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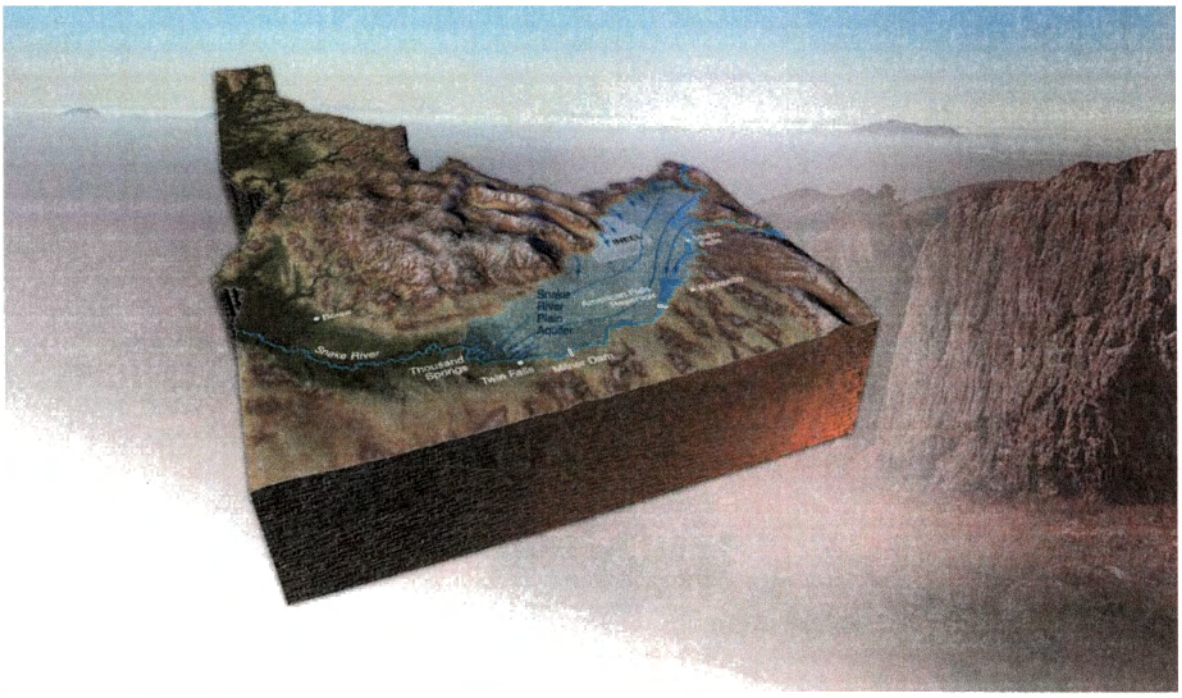
July 2002

U.S. Department of Energy
Idaho Operations Office

Environmental Management Performance Management Plan for Accelerating Cleanup of the Idaho National Engineering and Environmental Laboratory



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Environmental Management Performance Management Plan for Accelerating Cleanup of the Idaho National Engineering and Environmental Laboratory

July 2002

U.S. Department of Energy
Idaho Operations Office

EXECUTIVE SUMMARY

This Environmental Management Performance Management Plan for Accelerating Cleanup of the Idaho National Engineering and Environmental Laboratory, describes the U.S. Department of Energy's approach to accelerate the reduction of environmental risk at the INEEL by completing its cleanup responsibility faster and more efficiently. We believe this acceleration is possible by integration of work processes emphasizing risk reduction without compromising protection of the environment, site workers, and the public. This plan will provide the Department of Energy, the Office of Management and Budget, Congress, our regulators, and our stakeholders with a significantly improved approach to our cleanup mission and the way we do business. The plan describes an investment strategy for cleanup funding including the benefits of increased funding through the cleanup reform account. This plan is a product of the DOE-Idaho Operations Office and its contractors in consultation with the state of Idaho and the Environmental Protection Agency. It is ambitious and at this point, we do not have solutions to all the potential barriers that may inhibit achievement of all its objectives. But, we owe it to our citizens and taxpayers to attack, eliminate, and reduce risk as quickly as possible without compromising protection of the public and the environment. This plan is supported by our regulators and many of our stakeholders.

In May 2002, DOE, the Idaho Department of Environmental Quality, and the Environmental Protection Agency signed a letter of intent formalizing an agreement to pursue accelerated risk reduction and cleanup at the INEEL. The letter provides the foundation for a collaborative plan for the accelerated cleanup of the INEEL, and this is DOE's plan to implement the letter of intent as we continue to work with regulators to ensure the plan will fulfill the following agreed upon vision:

> *By 2012, the INEEL will have achieved significant risk reduction and will have placed materials in safe storage ready for disposal. By 2020, the INEEL will have completed all active cleanup work with potential to further accelerate cleanup to 2016.*

Section 3 describes the flowdown from this vision and the environmental priorities agreed upon in the letter of intent and two overarching objectives. Section 4 describes nine strategic initiatives DOE proposes to eliminate or reduce the environmental risks at the INEEL. The strategic initiatives are:

- Accelerate Tank Farm Closure
- Accelerate High-Level Waste Calcine Removal from Idaho
- Accelerate Consolidation of Spent Nuclear Fuel to the Idaho Nuclear Technology and Engineering Center
- Accelerate Off-site Shipments of Transuranic Waste Stored at the Transuranic Storage Area
- Accelerate Remediation of Miscellaneous Contaminated Areas
- Eliminate On-Site Treatment and Disposal of Low-Level and Mixed Low-Level Waste
- Transfer All EM-Managed Special Nuclear Material Off-Site
- Remediate Buried Waste at the Radioactive Waste Management Complex

- Accelerate Consolidation of INEEL Facilities and Reduce Footprint.

These strategic initiatives, described in Section 4, form the backbone of this plan. Successfully executing these initiatives will ensure that the vision articulated in the letter of intent is achieved.

Achieving this kind of significant risk reduction, and the attendant cost and schedule savings, will be accomplished only through fundamental changes in the way we do business at the INEEL. The challenge represented by these goals will dramatically affect how we think and act and will result in an acceleration of risk reduction at the INEEL and earlier completion, by decades, of the Environmental Management (EM) cleanup activities. Section 5 discusses the changes in business strategy we plan to pursue. Roles and responsibilities for DOE-ID, DOE-HQ, and site contractors are defined and new acquisition strategies explored. Cleanup of the INEEL is currently governed by compliance agreements that are coordinated, but whose schedules are not fully integrated. This plan reflects DOE's approach to managing the cleanup of the INEEL as a single project. Integrating the implementation of those agreements, and ongoing cooperation and collaboration among DOE and its regulators are a critical part of this plan. In addition, DOE agrees to smoothly transition laboratory sponsorship from EM to other program sponsors.

Accelerating cleanup at the INEEL will reduce the risk of contamination of the Snake River Plain Aquifer from nuclear and hazardous waste. It will also reduce the risk to workers, the environment, and the public by cleaning up, stabilizing, and disposing of waste much sooner than currently planned. Eliminating and reducing risk will be the governing strategy versus managing risk as we have done in the past. The plan describes how DOE will address risk reduction and risk elimination by stabilizing and dispositioning materials such as sodium-bearing liquid wastes, spent nuclear fuel, and special nuclear materials many years earlier than currently planned. DOE will ship stored transuranic waste offsite and remediate soils in accordance with existing agreements, but many years sooner than planned. By accelerating the cleanup mission at INEEL, we can significantly reduce and consolidate EM activities at the site and reduce site maintenance costs.

At our 2020 end state in the plan, some activities will continue: shipment of spent nuclear fuel to a repository; retrieval, treatment, packaging, and shipment of calcine high-level waste to a repository; and final dismantlement of remaining EM buildings. Additionally, the site will continue with ongoing activities such as ground water monitoring well beyond the 2020 end state identified in this plan. These activities will be complete by 2035 with the exception of some minor activities leading to long-term stewardship. Even with these continuing activities, the cleanup costs can be reduced by up to $19 billion, and the cleanup schedule can be completed decades earlier. But this plan is not the end of our efforts. This plan is a living document that will be revised and improved as necessary to reflect the decisions and progress made towards accelerated cleanup. As we implement this plan, we will continue to work with the Assistant Secretary for Environmental Management, our regulators, and stakeholders to further accelerate cleanup activities.

