to the Idaho National Engineering Laboratory for treatment, prior to disposal at WIPP.
- All TRU waste would be shipped to WIPP for disposal.

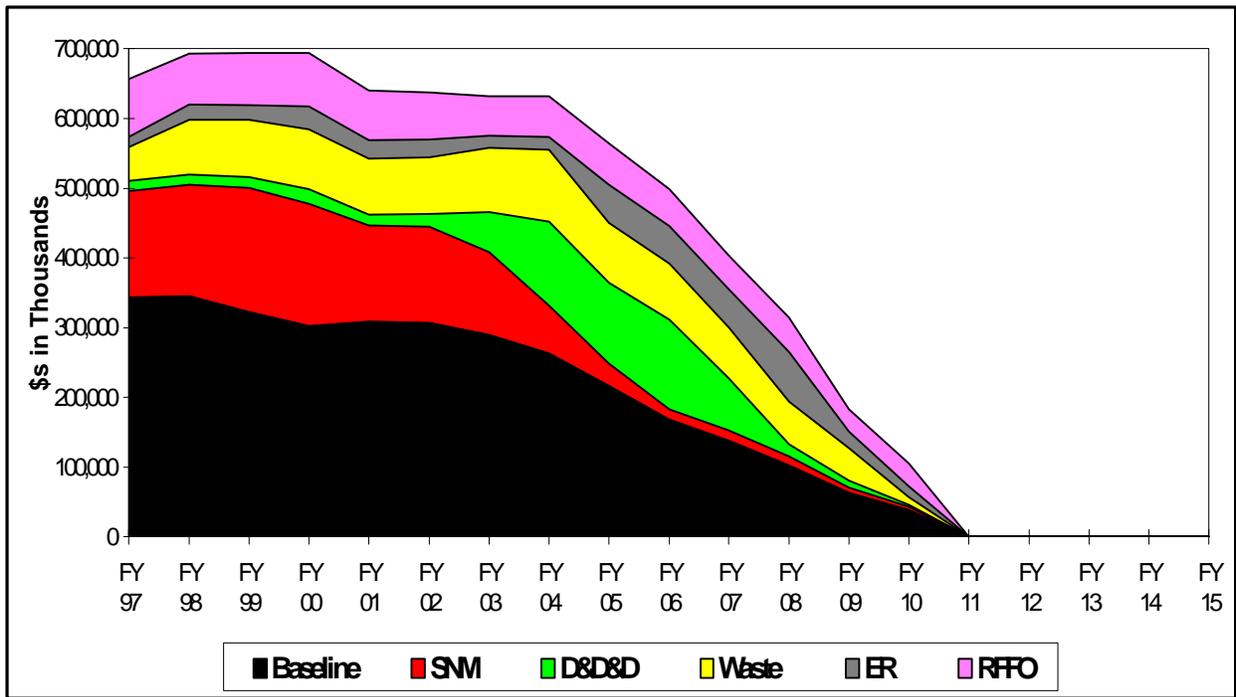
Environmental Cleanup Activities

- Approximately 6,100 acres would support open space uses. Any of the open space acreage could support future commercial uses, if desired, although the expectation is that only the current Industrial Area would have industrial or commercial reuse.
- Approximately 100 acres would be covered by man-made earthen caps that would be placed over any areas of contamination that remain, such as old landfills, to inhibit contaminant migration. These 100 acres would be restricted open space.
- Approximately 58 environmental remedial actions would be conducted to reduce or remove the sources of volatile organic and/or radiological contamination.
- Sources of contamination would be removed or controlled throughout the life of the project and after achievement of the end state, ensuring that State-mandated water quality standards were met.
- Continuous environmental monitoring would be performed throughout the life of the project (and beyond) to verify that the water quality standards were continuously met.

4.3 Cost and Schedule

This subsection presents the time and total estimated cost to accomplish the identified scope of work described above. This Document fully funds all recently negotiated RFCA milestones and DNFSB commitments, thus eliminating the need to renegotiate them. In addition, DOE, RFFO costs reflect a 5 percent per year efficiency gain. The major nuclear facilities are demolished by FY2007. The total cost for this case is estimated to be \$7.3 billion in current dollars (\$6.3 billion in constant 1998 dollars).

Figure 4-1 represents the funding profile by major Site activity and project. Table 4-1 shows the project completion profile.



**Figure 4-1
Funding Profile**

**Table 4-1
Completion Profile**

PBS #	Title	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	Project Cost (\$ in 1,000s)		
																97-06 Total	07-out Total	Project Total
001	Buffer Zone Closure Project															189,713	57,422	247,135
002	Waste Management Project															935,652	208,624	1,144,276
003	Remediation Waste & Contingent Storage Project															5,456	4,981	10,437
004	SNM Capital Support Project															17,848	0	17,848
005	IAEA Project															1,262	0	1,262
006	SNM Consolidation Project															54,151	0	54,151
007	New Pu Interim Storage Vault															1,644	0	1,644
008	Pu Metals and Oxides Stabilization Project															66,564	0	66,564
009	Pu Solid Residue Stabilization Project															476,016	0	476,016
010	Pu Liquid Stabilization Project															41,561	0	41,561
011	Uranium Disposition Project															13,142	0	13,142
012	SNM Shipping Project															31,458	0	31,458
013	Closure Caps Project															0	81,993	81,993
014	Industrial Zone Closure Project															266,109	64,116	330,224
015	Miscellaneous Production Zone Cluster Closure Project															109,717	26,785	136,502
016	Bldg 371 Cluster Closure Project															311,949	22,964	334,913
017	Bldg 707/750 Cluster Closure Project															233,373	9,015	242,388
018	Bldg 771/774 Cluster Closure Project															207,231	0	207,231
019	Bldg 776/777 Cluster Closure Project															223,197	13,635	236,832
020	Bldg 881 Cluster Closure Project															70,920	21,348	92,268
021	Bldg 991 Cluster Closure Project															17,001	0	17,001
022	Bldg 779 Cluster Closure Project															21,117	0	21,117
023	Utilities & Infrastructure Project															605,007	98,728	703,734
024	Safeguards & Security Project															411,546	37,963	449,509
025	Infrastructure Improvement/Replacement Project															84,685	0	84,685
026																0	0	0
027	Analytical Services Project															64,425	18,902	83,327
028	Work for Others Project															769	0	769
029*	RFFO Program Direct Project															676,449	179,475	855,925
030	K-H Project Management															1,199,542	160,177	1,359,719

* Includes National Program Funding

4.4 Cost and Schedule Methodology

This section addresses the methodology and approach used to develop the cost estimate and schedule for this Document. The cost, schedule, and work scope for this Document are integrated by means of a common sitewide WBS.

Work Breakdown Structure

The WBS identifies all Site work and consolidates it into work segments. Each work segment is dissected into successive levels of detail until adequate management control is possible and individual tasks are fully defined, quantified, estimated, and scheduled. The WBS provides the basis for work scope definition, cost estimating, schedule projections, and reporting of all Site work.

The top two levels of the WBS represent the Site Vision as set forth in the preamble to the RFCA and the intermediate site condition to be achieved. The third level divides the work into cleanup and closure segments to achieve the intermediate site condition. Within a cleanup or closure segment (level 5 of the WBS) the work is divided by facility cluster, IHSS, capital project, or associated waste management or SNM work processes.

The Rocky Flats WBS:

- Depicts the hierarchical relationship between work elements, reinforces mission-critical and integrating themes, and emphasizes areas for progress toward the Site of the future.
- Supports grouping of work elements into the 29 Projects that the PBS describes.
- Supports crosscut reporting by program area, source of funds, DOE ADS, type of work, responsible organization, performing organization, subcontractor, and others.
- Supports the network logic scheduling of work and facilities planning for completion of performance measures by incorporating the performance measure into the schedule logic work flow that has been planned for its completion.
- Facilitates communication of work completion, ongoing activities, and planned work with DOE within Kaiser-Hill and the Site subcontractors, and with stakeholders and regulators.

Cost Estimating

The cost figures included in the Document are categorized as planning estimates. The DOE Cost Guide, Volume 6 states that a planning estimate has an accuracy range from -50 percent to +100 percent. The cost estimates included in this document are at least within that range of accuracy and are as credible as possible for this stage of project definition. The FY1997 costs in the Document are the actual costs expended during that year. The cost estimates for FY1998 are from the approved FY1998 Budget contained in the Basis of Estimate Software Tool (BEST97) which is an activity based cost estimating tool developed by the Site. In addition, the Site is currently in the process of updating activity based cost estimates for the life-cycle of the Site.

The estimated cost and time duration required for each work activity in the schedule reflect the associated work scope. In this Document the work from FY1997 through FY2004 is funding constrained; work beyond FY2004 is schedule constrained. The baseline costs in this Document decrease as the SNM and liability reduction activities are completed.

Cost Estimating System

The Cost Estimating System consists of a database with a cost estimate for each element of the WBS. These costs estimates are either annual operating costs or one-time costs. Putting the individual costs for each WBS element into a database allows the costs to be sorted and summarized into any number of options. The database provides a mechanism for reflecting and documenting changes as additional detail and information become available.

Cost Estimating Approach

The cost estimates cover all activities required to complete the closure at Rocky Flats, including contingency and DOE, RFFO costs. The approach used to estimate each category of cost is addressed later in this section.

The cost estimates for the Rocky Flats Closure Project have been developed by knowledgeable technical staff. Professional cost estimators assisted in the development of the cost estimates and provided an overall review for consistency and credibility. To ensure that all costs were included but not duplicated, the cost estimates were developed at levels 5, 6, and 7 of the WBS.

The cost estimates are based on assumptions and data developed by the technical groups that have responsibility for managing the work. These assumptions, technical details, and specific quantities are identified in other parts of this report and in the basis of estimate.

Direct Cost Estimates

Direct costs are those costs associated with each work activity. For example, a direct cost is the cost required to fill a drum with waste. The direct cost includes the cost of the labor hours, plus the incremental cost of equipment, and the price of the drum. The direct cost is the basis from which all other elements of costs are derived.

The direct costs for the Document were provided by technical program staff. In some areas, such as facility decommissioning and environmental restoration, a detailed estimate was developed for an individual building or IHSS, then the costs were extrapolated for similar buildings or IHSSs.

In some instances costs were entered into the database at WBS level 7. However, most were entered at levels 4, 5, and 6. Where possible, the quantities and volumes of work were based on projections provided by the current operating programs. Unit costs were based on a combination of historical averages, cost benchmarks, and estimator judgment.

Indirect Cost Estimates

Indirect costs are defined as those costs that are necessary for the direct activities to be completed, but cannot be assigned to any single activity because of their general nature. The indirect activities were based on the FY1998 budget for each WBS element. The estimated cost for each subsequent year changes to reflect the changes in the direct work. A 5 percent reduction per year in these areas was assumed to the extent possible.

Escalation

Escalation is the adjustment applied to cost estimates to account for the impact of inflation. All of the costs were estimated in FY1998 dollars except FY1997 which is actual dollars. An escalation factor of 2.7 percent factor was applied to dollars beyond FY1998.

Contingency

Contingency is a specific provision for unforeseeable elements of cost within a defined project scope. Contingency is used to cover costs resulting from incomplete design, unforeseen and unpredictable conditions, and uncertainties within the defined project scope. Contingency does not include provisions for out-of-scope work and baseline changes.

The application of a contingency cost covers the entire life-cycle of a project from the feasibility studies through execution to close-out. A contingency analysis was performed at the lowest level of the WBS to present a true indication of the cost risk involved with the project. The contingency was applied as a single-line entry in the cost estimate summary spreadsheets. This section provides the approach used to determine the contingency.

The DOE Cost Estimating Guide, Volume 6, provided guidance for the analysis and application of contingency for cost estimates prepared for DOE. Although the guide does not specifically address process engineering, operations, or maintenance, the general philosophy of the guide was appropriate for those items in the context of Site closure as a single project. The contingency reflects the cost risk associated with activities planned in each fiscal year. The overall contingency applied to the cost estimate is 13 percent of the Total Project Cost.

The methodologies established for the analyses of contingency requirements for the Draft Document cost estimates were as follows:

- *Construction Project Costs* - Approximately a 25 percent contingency was added to construction project estimates to cover potential cost increases due to incomplete design, unforeseeable and unpredictable conditions, or uncertainties within the defined project scope. The four factors that were considered in determining the contingency for construction items are:
 - Project complexity
 - Design completeness
 - Market conditions
 - Special project or Site conditions

- *Environmental Restoration (ER) Costs* - Estimates for ER activities cover two phases: The assessment phase and the remediation and cleanup phase. The method used to determine contingency cost was dependent on the phase. The assessment phase of an ER project has a high degree of uncertainty regarding the technical characteristics of the regulatory issues, the site being evaluated, and the level of stakeholder concern. However, there is a low cost risk, so a contingency of 10-20 percent was applied. The cleanup phase resembles a construction project and a 25 percent contingency was applied.
- *Deactivation/Decommissioning Costs* - The contingency rate for facility deactivation and decommissioning was 30-35 percent because of the uncertainty associated with the cost factors. The contingency rate takes into consideration the following four cost factors:
 - Availability of technology to reach the desired end state
 - Unknown levels and amounts of contamination to be removed before demolition
 - Undetermined levels of contamination for materials to be left in place
 - Uncertainty of schedules for D&D
- *Operations and Maintenance* - The cost estimates for operations and maintenance were based on historical costs for similar activities. A contingency ranging from 0 to 20 percent was included.
- *Indirect Costs* - Contingencies were considered for indirect cost items that were proportional to external causes and were commensurate with the external drivers.

Scheduling Approach

Schedules were developed using the same scope identification techniques as the cost estimates to ensure consistency between the estimates and schedules. Schedule activities were identified to level 4, 5, 6, or 7 of the WBS and checks were performed to verify that the entire WBS scope was included in the schedules and to eliminate duplicate activities.

The scope of work associated with each building, area, or process was defined and an activity duration was assigned. A logical sequence for executing the activities within a building, area or process was developed to form a Critical Path Method schedule. Based upon dependencies created by work logic, resource constraints or funding limitations, the schedules were then linked to other schedules required to meet the objectives.

Cost/Schedule Integration and Resource Leveling

After the initial critical path schedule was produced, it was reviewed by senior scheduling staff and task team leaders to verify assumptions, Bases of Estimate, logic ties, activity duration, float, start and completion dates, and overall presentation. Changes were made to improve activity relationships and refine overall duration of the effort.

Then resources (costs) were loaded into each schedule activity from the cost estimate. For each schedule activity, the cost was identified as either one-time (cost remains constant regardless of activity duration) or unit-based (cost increases or decreases as activity duration increases or decreases, usually expressed as cost per year).

After the schedule and cost estimates were integrated, an available funding profile was entered into the system. Using the leveling capability of the system, activity start and completion dates were accelerated or

delayed until the activities could be completed within the imposed limitations of funding. In some instances leveling could not achieve the desired funding profile, and activity duration had to be adjusted on an individual basis. The resource-leveling step did not alter the basic logical structure of the schedule; adjusting activity duration required analysis of the critical path to ensure the basic logic structure remained sound. In instances where the original cost and schedule profile exceeded the funding ceiling in any given year, extension of work into the out-year(s) to accommodate the funding limitation had the effect of lengthening the overall completion time of the project.

4.5 Description of the Site Change Control Process

The purpose of the SCCB process is to ensure that changes in scope, schedule and cost for both the annual and life-cycle baselines are within established thresholds, are completed and tracked, in a formal, controlled manner.

This process is required by DOE Order 430.1, Life-Cycle Management Practices. The SCCB is required for both RFFO and contractor baseline changes. Change management holds both the government and contractor accountable. Change control also provides the project with a historical record of how and why changes were made to the original planning baseline.

Change control thresholds are required to ensure that all approved changes are reviewed and recorded accurately and timely, to control costs by avoiding needless changes, to prevent incorrect, inappropriate or unauthorized changes, to ensure that work on changed "scope" is only approved after a change request, and to inform stakeholders of proposed changes and final actions.

To ensure that a valid baseline (technical scope, cost, and schedule) is maintained for work performed at the Site, all baseline changes are controlled using the Baseline Change Control process.

Baseline

The current project baseline at Rocky Flats consists of scope, schedule, and budget. At the foundation of the baseline is a WBS which contains the Rocky Flats Closure Project Scope of Work. This WBS consists of approximately 2,800 elements each with a detailed dictionary entry providing a description of the work planned. The WBS is electronically shared with, and becomes the basis for, the estimating system, the accounting and reporting system, and the scheduling system.

All estimating for the Rocky Flats Closure Project is done on a software system which captures significant detail (scope, milestones, costs) for the execution year and the next two years, and reduced levels of detail for the outyears. This data is summarized into the Site's Work Authorization Documents (WADs). There are approximately 70 WADs which are summarized in 35 PBSs. These serve as the bases for 29 HQ PBSs. The WBS Dictionary, WADs and PBSs document the baseline.

Baseline Change Control

Changes to the baseline are important contractual documents requiring control and accountability. Rocky Flats has an established process in place to control changes to the baseline. If a change is required, the contractor WAD Manager will initiate a Baseline Change Proposal (BCP). There are three types of BCPs depending on the significance of the change or dollars associated with the change. Each level requires an associated and appropriate approval process. The more significant the change, the more rigorous the process.

The BCP contains a description of the change, justification for the change, details of what parts of the baseline need to be changed, marked-up copies of the changed baseline documents, results of a baseline impact analysis of the change, and the source of the requested funds, if appropriate.

The contractor WAD and PBS managers approve the BCP along with the contractor Vice President responsible for the work. A quality check and funds verification is performed by the contractor Planning & Integration Department before the BCP is submitted to the contractor Internal Change Control Board (ICCB). The ICCB reviews BCPs for justification and priority in accomplishing the closure project mission.