We believe this plan provides a basis for the Department's management of cleanup work at INEEL focused on risk reduction and consolidation of EM activities freeing up resources for reinvestment into cleanup. The plan also provides a basis for predictable, stable and sufficient funding as we and our contractors meet these commitments. Achieving the integrated approach and holding ourselves accountable for meeting the objectives and schedule of the plan is the key to completing this work by 2020 or sooner.

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1. PURPOSE

This Performance Management Plan describes and builds upon the planning under way for the past year at the Idaho National Engineering and Environmental Laboratory (INEEL). The INEEL has been exploring ways to remove high-level waste and spent nuclear fuel from Idaho sooner than 2035 and to complete overall cleanup prior to the 2070 scheduled date.

Accelerated Cleanup Vision

By 2012, the INEEL will have achieved significant risk reduction and will have placed materials in safe storage ready for disposal. By 2020, the INEEL will have completed all active cleanup work with potential to further accelerate cleanup to 2016.

By accelerating high-priority cleanup, it is also possible to complete all active cleanup of the INEEL much earlier than the existing baseline plans. The work will continue to be carried out utilizing existing regulatory processes and meeting all regulatory requirements. Under this accelerated strategy active cleanup can be completed by 2020, with the potential to further accelerate that cleanup to 2016.

This plan:

- Describes DOE's commitment to accelerate cleanup at the INEEL. This commitment is based on agreements to integrate those compliance activities. This reinforces a 'bias for action' philosophy and further enables coordination of work activities, facilitating accelerated cleanup. Cleanup activities are more focused on risk reduction and elimination.

- Commits the DOE to change from practices and processes that manage risk to those focused on reducing and eliminating risk. Operations office and headquarters functions will be aligned to allow contractors to complete work safely with focused DOE oversight.

- Incorporates recommendations of the Office of Environmental Management's Top-to-Bottom Review issued in February 2002. These recommendations include new acquisition strategies, risk-prioritization methods, and business processes to enable accelerated cleanup of environmental risks.

- Is a living document that will be revised and improved as necessary to reflect the decisions, and progress made towards accelerated cleanup at the INEEL.

- Reflects the vision of the EM cleanup program at the INEEL. Although significant interfaces exist and need to be worked with other DOE tenant programs, this plan does not address the future multi-program aspects of the INEEL.

It is DOE's intent that the work described herein be managed as a single integrated project, with all subsequent planning and budgeting activities for cleanup based on this plan's strategies and commitments.

2. BACKGROUND

Since its establishment in 1949, the INEEL has fulfilled numerous DOE missions including designing and testing nuclear reactors; reprocessing spent nuclear fuel to recover fissile materials; storing spent nuclear fuel; and storage, treatment, and disposal of waste. The INEEL's Environmental Management Program is responsible for managing a variety of radioactive and hazardous wastes that originated from those missions and from other DOE facilities. The EM program is treating, storing, and disposing of a variety of waste streams, cleaning up the environment, removing or deactivating unneeded facilities, and will remove DOE's inventory of spent nuclear fuel and high-level waste from Idaho.

Since 1991, the INEEL has been managing a significant cleanup legacy including:

- Millions of gallons of contaminated groundwater
- Nearly 600 known or suspected contaminated sites, including hundreds of acres of contaminated soil
- 88 acres of buried radioactive waste
- Numerous wastewater ponds, underground storage tanks, unexploded ordnance sites, and uncharacterized landfills
- 2.3 million gallons of liquids as high-level waste at the Idaho Nuclear Technology and Engineering Center tank farm
- 65,000 cubic meters of transuranic waste in aboveground storage
- Large amounts of low-level and mixed low-level radioactive waste in storage
- 250 metric tonnes heavy metal of spent nuclear fuel in storage
- 527 buildings totaling 5 million square feet.

Significant progress is being made at the INEEL to reduce risk to human health and the environment. To date, the following have been accomplished:

- 70% of the sites identified as being potentially contaminated have been either remediated or determined not to pose any risk.
- Over 2 million gallons of liquid waste have been calcined, reducing the volume of liquid waste to less than 900,000 gallons and emptying 6 of 11 tanks to the heel.
- Transuranic waste is being sent for permanent disposal on a routine basis to the Waste Isolation Pilot Plant in New Mexico. As of June 30, 2002, 1,927 cubic meters have been shipped with another 500 cubic meters ready for shipment.
- The backlog of low-level waste has been reduced by 18,000 cubic meters and mixed low-level waste by 2,500 cubic meters.
- 89% of EM spent nuclear fuel has been consolidated into dry storage.
- 99% of enforceable deadlines have been met.

Several compliance agreements and consent orders executed between 1991 and 2000 govern the cleanup work at the INEEL. Those agreements encompass the majority of the cleanup requirements and commitments. While these compliance agreements were coordinated in principle, they are not fully integrated, presenting opportunities for improved project execution. The two primary agreements are:

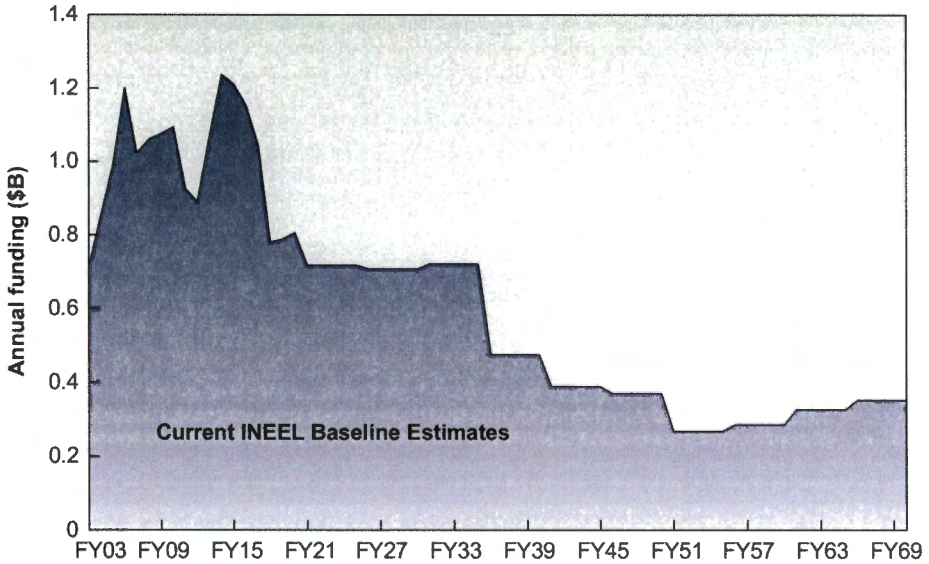
- Federal Facility Agreement and Consent Order (FFA/CO) (1991)

  Tri-party Comprehensive Environmental Response, Compensation, and Liability Act agreement with the Idaho Department of Environmental Quality and Environmental Protection Agency that defines the regulatory path and action plan to assess and clean up historical release sites and associated waste from remediation activities. Actions under this agreement satisfy Resource Conservation and Recovery Act and Hazardous Waste Management Act corrective action requirements.

- Idaho Settlement Agreement (1995)

  Tri-party court-ordered agreement between the DOE, the state of Idaho, and the U.S. Navy governs receipt and disposition of spent nuclear fuel, and treatment and disposition of stored transuranic waste and high-level waste.

Significant challenges face the INEEL in completing its cleanup responsibilities. Given the amount of waste and the hazards of handling radioactive materials, the scope of the cleanup program is lengthy and costly. Completion of the current life-cycle baseline is projected to take more than 70 years, at a total cost of $41 billion from FY 2003 through FY 2070. The cost profile for the existing baseline currently anticipated to meet the provisions of the INEEL's compliance agreements and other applicable regulatory requirements is shown in the figure below. This baseline plan is based on historical management and contracting methodologies. This profile, which peaks at nearly $1.2 billion in annual funding, does not reflect best available business practices and conflicts with requirements for a balanced federal budget, other funding demands (including cleanup of other DOE sites), emerging fiscal priorities, and wise stewardship of taxpayer funds.



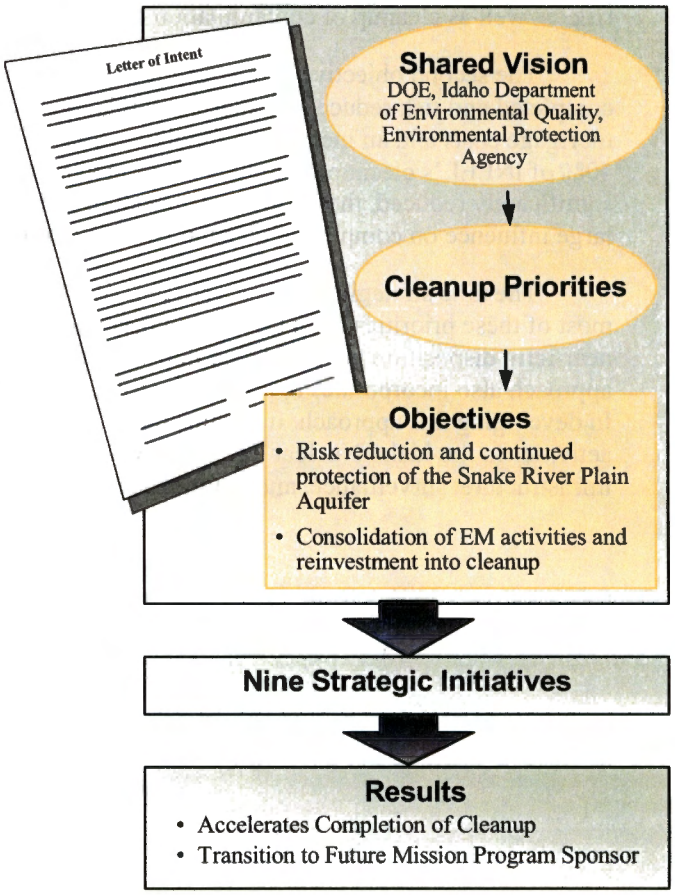
INEEL EM life-cycle baseline through 2070.

In this new approach to cleanup, as described in this plan, DOE is diverging from the past, where the focus was on risk management, and shifting to a future where the focus is on risk reduction and risk elimination. This approach will require a level of cooperation among DOE, its regulators, contractors and stakeholders unlike that in the past. The INEEL will transition from a culture of "business as usual" to a culture of "finish the job and move on to other missions." Business strategies will be developed which have not been attempted in the past. Decisions will be made based on what makes sense for the whole cleanup program, rather than those that make sense for one program or one regulatory agreement alone. Funding will be prioritized across the EM Program based on what actually reduces risk at the INEEL, rather than on programmatic or "stovepiped" priorities.

Not every initiative will be executed exactly as envisioned in this plan. But, by treating the cleanup at the INEEL as a single project, with defined milestones and performance measures, and with the cooperation of all stakeholders, which include DOE, its regulators, contractors, and the public, course corrections and technical improvements can be implemented to keep the project on track. In the end, the INEEL will be cleaned up many years sooner and for billions of dollars less than currently planned, and more importantly, the risk to workers, the public and the environment will have been substantially reduced, rather than just managed.

3. SHARED VISION FOR THE INEEL'S ACCELERATED CLEANUP PLAN

The DOE, the Idaho Department of Environmental Quality, and the Environmental Protection Agency have developed a shared vision for accelerating cleanup of the INEEL. This vision is described in the letter of intent signed by the agencies and identifies seven priorities for accelerating cleanup, which the Department has translated into two objectives and nine strategic initiatives to accomplish the vision. The seven priorities are:



- Continued cleanup and protection of the Snake River Plain Aquifer
- Consolidation of EM activities to the Idaho Nuclear Technology and Engineering Center, reducing the actively managed EM footprint by over 51%
- Removal and stabilization of sodium-bearing liquid wastes from the Idaho Nuclear Technology and Engineering Center tank farm and Resource Conservation and Recovery Act closure of the high-level waste tanks
- Placement of all DOE spent nuclear fuel managed by EM into dry storage
- Transfer of all Special Nuclear Material managed by EM to other sites
- Completion of the shipments of transuranic waste required by section B.1 of the Settlement Agreement entered in *Public Services of Colorado v. Batt*, Nos. 91-0035-S-EJL & 91-0054-S-EJL (Oct. 17, 1995)
- Making significant progress in the remediation of the buried waste in accordance with the comprehensive remedial investigation and feasibility study and record of decision for the Subsurface Disposal Area.

The two objectives are:

- **Risk reduction and continued protection of the Snake River Plain Aquifer**
- **Consolidation of EM activities and reinvestment into cleanup.**

The first objective addresses the continued protection of the Snake River Plain Aquifer, a sole source aquifer supporting much of southern Idaho. Risk reduction and continued protection of the Snake River Plain Aquifer is and will remain the principal objective of the INEEL's cleanup program. Achieving this objective requires continued focus on active cleanup of aquifer contamination posing a risk, as well as cleanup of contamination that could pose a future threat to the aquifer.

The second objective is to consolidate EM activities and reinvest funds into cleanup. As cleanup is completed and risk reduced, further consolidation and footprint reduction continue, resulting in lower mortgage costs and an increase in funding available for additional cleanup acceleration. Currently, over 40% of INEEL's cleanup funding is committed to maintaining site infrastructure. As that mortgage is significantly reduced, the ability to reinvest funds to active cleanup builds upon itself and will have a large influence on completing cleanup work much sooner than the existing baseline.

The nine strategic initiatives are described in Section 4 and focus on accelerating completion of most of these priorities from the current baseline. The cleanup approach ensures that material without a near-term disposition path is placed into safe storage and ready for ultimate disposition. The cleanup approach also incorporates opportunities for dramatic footprint reduction within INEEL's major facilities. In developing this approach, it became clear that the cleanup program could rapidly consolidate its activities to the Idaho Nuclear Technology and Engineering Center and significantly reduce infrastructure, surveillance, and maintenance costs.

4. INEEL'S ACCELERATED CLEANUP STRATEGY

Using the priorities and objectives outlined in Section 3, the INEEL has identified nine strategic initiatives for accelerating cleanup of the INEEL. These initiatives focus on significantly reducing risk and placing materials in safe storage ready for disposal. These strategic initiatives are described in the following sections and are compared to the baseline in Table 1.

Table 1. Comparison of current baseline to accelerated cleanup strategy.

Strategic Initiative	Current INEEL Baseline	Accelerated Strategy
Strategic Initiative 4.1 **Accelerate Tank Farm Closure**	• Empty pillar and panel vaulted tanks by June 2003 • Treat remaining sodium-bearing waste by 2015 • Close remaining tank farm tanks by 2016 • Ensure that treated liquids are ready to ship to the geologic repository by 2035 • Complete soils remediation by 2024 (not coordinated with tank farm closure)	• Empty pillar and panel vaulted tanks by January 2002 (Complete) • Cease receipt of newly generated liquid waste into the tank farm by 2005 • Close remaining tank farm tanks by 2012 • Treat, package and ship sodium-bearing waste offsite by 2012 • Coordinate tank farm soils remediation with tank closure actions and complete before 2020
Strategic Initiative 4.2 **Accelerate High-Level Waste Calcine Removal from Idaho**	• Complete characterization of calcine to support repository waste form acceptance criteria by 2012 • Vitrify calcine and have ready to ship to repository by 2035 • Ship calcine to repository by 2070	• Complete characterization of calcine to support repository waste form acceptance criteria by 2012 • Complete construction of calcine retrieval and packaging facility by 2020 • Retrieve, stabilize, package, and ship calcine to a repository by 2035
Strategic Initiative 4.3 **Accelerate Consolidation of Spent Nuclear Fuel to the Idaho Nuclear Technology and Engineering Center**	• Consolidate spent nuclear fuel from Test Area North to the Idaho Nuclear Technology and Engineering Center by 2017 • Complete transfer from wet to dry storage by December 2023 • Prepare and have spent nuclear fuel shipped from Idaho by January 1, 2035	• Consolidate spent nuclear fuel from Test Area North to the Idaho Nuclear Technology and Engineering Center by 2005 • Begin transfer to Spent Nuclear Fuel Dry Storage Project in 2005 • Complete transfer from wet to dry storage by 2012 • Complete shipping of spent nuclear fuel to repository by January 1, 2035
Strategic Initiative 4.4 **Accelerate Off-site Shipments of Transuranic Waste Stored at Transuranic Storage Area**	• Ship 3,100 cubic meters by December 31, 2002 • Begin remote-handled transuranic waste shipments in 2010 and complete by 2018 • Ship remaining stored transuranic waste to the Waste Isolation Pilot Plant by 2018 with target of 2015	• Ship 3,100 cubic meters by December 31, 2002 • Begin shipment of remote-handled transuranic waste offsite as early as 2004 and complete by 2012 • Ship remaining stored transuranic waste to the Waste Isolation Pilot Plant by 2012