BCPs which have lesser degrees of change requested can be approved by the ICCB for implementation/execution with copies sent to DOE, RFFO for information. BCPs with higher impacts (Type I BCPs) are approved by the ICCB for presentation to the SCCB which is staffed by RFFO. The SCCB reviews Type I BCPs for justification and priority in accomplishing the closure project mission. Approved BCPs are distributed to the appropriate contractor WAD/PBS managers for implementation/execution and incorporation/updating the affected portions of the baseline.

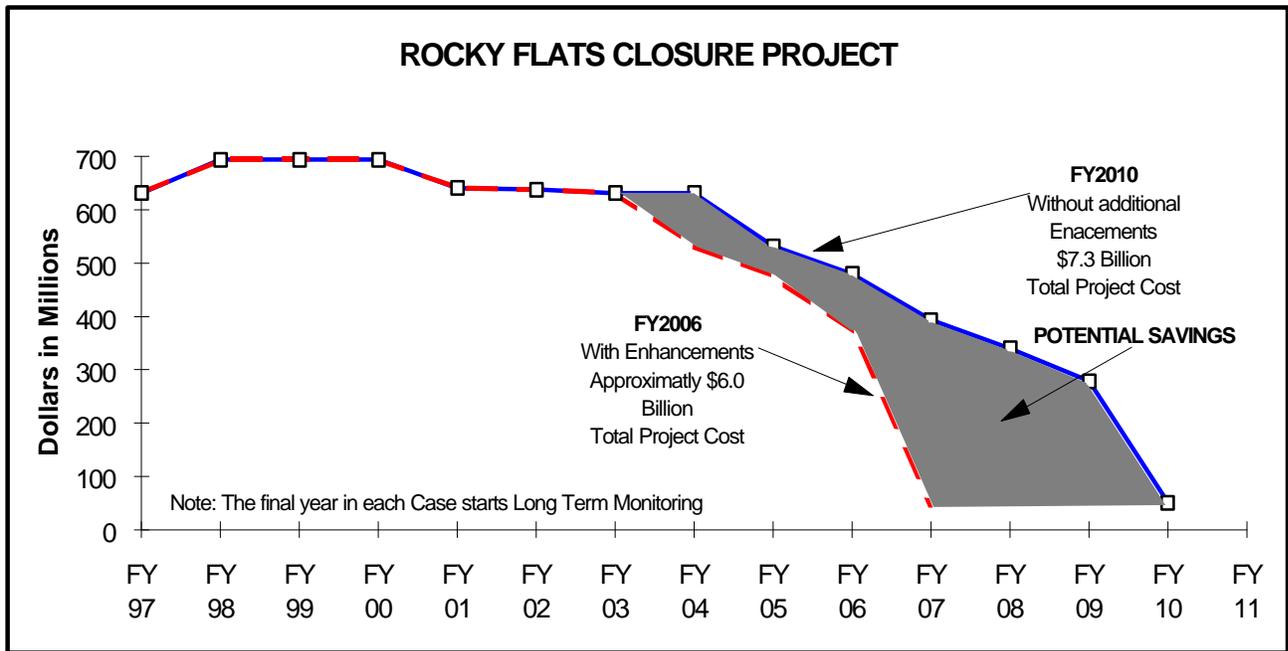
4.6 Enhanced Performance Strategies

This Document submittal has significant performance enhancements already included when compared to either the Case I or II projects from February 1997 "Focus on 2006" draft. From a life-cycle cost to complete the Rocky Flats closure project, this Document represents a \$8.8 billion cost savings from Case I (from \$16.1B to 7.3B) and a \$1.7 billion cost savings from Case II (from \$9.0B to \$7.3B). What has created this value is:

- Expedited shipment of SNM which would eliminate the need for construction, operation, and deconstruction of a new SNM Storage Vault. The life-cycle savings as a result is approximately \$200M.
- Moderate increase in funding (\$50M/year for 3 years) in the FY1998 to FY2000 time frame allows the Site to stabilize its SNM and SNM residues earlier than in the previous cases. This injection of funding and the resulting "domino effect" of accelerating other work is a significant factor in reducing the life-cycle cost of this project by over \$1.3 billion.

- Decrease in total time to complete the project compared to the previous cases. It is precisely through work scope acceleration that Rocky Flats achieves its greatest return on investment. As Rocky Flats mortgage costs are \$350 million/year, everyday that Rocky Flats closed early represents a savings to the taxpayer of \$1.5 million. We have structured our Performance-Based Incentives to place a significant fee on moving work scope up from future fiscal years, while maintaining programmatic controls to ensure work is completed safely and responsibly. Additionally, we have established significant dis-incentives or penalties for work scope if it is not completed in the planned fiscal year.

As discussed earlier, the baseline plan for Rocky Flats achieves cleanup by FY2010 at an estimated cost of about \$7.3 billion in current dollars (\$6.3 billion in constant 1998 dollars). However, the Site has a goal to achieve the same cleanup four years earlier and achieve life-cycle savings estimated to be \$1.3 billion. Figure 4-2 pictorially represents what the life-cycle cost and schedule cleanup profiles of the FY2010 looks like and what a FY2006 cleanup might look like.



**Figure 4-2
Comparison of Closure Project Scenarios**

Although a FY2006 baseline plan has yet to be developed, a number of key cost and schedule performance enhancing strategies become apparent upon analysis of the current Site baseline (FY2010) critical path. As Figure 4-2 above demonstrates, an acceleration in the cleanup of the Site could achieve life-cycle cost savings of \$1.3 billion primarily because significant mortgage costs are not incurred. Cost and schedule improvement must occur in at least three major areas in order to achieve progress toward the cleanup goal of 2006. These areas are: (1) nuclear material (plutonium metal and oxides, and enriched uranium) storage, stabilization and offsite shipment; (2) plutonium residue treatment and offsite shipment and (3) plutonium facility deactivation, decontamination and demolition (D&D).

Nuclear Material Storage, Stabilization and Shipment

The current cleanup baseline schedule assumes that plutonium metals and oxides will be stabilized, placed in 3013 containers and shipped to a receiver site starting in FY2002 and ending in FY2004, consistent with the Record of Decision for the Storage and Disposition of Weapons-Usable Fissile Material Programmatic Environmental Impact Statement. To achieve cleanup by 2006, the plutonium metals and oxides must be removed from the Site by FY2002. The accelerated removal of these materials allows two significant events to happen early. First, D&D of the nuclear facilities where these materials would be stored could begin two years earlier, if the plutonium residues, discussed below, are removed within the same time frame. Second, the early removal of these materials allows potential significant mortgage reduction savings to occur earlier because of subsequent reductions in safeguards and security costs, and nuclear safety costs. Another area where additional cost and schedule savings could be achieved is if the plutonium metals and oxides currently stored at Rocky Flats are packaged in 3013 containers at another DOE facility. This potential opportunity has not been closely examined.

Plutonium Residue Treatment and Offsite Shipment

The current cleanup baseline schedule assumes that the plutonium residues will be stabilized by FY2002, certified for WIPP by FY2003, and shipped to WIPP by FY2003. The future treatment of these materials is on the critical path for closure of the Site and represents a significant cleanup cost and schedule activity. The early removal and treatment of some or all of these residues at other DOE sites could, with the early removal of the plutonium metals and oxides, allow early D&D of the nuclear facilities where these materials would be stored. Further, some reduction in mortgage costs could be anticipated due to decreases in safeguards and security, and nuclear safety.

Plutonium Facility Deactivation, Decontamination and Demolition

The current baseline schedule assumes that the Site's major nuclear facilities can take five to seven years to D&D. D&D of the nuclear facilities dominate the later part of the critical path schedule of the cleanup of the Site. Early in the nuclear facilities D&D schedule, deactivation of the facilities is funding constrained (i.e., there is insufficient money early to accomplish significant deactivation). Later during the decontamination and demolition phases, the D&D schedule is work constrained (i.e., the work is constrained by the length of time it is estimated to take to accomplish the work). In order to achieve the goal of a 2006 closure, currently unidentified breakthroughs are needed to accelerate the time it takes to accomplish major nuclear facility D&D. During FY1998 and FY1999, the Site is planning the D&D of Building 779, a former plutonium production facility to not only improve the cost and schedule estimates for the D&D but to examine technologies to accelerate D&D.

5.0 REGULATORY COMPLIANCE

5.1 Compliance and the Document

By its very nature, the accelerated cleanup of Rocky Flats promotes regulatory compliance in that regulated wastes will be properly treated and disposed, remaining environmental remedial actions will take place, major sources of effluent will be removed or attenuated, and nuclear materials will be stabilized, packaged and shipped offsite. The RFETS is fully committed to regulatory compliance during the cleanup and the subsequent long-term stewardship of the Site. This commitment includes compliance with environmental laws and regulations; nuclear safety and management requirements; applicable agency agreements; and approved compliance schedules. Rocky Flats is committed to conducting management and operations in a manner that gives priority to performance which attains regulatory compliance and the goals of Site closure.

Programs are in place to support compliance with environmental regulations from Title 40 Code of Federal Regulations (CFR) and Colorado environmental laws and regulations, nuclear regulations outlined in Title 10, finalized agency agreements, consent orders, applicable DOE Orders and DNFSB recommendations. To track and ensure compliance with external commitments, management systems and tools have been developed and are utilized. The ability to maintain compliance with DOE Orders for both environmental and nuclear activities is achieved largely through programmatic implementation and requests for exemption.

The ultimate goal of rapid, effective, and safe closure of the Site must be the prime consideration to ensure that activities and resources are optimally applied to achieve the Site Vision described in the RFCA. Compliance is a key element for success, therefore the commitment to compliance is constant under any future funding scenarios. The implementation of this commitment involves balancing resources between baseline compliance and cleanup and closure.

5.2 Attainability of Compliance With and Without Enhanced Program Performance

The current assumptions and funding targets used to develop this Document allow for resource allocation to be focused on cleanup and closure while baseline compliance is maintained. Although not required to maintain compliance, any future increased efficiencies obtained from enhanced program performance will allow for additional resource allocation to cleanup and closure activities.

If the assumptions and funding targets used to develop this Document are modified, it may require differing approaches to compliance in terms of strategy, tactics, and timing. Strategies may need to be adjusted to alter the time distribution of resources required for compliance. If significant modifications related to resource allocation are required for the Site to maintain compliance it may be necessary to rebaseline/renegotiate previously established regulatory commitments and milestones. Given the regulators' current issues and perceptions, rebaselining/renegotiating of commitments can not be guaranteed. Under any scenario, the key to success is a continued examination of "necessary and sufficient" requirements for cleanup and closure activities.

It is the express intent of the Site to maintain compliance under any funding scenario; however, resource allocation is a continuum between baseline compliance and cleanup and closure activities.

6.0 STAKEHOLDER AND TRIBAL NATIONS INVOLVEMENT

6.1 Stakeholder and Tribal Nations Participation To Date

Much of the early work completed on a number of site planning documents contributed to submittal of the *Accelerating Cleanup: Focus on 2006 Discussion Draft* (Discussion Draft) in June 1997. Involvement of stakeholders throughout the development of these documents enabled DOE and Kaiser-Hill to address and incorporate many important stakeholder concerns and ideas into the development of the Site strategies and prepare the *Path to Closure Document*.

On February 27, 1998, the Draft Document as well as draft strategies from other sites in the DOE complex were made available to the public for a 60-day comment period which ended on May 1, 1998. These strategies have been revised to reflect any additional comments received. Prior to the beginning of the comment period, the Site offered briefings to interested members of the public and organizations to discuss changes and updates submitted to DOE, HQ by the Site. To review the comments received at Rocky Flats, see Attachment E.

6.2 Future Stakeholder and Tribal Nations Participation Opportunities

Regular Rocky Flats public involvement activities will continue. As individual issues of interest emerge Rocky Flats will continue to involve and inform stakeholders in Site decisions affecting closure. The Site plans to provide quarterly updates on the progress toward achieving the milestones described in the document. The updates may be in the form of a written report or may be presentations at local community meetings. The remainder of this section is organized into two parts. Section 6.2.1 describes the general stakeholder involvement strategy associated with the Rocky Flats Closure Project. Section 6.2.2 presents the activities and tools that will continue to be used to implement the strategy.

Requests for further information or copies of the Rocky Flats document, should be directed to the following:

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Rocky Flats 2006 Plan Contact
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EM will make available on the World Wide Web (<http://www.em.doe.gov>) all eleven Draft Site Strategies and the National Report, as well as the supporting data used to develop the plans (e.g., Project Baseline Summaries, waste/material disposition maps). Requests for additional National Reports should be directed to the Center for Environmental Management Information (CEMI) at 1-800-736-3282.

6.2.1 Public Involvement Strategy

The Rocky Flats Closure Project documents the implementation of public policy decisions deliberated among the DOE, EPA, the state, and a broad range of stakeholders during and subsequent to the development of RFCA. Stakeholder interest remains high in monitoring Closure Project progress and providing input to decision-makers on the manner in which the Project is carried out. Stakeholders in this plan include Site employees, elected officials and staff, Citizens Advisory Board (CAB) members, RFLII members, and the general public.

Therefore, strategic objectives are intended to:

- Maintain dialogue among interested stakeholders and key project decision-makers as the Plan is implemented and revised.
- Improve stakeholder access to information about Rocky Flats Closure Project progress and changes in the Plan assumptions.
- Promote alignment between Project and stakeholder interests regarding outstanding Plan issues.

It is important to emphasize that the Plan is a living document that will be evaluated and updated periodically as new information becomes available. Stakeholders will continue to play an essential role in this ongoing development and review process. Because of the evolving nature of many key planning assumptions, this stakeholder involvement strategy will remain dynamic and flexible. Stakeholders are encouraged to provide input on how they would like to be included in shaping Rocky Flats decisions.

6.2.2 Public Involvement Activities and Tools

This section presents tools and techniques designed to achieve the strategic objectives outlined in Section 6.2.1.

Meetings/Briefings

Cascading Meetings - Information on Plan developments is conveyed to supervisors through Cascading Meetings briefing materials for their use in face-to-face meetings with Site employees.

CAB and RFLII Presentations - These boards have a diverse range of membership and attendance, and provide access to a cross section of stakeholders. Presentations to the full boards or interested subcommittees will continue to be offered regularly. All briefings are intended to encourage two-way communication and obtain feedback for decision-makers.

Document Briefings - Briefings will continue to be offered to federal, state and local officials; local government officials; business organizations; interest groups; and employee representatives, as requested and in compliance with RFCA.

Presentations at Scheduled Rocky Flats Public Information Meetings - Presentations and discussions in this forum will promote communication with those community members who are not associated with the Site Specific Advisory Boards or other organized stakeholder groups.

Focused Stakeholder Meetings (Pizza Meetings) - These meetings, typically scheduled in the early evening and accompanied by pizza, provide an opportunity for informal focused dialogue among stakeholders and Site personnel on a specific topic.

Teleconferences - Teleconferences will be conducted as needed to augment opportunities for input by stakeholders known to have a high level of interest in a specific issue.

State of the Flats Stakeholder Meeting - This meeting will be held in January each year. Accountability for the past and prioritization for future decisions will be the two meeting themes. The meeting will address the same subjects outlined under *State of the Flats Annual Report* and will include discussion of areas where stakeholder involvement is needed.

Informational Tools

Employee Publications - Information about Plan progress and developments is published through the Site newspaper (*Crossroads*) and on the Site intranet.

Monthly Newsletter - A monthly newsletter is published to provide regular updates onsite activities to stakeholders. The newsletter will include Site plans and accomplishments, as well as upcoming opportunities for stakeholder involvement and highlights on Plan developments.

Annual Report Card - An annual report on Rocky Flats Closure Project progress is published and distributed to Site employees and other stakeholders. Updates to the report are published periodically during the year.

Fact Sheets - Fact sheets will continue to be developed and revised as needed to support the Draft Document communication. Examples of fact sheet topics include: TRU Waste, LL and LLMW, SNM, Contingency Plans, D&D, and Soil Action Levels. Additional fact sheets will be developed as informational needs arise.

Responsiveness Summary - A formal Responsiveness Summary has been drafted that addresses stakeholder questions and comments received on the June 1997 Discussion Draft. The Responsiveness Summary is presented in Attachment E of this document. A formal responsiveness summary was also prepared following the July 1996 Ten Year Plan. Questions and comments will be encouraged throughout the life of the Plan and addressed on an ongoing basis.

Community Advisories - Community advisories announcing public meetings and other relevant information will be issued over the Rocky Flats community broadcast fax system, which reaches more than 50 local community organizations and stakeholders. Distribution is updated periodically to encompass active participants. Community advisories will also be used to announce important Plan information as appropriate.

News Releases - News releases will be used to announce similar information as described above in Community Advisories.

Advertisements - Display advertisements will be placed in major newspapers to publicize DOE-sponsored public information meetings.

Site Internet Web Page - Regular updates are made to the Rocky Flats Internet Web Page providing a channel for improving stakeholder access documents and information regarding the Plan and the Rocky Flats Closure Project.

Document/Record Accessibility - The Public Reading Room will be maintained to provide public access to available documents.

State of the Flats Annual Report - This letter report will be disseminated at the beginning of each fiscal year approximately one month prior to the State of the Flats Stakeholder Meeting (see below). It will provide a detailed discussion of the items listed below. The Annual Report will be supplemented by quarterly updates on the progress of achieving Site goals.

- What did the Site accomplish in the past year?
- What didn't the Site accomplish that was planned and why?

- What is planned for the upcoming year? Integration of the upcoming Performance Measures, Milestones, Baseline and Budget.

7.0 DISPOSITION OF STAKEHOLDER AND TRIBAL NATIONS COMMENTS ON DISCUSSION DRAFT

7.1 Comment Disposition Process and Results

In 1998, the DOE distributed National and Site *Accelerating Cleanup: Path to Closure* documents, as the basis for continuing dialogue with stakeholders and Tribal Nations regarding the Focus on 2006 Plan. The National document was based on site drafts submitted by each Operations/Field Office. The comment period for both National and Site documents ended May 1, 1998.

The DOE, HQ has issued a report, "Comment Response Document to the National Accelerating Cleanup: Focus on 2006 Plan, Discussion Draft" in December 1997. The document focuses exclusively on comments provided in response to the National Discussion Draft. Copies of this report can be obtained by contacting:

U.S. Department of Energy
Rocky Flats 2006 Plan Contact
Mariane Anderson
P. O. Box 928
Golden, CO 80402-0928
(303/966-6088)
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A number of site specific comments were also received. Rocky Flats received approximately 75 comments from 5 letters. The majority of the comments received by Rocky Flats related to site specific issues. However, some of the comments received related to national issues and were forwarded to DOE, HQ for resolution. A listing of the comments received and the responses to them are provided in an attachment. Additionally, the inputs from many of these comments as well as other comments received verbally through various public forums, has been incorporated throughout this document.

7.2 Summation of Comments Received

A summary of the comments received by Rocky Flats on the *Path to Closure* are provided in Attachment E.

ATTACHMENT A
Programmatic Risk Management Plans

E-1 Liquid Organic Waste Receiver Site Available

1. Description of Programmatic Risk
 - RFETS currently stores 17,000 gallons
 - Two Site Treatment Plan (STP) milestones to remove this waste in FY98
 - State of Tennessee is holding up shipments to Oak Ridge's (OR's) TSCA incinerator
 - Consequence of not meeting milestone date: Results in 2 missed STP milestones and prolonged storage, likely development of costly onsite treatment capability
2. Proposed Resolution Process, Including Contingencies and Alternative Backup Approaches
 - Oak Ridge and HQ need to resolve issues with State of Tennessee to allow RFETS liquid organic waste shipments to OR's TSCA incinerator
 - An alternative path is being pursued involving renegotiating the milestones with the State of Colorado. Results of this effort will be provided in the next annual update of the plan.
3. Other Sites/Agencies that Must be Consulted
 - Oak Ridge
 - HQ
 - State of Tennessee
 - [State of Colorado]
4. Any Need for HQ Assistance
 - HQ needs to work with Oak Ridge to resolve issues with State of Tennessee
5. Preliminary Schedule for Resolution
 - Resolution of issues with Tennessee: 1st Quarter FY98. This date has passed without resolution of the issues. Target date for resolution has not been determined.

E-2: Sand, Slag and Crucible Receiver Site Available

1. Description of Programmatic Risk
 - Defense Nuclear Facilities Safety Board (DNFSB) milestone to complete stabilization in FY98
 - RFETS plans to ship these materials to Savannah River Site (SRS) by 4/98. The change to the baseline to disposition this material by alternate methods is in process. Once the baseline change is complete, this date and milestone will be removed.
 - Consequence of not meeting milestone date: Results in missed DNFSB commitment, prolonged storage, and building on-site processing capability. The DNFSB has agreed to disposition this material by alternate methods. Once this baseline change has been made, this milestone will be removed.
2. Proposed Resolution Process, Including Contingencies and Alternative Backup Approaches
 - HQ needs to assure that SRS receiver site capability is authorized and funding available to support receiver site functions
3. Other Sites/Agencies that Must be Consulted
 - SRS and stakeholders
 - HQ
 - DNFSB
4. Any Need for HQ Assistance
 - HQ needs to assure that SRS receiver site capability is authorized and funding available to support receiver site functions
5. Preliminary Schedule for Resolution
 - 2nd Quarter FY98. Once the baseline change has been approved, this date will be removed.

E-3 Record of Decision for Residue Processing

1. Description of Programmatic Risk
 - For RFETS the ROD is not based on technology.
 - The EIS is currently open for public comment.
 - The EIS involves multiple DOE Sites.
2. Proposed Resolution Process, Including Contingencies and Alternative Backup Approaches
 - HQ must issue the ROD on the schedule it has identified.
 - Alternative is to continue on site storage until ROD is issued, delaying site closure.
3. Other Sites/Agencies that Must be Consulted
 - The NEPA process involves stakeholders and other interested federal and state agencies.
 - Savannah River Site, Pantex.
4. Any Need for HQ Assistance
 - The action is solely Headquarters, the RFETS is not a decision maker for this activity.
5. Preliminary Schedule
 - The ROD is scheduled to be approved by HQ in 1st Quarter FY98. HQ changed the date to May 1998.

E-4: Waste Isolation Pilot Plant Opens

1. Description of Programmatic Risk
 - By FY99, on-site storage capacity will be exceeded
 - Consequence of WIPP not opening by FY99: RFETS will need to construct new TRU waste storage facility by 1st or 2nd Quarter FY99
2. Proposed Resolution Process, Including Contingencies and Alternative Backup Approaches
 - HQ needs to assure that WIPP receiver site capability is authorized and funding available to support receiver site functions
3. Other Sites/Agencies that Must be Consulted
 - WIPP and stakeholders
 - HQ
4. Any Need for HQ Assistance
 - HQ needs to assure that WIPP receiver site capability is authorized and funding available to support receiver site functions
5. Preliminary Schedule for Resolution
 - 3rd Quarter FY98

E-5: Additional TRUPACT II's Available

1. Description of Programmatic Risk
 - RFETS assumes adequate TRUPACT II's available to meet shipping schedules
 - Consequence of inadequate number of TRUPACT II's available: Construction of new on-site TRU waste storage facility
2. Proposed Resolution Process, Including Contingencies and Alternative Backup Approaches
 - HQ needs to assure that TRUPACT II construction and mobilization capability is authorized and funding available to support transportation functions
3. Other Sites/Agencies that Must be Consulted
 - Carlsbad
 - HQ
4. Any Need for HQ Assistance
 - HQ needs to assure that TRUPACT II construction and mobilization capability is authorized and funding available to support transportation functions
5. Preliminary Schedule for Resolution
 - 4th Quarter FY98

E-6 Fluorides Receiver Site Available

1. Description of Programmatic Risk
 - The technology for preparation for shipment of this material has been demonstrated.
 - Shipment is dependent upon the EIS ROD for Residue Processing.
 - RFETS plans to stabilize fluorides on-site, then ship off-site for processing
 - Consequence of unavailability of receiver site: Results in prolonged storage and construction of on-site processing capability
2. Proposed Resolution Process, Including Contingencies and Alternative Backup Approaches
 - ROD for Residue Processing needs to be approved by 1st Quarter FY98. [HQ changed this date to May 1998.]
 - A shipper/receiver agreement will be prepared once the ROD is approved.
3. Other Sites/Agencies that Must be Consulted
 - SRS
 - HQ to approve the ROD for Residue Processing.
 - The NEPA process involves stakeholders and other interested federal and state agencies.
4. Any Need for HQ Assistance
 - HQ must issue the ROD for Residue Processing by 1st Quarter FY98 before RFETS can begin the shipper/receiver process.
5. Preliminary Schedule
 - HQ needs to approve the ROD for Residue Processing by 1st Quarter FY98. HQ changed this date to May 1998.

E-7: : Low Level Mixed Waste Receiver Site Available

1. Description of Programmatic Risk
 - Disposal facility needed by 4th Quarter FY00 that can accept LLMW>1nCi/gram of activity
 - Consequence if facility unavailable: Results in construction of new on-site LLMW storage facility
2. Proposed Resolution Process, Including Contingencies and Alternative Backup Approaches
 - HQ needs to approve Waste Disposal EIS ROD and include Hanford as disposal site for LLMW>1nCi/gram of activity.
 - HQ needs to assure that Hanford waste disposal facility is adequately funded to support RFETS' LLMW disposal needs.
 - Richland and HQ need to negotiate with stakeholders to gain regulatory approval of Hanford for disposal of RFETS' LLMW.
3. Other Sites/Agencies that Must be Consulted
 - Richland and stakeholders
 - HQ
4. Any Need for HQ Assistance
 - HQ needs to approve Waste Disposal EIS ROD by 3rd Quarter FY98. HQ has changed this date to at least 1st quarter FY1999.
5. Preliminary Schedule for Resolution
 - HQ approve ROD by 3rd Quarter FY98. HQ has changed this date to at least 1st quarter FY1999.
 - Disposal facility for LLMW>1nCi/gram available by 4th Quarter FY00.

E-8: Scrub Alloy Receiver Site Available

1. Description of Programmatic Risk
 - RFETS plans to ship the scrub alloy to SRS for processing
 - Consequence if receiver site unavailable: Results in prolonged storage with possible new vault construction
2. Proposed Resolution Process, Including Contingencies and Alternative Backup Approaches
 - HQ needs to assure that SRS receiver site capability is authorized and funding available to support receiver site functions
3. Other Sites/Agencies that Must be Consulted
 - SRS and stakeholders
 - HQ
4. Any Need for HQ Assistance
 - HQ needs to assure that SRS receiver site capability is authorized and funding available to support receiver site functions
5. Preliminary Schedule for Resolution
 - 1st Quarter FY02

E-9: Safe Secure Transports (SSTs) Available

1. Description of Programmatic Risk
 - RFETS needs an adequate supply of SSTs to meet SNM shipping schedules
 - Consequence if adequate supply of SSTs unavailable: Results in prolonged on-site storage of SNM
2. Proposed Resolution Process, Including Contingencies and Alternative Backup Approaches
 - HQ needs to assure that SST capability is authorized and funding available to support SNM transportation functions.
3. Other Sites/Agencies that Must be Consulted
 - Albuquerque
 - HQ
4. Any Need for HQ Assistance
 - HQ needs to assure that SST capability is authorized and funding available to support SNM transportation functions.
5. Preliminary Schedule for Resolution
 - 1st Quarter FY02

E-10 Metal and Oxides (M&O) Receiver Site Available

1. Description of Programmatic Risk
 - RFETS plans to begin off-site shipments of M&O in FY02 and finish by FY04.
 - Consequence if receiver site unavailable: Results in construction of new SNM vault.
2. Proposed Resolution Process, Including Contingencies and Alternative Backup Approaches
 - HQ needs to assure that M&O receiver site capability is authorized and funding available to support receiver site functions by FY02.
 - An alternative path is being pursued whereby SRS is modifying an existing reactor building to accommodate accelerated shipments of M&O starting in January 2000. This accelerated path is not yet part of the RFETS baseline. Once the baseline has been changed, the annual update to the plan will reflect the new path for M&O.
3. Other Sites/Agencies that Must be Consulted
 - SRS and stakeholders
 - HQ
4. Any Need for HQ Assistance
 - HQ needs to assure that M&O receiver site capability is authorized and funding available to support receiver site functions by FY02.
5. Preliminary Schedule
 - M&O receiver site available by 1st Quarter FY02.

E-11: LANL Available to Receive Salts that Exceed Safeguard Termination Limits (STLs)

1. Description of Programmatic Risk
 - After stabilization of high risk salts, RFETS plans to ship to LANL for processing
 - Consequence if LANL unavailable: Results in additional salts treated on-site, extending salt distillation schedule and operation of B707
2. Proposed Resolution Process, Including Contingencies and Alternative Backup Approaches
 - HQ needs to assure that LANL receiver site capability is authorized and funding available to support receiver site functions
 - Alternate methods to disposition these salts are being investigated. If successful, the baseline will be changed. Once the baseline has been changed, this date will be removed.
3. Other Sites/Agencies that Must be Consulted
 - LANL and stakeholders
 - Albuquerque
 - HQ
4. Any Need for HQ Assistance
 - HQ needs to assure that LANL receiver site capability is authorized and funding available to support receiver site functions
5. Preliminary Schedule for Resolution
 - 1st Quarter FY98, if alternate disposition methods are approved, the baseline will be changed. Once the baseline has been changed, this date will be removed.

C-3 Salt Distillation Complete

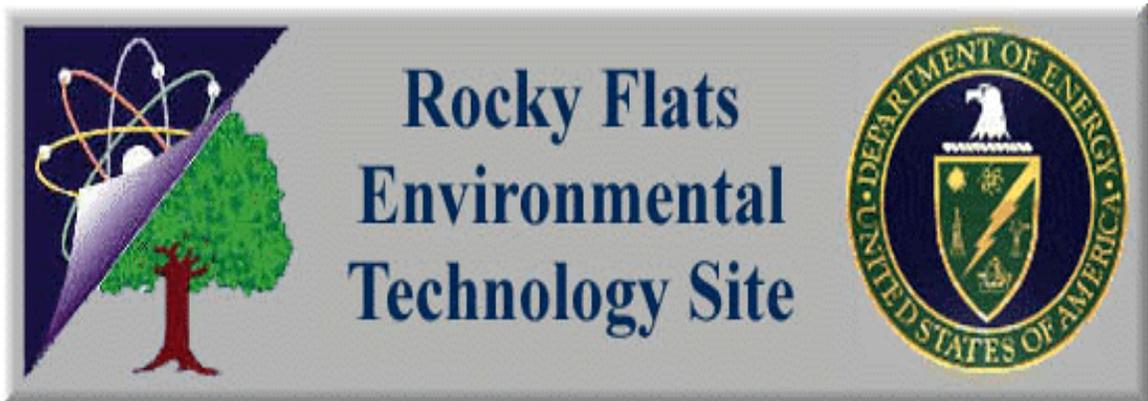
1. Description of Programmatic Risk
 - Development of distillation exists only at the laboratory level. Success has not yet been demonstrated for all types of salt residues.
 - Distillation construction and operation requires issuance of the EIS ROD for residue processing.
 - WIPP certification for resulting waste form has not yet been achieved .
2. Proposed Resolution Process, Including Contingencies and Alternative Backup Approaches
 - Issue Residue Processing EIS ROD.
 - Successful demonstration of distillation process on a production scale.
 - Top DOE management advised of jeopardy to critical path from current Safeguards Termination Limits (STLs).
 - An alternative disposition method is being investigated which would allow RFETS to ship these salts without processing. Once a baseline change has been approved, the annual update to the plan will reflect the new path for these salts.
3. Other Sites/Agencies that Must be Consulted
 - LANL, WIPP
4. Any Need for HQ Assistance
 - Issue Residue Processing EIS ROD on schedule
 - Top DOE management resolve issues of feasibility of alternate disposition methods.
5. Preliminary Schedule for Resolution
 - HQ issue Residue Processing EIS ROD in 2nd Quarter FY98. HQ changed this date to May 1998.

C-4 Residues Complete DNFSB 94-1

1. Description of Programmatic Risk
 - Development of vitrification exists only at the laboratory level. Success has not yet been demonstrated for all types of salt residues.
 - Vitrification construction and operation requires issuance of the EIS ROD for residue processing.
 - WIPP certification for resulting waste forms has not yet been achieved.
2. Proposed Resolution Process, Including Contingencies and Alternative Backup Approaches
 - Issue Residue Processing EIS ROD.
 - Successful demonstration of vitrification process on a production scale.
3. Other Sites/Agencies that Must be Consulted
 - SRS, LANL, WIPP
4. Any Need for HQ Assistance
 - Issue Residue Processing EIS ROD on schedule.
5. Preliminary Schedule for Resolution
 - HQ issue Residue Processing EIS ROD in 2nd Quarter FY98. HQ changed this date to May 1998.

**SITE TECHNOLOGY
DEPLOYMENT PLAN**

Draft Revision 2.0



JUNE 1, 1998

ATTACHMENT B

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1.0 INTRODUCTION

The Rocky Flats Environmental Technology Site (hereafter referred to as RFETS or the Site) is focused on a baseline path to closure by fiscal year (FY) 2010 at a total cleanup cost of approximately \$7 billion. This baseline path represents a significant transformation from the high-level conceptual framework of the Baseline Environmental Management Report (BEMR) with a closure date of 2050 at a total cleanup cost of \$37 billion into detailed project planning with life-cycle budgeting and a clear plan for closure. Additionally, in November 1997, RFETS accepted the challenge to accelerate closure from FY 2010 to the end of FY 2006 by targeting a +12% per year positive schedule variance against the life-cycle baseline.

Deployment of alternative technologies is one mechanism that can assure the FY 2010 baseline closure date, and it is essential to leveraging the FY 2006 closure goal. To achieve a +12% schedule variance, alternative technology applications and deployments will be necessary.

The RFETS is committed to meeting the challenges of technology applications and deployment given the Site's aggressive closure goal. Because of ultimate closure, the Site is a "technology user" versus a "technology developer," often with a limited window of opportunity for technology selection and deployment. As a "technology user" site, RFETS values technology activities occurring elsewhere that have application to the Site and proactively consults and cooperates with technical programs throughout the U.S. Department of Energy (DOE) complex, private industry, and academia.

Toward the end-state closure goal, RFETS aggressively pursues alternative technologies that have been demonstrated and are commercially available for deployment. When technologies cannot be identified or implemented in the near term, then "development" may be the only method by which to achieve schedule acceleration.

1.1 Background

In a July 3, 1997, memorandum, former Assistant Secretary for Environmental Management Alvin Alm stated "I am strongly committed to accomplishing wide-spread deployment of innovative technologies to achieve the goals of the EM program." Toward this end, the memorandum directed that "Site-Specific Deployment Plans" be prepared by each field office. The October 20, 1997, guidance for the "Accelerating Cleanup: Focus on 2006" provided additional detail for the content of the Site Technology Deployment Plans. This guidance states "Additional management attention is needed to accelerate the use of innovative technologies..." and specifies that the Site Technology Deployment Plan consist of two parts: a Technology Deployment Management Plan and Technology Deployment Opportunity Fact Sheets. This document is being provided to meet the guidance direction.