Strategic Initiative	Current INEEL Baseline	Accelerated Strategy
Strategic Initiative 4.5 **Accelerate Remediation of Miscellaneous Contaminated Areas**	• Complete all voluntary consent order characterization work by 2006 • Complete voluntary consent order tank closures by 2019 • Remediate Power Burst Facility, Central Facilities Area, Test Area North, and Test Reactor Area by 2024 • Complete site-wide remediation in 2070	• Complete all voluntary consent order characterization work by 2005 • Complete all voluntary consent order actions by 2012 • Remediate Power Burst Facility, Central Facilities Area, Test Area North, and Test Reactor Area by 2005 • Complete site-wide active remediation by 2020
Strategic Initiative 4.6 **Eliminate On-Site Treatment and Disposal of Low-Level Waste and Mixed Low-Level Waste**	• Maintain six mixed waste storage facilities • Eliminate mixed waste backlog by 2006 • Cease on-site disposal of low-level waste in 2020	• Consolidate mixed waste storage to one facility by 2004 • Eliminate mixed waste backlog by 2004 • Cease on-site disposal of low-level waste in 2009
Strategic Initiative 4.7 **Transfer All EM-Managed Special Nuclear Material Off-Site**	• Package and ship off-site by 2044	• Package and ship to off-site locations by 2009 • Cease EM management services for Special Nuclear Material by 2009
Strategic Initiative 4.8 **Remediate Buried Waste in the Radioactive Waste Management Complex**	• Perform remediation in accordance with CERCLA by 2020 while Advanced Mixed Waste Treatment Project and Radioactive Waste Management Complex disposal are operating	• Complete Pit 9 retrieval demonstration in support of Subsurface Disposal Area CERCLA remediation decision by 2007
Strategic Initiative 4.9 **Accelerate Consolidation of INEEL Facilities and Reduce Footprint**	• Perform EM facility-by-facility shutdown and decontamination and decommission and complete by 2070	• Consolidate EM activities to the Idaho Nuclear Technology and Engineering Center by 2012 • Reduce EM footprint by 51% by 2012

4.1 Accelerate Tank Farm Closure

4.1.1 Initiative Completion Criteria

Benefits

- Disposes of liquid sodium-bearing waste by 2012
- Accelerates tank farm facility closure by four years to 2012
- Integrates approach and schedule for tank farm soils cleanup with tank closure thus reducing costs and overall schedule

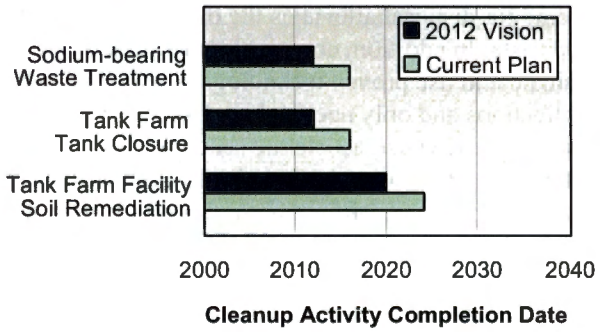
The tank farm at the Idaho Nuclear Technology and Engineering Center has approximately 900,000 gallons of liquid sodium-bearing waste currently stored in 11 underground stainless steel tanks. The DOE and the Idaho Department of Environmental Quality's priority is to remove this liquid waste from above the Snake River Plain Aquifer. This initiative accelerates treatment and removal of liquid sodium-bearing waste and associated tank solids from the tanks and transports it out of the state of Idaho for disposal by 2012. As of January 2002, all five tank farm pillar and panel vaulted tanks have been emptied to the lowest level possible using existing equipment. The initiative accelerates closure of the tanks by 2012, four years earlier than the current baseline. The project will integrate the following key activities in the tank farm to allow cost effective cleanup and closure of the entire tank farm system and remediation of surrounding contaminated soils by 2020:

- Treatment and removal of liquid sodium-bearing waste
- Closure of tank farm tanks in accordance with Resource Conservation and Recovery Act and DOE requirements
- Treatment of newly generated liquid waste from the Idaho Nuclear Technology and Engineering Center operations
- CERCLA remediation of soils around the tank farm.

The Idaho Nuclear Technology and Engineering Center continues to generate liquid waste from decontamination and demolition activities and operations of waste management and spent nuclear fuel storage facilities. This initiative also identifies and implements cost effective technologies to treat and dispose of future generation of this waste so that continued tank storage is not required. By 2005 the tank farm will no longer receive newly generated liquid waste.

4.1.2 Strategy

Previously, the Department was working toward a single treatment process for both high-level waste calcine and liquid sodium-bearing waste. Under this initiative, treatment of the liquid sodium-bearing waste is decoupled from the preparation of high-level waste calcine for disposal. This decoupling is prudent since the liquid sodium-bearing waste, although stored in the tank farm, was mainly generated from activities ancillary to fuel reprocessing, and may be classified under existing waste classification processes as mixed-transuranic waste.



A Waste Incidental to Reprocessing determination that is currently under way could formally classify the liquid sodium-bearing waste as mixed-transuranic waste. As a transuranic waste, the treated liquid sodium-bearing waste could be disposed offsite, for example at the Waste Isolation Pilot Plant. Sending the waste offsite would allow the INEEL to accelerate shipments of waste out of Idaho 25 years ahead of the current baseline.

Emptying the high-level waste tank farm tanks is considered by both the DOE and the state of Idaho to be of highest priority. The five pillar and panel vaulted tanks were emptied to the heel level in January 2002, over one year ahead of the June 2003 milestone. To accomplish the treatment and removal of the liquid sodium-bearing waste from the remaining tanks, as well as treatment of the tank solids (heel), the INEEL is analyzing the feasibility of multiple technologies that have been utilized in the commercial sector or at other government facilities. This analysis will culminate in the DOE selection of a cost effective technology that accelerates treatment times while simultaneously reducing risks.

Once a treatment technology is selected and implemented, the waste will be treated and the containers of the final waste form will be shipped offsite as produced, thus eliminating the need for interim storage capabilities. To further accelerate baseline schedules, tank closure operations will take place concurrently with treatment and removal of the liquid sodium-bearing waste. As each of the remaining tanks is emptied, it will be closed in accordance with Resource Conservation and Recovery Act, as well as DOE requirements to ensure protection of human health and the environment.

Soil contamination at the tank farm resulted from transfer line and valve box leaks. No leaks have occurred from the tanks themselves. Remediation of the contaminated tank farm soils will be coordinated with Resource Conservation and Recovery Act closure of the tanks and will follow the CERCLA process for selection of the final remedy, thus mitigating risks to human health and the environment. The remedial investigation and feasibility study will be completed following liquid sodium-bearing waste technology selection in 2004. The CERCLA process allows for public comments on the proposed plan. Integration of the Resource Conservation and Recovery Act tank closure with the CERCLA tank farm remediation will allow for optimum risk reduction, schedule acceleration and cost reduction. Accelerated tank closure will facilitate soils remediation well ahead of the baseline schedule.