1.2 The Effect of Closure

As a closure site, as opposed to a site with an ongoing mission or a national laboratory, RFETS has an inherently different philosophical, strategic, and tactical approach to technology deployment. The Site recognizes that no single technology package fits all circumstances; for example, no single technology meets the needs of all building decontamination and decommissioning (D&D) cases. The closure focus at RFETS has produced the following strategic planning and process shifts related to technology:

- The status of RFETS as a “technology user” site means that it will look to other sites with ongoing missions that include technology development activities to help solve the Site’s closure technology needs and opportunities (as defined in the Site Technology Coordination Group [STCG] list of Site technology needs and opportunities). An increased association with the EM-50 focus groups will be undertaken to ensure the Sites needs are well understood in this regard.
- Decontamination and treatment activities at RFETS will be minimized in most D&D and related waste management projects, as a preliminary analysis conducted by Kaiser-Hill has demonstrated that they are not cost effective. The Kaiser-Hill analysis is on-going; this analysis and individual project planning may indicate the need for specific decontamination or treatment applications.
- For all D&D activities, the standard waste box (SWB), rather than drums, is anticipated to be the RFETS standard for disposal of waste. This strategy will produce significant cost savings from reduced requirements for waste handling, documentation, storage, and size reduction. In general, size reduction efforts will therefore be directed to the limitations imposed by use of the SWB, and to maximizing waste loading within the SWB. Use of the SWB necessitates corollary technology deployments such as counters.

2.0 OBJECTIVE AND SCOPE

The objective of this plan is to describe the Site’s philosophy and strategy for the evaluation and implementation of cost-efficient and schedule-enhancing technologies to be used as alternatives to the planned baseline technologies. By describing an overall approach for technology identification, evaluation, and implementation, it is anticipated that functions and activities in support of technology deployment will be clarified and, thus, executed more effectively and efficiently. The lead organizations for executing this plan are the DOE RFFO Program Planning and Integration group and Kaiser-Hill, LLC Closure Project group.

The scope of this plan includes the following information (with corresponding section locations within this document) per the October 20, 1997, “Accelerating Cleanup: Focus on 2006” guidance:

- Objective and scope (Section 2.0)
- Overview of potential opportunities for the deployment of new technologies (Section 4.1.2)
- Management strategy (Section 3.0)
- Overall site approach to enhancing technology deployment (Section 4.0)
- Barrier reduction efforts (Section 4.1.3)
- Key information requirements (Section 4.1.2)

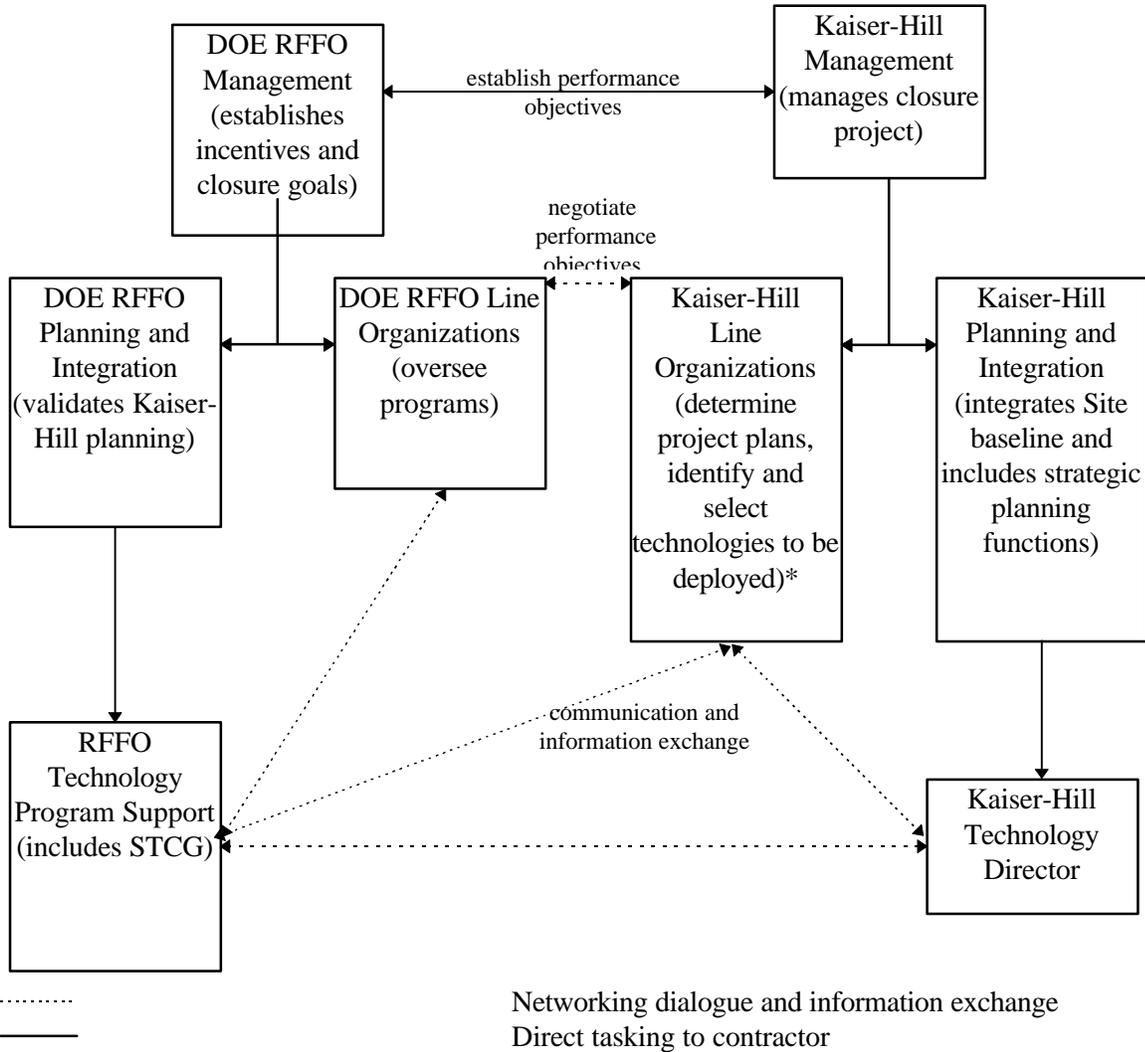
3.0 MANAGEMENT STRATEGY

The management strategy supporting deployment of technologies and the Site Technology Program is consistent with the existing performance-based integrating management contract (PBIMC). The RFFO has established the end point (Site Closure) in collaboration with its community stakeholders and relevant regulatory agencies in the Rocky Flats Closure Agreement (RFCA). Kaiser-Hill, as the integrating management contractor (IMC), is responsible for the management functions in support of achieving the established closure goals. Kaiser-Hill uses its team of prime subcontractors along with other subcontractors as deemed appropriate to perform the work necessary to accomplish the established closure goals. Each year, RFFO and Kaiser-Hill negotiate performance measures for which Kaiser-Hill and its team can earn fee. In this way, RFFO provides incentives for specific project outcomes in each fiscal year.

Deployment of technologies is pursued based on their capacity to improve the Site's ability to meet its closure goals as outlined in Section 4.1.2. That is, those technologies that can improve the Site's closure schedule/budget, reduce risk, or improve safety will be researched and investigated for application at RFETS. RFFO and Kaiser-Hill management consider the line organizations to be the Site's technology users, and their evaluations will ultimately determine whether or not an alternative technology will be deployed. The primary role of both RFFO and Kaiser-Hill management with respect to technology deployment is to encourage line organization staff to consider alternatives to the baseline approach when doing so can result in meaningful improvements to the Site's path to closure. In addition, management reviews overall programmatic issues to ensure that a true "life-cycle" evaluation of a technology's advantages and disadvantages is accomplished.

Figure 1 is provided to illustrate the management and staff roles with respect to technology deployment.

Figure 1: RFETS Organization Chart Relative to Technology Deployment



* Actual deployment of technologies and execution of projects are accomplished by Kaiser-Hill's contractors.

4.0 SITE TECHNOLOGY PROGRAM OVERVIEW

Ultimately, the role of the Site Technology Program is to introduce and facilitate deployment of alternative technologies that can reduce costs, improve worker safety, reduce risk, improve stakeholder acceptance, and/or accelerate the schedule for Site closure.

The RFFO and Kaiser-Hill each possess functions linked to the Site Technology Program. The RFFO Technology Program operates as a research, marketing, information, and liaison resource to closure programs and includes STCG and Technical Program Officer (TPO) support functions. The STCG is responsible for coordinating an annual revision of the Site's list of technology needs and opportunities. In addition, the STCG function (backed by a technical staff) provides a focal point for technology information exchange, and as such, is a critical link in networking throughout the DOE complex. The TPO support is responsible for technical and administrative requirements associated with projects sponsored by EM-50. The Kaiser-Hill Technology Program has additional roles for vendor qualification and negotiation, project development, and project implementation.

When technologies are identified as qualified candidates to meet Site needs, their potential to replace baseline technologies is evaluated by the relevant Kaiser-Hill and subcontractor closure program and project personnel. Upon selection of a technology for deployment, Kaiser-Hill and its subcontractors are responsible for its implementation at the Site. Assessment and approval of a technology by the cognizant project staff (end-users) create a sense of "ownership" in the technology that produces an environment supportive of application of the technology.

The Site Technology Program functions according to two distinct phases. The first phase focuses on accelerating the Site's closure path (RFCA End State) schedule through constant evaluation of the Site's critical path and those other paths that may become the Site's critical path. Phase I is further defined with two parallel operational objectives:

- Objective 1 is focused on resolving near-term (less than one year) technology needs. An example includes reviewing strippable coatings for use on highly contaminated floors in order to identify an alternative coating to improve worker safety and reduce exposure risk. Such improvements result in reduced requirements for personal protective equipment (PPE).
- Objective 2 is focused on resolving mid-term (between one and three years) technology opportunities, such as cutting technologies to be used in Building 776 which are beyond the current cutting technologies used at RFETS.

Kaiser-Hill as the Site's integrating contractor leads the effort for Objective 1, and RFFO leads the effort for Objective 2. Both efforts require extensive dialogue for mutual success.

This distinction between Objective 1 and 2 in Phase I is based on the relationship established between RFFO and Kaiser-Hill under the Site's PBIMC. The PBIMC coupled with the Site's drive toward closure influences the traditional role between DOE and its contractor. Under the PBIMC, DOE sets performance expectations, and the IMC is responsible for choosing *how* to accomplish those expectations. The role of application and deployment of alternative technologies within Phase I is to provide levers to accelerate closure project goals, both in near-term and longer-term strategies.

Near-term technology planning evaluations are driven by project needs and computer "what if" modeling in order to select and apply technologies that will result in real-time impact to the Site's annual baseline budget and performance goals. Mid-term technology planning activities are led by RFFO with critical

involvement from Kaiser-Hill to identify technology opportunities for closure schedule acceleration and life-cycle cost reduction.

Phase II of the Site Technology Program focuses on improving Site end-results through technology application, and thus, improving the final end-state condition of the Site. The second phase will be pursued only when opportunities associated with the first phase have been exhausted, thus keeping the Site's closure mission in the forefront of all planning and integration efforts. The objectives associated with Phase II are yet to be fully determined and defined.

Table 1 illustrates and describes the strategy and distinctions of the Site's phased approach toward technology application and deployment at RFETS.

Table 1: Overview of RFETS Technology Program Phases I and II

	Phase I RFCA End State Objective 1	Phase I RFCA End State Objective 2	Phase II Beyond Closure Objective TBD
Lead Organization	Integrating contractor (Kaiser-Hill)	RFFO/IMC	RFFO and Integrating contractor
Focus	Technology needs	Technology opportunities	Closure obligations
Goal	Technology solutions	Technology improvements	Remediation
Function	Make real-time, project-level decisions	Set performance goals	Facilitate stakeholder acceptance
Time Frame	less than 1 year	1 to 3 years	Beyond 2006
Constraints	Project driven; Dollar limited	Life cycle driven; Schedule limited	Stakeholder driven; Technology limited
Funding Constraint	Within baseline budget	Possible leveraged funds	Funding to be determined

4.1 Phase I: Closure Path Focus (RFCA End State/Vision)

The Site Technology Program is primarily focused on activities that will improve the Site's mission, i.e., closure. Accelerating the Site's closure path schedule is the primary driver for decisions to deploy alternative technologies. This rationale can be better understood when one considers that each day eliminated from the closure path schedule equates to approximately \$1 million in infrastructure cost savings for the Site. When line managers evaluate the incorporation of an alternative technology into baseline work packages, they look for an overall positive impact relative to the project drivers and the project risk of implementing a new technology. Fundamentally, Phase I of the Technology Applications and Deployment Program can be described within the following framework of tasks:

- Identification, description, and prioritization of Site technology needs and opportunities. Fundamentally, this element refers to "problem" identification with respect to technology issues. These needs and opportunities (problem statements) are communicated to technology vendors, technical service providers, other DOE sites, DOE EM-50 Headquarters and Programs, and other national and international institutions.
- Identification, assessment, and qualification of candidate technical products and resources to satisfy the terms and conditions of the Site project activity. A candidate technical product or resource is compared to the current baseline technology in terms of schedule acceleration, cost effectiveness, risk reduction, programmatic uncertainty, and any other relevant project requirements. In addition, assessment is made whether terms of a commercial arrangement can be developed to satisfy the project needs. Qualified technology solutions and improvements are then communicated with planning and operations functions throughout the Site.
- Support to approval and permitting processes and stakeholder acceptance. This element refers to information and liaison support to closure programs for those activities needed when a "new" technology is introduced at the Site. A change from a conventional technology approach to an alternative technology may require regulatory permits and approvals as well as stakeholder briefings and comment periods. In such cases, the Site Technology Program provides support as appropriate (based on requests from the relevant closure program) to facilitate and complete these activities.
- Implementation of technologies and technical approaches that are deemed schedule enhancing and/or cost effective and meet requisite technical and other project criteria. Selected technologies are incorporated into the Site's closure plan on a project-by-project basis at the most detailed activity level. Upon successful implementation of an alternative technology, its application to multiple projects across the Site is investigated and pursued.

4.1.1 Site Technology Needs and Opportunities

The first step toward establishing an enhanced technical baseline is to understand the current baseline and recognize those areas that present technical difficulties. In other words, a problem must be identified at some level before a meaningful solution can be or will be sought. To support this process, the STCG coordinates an annual revision of the Site's list of technology needs and opportunities. This revision is based upon interactions between subject matter experts and technology users in line and planning organizations with the Site Technology Program. In this way, the list becomes representative of an overall closure program perspective. After agreement is reached on the list of technology needs and opportunities, DOE and contractor line and planning organization personnel are consulted to describe each item on the list

accurately and comprehensively. The most recently revised STCG list of Site technology needs and opportunities (September 1997) is presented in Section O.9.2 of the December 1997 submittal of the Site's Path to Closure. Although a formal revision process for the list occurs on an annual basis, the list is considered a working document that is constantly changing in response to the changing conditions at the Site.

The revised list of Site technology needs and opportunities (updated as needed, but annually at a minimum) is prioritized based on input from line and planning organization personnel from across the Site. Prioritization is based on a number of criteria, some of which include impact on Site closure critical path, project schedule milestones, life-cycle baseline cost reduction, and size of the problem. The prioritized list of technology needs and opportunities is distributed to DOE Headquarters and Programs, technology developers and vendors, and other public and private institutions.

In addition to the more formal process outlined above, the Site's strategic planning process constantly involves subject matter experts with planning personnel to explore strategic initiatives and develop technology options and/or alternative technical approaches focused on improving the Site's closure strategy. Deployment of alternative technology is one mechanism by which RFETS can achieve enhanced schedule performance toward Site closure; therefore, the baseline is constantly being evaluated to identify opportunities where alterations can achieve significant schedule acceleration and closure impact. Factors considered in the evaluation of various alternative approaches include the Site's critical path, project schedule milestones, requisite technical criteria, project performance measures, resource availability, cost efficiency, risk reduction, and budget allocation.

4.1.2 Site Technology Solutions and Improvements

The Site Technology Program accesses technology search consultants and technology resources, including DOE resources such as Global Environmental Technology Enterprise (GETE), TechCon, and others; participates in technical trade activities; and maintains a network in the technical community worldwide. Kaiser-Hill now maintains a vendor tracking, response, and interactive focusing process, established in FY97, to achieve a higher capture rate of useful technology. The STCG acts as a Site focal point of a communication network for information exchange between technology developers, technology vendors, other DOE sites, and Site program personnel.

The Site Technology Program assists subject matter experts, line organization managers, and procurement personnel as appropriate to identify candidate technology solutions and match them to projects. The Site Technology Program may also assist with the following activities:

- development of technical specifications and requests for proposals;
- structure of subcontractor terms and conditions to meet project activity scope, schedule, and cost parameters;
- performance of due diligence;
- validation of cost, technical, safety, and environmental claims;
- design of characterization and treatability studies; and
- participation in technology/source selection process.

Together, the Site Technology Program planning personnel and the functional operations managers structure the selected technical packages to fit the execution plans of the intended projects at the detailed activity level. The multiplicity of technologies in each project are integrated, and the technology subcontractors are combined into a cohesive unit. The STCG supports this process by facilitating the

information exchange between the appropriate Site program personnel and the vendors and technical service providers.

An alternative technology is seriously considered for deployment if it satisfies at least one of the following conditions:

1. It resolves or reduces programmatic uncertainty. (Programmatic risk is associated with the level of confidence project/program personnel have in their ability to meet scope, schedule, cost, and/or regulatory acceptance of their project. As described in the October 1997 2006 Plan guidance, programmatic risk consists of technology risk, work scope definition risk, and inter-site dependency risk.)
2. It accelerates or compresses the Site critical path schedule.
3. It reduces life-cycle baseline costs.
4. It contributes to worker, public, and/or environmental risk reduction.

The following list provides examples of scenarios that would satisfy the conditions described in items 1 through 4 above:

- A technology at the same cost or schedule as baseline with a positive environmental safety and health benefit
- A technology at the same cost or schedule as baseline with a positive waste stream benefit
- A technology at the same cost or schedule as baseline with a positive regulator or regulatory benefit
- A technology at the same cost as baseline with a positive schedule return without negative secondary impacts
- A return on investment greater than baseline without secondary waste increase or negative schedule impacts
- A technology at the same cost and schedule as baseline with a positive risk reduction benefit

Other factors that will be considered before deploying an alternative technology include, but are not limited to:

- ⇒ restrictions or limitations of the technology
- ⇒ worker risk (industrial and/or radiological) and hazards associated with the technology
- ⇒ treatment efficiency, as measured by percent removal/destruction
- ⇒ generation of secondary waste streams
- ⇒ sitewide extent of the problem
- ⇒ economic uncertainty associated with use of the technology
- ⇒ maturity of the technology
- ⇒ commercial availability of the technology
- ⇒ practicality of the technology with respect to the rendering of the science in tractable project terms
- ⇒ simplicity with respect to engineering, worker training, or other application concerns
- ⇒ performance guarantees, including compliance
- ⇒ close fit with all project parameters at the detailed activity level
- ⇒ resources of the technology subcontractor, such as finances, equipment, and worker skills
- ⇒ amenability of the technology to privatized, self-contained, modular, or transportable operations

Final decisions for deployment of alternative technologies rest with the functional line program organizations that are held accountable for the performance of their specific projects. Their participation in the technology assessment and their acceptance of the technology provide a sense of ownership and create

an effective user-driven environment for the technology application. Coordination of the technology selection with planning functions then ensures that all technology activities pursued at the Site are in alignment with the closure strategy and other ongoing programmatic activities.

There must be a fundamental understanding of the technology need/opportunity relative to available Site financial resources. To compete with baseline technologies, candidate alternative technologies must meet the constraints of the baseline funding resource. If deployment of alternative technologies requires funding supplemental to the Site's baseline budget, decisions to request and pursue funding (i.e., from EM-50, privatization, etc.) will be made on a case-by-case basis. Upon selection of alternative technologies for deployment, the Site will use existing project mechanisms to verify schedule acceleration and/or to collect costs to verify life-cycle cost savings. Technology activities will be performed in accordance with the following standard Site procedures, protocols, and practices:

- the agreed upon union contract and Davis-Bacon constraints for work on site
- liability issues such as Price Anderson
- the established subcontracting methodology for accomplishing work
- the tradeoff between the defined baseline and the risk associated with a new site technology application

Deployments under a PBIMC framework then are contingent upon the above factors, in that the government holds the IMC liable for all work performed on the Site.

The Site Technology Program utilizes existing information programs and communication mechanisms for stakeholder and regulatory interactions. Examples of relevant off-site organizations include the Rocky Flats Citizens' Advisory Board, the Rocky Flats Local Impacts Initiative, and the Decontamination and Decommissioning Working Group. Regulatory and stakeholder acceptance of innovative technologies may be facilitated by the STCG networking effort. The two following tables represent the current technological focus at RFETS.

Table 2 lists technologies that are currently planned and expected to be deployed at the Site. Table 3 lists technologies with a strong potential for deployment at the Site. Again, these table entries are continuously being revised to reflect changing Site conditions as technical deployments and project work proceed. Tables 2 and 3 were prepared in March 1998 and represent the most accurate information available at the time of this document's preparation.

4.1.3 Factors Impacting Technology Deployment

Many ancillary factors have a significant impact on the deployment of alternative technologies at the Site. Some examples of these factors are given below.

- Short time to Site closure
 - ⇒ *Issue* - Given the Site's accelerated path to closure, there is a limited "window of opportunity" in which to select an alternative technology for a funded project activity. To achieve accelerated closure of the Site, program/project managers focus on deployment of technologies that are mature and have previously been demonstrated to be successful. The Site's path to closure provides little time to develop new technologies.
 - ⇒ *Strategy* - The Site Technology Program focuses its efforts on identifying and resolving the "critical few" technology needs and opportunities as they relate to the Site's path to closure. In this way, the Site Technology Program aligns its activities with the strategy, priorities, and activities of Site closure.

Table 2: Technologies Currently Planned for Deployment at RFETS

Technology Name	Deployment Status	Schedule Confidence
Pyrochemical Salt Oxidation Process	Deployed 1/98	Started on schedule
Passive Reactive Barrier	Planned for 7/98	High
Pipe Component Packaging Process	Planned for FY98	High
Vented/Filtered Bag-Out Bags	Planned for FY98	High
DISPIM (In-Situ Pu Inventory Monitor)	Planned for FY98	High
Enhanced Mechanical Cutting Tools	Planned for FY98	High
WIPP Certifiable SWB Counter	Planned for FY99	Medium
Pu Stabilization and Packaging System	Planned for FY99	Medium
Multi-Purpose Crate Counter	Planned for FY00	Medium

Table 3: Technologies with a Potential for Deployment at RFETS

Technology Name	Deployment Status	Schedule Confidence
Real-Time Head Space Analyzer System	Potential for FY98	High
Rad Aerosol Encapsulation Process	Potential for FY98	High
Removable Spray Coating Process	Potential for FY98	High
Wet/Combustible Residue Process Module	Potential for FY98	Medium
Personal Property Disposition Pu Survey	Potential for FY98	Medium
Ash Residue Calcination Process	Potential for FY98	Medium
Ash Residue Vitrification Process	Potential for FY98	Medium
Ash Residue Ceramification Process	Potential for FY98	Medium
CO ₂ Pellet Decontamination Process	Potential for FY98	Low
Modular TRU Waste Sorting and Packaging System	Potential for FY98	Low
Asbestos Digester	Potential for FY99	Medium
TRU Level Pu Imaging System for Gloveboxes, Floors, Walls, Tanks; possibly Ducts	Potential for FY99	Medium
TRU Package Monitor	Potential for FY99	Medium
Electrolytic Decontamination	Potential for FY99	Medium
Robots for Sizing, Packaging, Counting	Potential for FY99	Low to Medium
Plasma Arc Torch	Potential for FY99	Low to Medium
TruChem Decontamination Process	Potential for FY99	Low
Salt Residue Ceramification Process	Potential for FY99	Low
Fluoride Residue Ceramification Process	Potential for FY99	Low
Salt Residue Distillation Process	Potential for FY99	Very Low

- High cost associated with critical path schedule slips
 - ⇒ *Issue* - Given the Site's baseline path to closure, each schedule slip of the critical path by only one day equates to additional Site infrastructure costs of roughly \$1 million. Therefore, a technology vendor or technical service provider must convince program/project management that a particular technology will ultimately help the Site to meet its closure schedule goals. The Site's goal of closure by the end of FY 2006 means that the cost associated with schedule risk (delaying closure) is extremely high.

- ⇒ *Strategy* - The Site Technology Program will focus its efforts on identifying those technologies with little programmatic risk and a high probability of schedule acceleration.
- Commercial availability of technology
 - ⇒ *Issue* - The Site is operated under a PBIMC between DOE and the integrating contractor. This contract ensures that all work performed at the Site is in accordance with approved labor, liability, and procurement protocols and practices. The PBIMC is the preferred mechanism by which alternative technologies are procured. If an alternative technology is not yet commercially available, the ability to procure it will be limited. Alternative procurement mechanisms can be pursued but may delay the technology deployment to such an extent that the benefits of deployment no longer outweigh the benefits of the baseline approach.
 - ⇒ *Strategy* - The Site Technology Program will focus its efforts on identifying technologies that are very near the end of their development or already commercially available. This will alleviate procurement concerns and shorten the time to deployment.
- Limited availability of cost and performance data
 - ⇒ *Issue* - Because a prime factor in the decision to deploy an alternative technology is its ability to accelerate the critical path schedule and/or reduce life cycle costs, selection of an alternative technology requires completion of a cost/benefit analysis (including a schedule analysis). Detailed cost and performance data on the proposed technology are required to perform this analysis. Without such data, Site program personnel are not be able to evaluate programmatic uncertainty associated with deployment of a particular technology. Thus, even if a technology appears promising, it may be programmatically unwise to deploy it without sufficient data to support that decision. Again, given the Site's goal of closure by the end of FY 2006, there is little room for cost and/or schedule risk.
 - ⇒ *Strategy* - The Site Technology Program will focus its efforts on obtaining complete and comprehensive information from technology developers and vendors that is considered necessary by the Site end users for the performance of a cost/benefit analysis and subsequent recommendation for deployment of alternative technologies.
- Site contract precludes DOE from directing technology deployment
 - ⇒ *Issue* - Under the current PBIMC, contractors are provided incentives for achieving specific end results within a given time frame, as defined in the annual performance measures. The nature of the PBIMC precludes DOE from directing the contractor *how* to perform the work. Thus, unless the contractor program/project management is confident that a particular alternative technology will improve their ability to achieve the goals of a particular project, they cannot be expected to choose to deploy it.
 - ⇒ *Strategy* - The Site Technology Program will focus its efforts on identifying technologies that will be considered clear advances over more conventional methods. In this way, program/project management will choose deployment of technologies that will help them to achieve project goals.

- No consistent methodology for calculating cost savings estimates
 - *Issue* - There is no single methodology used consistently across the DOE complex for estimating and evaluating cost savings anticipated from the application of alternative technologies. This includes inconsistency in how to capture complete life-cycle costs.
 - ⇒ *Strategy* - The Site Technology Program will focus its efforts on understanding the methodology used by the Site to develop and validate its life-cycle baseline. To the greatest extent possible, the same methodology will be used to evaluate alternative technologies against the baseline and estimate cost savings associated with their deployment.

4.2 Phase II: End-State Focus

The Site's mission is closure. Thus, closure is also the Site's top priority, particularly maintaining or improving the critical path schedule and those activities that can affect the critical path. However, as opportunities for closure path acceleration and cost reduction are identified, addressed, and resolved, the Site Technology Program will transition into a new organizational focus and adopt a modified function and activities. The Site Technology Program is currently operating within the framework of Phase I.

The transition to Phase II is expected to be very distinct. As the transition nears the 2006+ time frame, additional details regarding functions and activities will be explored and developed. Phase II of the Site Technology Program is designed to address the issue of achieving improved end results from the application of alternative technologies.

The revised organization element will consist of a cross-functional team of yet to be determined "experts." These experts will address the end results of the current technology processes on a case-by-case basis. The feasibility, cost effectiveness, and performance time of alternative technologies will be compared to the baseline technical processes to determine the potential for improved end state. The Site Technology Program will continue to monitor the performance of alternative technologies deployed at other DOE sites to maintain a database of technologies for these comparisons. Compilation and exchange of the information relative to the demonstrated technologies, such as performance, site requirements, cost, secondary waste, etc., will be accomplished with STCG support.

5.0

SUMMARY

The RFETS is a closure site focused on a baseline path to Site closure by FY 2010 within a total cleanup cost of approximately \$7 billion. Additionally, in November 1997, RFETS accepted the challenge to accelerate closure from FY 2010 to the end of FY 2006 by targeting a +12% per year positive schedule variance against the life-cycle baseline. Deployment of alternative technologies is one mechanism that can assure the FY 2010 baseline closure date, and it is essential to leveraging the FY 2006 closure goal.

The management strategy supporting deployment of technologies and the Site Technology Program is consistent with the existing PBIMC. Deployment of technologies is pursued based on their capacity to improve the Site's ability to meet its closure goals. The RFFO and Kaiser-Hill management consider the line organizations to be the Site's technology users, and their evaluations will ultimately determine whether or not an alternative technology will be deployed. Ultimately, the role of the Site Technology Program is to introduce and facilitate deployment of alternative technologies that can reduce costs, improve worker safety, reduce risk, improve stakeholder acceptance, and/or accelerate the schedule for Site closure.

The Site Technology Program functions according to two distinct phases. The first phase focuses on accelerating the Site's closure path (RFCA End State) schedule through constant evaluation of the Site's critical path and those other paths that may become the Site's critical path. Phase I is further defined with two parallel operational objectives: Objective 1 is focused on resolving near-term (less than one year) technology needs, and Objective 2 is focused on resolving mid-term (between one and three years) technology opportunities. Kaiser-Hill, as the Site's integrating contractor leads the effort for Objective 1, and RFFO leads the effort for Objective 2, although both require extensive dialogue for mutual success. The second phase of the Site Technology Program focuses on improving end-results of technology application, and thus, improving the final end-state of the Site. The second phase will be pursued when opportunities associated with the first phase have been exhausted.

APPENDIX A:

**Technology Deployment Opportunity
Fact Sheets**

Technology Deployment Opportunity Fact Sheet
Pyrochemical Salt Oxidation

1. Identifying Information

The Rocky Flats Closure Project has requirements for stabilization of salt residues resulting from pyrochemical processing of plutonium metal and oxide at Rocky Flats Plant during production. Three basic types of pyrochemical salt residues include: (1) molten salt extraction (MSE), (2) electro-refining (ER), and (3) direct oxide reduction (DOR). The MSE process was used to remove americium from plutonium metal by selectively oxidizing americium metal and extracting the americium ion into the molten salt matrix. ER was used to purify plutonium, leaving high purity plutonium metal for part production and a salt residue containing impurities. DOR was used to reduce plutonium oxide to the metal using calcium metal in a molten calcium chloride matrix. MSE and ER salts contain mostly magnesium, sodium, and potassium chlorides. DOR salts contain calcium chloride. All salts contain reactive metals such as plutonium, calcium, magnesium, sodium, and potassium, depending on the pyrochemical process in question.

2. Definition of the Problem

The DNFSB Recommendation 94-1, accepted by the DOE, requires stabilization of residues, with special emphasis on early stabilization of reactive residues. Due to the reactive metals in pyrochemical salt residues, they are considered high-risk and require timely stabilization. There are 16 tons of pyrochemical residues at RFETS, containing 1 ton of plutonium.

3. Technology Baseline Information

During the production years, a salt scrub process was used to recover plutonium and americium in an alloy for plutonium recovery at Savannah River Site. The current plan is to melt the salts in crucibles and pyro-oxidize the reactive metals using an oxidant, e.g., sodium carbonate.

4. System Performance Requirements

The pyro-oxidation process must be capable of eliminating reactivity of the pyrochemical salt residues and not introduce any component that will complicate disposition, whether as a waste to the Waste Isolation Pilot Plant or as a plutonium product to Material Disposition for can-in-can immobilization and disposition in the national high-level waste repository. The process must accelerate site closure, increase worker safety and health margins, reduce risks of facility and environment contamination, and minimize waste generation.

5. Project Benefits for the Technology

Projected benefits include stabilized residues; reduced risk to the public, workers, and the environment; minimized waste generation; and an accelerated plant closure schedule.

6. Unique Barriers

Depending on the disposition path(s) chosen, the stabilized products will have to meet WIPP Waste Acceptance Criteria, Material Disposition Acceptance Criteria, Safeguards Termination Limits, and transportation requirements.

7. Funding and Resource Requirements

The funding for pyrochemical salt oxidation is contained within the Rocky Flats Closure Project Baseline. Funding modification may be required for transportation of residues and/or products elsewhere for treatment and disposition.

Technology Deployment Opportunity Fact Sheet
Passive Reactive Barrier System

1. Identifying Information

A passive reactive barrier system is planned for possibly three ground water plumes contaminated with volatile organic compounds (VOCs) and radionuclides at the Rocky Flats Environmental Technology Site (RFETS). VOCs include tetrachloroethene, trichloroethene, carbon tetrachloride, and low levels of plutonium and americium. The three plumes are the Mound Plume, the 903 Pad/Ryan's Pit Plume, and the East Trench Plume. The passive reactive ground water treatment system that is planned for RFETS a passive reactive barrier system using zero valent iron. This system will be used to remove the above referenced chlorinated organic compounds and radionuclides. The system will first be demonstrated on the Mound plume and if successful at that site be applied to the other two RFETS plumes.

2. Definition of the Problem

The Mound plume is believed to originate at the Mound site and extend to where the plume discharges as seeps and subsurface flow into the South Walnut Creek drainage. The contaminants are primarily VOCs, but radionuclides and other naturally occurring metals below background levels have been detected. The VOCs and some radionuclides are in excess of action levels defined in the Rocky Flats Cleanup Agreement (RFCA). The RFCA is an agreement between the State of Colorado, EPA Region VIII, and DOE.

3. Technology Baseline Information

Currently, contaminated ground water plumes are remediated through conventional pump and treat processes and/or contained with a variety of impermeable barriers. Treatability studies have shown that reactive (zero valent) iron will treat contaminated ground water from the three RFETS VOC plumes to regulatory action levels.

4. System Performance Requirements

The system must clean up the plume to water quality standards as specified in the RFCA (DOE 1996). Water quality standards for tetrachloroethene, trichloroethene, and carbon tetrachloride are all 5 ug/Liter.

5. Project Benefits for the Technology

A passive system is a permeable barrier that selectively removes and/or chemically alters the contaminant(s) of concern and will result in lower ground water remediation costs (reduced O&M costs compared to pump and treat). Furthermore, the technologies will generate smaller quantities of waste materials requiring disposal. In addition, in-situ destruction of VOCs reduces potential for human exposure.

6. Unique Barriers

Effluent water has to be in accordance with RFCA (DOE 1996) surface water action levels.

7. Funding and Resource Requirements

This project is funded within the Rocky Flats Closure Project Baseline plus support from the SubCon Focus Area.