4.1.3 Rationale

Together, the key activities of this initiative create a viable and fiscally responsible approach for dealing with the wide spectrum of activities integral to successfully enabling early treatment and removal of liquid sodium-bearing waste, resulting in early tank closure, which, in turn enables early tank farm soil remediation.

Decoupling the treatment of liquid sodium-bearing waste from the preparation of high-level waste calcine for disposal alleviates the overly conservative, costly, and time consuming approach of vitrifying this waste. In addition, correct classification of the liquid sodium-bearing waste provides opportunities to evaluate and use proven technologies, which have been used in other commercial and government applications and only need to be adapted to the INEEL's specific needs. Using such technologies will serve to reduce cost, accelerate schedules, and reduce risk to the workers and the environment. The initiative is proceeding with multiple treatment processing options up to final design as a program risk mitigation strategy. Mitigation of this risk is directly dependent on the systematic selection of a final sodium-bearing waste treatment technology to address multiple and changing requirements.

These requirements include such factors as disposal locations, waste classification, regulatory requirements and schedule risks. By proceeding with multiple treatment options, further changes in program requirements are expected to leave at least one viable processing solution. The waste volume resulting from the potential treatment under evaluation and to be shipped for disposal is up to 1,000 cubic

meters of remote-handled transuranic waste and up to 4,000 cubic meters of contact-handled transuranic waste.

The tank farm project will also benefit from use of a commercial approach, within government regulations, to accelerate the design and construction.

4.1.4 Key Milestones

Sodium-bearing waste treated and ready for shipment

- Submit Critical Decision-0: justification of mission need by September 2002
- Cease receipt of newly generated liquid waste in the 11 high-level waste tank farm tanks by September 2005
- Start construction of sodium-bearing waste treatment facility by December 2005
- Complete construction and readiness review of a treatment facility for sodium-bearing waste by September 2008
- Complete sodium-bearing waste and tank solids treatment and ship offsite by 2012

Closure of the high-level waste tanks

- Empty the five pillar and panel vaulted tanks by June 2003
- Complete cleaning and grouting of first pillar and panel vaulted tank by September 2003
- Complete cleaning and grouting of second pillar and panel vaulted tank by September 2004
- Complete cleaning and grouting of the remaining pillar and panel vaulted tanks by December 2006
- Close remaining pillar and panel vaulted tanks by December 2006
- Complete cleaning and grouting of two more tanks by September 2008
- Close remaining tank farm tanks by September 2012.

4.1.5 Metrics

The following are examples of performance metrics. These metrics will be further developed in detailed plans:

- Number of tanks closed
- Volume of sodium-bearing waste shipped offsite

4.2 Accelerate High-Level Waste Calcine Removal from Idaho

4.2.1 Initiative Completion Criteria

In 1992, spent fuel reprocessing was discontinued, resulting in the elimination of liquid high-level waste generation at the INEEL. To date, liquid high-level waste at the INEEL has been converted to a dry granular material, called calcine, and is currently safely stored in dry storage bins.

The current INEEL baseline describes current disposal plans for INEEL calcined high-level waste, specifying construction of a retrieval and vitrification facility, interim storage, and final disposition of the waste at a repository. Total cost for that disposal plan is approximately $7 billion.

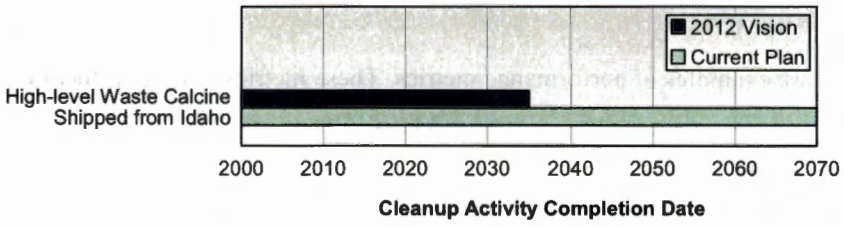
Benefits

- Eliminates the need to construct then decontaminate and decommission a large vitrification facility
- Accelerates shipments of calcine to the repository by up to 35 years
- Makes possible a life-cycle cost savings on the order of $6 billion
- Reduces the volume of waste destined for the repository by 50%
- Eliminates need for an interim storage facility

The high cost of the vitrification methodology has caused DOE to reconsider this approach. This initiative eliminates vitrification of the calcine; instead disposing of it directly or with alternative preparations for disposal. The calcine will be characterized, retrieved, prepared for disposal, packaged, and shipped to a repository. Cost savings of up to $6 billion could be realized while maintaining protection of human health and the environment.

This initiative will have the calcine ready for shipment prior to 2035 and will allow just-in-time shipping to a repository, thereby eliminating the interim storage requirements. Moreover, it completes processing of all calcine by 2032, three years faster than the vitrification process. The initiative avoids the need for extensive intrusive sampling and characterization activities through utilization of existing process data and non-intrusive sampling/characterization methodologies. This results in significant cost savings and worker risk reduction.

Directly packaging the calcine can reduce the volume of waste destined for the repository by up to 50% from the vitrification baseline. This reduction will significantly reduce the shipments to the repository. The large vitrification facility and potential separations facility will not be constructed, thereby eliminating the need for future facility decontamination and decommission, and significantly reducing the risk to the environment and workers.



4.2.2 Strategy

This initiative focuses on completing calcine packaging and disposal which will occur after the sodium-bearing waste treatment and tank farm closure in 2012. It prepares the calcine by retrieving, packaging, and alternately treating (instead of vitrifying) the high-level waste calcine for disposal, which allows significant cost and schedule improvements. This strategy significantly improves the possibility that calcine can be shipped as it is retrieved and packaged by 2035, 35 years ahead of the 2070 schedule.

The Department will focus on actions to accelerate calcine characterization and to ensure calcine meets appropriate requirements eliminating vitrification as a process needed for material disposal. The calcine would be directly packaged, or packaged with an alternative less costly treatment (Department of Transportation requirements may still prompt some immobilization treatment). An innovative approach to characterize the calcine material to meet both Resource Conservation and Recovery Act and repository equivalency will be developed in conjunction with retrieval studies. For example, a non-intrusive way to characterize calcine in-situ is a key technology gap that will be implemented through this initiative. Eliminating vitrification, and thereby simplifying the treatment, reduces cost and allows acceleration of the schedule. Final design, construction, and operation occur after 2012, allowing completion of other high-priority, high-cost initiatives first. Proof of principle activities, such as characterization and retrieval techniques, will occur before 2012 in conjunction with the preliminary design.

Completing construction of the calcine retrieval, alternate treatment, and packaging facility between 2012 and 2020 significantly improves the possibility that calcine can be shipped as it is retrieved (with minimal lag or interim storage). Assuming no further immobilization, approximately 4,400 cubic meters would be shipped to a repository. By packaging in standard canisters and using the new spent nuclear fuel dry storage facility, as the transportation load out facility will result in lower construction costs. Completion of shipping could occur by 2035, 35 years ahead of the current shipment schedule. Eliminating the need for an interim facility, alone, results in an approximated $250 million cost reduction.

4.2.3 Rationale

Adequate characterization of the calcine may be accomplished in place with the application of new technology. Current characterization plans assume extensive "hands on" and intrusive sampling of the calcine. Use of less aggressive, non-intrusive techniques can simplify calcine characterization, resulting in less costly and quicker characterization. Characterization will be coordinated with the demonstration of calcine retrievability. Characterization data are necessary to support regulatory and waste acceptance requirements that form the largest project risk. Additionally, characterization is necessary to evaluate alternate treatments. The demonstration of retrievability will address previously identified technical risks associated with the ability to retrieve calcine. Together, characterization and retrieval form the basis for proof of principle leading to conceptual design and allow new evaluation/analysis to show calcine can meet acceptance requirements at the repository as an acceptable waste form. Packaging of stabilized calcine in a standard canister will facilitate the use of the new spent nuclear fuel dry storage facility for transportation loading.

Calcine disposition is planned to occur in three phases: 1) Complete characterization, waste acceptance, regulatory requirements, and initiate process design - 2003 to 2012; 2) Complete final design and construction - 2012 to 2020; and 3) Alternately treat, package, and ship calcine to a repository - 2020 to 2035.