Technology Deployment Opportunity Fact Sheet
Pipe Component Packaging Process
(Pipe Overpack Container)

1. Identifying Information

The Pipe Overpack Container (POC) is a means to store and transport selected plutonium residues in their existing chemical and physical form. The POC is a robust residue container that meets or exceeds the package requirements for both transportation and disposal at the Waste Isolation Pilot Plant (WIPP). The actual residue material is contained in a slip-lid can (either in 1- or 2-liter volumes). During bag-out cut operations, the can is placed in a 10-mil polyvinyl chloride bag. The can and the bag-out are then placed in a 3-mil-thick polyethylene bag. The can and the two plastic bags are placed inside an 11 gauge stainless steel can with a threaded lid fitted with a HEPA vent filter. Two of the "inner contamination barrier cans" are placed inside the pipe component. The lid is also fitted with a HEPA filter. The pipe component and fiberboard packing materials are placed inside a DOE-17C Type A 55-gallon TRU waste drum. By virtue of the packaging configuration described above, the residues will have a minimum of five layers of containment. Three layers of this containment qualify as contamination barriers as defined by Interim Safe Storage Criteria (ISSC) requirements.

2. Definition of the Problem

The residues being considered for inclusion in the POC or Pipe-and-Go option are primarily within the salt and ash residue stabilization projects. Certain other materials also meet the criteria. Processing is planned to be performed to reduce hazards and to meet Safeguards Termination Limit (STL) criteria.

3. Technology Baseline Information

Processing of salt and ash residues include forms of thermal oxidation in order to eliminate perceived hazards. Pyro-chemical oxidation for salts and calcination for ash are being performed for hazard reduction, storage, and transportation. Vitrification of ash residues and distillation of salt residues is performed for STL and WIPP acceptance. The furnaces required for calcination and pyro-oxidation must operate between 500 and 1,000 degrees Celsius. These furnaces have had a history of unreliability, and they require off-gas treatment systems.

4. System Performance Requirements

The Pipe-and-Go system must meet the WIPP WAC, the ISSC, and the STLs.

5. Project Benefits for the Technology

The Pipe-and-Go system is simpler; avoids complex thermal processing with pretreatment, treatment, and off-gas systems; and is cheaper to implement. Implementation of this technology will reduce the time to dispose of the selected waste streams and allow D&D activities in the affected buildings to begin earlier.

6. Unique Barriers

In order to implement the Pipe Component Packaging Process, an STL is required.

7. Funding and Resource Requirements

Projected cost savings from FY98 through shipment to WIPP can be reduced by about \$50 million to \$100 million. This technology has been funded from Kaiser-Hill program funds as a cost reduction initiative.

Technology Deployment Opportunity Fact Sheet
Vented/Filtered Bag-Out Bags

1. Identifying Information

The Rocky Flats Closure Project has initiated the use of filtered plastic bags (called bag-out bags) used to remove transuranic waste materials from glovebox lines. The bags contain small HEPA filters that are effective in containing radioactively contaminated particulate material but allow for the diffusion of hydrogen and other explosive gases. This technology, when used in conjunction with 55-gallon waste drums that contain HEPA filtered vents, ensures that explosive gases will not accumulate.

2. Definition of the Problem

The WIPP imposes limits on the amount of plutonium-bearing hydrogenous material to only a fraction of the capacity of the drums. The issue of concern is the radiolytic generation and accumulation of hydrogen and other explosive gases in waste containers. If explosive gases can be continuously released from waste containers as it is formed, this problem would be mitigated.

3. Technology Baseline Information

Past baseline technology was to use unfiltered plastic bag-out bags and stay within the wattage limit set by WIPP. In February 1997, the Nuclear Regulatory Commission (NRC) approved the use of filtered bag-out bags for transuranic materials destined for WIPP when used in conjunction with vented/filtered 55-gallon drums.

4. System Performance Requirements

The technology had to be acceptable to the NRC and WIPP operations. HEPA filters had to be used as the filter media. Filter element must operate at a flow rate of 200 cubic centimeters.

5. Project Benefits for the Technology

The use of filtered bags allows for increased wattage limits and will result in a four-fold reduction on the number of drums and a concurrent four-fold reduction in storage, certification, transportation, and disposal costs. Cost savings by avoiding the certification of 12,000 drums alone amount to an estimated \$24 million minimum.

6. Unique Barriers

Must be acceptable to WIPP operations. Technology now approved by NRC.

7. Funding and Resource Requirements

The Kaiser-Hill team has funded this technology development out of programmatic funds as a cost reduction initiative.

Technology Deployment Opportunity Fact Sheet
Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM™)

1. Identifying Information

The Rocky Flats Closure Project (RFCP) has identified a need to map contamination levels of gloveboxes and vessels prior to beginning their decontamination and size reduction. The BNFL Instruments DISPIM™ unit is an in-situ glovebox and vessel assay and imaging tool that has been used successfully at BNFL, plc, Sellafield site and other European nuclear facilities. The DISPIM™ unit is a modular system utilizing passive neutron coincidence counting technology.

2. Definition of the Problem

Accurate methods of determining concentrations of plutonium contamination in gloveboxes and vessels are needed to assist in work planning during decontamination and size reduction activities. This knowledge will provide for efficient planning in the areas of personal protective equipment (PPE) selection and TRU/low-level waste segregation. In using traditional gamma-based measuring techniques, both in-box machinery and lead shielding present problems for plutonium assay as the most useful emissions are quickly absorbed by these materials. A potential therefore exists to significantly underestimate the residual plutonium content when using these techniques.

3. Technology Baseline Information

The current baseline method available for this type of activity is hand-held gamma-based scanners that have to be manually administered. This method is very labor intense resulting in unwanted exposure to operating personnel and does not provide a method of automatically charting the contamination readings. In addition, gamma-based technology does not account for the shielding effects of heavy metal equipment inside gloveboxes or the lead shielding present on high dose-rate gloveboxes.

4. System Performance Requirements

The system must be able to field measure the plutonium content of a glovebox with a sensitivity of one gram of plutonium and an accuracy of $\pm 50\%$.

5. Project Benefits for the Technology

Without the ability to know the levels of contamination prior to beginning decontamination and/or size reduction activities, work that could safely be performed with a lower level of PPE may require supplied air suits as a safety precaution. In addition, accurate knowledge of contamination levels prior to size reduction will allow for planning more efficient TRU/low-level segregation activities so that segregation decisions can be made prior to work beginning. The benefits will be in time savings, ALARA, reduction in PPE costs, and reduced TRU waste volume.

6. Unique Barriers

No unique barriers have been identified that will impede the deployment of this technology.

7. Funding and Resource Requirements

The funding for the DISPIM™ is contained within the Rocky Flats Closure Project Baseline. Moreover, this funding was catalyzed by the \$660K of ASTD funds.

Technology Deployment Opportunity Fact Sheet
Enhanced Mechanical Cutting Tools

1. Identifying Information

The Rocky Flats Closure Project (RFCP) will require size reduction of large numbers of radioactively contaminated stainless steel gloveboxes and vessels. New cutting tools are continuously being developed that may be beneficial to this effort. As these tools are identified, they will be integrated into the program where appropriate.

2. Definition of the Problem

Size reduction of radioactively contaminated gloveboxes and vessels is very labor-intensive hazardous work. This work must be performed in personal protective equipment (PPE), which further increases the difficulty of performing this manual task. Particulate generated by mechanical cutting methods can increase the level of airborne contamination during size reduction. Tools used for this task are not generally designed for use in radioactively contaminated environments. Therefore, their design does not take into consideration the difficulty of use when the operator is working in PPE.

3. Technology Baseline Information

The two baseline tools that D&D personnel currently use are standard commercial nibblers and shears. These tools are designed for durability and in some cases are quite heavy. Additionally, they were not designed with any significant consideration for particulate generation or suppression.

4. System Performance Requirements

As compared to the baseline equipment, the performance requirements of new cutting tools are improved cutting speed, minimal particulate generation, reduced weight, and ease of use per personnel in PPE.

5. Project Benefits for the Technology

Improving the methods to size reduce large plutonium-contaminated equipment (i.e., gloveboxes and vessels) that result in lower airborne contamination will allow relaxation of PPE requirements from supplied air to Anti-C clothing and full-face respirators. This will result in significant cost savings in reduced labor and PPE supplies. Tools that are lighter and have improved cutting speeds will also result in cost savings from reduced labor.

6. Unique Barriers

No unique barriers have been identified that will impede the deployment of this technology.

7. Funding and Resource Requirements

The funding for the enhanced mechanical cutting tools is contained within the Rocky Flats Closure Project Baseline. Moreover, this funding was catalyzed by the \$150K of ASTD funds.

Technology Deployment Opportunity Fact Sheet
WIPP Certifiable Standard Waste Box (SWB) Counter

1. Identifying Information

Rocky Flats Closure Project (RFCP) has requirements for a mobile TRU waste Standard Waste Box (SWB) nuclear assay system that will certify SWBs for shipment to WIPP. The unit being planned by RFCP is a low risk approach that integrates proven drum and crate counter components. The assay system is an integration of an existing High Efficiency Neutron Counter (HENC) and a commercialized drum counter with a physics package and software that have improvements developed by LANL over the past two years.

2. Definition of the Problem

Waste must be fully characterized prior to being shipped to WIPP. Currently, no assay equipment has been configured and certified for assaying WIPP boxes, thus all waste that will be placed in boxes must be fully assayed prior to placement into the WIPP SWB. The process of assaying all waste prior to placement into WIPP certified boxes is expensive, time consuming, and not feasible from a production standpoint.

3. Technology Baseline Information

No system exists currently that can perform the required measurements, in-situ, although the components exist; nor has the certification process been exercised. To meet WIPP measurement criteria with the existing technology base requires that each piece of waste that is put into waste containers be individually assayed.

4. System Performance Requirements

The assay system must be capable of meeting WIPP Waste Acceptance Criteria characterization requirements for drums since separate criteria for crates have not been developed. WIPP certification requires that wastes must be greater than 100 nCi/Gram. The system must have throughput capability of at least one and one half boxes per hour.

5. Project Benefits for the Technology

SWB packaged TRU contaminated waste can be placed directly into the box counter and all waste components can be assayed at one time. This technique saves the assay of each individual waste component prior to placement into the box. The cost savings opportunity for a WIPP certified box counter is enormous and could be used at most DOE sites. It will also enable multi-purpose crate counters in the future.

6. Unique Barriers

Must meet WIPP Waste Acceptance Criteria measurement standards and Safeguards and Accountability measurements for drums to ensure certification for SWBs. Required error bands from these criteria push current technology capabilities.

7. Funding and Resource Requirements

The funding for the WIPP certified SWB counter is contained within the Rocky Flats Closure Project Baseline. Moreover, this funding was catalyzed by the \$1.3 million of ASTD funds.

Technology Deployment Opportunity Fact Sheet
Plutonium Stabilization and Packaging System

1. Identifying Information

There is a need at Rocky Flats for stabilizing and packaging unprocessed plutonium metal and oxides for long-term storage. To accomplish this the DOE has assembled an integrated team of highly qualified and experienced DOE personnel and government contractors to implement the Plutonium Stabilization and Packaging System (PuSPS). The contractor project team is headed by the prime contractor, BNFL, Inc. and includes seven subcontractors. The first system will be deployed at the Site in FY99.

2. Definition of the Problem

When nuclear weapons were being produced, it was extremely cost effective to recycle fissile material scrap and material from retired weapons. Therefore, this material was processed for short-term storage while awaiting reprocessing. As a result, when weapons production lines were halted in the late 1980's, these materials were left in conditions unsuitable for long-term storage. The Defense Nuclear Facility Safety Board (DNFSB) has recommended that an integrated program be formulated to convert such materials to a form or condition suitable for a safe interim storage period of 50 years. In addition the DNFSB specified that this should be completed by the year 2002.

3. Technology Baseline Information

There is no current technology in use at the Site for long-term storage. However, preparation for short-term storage includes heating to stabilize the material, packaging in plastic bags inside one or two metal cans, and sealing the containers with tape. The packages are then labeled with hand written paper labels. All work is performed manually inside gloveboxes. The stabilization step is accomplished at a temperature that renders the material non-pyrophoric but may not remove all of the water present. The presence of water and the plastic used in packaging are two sources of hydrogen gas that can form over long periods of storage.

4. Systems Performance Requirements

The system must be able to stabilize and package the subject materials to meet the DOE standard, *Criteria for Safe Storage of Plutonium Metals and Oxides*, DOE-STD-3013.

5. Project Benefits for the Technology

The PuSPS stabilizes nuclear material at a temperature that sinters it, increases the particulate size of the oxide, and drives off all water. In addition, no plastic is used in packaging and the containers are sealed by welding. Barcode labels are permanently affixed to the exterior of the containers. The majority of these steps are performed automatically or remotely, thus reducing radiation exposure to operating personnel and life-cycle costs in comparison to manual systems. The implementation of this system will provide the means to improve the level of safety for DOE's stored plutonium materials in the long-term. Once the first system is operational, additional systems will be built and implemented at other sites. Standardizing the system for use at all DOE sites will result in substantial savings in overall program costs.

6. Unique Barriers

No unique barriers have been identified that will impede the deployment of this technology.

7. Funding and Resource Requirements

Funding for the PuSPS is being provided by EM-60.

Technology Deployment Opportunity Fact Sheet
Remote/Robotic Size Reduction

1 Identifying Information

The Site's closure goal includes aggressive time frames to dismantle plutonium-processing areas, including hundreds of gloveboxes and tanks in Building 771 that must be packed into relatively small standard waste boxes. Remote/robotic size reduction equipment installed in the building would improve cost and schedule performance while enhancing worker safety.

2 Definition of the Problem

Size reduction of gloveboxes and tanks using existing, manual methods requires workers with hand tools to erect and enter a temporary contamination containment structure around the item and wear personal protective equipment (PPE) to deal with the airborne contamination in the containment structure. Even with these precautions, the risk to the worker is still aggravated as compared to working where a containment structure is not needed. To safely support personnel working in the containment structure, extra support personnel are required for the job, and the amount of time workers may spend in the special PPE is significantly limited.

3 Technology Baseline Information

Standard hand tools for cutting are the currently available technology, coupled with the contamination control described in the Definition of the Problem. The manual method was not developed for a large D&D project.

4 Systems Performance Requirements

The remote/robotic size reduction equipment, installed in its own contamination enclosure, will eliminate the need for workers to enter the containment structure to perform the cutting. As compared to the manual method, the number of workers required to support the size reduction effort will be reduced at least by half. The remote/robotic tools will cut at a rate about four to five times the manual rate.

5 Project Benefits for the Technology

The remote/robotic technology will improve cost and schedule performance while enhancing worker safety.

6 Unique Barriers

No unique barriers have been identified in discussions with the regulators, vendors, and the Building 771 planning team. None are anticipated.

7 Funding and Resource Requirements

Funding for the remote/robotic system had insufficient priority to obtain funding in FY98. In FY99, RFETS expects to be able to fund about \$3 million of the \$4 million needed to acquire the commercially available technology. An additional \$2 million would enable the remote/robotics technology to be operational and support the full scope of possible size reduction activities across the sites.

ATTACHMENT C
Status of Action Plans for which RFETS is Responsible

The Rocky Flats Environmental Technology Site has no Action Plans to submit. The Site has dispositioned the Issues in the following manner:

1. Issue: TRU waste residue treatment and potential repackaging requirements should be clarified with regards to the WIPP Safeguards Termination Limits.

Resolution: EM-1 accepted this issue for HQ resolution in an Agreement signed and dated November 14, 1997.

2. Issue: Rocky Flats end state is dependent on a solution for plutonium and highly enriched uranium storage and moving materials offsite.

Resolution: EM-1 accepted this issue for HQ resolution in an Agreement signed and dated November 14, 1997.

3. Issue: Provide more detail on Rocky Flats' baseline case for shipping scrub alloy to Savannah River for processing and interim storage.

Resolution: More detail will be provided in PBS 12 and the Draft Document. Also EM-1 committed to resolution of the issue in an Agreement signed and dated November 14, 1997.

4. Issue: Rocky Flats should maintain the baseline proposal for the treatment and shipment of sand slag and crucible and salts, but also review and evaluate technical reviews and EPA activities to determine impacts to the current baseline.

Resolution: Will be addressed in the Site narrative and/or PBSs.

5. Issue: Rocky Flats and Savannah River should assume that existing Rocky Flats scrub alloy will be received at Savannah River for stabilization and interim storage, until ongoing studies, analyses, discussions and subsequent Records of Decision are complete.

Resolution: Rocky Flats is assuming that scrub alloy will go to Savannah River for planning purposes, pending issuance of the Residue EIS Record of Decision.

6. Savannah River should include receipt of sand slag, and crucible as well as scrubbed salts from Rocky Flats as an alternative.

Resolution: Savannah River should be the lead on this issue.

ATTACHMENT D
Shipping/Receiving Transfer Attachment

RFETS LLM Disposition Map

Offsite Treatment - TBD: 35,220 m³- Includes waste from: RFETS-LLM-1, RFETS-SOIL-1. RFETS-DD-1b, and RFETS-DEB-1b.

Possible Options: Other DOE sites (including OR, ID, SR, Hanford), commercial, limited onsite.

Discussion: RFETS strategy for treatment of LLMW is to use cost/technologically effective treatment systems. The focus is primarily offsite for treatment of LLMW including other DOE sites (e.g., DOE incinerators), as well as commercial. Limited treatment will occur onsite, including mobile units and existing onsite treatment technologies. RFETS is actively researching treatment options, and as they become available RFETS pursues their use. Many offsite options at DOE facilities involve extensive discussions with other states (e.g., the state of Idaho for use of WERF, and the state of Tennessee for the use of the TSCA incinerator). RFETS will be relying on the OR Broad Spectrum contract for treatment of many of its waste streams.

For additional discussions of RFETS options, see Section 3.3 of the Site Plan.

Offsite Disposal -TBD: 67,934 m³- Includes waste from: RFETS-LLM-1, RFETS-SOIL-1. RFETS-DD-1b, and RFETS-DEB-1b.