4.2.4 Key Milestones

- Complete characterization analysis of bin set 2 calcine samples by September 2003

- Define technology development needs and initiate development work for non-intrusive calcine characterization by September 2004
- Complete a sample retrieval and characterization demonstration by September 2007
- Issue record of decision on calcine treatment path forward by December 2009
- Submit Resource Conservation and Recovery Act Part B Permit for calcine treatment, retrieval, and packaging process by TBD
- Complete retrieval, packaging, alternative treatment and shipping to repository by December 2035

4.2.5 Metrics

The following are examples of performance metrics. These metrics will be further developed in detailed plans:

- Cubic meters of calcined shipped to the repository
- Cubic meters of calcine packaged
- Amount of curies remaining

4.3 Accelerate Consolidation of Spent Nuclear Fuel to the Idaho Nuclear Technology and Engineering Center

4.3.1 Initiative Completion Criteria

Benefits

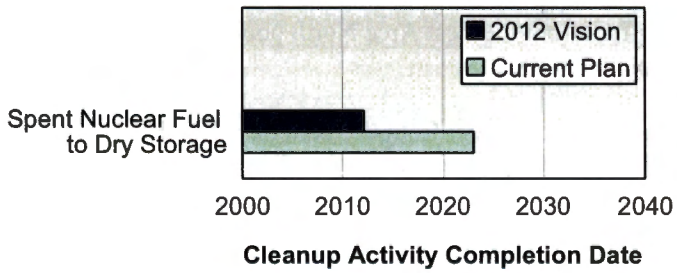
- Consolidates spent nuclear fuel into one site area
- Eliminates the risks of underwater storage
- Reduces facility costs and ensures safer storage pending shipment to repository
- Links packaging and characterization to establishment of repository acceptance criteria

Under this initiative, the INEEL will: 1) accelerate the transfer of spent nuclear fuel from wet to dry storage located at the Idaho Nuclear Technology and Engineering Center; 2) accelerate the consolidation of spent nuclear fuel from other INEEL site areas to the Idaho Nuclear Technology and Engineering Center; and 3) disposition Fermi blanket spent nuclear fuel.

This initiative will accelerate the removal of the fuel from underwater storage from 2023 to September 2012 and consolidate it into dry storage at one site area, the Idaho Nuclear Technology and Engineering Center. Transferring the fuel into dry storage eliminates the environmental risks inherent in underwater storage, reduces the EM footprint, reduces the number of facilities requiring intensive security, and reduces the annual costs of managing the spent nuclear fuel in wet storage. This initiative will also consolidate spent nuclear fuel management to the Idaho Nuclear Technology and Engineering Center, further reducing spent nuclear fuel management costs and removing infrastructure requirements at Test Area North, Power Burst Facility, and Test Reactor Area. Finally, this initiative will determine final dispositioning of Fermi blanket spent nuclear fuel, a special category of sodium-bonded spent nuclear fuel.

4.3.2 Strategy

The INEEL is currently managing approximately 250 metric tonnes heavy metal of spent nuclear fuel at the INEEL. Of this, approximately 26 metric tonnes heavy metal is stored in water-filled pools at four locations. Some of the pools are older and may be susceptible to leaking. These wet storage facilities are located at Test Area North, Power Burst Facility, Test Reactor Area, and the Idaho Nuclear Technology and Engineering Center. The strategy is to transfer the fuel from these areas to a single site area at the Idaho Nuclear Technology and Engineering Center for dry storage. Dry storage eliminates the potential for leaking radioactively contaminated water and reduces the potential for corrosion of the fuel. This initiative removes the spent nuclear fuel from wet storage 11 years ahead of the 2023 current baseline. It is substantially less expensive to operate one dry storage area than four wet storage areas, thereby reducing the infrastructure costs relating to fuel storage. Spent nuclear fuel incoming from other DOE sites and domestic and foreign research reactors will continue to be placed in dry storage at the Idaho Nuclear Technology and Engineering Center.



Consolidation of spent nuclear fuel from Test Area North to the Idaho Nuclear Technology and Engineering Center will be accelerated from 2017 to 2005. This initiative is enabled by the construction of a new pad at the Idaho Nuclear Technology and Engineering Center. This pad will hold spent nuclear fuel from West Valley, the repackaged spent nuclear fuel removed from wet storage at Test Area North, and existing

spent nuclear fuel in dry storage at Test Area North. This consolidation effort will reduce spent nuclear fuel management costs and remove infrastructure responsibilities at Test Area North.

The Fermi blanket spent nuclear fuel is a sodium-bonded fuel for which a disposition path has not been finalized. Alternative disposition paths being pursued include transfer to another program (i.e., the Office of Nuclear Energy, Science and Technology), evaluation of several process technologies to remove the sodium, or development of a methodology for direct disposal in a repository.

After the privatized Spent Nuclear Fuel Dry Storage Project is constructed and operational at INEEL in 2005 and repository acceptance criteria are finalized, the fuel will be packaged in repository-ready standard canisters. The canisters will be stored in this Nuclear Regulatory Commission-licensed dry storage facility while awaiting shipment to the repository. Storage capacity of this facility can be expanded if packaging rates exceed transportation rates to the repository. Management of this spent nuclear fuel in a Nuclear Regulatory Commission-licensed facility ensures entry of this fuel into the Nuclear Regulatory Commission-licensed repository. In addition, all activities are performed under the quality assurance program adopted by the repository. This further ensures entry of this fuel into a repository with completion of shipments by 2035.

Characterization and packaging the fuel in standard canisters based on established repository criteria minimizes the number of fuel shipments from the INEEL to the repository by a factor of six (from over 1000 truck and rail shipments to ~186 rail shipments) and minimizes the amount of fuel characterization required before disposal. Use of the standard canister also substantially reduces the risk that DOE spent nuclear fuel would be considered a nonstandard fuel. Nonstandard fuel incurs much greater characterization costs and will be placed at the end of the queue for receipt at the repository, thereby requiring INEEL storage facilities to operate longer and jeopardizing the completion of shipment of spent nuclear fuel offsite by January 1, 2035. Some intact commercial-type fuels stored at the INEEL for experimental purposes may be sent directly to the repository without packaging into standard canisters. Finally, to decrease the EM efforts for storage and packaging costs at the INEEL, foreign research reactor fuel and domestic research reactor fuel will be sent directly from the generators to the repository after the repository opens. This includes spent nuclear fuel from DOE test reactors.

4.3.3 Rationale

The strategy outlined above reduces risks and costs and accelerates the ability of the INEEL to remove existing and future receipt of spent nuclear fuel from Idaho. The strategy ensures that spent nuclear fuel will be accepted at the repository at the earliest possible timeframe by use of the INEEL-designed and tested standard canister. The Idaho Settlement Agreement milestone for removal of DOE-ID spent nuclear fuel from wet storage will be achieved 11 years ahead of the current baseline.

Early opening of the repository allows a minimization of shipments to the INEEL after 2010.

4.3.4 Key Milestones

- Complete transfer of all spent nuclear fuel from the Test Area North pool to existing dry storage casks on a storage pad by September 2002

- Complete transfer, dry, and store all spent nuclear fuel from the Materials Test Reactor canal to the Idaho Nuclear Technology and Engineering Center in the Irradiated Fuel Storage Facility by December 2002

- Complete transfer of all spent nuclear fuel from the Power Burst Facility pool to the Idaho Nuclear Technology and Engineering Center and store in the Irradiated Fuel Storage Facility by December 2003

- Complete transfer of all spent nuclear fuel from the Test Area North storage pad to a new cask storage pad at the Idaho Nuclear Technology and Engineering Center by September 2005

- Initiate repackaging into and storage of repository-ready standard canisters for shipment to the repository by December 2005

- Cease acceptance of Advanced Test Reactor fuel by September 2010

- Remove sodium-bonded fuels (Experimental Breeder Reactor, EBR-II) by September 2011

- Remove all spent nuclear fuel from underwater storage pools at the Idaho Nuclear Technology and Engineering Center by September 2012

- Remove naval fuels from the Idaho Nuclear Technology and Engineering Center by September 2012

- Complete final shipment of all EM-managed legacy spent nuclear fuel to a repository by January 1, 2035

4.3.5 Metrics

The following are examples of performance metrics. These metrics will be further developed in detailed plans:

- Metric tonnes heavy metal of spent nuclear fuel shipped to a repository

- Metric tonnes heavy metal of spent nuclear fuel transferred to dry storage

- Metric tonnes heavy metal received from offsite sources

4.4 Accelerate Off-Site Shipments of Transuranic Waste Stored at the Transuranic Storage Area

4.4.1 Initiative Completion Criteria

The INEEL must ship 65,000 cubic meters of transuranic waste stored at the Transuranic Storage Area to the Waste Isolation Pilot Plant, or other designated DOE facility. This task involves characterizing, certifying and shipping 3,100 cubic meters by December 31, 2002 and the retrieval, characterization, treatment, certification and shipment of the remaining stored waste by a target date of December 31, 2015, but no later than December 31, 2018. Under this initiative, removal of both contact-handled and remote-handled stored transuranic waste will be accelerated and completed by 2012, six years ahead of the current baseline schedule.

Benefits

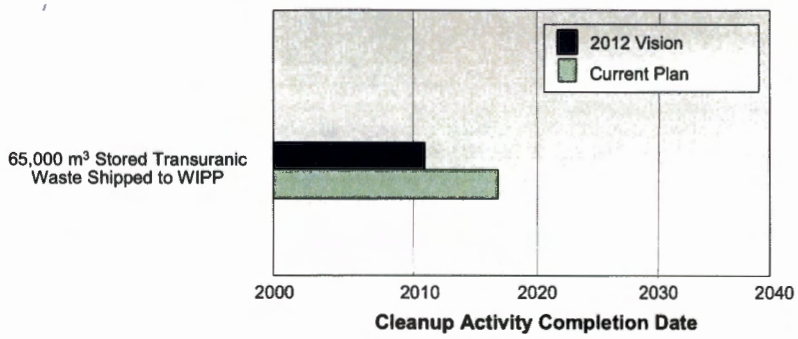
- Eliminates risk of transuranic waste stored at the Transuranic Storage Area six years ahead of current baseline schedule
- Reduces remote-handled transuranic waste life-cycle costs by an estimated $60 million
- Allows for early closure of the Radioactive Waste Management Complex, reducing the EM footprint

4.4.2 Strategy

This initiative depends on removal of stored contact-handled transuranic waste at the Transuranic Storage Area and initiation of remote-handled transuranic waste disposal. Remote-handled transuranic waste will be characterized and prepared for shipment to the Waste Isolation Pilot Plant as early as 2004 with shipments completed by 2012. Shipment of the remaining stored contact-handled transuranic waste under the privatized Advanced Mixed Waste Treatment Project will be accelerated with completion by 2012. The Advanced Mixed Waste Treatment Project will also process waste retrieved from the Pit 9 demonstration project prior to 2012.

Acceleration of contact-handled transuranic shipments from the Advanced Mixed Waste Treatment Project can be accomplished through focused use of the designed facility capacity for processing INEEL waste streams. Changes in disposal requirements and in processing approach have reduced the volume of waste requiring more robust treatment and increased the capability of the facility for processing waste. A strategy will be developed for treatment of transuranic-contaminated waste forms not currently meeting Waste Isolation Pilot Plant disposal criteria. Opportunities to decrease the number of waste shipments, resulting in decreased costs and risks, by use of an alternative transportation system are being explored.

Under this initiative, the INEEL will accelerate remote-handled transuranic waste disposal by capitalizing on the Waste Isolation Pilot Plant's permitting plans to characterize this waste using acceptable knowledge—existing information and records on the waste. Development of acceptable knowledge indicates that a portion of the waste should not require repackaging to meet transportation and



disposal requirements. This waste inventory would be prepared for early shipment to the Waste Isolation Pilot Plant. Remaining waste may require repackaging to meet transportation criteria. The current waste disposition life-cycle baseline plan conservatively assumes that all remote-handled transuranic waste in the Transuranic Storage Area must be repackaged prior to shipment to Waste Isolation Pilot Plant using an existing hot cell facility. The INEEL will investigate use of commercially available characterization systems; use of modular commercially available repackaging capabilities as an alternative to modifying old existing facilities; and use of the future Remote Treatment Facility to achieve significant cost reductions. This initiative includes use of alternative approved shipping containers that will minimize the number of remote-handled transuranic waste shipments to Waste Isolation Pilot Plant. Application of existing technologies or development of technology alternatives is essential for accelerating remote-handled transuranic waste disposition.

Management strategies will be developed for unique waste streams including transuranic-contaminated non-defense generated waste and irradiated beryllium components. Transfer of unirradiated U-233 special nuclear material stored at the Transuranic Storage Area to another facility will be coordinated with Strategic Initiative 4.7.

Accelerated off-site shipments of transuranic waste stored at the Transuranic Storage Area for disposal eliminates risk of onsite storage six years ahead of schedule and allows closure of the Radioactive Waste Management Complex eight years ahead of the baseline schedule. Accelerating disposal of INEEL's transuranic waste stored at the Transuranic Storage Area reduces the radiological and hazardous waste risk to the environment and public by moving the waste to final disposal at the Waste Isolation Pilot Plant. Achieving early cleanup of stored defense-generated transuranic waste generates significant cost savings. INEEL has an inventory of stored remote-handled transuranic waste that can be qualified to support planned initiation of remote-handled transuranic waste disposal operations at the Waste Isolation Pilot Plant in 2004.

4.4.3 Rationale

Acceleration of contact-handled transuranic waste shipments by the Advanced Mixed Waste Treatment Project is possible due to capacity designed into processing lines. Disposal requirement changes at the Waste Isolation Pilot Plant have also resulted in increased capability to characterize waste for shipment to the Waste Isolation Pilot Plant.

Development of acceptable knowledge for the existing inventory of remote-handled transuranic waste has allowed improvement in the baseline strategy. This information has allowed for alternative approaches to be considered for determining the radionuclide content in the waste, identified a portion of the inventory that will not need to be repackaged, and supported identification of technology development needs that may further reduce the need to repackage waste. Significant cost reductions have been identified by use of modular shielded repackaging capability as an alternative to modification of an existing hot cell facility.

4.4.4 Key Milestones

Stored contact-handled transuranic waste

- Complete shipment of 3,100 cubic meters of transuranic waste to the Waste Isolation Pilot Plant by December 31, 2002
- Complete construction of the Advanced Mixed Waste Treatment Project by December 2002
- Complete transition of selected transuranic waste management facilities and equipment to the Advanced Mixed Waste Treatment Project by January 2003

- Initiate Advanced Mixed Waste Treatment Project shipment operations by March 2003
- Complete Waste Isolation Pilot Plant certification of the Advanced Mixed Waste Treatment Project retrieval operations by March 2003
- Initiate Advanced Mixed Waste Treatment Project treatment operations by October 2003
- Complete processing and disposal of remaining contact-handled transuranic waste stored at the Transuranic Storage Area by the end of 2012
- Initiate closure of Advanced Mixed Waste Treatment Project facilities in 2012, subject to decisions made under strategic initiative 4.8

Stored Remote-handled transuranic waste

- Complete initial acceptable knowledge development supporting waste characterization in 2002
- Complete technical strategy document and Critical Decision 0 for mission need by September 2003
- Initiate shipment of remote-handled transuranic waste not requiring repackaging to the Waste Isolation Pilot Plant for disposal as early as 2004
- Complete repackaging capability design activities by September 2005.
- Complete construction and startup of repackaging capability by September 2006
- Complete transfer/shipment of unirradiated U-233 stored at the Transuranic Storage Area to another DOE site by September 2008
- Complete repackaging and shipment of remote-handled waste stored at the Transuranic Storage Area to the Waste Isolation Pilot Plant in September 2011
- Turnover remote-handled transuranic waste facilities to deactivation and decommissioning (D&D) by 2012

4.4.5 Metrics

The following are examples of performance metrics. These metrics will be further developed in detailed plans:

- Shipments of contact-handled transuranic waste
- Shipments of remote-handled transuranic waste
- Advanced Mixed Waste Treatment Project throughput

4.5 Accelerate Remediation of Miscellaneous Contaminated Areas

4.5.1 Initiative Completion Criteria

Benefits

- Accelerates worker and environmental risk reduction
- Reduces life-cycle cost providing for reinvestment to further accelerate cleanup
- Completes Voluntary Consent Order tank closures by 2012, seven years ahead of schedule

The focus of this initiative is to expedite remediation work at DOE-ID's Waste Area Groups thus enabling risk reduction, footprint reduction and consolidation to be completed on an accelerated schedule. This allows for mortgage reduction savings to be reinvested to further accelerate cleanup and risk reduction. INEEL established 10 Waste Area Groups across the site to address remediation of contaminated areas under the CERCLA FFA/CO. DOE-ID is responsible for remediation of eight of these Waste Area Groups. DOE's Chicago Operations Office manages Argonne National Laboratory West (WAG 9) and the Pittsburgh Naval Reactor's Program manages Naval Reactor Facility (WAG 8). DOE-ID is also responsible for working with the cognizant DOE offices to integrate the closure of their respective Waste Area Groups.