Possible Options: Hanford, commercial

Discussion: RFETS preferred option for disposal of most of their LLMW is Hanford. Additionally, RFETS will be relying on the national disposal procurement for a limited amount of its LLMW. Most of the volume of LLMW currently cannot be accepted at a commercial facility because the radionuclide concentration exceeds their limit. RFETS has initiated discussions with Hanford to discuss their state issues and the feasibility of Hanford accepting the waste for disposal.

For additional discussions of RFETS options, see Section 3.3 of the Site Plan.

Attachment E

Rocky Flats Disposition of Comments on 2006: *Path to Closure* Received 3/98 - 4/98

LTR #	COMMENT #	COMMENT and RESPONSE
1	1	Comment: The City of Westminster does not support capping as a solution for cleanup of contamination.
		Response: Department of Energy feels that if capping is approved by the regulators as a cleanup method, we can assure the public that the spread of contamination will be halted and risks will be reduced to within regulatory levels.
1	2	Comment: We request that the City of Westminster be included in any future discussion of remedy selection and that each remedy option list the institutional controls necessary for that option.
		Response: The CERCLA process is always open to the community for input. Selection of a remedy would include consideration of the actions necessary to implement the remedy, including any institutional controls.
1	3	Comment: The Closure Plan does not specify that additional dollars will be necessary beyond the time environmental remediation is complete and RFETS is closed for institutional controls: monitoring, maintenance, and surveillance.
		Response: The Path to Closure document is focused on the work necessary to bring the Site to the end state. However it does include information about the funding that will be necessary to carry out monitoring, maintenance, surveillance and other post-closure activities. Please see PBS 29 Program Direction Project where those dollars are included in the years after 2010. Section 3.2 of Path to Closure describes the kinds of post-closure activities DOE anticipates being necessary at Rocky Flats. This section will be expanded in the next version of Path to Closure, and DOE HQ plans to finalize the draft Moving from Cleanup to Stewardship and issue it as a companion document to the national Path to Closure in the summer of 1998.
1	4	Comment: We request that the RFETS Field Office prepare a table indicating the institutional controls that will be necessary under the present accelerated plan for cleanup and the costs associated with their implementation in perpetuity, versus the cost for achieving a more complete cleanup scenario.
		Response: Institutional controls will be included in the cleanup remedies as they are selected. At this time, we do not know what the remedies or the institutional controls will be. Several cleanup options will be analyzed as a part of the CERCLA evaluation process, and the costs of the various remedies will be an important part of that analysis.
1	5	Comment: The plutonium storage vault is still listed as an RFETS closure project activity. We have been assured that there is no desire or intent by the United States Department of Energy (DOE) to build this vault at RFETS; however, having it listed raises questions as to whether DOE is being forthright with our community on this issue.
		Response: The plutonium storage vault is still a contingency if a DOE receiver site is not identified and available in a timely manner (by 2001). Further work on the vault was not included in the funding request for FY 99 or for the future.
1	6	Comment: Building a storage vault at RFETS may result in the plutonium being stored at RFETS for an extended period of time. This is unacceptable and poses a risk to our community and its residents and water supply, Standley Lake.
		Response: Rocky Flats intends to expend every effort necessary to secure an off site repository for special nuclear materials. A

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		plutonium storage vault will only be constructed if no receiver site is found and it is needed for long term storage of the Site's special nuclear materials. Risk studies indicate that storage in a new vault would be preferable to long term storage in Building 371, the Site's current storage facility.
1	7	Comment: The City of Westminster strongly supports a 2006 cleanup date.
		Response: RFETS is dedicated to doing whatever is possible to achieve the 2006 date. Our ability to close the Site by 2006 will depend not only on our determination, but on the funding allocated to the Site to accomplish our goals.
1	8	Comment: We urge the RFETS Field Office to keep DOE Headquarters informed as to the actual time frame for closure, given the current budget shortfalls.
		Response: RFETS has kept DOE HQ well informed of the time frames for accomplishment of closure in the event of budget shortfalls, and will continue to do this.
1	9	Comment: It is imperative that Congress be kept informed as to the duration of cleanup at RFETS, so that funding will continue beyond 2006.
		Response: We believe that Congress understands the connection between funding allocated to cleanup and accomplishment of work. We will keep Congress and DOE HQ informed of the progress on cleanup and the remaining scope to be accomplished through annual updates of the Site closure document.
2	1	Comment: We agree that some soils treated for non-rad contamination will appropriately be returned to the excavation. However, there is still some disagreement between DOE and its regulators as to what level of contamination should be used to make that decision.
		Response: The Path to Closure document is based upon the best information available. If the requirements for cleanup of soils change from the present assumptions, the Path to Closure will be updated accordingly.
2	2	Comment: The assumption that WIPP will open in May of FY98 looks problematic, especially with respect to mixed Transuranic waste.
		Response: DOE estimates that the Site has enough straight transuranic waste in storage, and will generate enough additional straight TRU, to make shipments to WIPP for over a year. This will provide us with a window of time for the mixed TRU waste disposal issue to be resolved.
2	3	Comment: EPA would not support the concept that subsurface utilities outside facility footprints will be capped and left in place in cases where the utilities contain significant contamination.
		Response: DOE does not assume capping of contaminated underground utilities.
2	4	Comment: Discussions between DOE, EPA and the Colorado Department of Public Health and the Environment on what are the appropriate requirements for decontamination of buildings are ongoing. No agreement has been made to use either DOE Order 5400.5 or the NRC criteria.
		Response: Discussions are still ongoing regarding the requirements for decontamination of buildings. In the absence of a conclusion to the discussions, the Path to Closure document is based upon an assumption that the standards in DOE Order 5400.5 will be used

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		until other standards are agreed to.
	5	Comment: Any agreement (on the use of closure caps) will be dependent upon the size and design of the caps as well as the nature and toxicity of the materials to be capped. At present the only caps that we agree to (on a conceptual basis) are those for the onsite landfills and the solar evaporation ponds.
		Response: The size and design of proposed caps and the materials that would be placed under them will all be addressed in the CERCLA remediation documentation for the Site.
2	6	Comment: The plan should be updated to reflect the demise of the National Conversion Pilot Project.
		Response: The assumption regarding the National Conversion Pilot Project will be deleted.
3	1	Comment: Plan should include a list of acronyms used throughout the document.
		Response: A list of acronyms will be added to the attachments for reference.
3	2	Comment: Page 1-2 last paragraph and last sentence under Guiding Principles: "Project Baseline Summary (PBSs) should be plural ("Summaries").
		Response: The suggested change will be incorporated.
3	3	Comment: Page 1-2 last sentence under Current Plan suggest revising to include State and Federal Regulators - "This goal may be attained through concerted effort of DOE, HQ, (<i>State and Federal regulators</i>), and the Site to focus on eliminating identified barriers to offsite shipments and disposition of wastes and SNM."
		Response: The suggested text change will be incorporated to read "...concerted effort of DOE HQ, state and federal regulators, and the sites to focus on eliminating identified barriers to off site shipments...."
3	4	Comment: Page 1-3 fourth sentence in the last paragraph under Compliance section (1.2.1) suggest revising to include Performance Measures - "In some cases, re-negotiation of commitments, (<i>performance measures</i>) and milestones may be necessary to properly balance the need to maintain compliance with the cleanup of the Site in a cost-effective and safe manner."
		Response: The suggested change will be incorporated.
3	5	Comment: Figure 1-2 on page 1-5: Risk (LCF/yr) should state the reference location. In other words, is that risk at the fence line of for the nearest resident?
		Response: The suggested change will be incorporated into the text by explaining that the figure shows risk to the population within a 50 mile radius of Rocky Flats.
3	6	Comment: Page 1-8 under General Assumptions, the sixth sentence, should include language that provides for an alternative assumption if the receiver sites are not ready at the time of planned offsite shipments of SNM waste.
		Response: The assumptions included in the Plan are made to reflect the best current information in an area of uncertainty. If changes in scope, schedule or cost invalidate an assumption, DOE's plans will be changed to accommodate new facts.
3	7	Comment: Page 1-8 under General Assumptions, last sentence under this section, it is unclear what is meant by "DOE, RFFO will not assume the role as Site integrator."

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		Response: The assumption addresses whether the Rocky Flat Field Office of DOE will assume responsibility for direct management of operations at the Site.
3	8	Comment: Page 1-8 under Special Nuclear Material Assumptions, the third sentence indicates that "Building 371 will be used as the temporary repository for all SNM until the material is shipped offsite," which does not correlate with the above statement in the General Assumptions section regarding no delays of offsite shipments of SNM.
		Response: The Site needs a location to accumulate special nuclear materials where they can be temporarily stored and readied for shipment off site. Building 371 has been selected as this location. The Site assumes that off site repositories will be available on schedule so that Building 371 will not need to be used for longer than temporary storage of special nuclear material.
3	9	Comment: Page 1-8 under Waste Management Assumptions, first paragraph, recommend that this sentence be modified to read: "Excavated soils that meet the radioactive soil action levels will remain on site."
		Response: The suggested language will be added at the end of the assumption.
3	10	Comment: Page 1-8 under Waste Management Assumptions, third paragraph, it should be pointed out that although there is a higher level radioactivity cutoff for low level waste (100 nanocuries per gram), there is not yet a determination as to what constitutes a lower level radioactivity cutoff.
		Response: The suggested change seems inconsistent with the level of detail of the information in the paragraph.
3	11	Comment: Page 1-9 under Economic Conversion Assumptions, reference to the National Conversion Pilot Project should be updated as this project has been canceled and the planned leases for the referenced Buildings 865 and 883 are no longer valid.
		Response: The assumption will be deleted.
3	12	Comment: Page 1-10 and 1-11, reference is made to the "interim end state by 2006" and also referred to as reaching "the end state" by 2006." Are these terms synonymous? Interim vs. end state vs. final end state?
		Response: The terms "end state" and "interim end state" have been used interchangeably in the document. To avoid confusion, the term "intermediate site condition" from RFCA will replace both "end state" and "interim end state" throughout the document.
3	13	Comment: Page 1-11, Table 1-1: "Nuclear Facilities Demolished" has a life cycle cost of \$477 million. Does this cost include D&D activities?
		Response: Yes, this figure includes the costs of D&D.
3	14	Comment: Figure 3-1, Critical Closure Path should probably be printed in color so as to delineate the activities planned and match the color schemes with the "Expanded Management Summary Schedule" produced by the site.
		Response: The figure will be either printed in color or modified so that color is not necessary to retain clarity in the next version.
3	15	Comment: Page 3-6, second paragraph, in relation to the above comment, refers to each of the milestones by color code which confirms the need for a color chart to be included in the plan.
		Response: The figure will be either printed in color or modified so that color is not necessary to retain clarity in the next version.
3	16	Comment: Pages 3-9 through 3-15 (which includes the baseline disposition maps) should include a detailed explanation and

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		supporting documentation on how to read the maps and determine what the proposed final disposition of each type of material. As it is currently written, there is no guidance on what the symbols on the maps represent, nor an explanation of how to move from map to map to determine how they are interrelated. The maps do not show a time line for when the particular activities are scheduled to begin or to be completed, (in what Fiscal Year will the activity occur?) nor is there accompanying documentation for cost estimates of these activities. The information is very general and should include more detail.
		Response: The disposition maps conform to a format established by HQ. An expanded narrative explanation of how to interpret the disposition maps, including the symbols used on them and the interrelationships between them, will be added to section 3.4 of the document. Information about time lines and cost estimates is available in the Project Baseline Summaries for waste management (PBS 2 & 3), residues (PBS 9), and special nuclear materials (PBS 6) which are available in DOE reading rooms or through the Rocky Flats home page on the internet.
3	17	Comment: Page 4-3, Section 4.3 Cost and Schedule, this section should be updated to reflect all recently negotiated milestones for the current fiscal year and out years and Figure 4-1 and Table 4-1 should be adjusted to reflect any changes in the funding for those milestones.
		Response: The costs and schedules shown in section 4.3 are at a very high summary level which has not been affected by the new RFCA milestones. Changes that do affect the figure will be captured in future versions of the Path to Closure.
3	18	Comment: Page 4-5, Figure 4-1 sets out 30 Project Baseline Summaries (PBSs) - the text of the Draft document consistently refers to only 29 PBSs, the reference to the number of PBSs should remain the same throughout the document.
		Response: The closure project at the site has been divided into 29 PBSs. Please note that the line in Table 4-1 for PBS 26 has zero cost and no schedule. The work in PBS 26 has been completed or merged into another PBS. The PBS number was retained to avoid confusion about why PBS 26 was missing. Other PBS numbers will also be retained after their scope of work has been completed.
3	19	Comment: Page 4-10, Section 4.5, <u>Baseline</u> , the paragraph describes the Baseline as being comprised of 70 Site Work Authorization Documents (WADs) which are summarized in 35 PBSs, that form the bases for the 29 PBSs currently identified. Why are there 35 identified PBSs but the current baseline only reflects 29 PBSs?
		Response: Work at the Site is tracked in 35 PBSs. DOE HQ requested that the Site represent the costs of the work differently than they are tracked at the Site. The work at the Site was divided into 29 PBSs for the Path to Closure so that costs like indirects and overhead that are tracked separately at the Site are spread over all of the of the PBSs in the Path to Closure document. The baseline was developed using the 29 HQ PBSs.
3	20	Comment: Page 4-10, Section 4.5, <u>Baseline Change Control</u> , second sentence in the last paragraph is missing a word, "A quality check and funds verification is performed by the contractor Planning & Integration Department before the BCP is <i>submitted</i> to the contractor Internal Change Control Board."
		Response: The suggested change will be incorporated.
3	21	Comment: Page 4-11, Section 4.6, second bullet item discusses a "reduction of the life cycle cost of the project by over \$1.5 billion."

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		Is this consistent with the earlier statements of reducing the total life-cycle cost by \$1.3 billion?
		Response: The figure should be \$1.3 billion consistent with the remainder of the document. This change will be incorporated.
3	22	Comment: Page 5-1, Section 5.2 , second paragraph, second sentence should read as follows: "Strategies may need to be adjusted to alter the time distribution of resources required for compliance <i>or any site activity.</i> "
		Response: This section addresses the ability to maintain compliance. It is appropriate that the paragraph only address distribution of resources for compliance.
3	23	Comment: Also, third sentence should read as follows: "If significant deviation from established assumptions regarding funding, rebaseline/renegotiation and reallocation may be necessary."
		Response: We have chosen not to incorporate this change. The suggested re-wording would unacceptably change the intent of the sentence.
4	1	Comment: Although efficiencies should always be found to save time and money, it is more accurate to tell Washington that there is a 2010 plan which the site hopes to complete faster and cheaper as early as 2006.
		Response: This message is precisely the message that has been conveyed to DOE HQ and is the message of the Rocky Flats Path to Closure document.
4	2	Comment: We are struck that even the President's budget for 1999 does not provide adequate funding for a 2010 date for the second year in a row.
		Response: In the RFFO's experience, it is not unusual for the President's budget request to be different than the budget the Site requested. We are hopeful that if the Site is able to perform and meet expectations, adequate funding will be provided to meet closure goals.
4	3	Comment: The Closure Plan projects that at the end of 2006 the site will still have 25% of low level waste, 30% of plutonium buildings mothballed awaiting demolition, and 15% of soil and water cleanup remaining. This result is unacceptable.
		Response: Please note that the percentages cited represent the amount of work remaining at the end of FY 2006 if the Site is on schedule to reach the end state in FY 2010. If the Site is able to secure funding and accelerate closure and reach the end state in FY 2006, all of this work will be completed by the end 2006.
4	4	Comment: The Closure Plan should be communicated in ways that do not unduly risk funding being cut after 2006 based on today's unfounded promises. If requested funding levels continue to not be granted by Congress, the Closure Plan must be officially modified to reflect a plan that would achieve the same goals over a longer period of time with less money annually and a larger life cycle cost.
		Response: We believe that Congress understands the connection between funding allocated to cleanup and accomplishment of work. We will keep Congress and DOE HQ informed of the progress on cleanup and the remaining scope to be accomplished through annual updates of the Site closure document.
4	5	Comment: The plan assumes "resources freed up from mortgage costs will be reallocated to achieve the critical path schedule earlier." This assumption was not followed by the OMB in preparation of the 1999 President's Budget.

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		Response: OMB is not bound by the assumptions in DOE's Path to Closure document. RFFO will continue to request the funding needed to achieve our closure goals.
4	6	Comment: It is important that there be contingency planning to determine alternative courses of action and the implications of these contingencies on scope, schedule and cost.
		Response: DOE-RFFO is aware that contingencies may need to be implemented for some of the assumptions included in the Plan, and we recognize the amount of work that may be necessary to implement a contingency. However, we are obliged to strike a balance between the work to be accomplished and additional planning for contingencies. It is our intent that in areas where contingency plans do not exist, we will move promptly to frame the alternatives and obtain public input on the potential courses of action as soon as we know we will have to implement alternate plans.
4	7	Comment: A report to the community should be made quarterly as to the status of these milestones and any changes in assumptions or strategies.
		Response: DOE will evaluate the best methods to provide quarterly updates to the stakeholders on the status of milestones and changes in assumptions and strategies. Formats under consideration include distributing printed reports and making presentations at community meetings to supplement the annual State of the Flats meeting and report.
4	8	Comment: We strongly support off site disposition of plutonium as soon as it is safely possible. The site should provide the community with ongoing reports on the status of this decision and let us know any assistance we may provide to help facilitate it.
		Response: DOE will evaluate the best methods to provide quarterly updates to the stakeholders on the status of milestones and changes in assumptions and strategies. Formats under consideration include distributing printed reports and making presentations at community meetings to supplement the annual State of the Flats meeting and report.
4	9	Comment: The Closure Plan states that in <i>the event</i> an off site receiver is not approved in a timely manner, the special nuclear materials will be stored in Building 371 rather than a newly constructed vault. While we endorse that there be a contingency, site officials previously assured the community that a decision has not yet been made between 371 and a new vault.
		Response: The Site assumption concerning a new plutonium storage vaults is stated as "A new interim storage vault will not be constructed. Building 371 will be used as the temporary repository for all SNM until the material is shipped off site." If an off site repository is not identified in a timely manner, the vault environmental impact statement would be revived and used to help make a decision on whether to construct a new vault. In the event that the new vault option was selected, storage in B 371 would still be necessary until a new vault was completed.
4	10	Comment: If a new vault is constructed, it should be done at the eastern part of the industrial area rather than in the clean 130 area.
		Response: Construction in contaminated areas can be problematic because it presents increased hazards to workers and the public by disturbing and perhaps dispersing contamination. If the Site is required to construct a Pu storage vault (which is a contingency to current planning), the Site may need to construct it on unoccupied space. The most favorable terrain would be the relatively flat and uncontaminated area close to the Industrial Area. Actual siting of a new facility would be addressed in the revived the Environmental

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		Impact Statement for the vault.
4	11	Comment: The view that completion of the closure plan may be possible only if regulatory “relief” is granted is unacceptable.
		Response: Some examples of recent regulatory relief that has benefited the Site are a variance from the Safeguards Termination Limits for disposal of residues. Completion of the closure mission is not dependent on relief from regulatory requirements, but it can be helpful in accelerating our progress.
4	12	Comment: Employees deserve to know how their jobs fit into the cleanup project. It is shortsighted to withhold information about workforce planning from employees just because it is subject to change.
		Response: Kaiser-Hill maintains a skills mix analysis which is updated on a quarterly basis. This analysis is available to employees at the on site Career Assistance Center. The Path to Closure gives an idea of when various activities are to be completed at the Site, and based on that schedule, at what point workers would no longer be required for those activities.
4	13	Comment: The Site should also consider incentives to keep experienced workers on the job.
		Response: DOE and the contractor are aware of the concerns of retaining experienced workers on site. DOE and Kaiser-Hill are currently working on developing and implementing a package of services and incentives for workers through the next 8 years. Part of the proposed services may include incentives geared towards retaining critical skills through closure. During workforce restructuring, certain categories of employees are “fenced” so that they are excluded from consideration for workforce reduction. Monetary incentives from performance measures are distributed among all of the site employees who participated in the successful completion of the performance measure.
4	14	Comment: Worker transition funding, including maintenance of the offsite Career Assistance Center, is important to help employees have confidence that they can move to other good jobs in the community when their services are no longer needed at Rocky Flats.
		Response: Career Transition assistance is a very important tool in assisting employees as the Site moves towards closure. At this time DOE and Kaiser-Hill are looking at ways in which this type of assistance can be enhanced and/or modified to better meet the needs of the work force as we move towards closure.
4	15	Comment: The community recognized that there are over 5,000 people working at Rocky Flats who will transition to different jobs at the end of cleanup. This will have an impact on our community at that time and Kaiser-Hill and the community must continue working together to assure a smooth transition for these employees and the local economy following completion of cleanup.
		Response: DOE and Kaiser-Hill will continue to work closely with the community as the Site moves towards closure. Kaiser-Hill is also looking at ways to establish partnerships with local businesses to aid in the placement of workers as the Site gets closer to closure. Employees are now able to utilize the Tuition Reimbursement Program to prepare themselves for another career if they choose to do so. Kaiser-Hill is considering other retraining options which give employees other opportunities. All of these will contribute to the smooth transition of our workers into the economy of the communities in which they reside. Another point to consider is that the employment level will be gradually reduced so that no more employees than necessary will be excessed in any given year.
4	16	Comment: The Closure Plan states that sanitary waste will be disposed off site. It calls for “demolition debris without radiation

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		added by site operations” to be considered “clean debris”. Is clean debris the same as sanitary waste?
		Response: Clean debris can be disposed of as sanitary waste.
4	17	Comment: What are the disposal plans or assumptions for clean debris?
		Response: The plan assumes that clean debris will be transported to permitted off site facilities for disposal; that there will be adequate disposal capacity available; and that we will be able to meet the disposal site’s acceptance criteria.
4	18	Comment: Does the plan leave open a recommendation from the D&D Working Group about the disposition of debris?
		Response: The Plan is based on assumptions that reflect the best current information. We will continue a dialogue with the community, including working groups, about whether to continue off site disposal. DOE’s plans will be changed to accommodate new facts or decisions as they become available.
4	19	Comment: Any corrective action management unit must be designed for easily monitored and readily retrievable temporary storage of waste. A landfill-type unit does not meet this criterion.
		Response: If a bulk storage CAMU is constructed, it will be for temporary storage rather than disposal of remediation waste. All waste will be removed from the CAMU before it is closed.
4	20	Comment: A new waste facility for either low level or TRU should be located in eastern portions of the buffer zone which are already disturbed rather than on less-disturbed land to the west.
		Response: Construction in contaminated areas can be problematic because it presents increased hazards to workers and the public by disturbing and perhaps dispersing contamination. If the Site is required to construct new storage facilities (which are contingencies to current planning), the Site may need to construct it on unoccupied space. The most favorable terrain would be the relatively flat and uncontaminated area close to the Industrial Area.
4	21	Comment: We recommend that staging of all waste management activities be conducted in the same area with attention to access to the Protective Area where most will be generated, and away from office and other support function.
		Response: Staging of waste for off site shipment and disposal will necessarily be in the vicinity of the area in which waste is being generated or stored.
4	22	Comment: The Plan assumes that much clean debris such as foundations, tunnels, wiring and pipes will be left in place. This is not consistent with site reuse. The site should be left in a state suitable for transition to future uses which includes removal of foundations and obsolete utilities.
		Response: The future of re-use of the industrial area at the Site is unknown at the present time. At the present DOE plans to remediate to the standards agreed on the CERCLA cleanup documents. If this does not include removal of uncontaminated underground utilities and building foundations, they will need to be removed by a future redeveloper if they conflict with development plans.
4	23	Comment: Although precise regulatory decisions await, there should be more discussion with the community and thorough technical analysis about the assumption that closure caps will be used prior to committing funds in the baseline that could predetermine or

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		preclude options.
		Response: The inclusion of funding levels for closure caps in a planning baseline is not a commitment of funds to the project. Planning to use caps as a remedy, and even having funding available, is not expected to influence the regulators regarding selection of cleanup remedies for the site.
4	24	Comment: The Industrial Area Reuse Task Force is likely to recommend that caps be minimized and that any that are constructed be compatible with reuse options.
		Response: The Plan is based on assumptions that reflect the best current information in an area of uncertainty. If changes in scope, schedule or cost invalidate an assumption, DOE's plans will be changed to accommodate new facts.
4	25	Comment: We support an ongoing program that provides level funding for ER during the early years of the plan.
		Response: DOE intends to continue to fund ER activities each year until cleanup is completed.
4	26	Comment: We support a one to two year delay of actual remediation of the 903 area until thorough characterization and further discussion of the soil action levels and actinide migration studies.
		Response: A remediation remedy for the 903 Pad cannot be selected until it has been adequately characterized, and information about actinide migration will be an important consideration for selecting a remedy for that area. DOE has committed previously to continuing the discussion on soil action levels.
4	27	Comment: The Plan should anticipate that environmental restoration costs may increase from current estimates if additional actions beyond those now envisioned are necessary to protect water quality over the long term.
		Response: The Plan is based on assumptions that reflect the best current information in an area of uncertainty. If changes in scope, schedule or cost invalidate an assumption, DOE's plans will be changed to accommodate new facts.
4	28	Comment: The Closure Plan is incomplete in its analysis of post closure stewardship responsibilities and costs. The assumption that monitoring will occur for only 30 years may be unrealistic. The site must work with the regulators, local governments, and stakeholders to design a long term stewardship program that adequately protects human health and the environment after 2010 and provides adequate funding for both maintenance of controls and remediation of areas found to be not protective of human health or the environment in the future.
		Response: The Path to Closure is intended to address the work that needs to be done to reach the end state. Post closure activities are not addressed in detail because of the uncertainties about what the future of the site is. DOE plans to devote time to consultation with the stakeholders to determine what the future use should be and what stewardship responsibilities DOE will have.
4	29	Comment: The Plan also states that "additional cleanup and removal activities may be conducted as funding, technology, and political opportunities allow". This is an important statement. Implications include that cleanup (including caps) must be done in ways that optimize protection of human health with opportunities for further remedial actions, and that DOE commit to technology research, development, and demonstration beginning today. Can these efforts be accomplished for the promised \$7.3 billion?
		Response: The cited \$7.3 billion is a planning estimate of the cost to close the Site. Currently, alternative technologies are being

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		sought, identified, and utilized to complete cleanup at the Site. However, because of ultimate closure, Rocky Flats views itself as a "technology user" rather than a "technology developer." Rocky Flats is relying on other parts of the DOE complex and private industry to identify and develop technological advances that can be applied at Rocky Flats. Thus, technologies will be used to help the Site achieve its goal of \$7.3 billion in closure costs.
4	30	Comment: While the final recommendations are not yet developed, it is likely they will include that all buildings except 130, 130W, 131, and 460 may be demolished as planned and that these four buildings be maintained by DOE until the end of cleanup (rather than until scheduled D&D) pending a decision prior to closure by the community on their reuse potential. Appropriate modifications to the Path to Closure Plan should be anticipated incorporating these recommendations.
		Response: The Plan is based on assumptions that reflect the best current information in an area of uncertainty. If changes in scope, schedule or cost invalidate an assumption, DOE's plans will be changed to accommodate new facts.
4	31	Comment: DOE should be developing policies for its management of the site while there is a DOE mission, such as the Natural Resources Management Policy.
		Response: DOE is developing site specific policies where needs have been identified. There are, of course, many DOE policies already in place.
4	32	Comment: It is not appropriate for DOE to unilaterally develop plans for use of the site after it is transferred to local control. Future use planning must continue to be done collaboratively with affected local governments and the community. One aspect we will pursue is to identify ways to lock in permanent protection of the majority of the buffer zone as open space as recommended by the Future Site Use Working Group.
		Response: DOE has not made any plans for the future use of the Site. DOE has participated in dialogues with the community about what the future use of the Site should be. DOE's working assumption is that the buffer zone will remain as open space, and it is being managed accordingly.
4	33	Comment: The site's attention to potentially reusable equipment for community economic transition and education is lacking. We do not believe that the best path is to put all such items in waste crates, nor that they remain inside buildings to deteriorate until building demolition. We urge that improved and more cost effective procedures be developed so that excess equipment can be reused in the community to the maximum extent.
		Response: The Rocky Flats asset disposition process includes disposition of personal equipment as a part of the D&D process. Equipment is inventoried as a part of routine building inventories, or when a building enters D&D or is identified for re-use. The first factor that must be considered when evaluating equipment for reuse outside the DOE complex is the cost to determine whether the equipment is contaminated or otherwise unsuitable for reuse. Equipment must be surveyed for beryllium, asbestos, chemical, radioactive and other contamination before it can be released. The Site cannot afford to spend cleanup funds on equipment surveys and subsequent rehabilitation if the cost to decontaminate or otherwise prepare equipment for reuse is more than the value of the equipment is estimated to be. The Site is engaged in a pilot program to remove a certain amount of high value equipment from buildings that are

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		not expected to be heavily contaminated.
5	1	Comment: While supporting the goal of expedited cleanup of Rocky Flats, RFCAB believes that time and cost should not be the primary drivers of this plan. Elimination or reduction of risk to workers, the public, and the environment should drive any cleanup. RFCAB is concerned that cleanup and risk reduction activities be done well and that they be done safely.
		Response: The mission at RFETS is safe, effective cleanup to achieve risk reduction. The need for coordinated and well considered planning to achieve this mission is the primary driver for writing the Path to Closure document. If the emphasis of the plan seems to be on time and cost, it is because the site's budget must be large enough in early years to not only meet all of the Site's compliance commitments, but have money left over to apply to risk reduction activities.
5	2	Comment: The Department of Energy is relying on offsite options for all waste and nuclear materials. These offsite options may be delayed or never come to fruition. It is imperative that the Department have contingency waste storage plans so that cleanup may proceed at the site.
		Response: DOE-RFFO is aware that contingencies may need to be implemented for some of the assumptions included in the Plan, and we recognize the amount of work that may be necessary to implement a contingency. However, we are obliged to strike a balance between the work to be accomplished and additional planning for contingencies.
5	3	Comment: At the urging of RFCAB and other community entities, DOE has agreed to fund a review of the Soil Action Levels for plutonium. The process is just beginning. DOE needs to demonstrate how more stringent levels might impact the cleanup process, and that the site is able to accommodate such a change from a cost and schedule perspective.
		Response: Please refer to the Baseline Environmental Management Report (1996) for information about the resources required to remediate the site to residential use standards. The Site clearly could not accommodate such a change within to the costs and schedules projected in the Path to Closure.
5	4	Comment: RFCAB is concerned that DOE-Headquarters is sending the wrong signal to Congress by seeming to promise 2006 or 2010 closure. Cleanup and closure of Rocky Flats is a very complicated undertaking and any number of issues (internal to Rocky Flats or external) may arise that will delay current projections. Therefore we urge DOE to be careful to describe the challenging nature of cleanup, and that 2006/2010 are goals the site is striving to achieve.
		Response: We believe that Congress understands the connection between funding allocated to cleanup and accomplishment of work. We will keep Congress informed of the nature of the task before us, progress on cleanup, and the remaining scope to be accomplished through annual updates of the Site closure document.
5	5	Comment: Because DOE is relying on questionable offsite options for waste and material disposition, RFCAB again calls for a coordinated national process (note - not a workshop) to help ensure that DOE is developing publicly-acceptable and scientifically-credible decisions for waste and materials.
		Response: Forwarded to DOE headquarters for response.

ATTACHMENT F
Acronym List

ACP	Accelerated Cleanup Plan
ADS	Activity Data Sheets
ALARA	As Low As Reasonably Achievable
AMGO	Department of Energy/Assistant Manager for Government Operations
APSF	Advanced Plutonium Storage Facility
ASAP	Accelerated Site Action Project
BCP	Baseline Change Proposal
BEST97	Basis of Estimate Software Tool
BOES	Basic Operating and Essential Services
CAB	Citizens Advisory Board
CAD	Corrective Action Document
CAMU	Corrective Action Management Unit
CDPHE	Colorado Department of Public Health and Environment
CERCLA	Comprehensive Environmental Response, Compensation & Liability Act of 1980
CFR	Code of Federal Regulations
CH	contact handled
CID	Cumulative Impacts Document
D&D	Decontamination and Decommissioning
DNFSB	Defense Nuclear Facility Safety Board
DOE	Department of Energy
DOR	Direct Oxide Reduction
Draft Document	Accelerating Cleanup: Path to Closure dated February 1998
ECA	Energy Communities Alliance
EIS	Environmental Impact Statement
EM	Department of Energy Environmental Management
EPA	United States Environmental Protection Agency
ER	Department of Energy Environmental Restoration
FSUWG	Future Site Use Working Group
FTIRS	Fourier Transform Infrared System
FY	Fiscal Year
HQ	Department of Energy Headquarters
IAEA	International Atomic Energy Agency
ICCB	Internal Change Control Board
ID	Department of Energy Idaho
IDC	Item Description Code
IHSS	Individual Hazardous Substance Site
IMC	Integrating Management Contract
INEEL	Idaho National Engineering and Environmental Laboratory
IPL	Integrated Priority Listing
ISM	Integrated Safety Management
LANL	Los Alamos National Laboratory
LCB	Life Cycle Baseline
LCF	Latent Cancer Fatalities
LLMW	Low Level Mixed Waste
LLW	Low Level Waste
M&O	Metals & Oxides
M&O Contractor	Management & Operating Contractor
Mat'l	Material

Misc.	Miscellaneous
MLLW	Mixed Low Level Radioactive Waste
MOL	Minimum Operating Level
MOX	Mixed Oxide Fuel
MR	Mortgage Reduction Milestones
mrem	milli rem
MSE/ER	Molten Salt Extraction/Electrorefining
NCPP	National Conversion Pilot Project
NEPA	National Environmental Policy Act
NM	Nuclear Material
NTS	Nevada Test Site
Ops.	Operations
OR	Oak Ridge
OU	Operable Unit
PA	Protected Area
PAC	Potential Area of Concern
PBMC	Performance Based Management Contract
PBS	Project Baseline Summaries
pCi/g	Pico Curries per gram
PEIS	Programmatic Environmental Impact Statement
PPI	Program Planning and Integration
Pu	Plutonium
PuF4	Plutonium Fluoride
RESRAD	Computer Model Pertaining to Residual Radiation Material
RF	Rocky Flats
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Department of Energy Rocky Flats Field Office
RFLII	Rocky Flats Local Impacts Initiative
ROD	Record of Decision
SAL	Soil Action Levels
SCCB	Site Change Control Board
SISMP	Site Integrated Stabilization Management Plan
Site	Rocky Flats Environmental Technology Site
SMEs	Subject Matter Experts
SNM	Special Nuclear Material
SRS	Savannah River Site
SS&C	Salt, Sand & Crucible
SSTs	Safe Secure Transport
STCG	Site Technology Coordination Group
STLs	Safeguards Termination Limits
STP	Site Treatment Plan
TBD	To be determined
TRU	Transuranic Waste
TRUM	Transuranic Mixed Waste
TSCA	Toxic Substances Control Act
TYP	Ten Year Plan
USTs	Underground Storage Tanks
WAD	Work Authorization Document
WBS	Work Breakdown Structure
WERF	Waste Experimental Reduction Facility

WIPP
WM

Waste Isolation Pilot Plant
Waste Management