Remedial actions at Test Area North, Central Facilities Area and Auxiliary Reactor Area/Power Burst Facility areas will be coordinated with other EM cleanup objectives and accomplished in an expedited manner. Continuation of remediation at Idaho Nuclear Technology and Engineering Center will enable disposal of existing CERCLA stored waste and allow efficient INEEL CERCLA Disposal Facility operations. Completion at these areas will enable facility closures at all site areas to be accomplished sooner, which directly supports the footprint reduction and consolidation strategy addressed in Section 4.9. Additionally, this initiative addresses sitewide remediation of soils and the ordnance remaining from past military munitions operations that occurred prior to the establishment of the INEEL.

Characterization and remediation of several hundred tanks across the INEEL will be accelerated. Thirty percent of the 704 tanks have been characterized. The remaining tanks, which may potentially contain hazardous material, are addressed under the 2000 Voluntary Consent Order with the state of Idaho and will be remediated by 2012, seven years ahead of schedule.

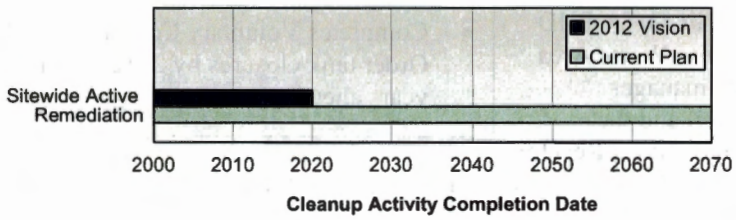
This initiative will optimize remedial and post closure actions that constitute long-term operations, maintenance, and monitoring for both Resource Conservation and Recovery Act and CERCLA actions, and periodic regulatory reviews of the effectiveness of remedial and post closure actions taken at the INEEL.

4.5.2 Strategy

Several remedial actions are in progress that address areas of soil contamination and other contaminated release sites at the INEEL. These actions, conducted at Test Area North (WAG 1), Idaho Nuclear Technology and Engineering Center (WAG 3), Central Facilities Area (WAG 4), and Auxiliary Reactor Area/Power Burst Facility (WAG 5) will be coordinated to improve resource utilization and completed on an accelerated schedule. Remedial actions at Test Reactor Area (WAG 2) are complete. Soils remediation at the Idaho Nuclear Technology and Engineering Center will involve the disposal of existing CERCLA legacy waste currently being stored in containers and stockpiles at Waste Area Group 3 along with the other contaminated soils as necessary to optimize INEEL CERCLA Disposal Facility operations for schedule and cost efficiencies. It is anticipated that most of the soils generated in these remedial actions will be placed in the INEEL CERCLA Disposal Facility currently under construction

adjacent to the Idaho Nuclear Technology and Engineering Center. The first cell of this landfill will be utilized for the disposal of waste generated from the remediation activities at these areas, with additional cells constructed to support continued remedial actions. Some soils from these areas require treatment before disposal in the INEEL CERCLA Disposal Facility. If on-site cost-effective treatment is unavailable, the soils may be sent to off-site facilities for treatment and disposal.

Operation of the INEEL CERCLA Disposal Facility will be coordinated with the other landfill operations at the INEEL to optimize personnel and equipment utilization, again providing opportunities for cost savings for reinvestment. Additionally, the Idaho Nuclear Technology and Engineering Center remediation activities will be re-sequenced to more efficiently and effectively achieve the tank farm closure strategy addressed in Section 4.1.



The final record of decision for Waste Area Group 10, Operable Unit 10-08 (sitewide groundwater) was intended to take a comprehensive look at the Snake River Plain Aquifer after other remedial actions have been completed. The current schedule for that record of decision conflicts with that intent. Discussions with the regulators have indicated support for re-sequencing this record of decision so that its original intent can be met. This record of decision is expected to be signed in 2008 and any additional remedial action, if required, would be initiated after that date and completed by 2020. The draft record of decision for Waste Area Group 10, Operable Unit 10-04 (sitewide soils and ordnance) is currently under review by the state and EPA. The final record of decision issuance is expected after agreement is reached with the agencies.

Under the current baseline, characterizing and remediation of the 704 tanks identified in the Voluntary Consent Order is scheduled to take over 16 years. A review of the Voluntary Consent Order action plan is currently underway to identify opportunities to accelerate both of these activities as well as to improve sequencing to support the footprint reduction and consolidation strategy. Using this approach, all Voluntary Consent Order tank closures will be completed by 2012, and costs will be reduced as tank remediation is integrated with related cleanup actions at the INEEL.

Completion of remediation means all actions identified in the records of decision and closure plans have been implemented, such as the excavation and removal of contaminants exceeding risk levels; completion of site restoration; completion of on-site treatment of wastes other than ongoing groundwater pump-and-treat; and groundwater-monitoring systems are complete and operating as intended. Ongoing long-term stewardship activities such as surveillance, maintenance of engineered and institutional controls, and monitoring will continue after completion of remediation.

4.5.3 Rationale

Both the FFA/CO and the Voluntary Consent Order agreements are structured with flexibility to allow work to be sequenced in a manner that reduces risk but also promotes efficient accomplishment of remedial actions. This initiative takes advantage of those provisions and is consistent with similar actions taken in the past at the INEEL. Stakeholder and public involvement in these decisions and actions will continue as outlined in those agreements. Integration of related cleanup activities at the INEEL is also a critical element in the footprint reduction and consolidation strategy, and will result in significant cost reductions that will lead to additional funding for accelerating other cleanup.

4.5.4 Key Milestones

- Complete remediation of Central Facilities Area (WAG 4) by September 2004
- Complete remediation of Auxiliary Reactor Area and Power Burst Facility areas (WAG 5) by September 2004
- Complete characterization of all Voluntary Consent Order tanks by September 2005
- Complete remediation of Test Area North (WAG 1) by September 2005, except for the on-going pump and treatment of the groundwater.
- Complete remediation and closure of all Voluntary Consent Order tanks by September 2012
- Complete removal of soils destined for the INEEL CERCLA Disposal Facility by September 2013

4.5.5 Metrics

The following are examples of performance metrics. These metrics will be further developed in detailed plans:

- Amount of cubic yards of contaminated soils remediated by WAG
- Number of Voluntary Consent Order tanks characterized and remediated

4.6 Eliminate On-Site Treatment and Disposal of Low-Level and Mixed Low-Level Waste

4.6.1 Initiative Completion Criteria

Benefits

- Removes legacy radiological and hazardous waste risk to the environment two years sooner
- Eliminates on-site land disposal of containerized low-level radioactive waste at the Radioactive Waste Management Complex 11 years sooner
- Eliminates need for multiple mixed and low-level radioactive waste treatment/storage and disposal facilities and accelerates facility closure

This strategic initiative reduces, and in many cases, eliminates the need for INEEL on-site treatment, storage, and disposal facilities for low-level and mixed low-level waste through eliminating waste inventory and using off-site waste services.

INEEL mixed low-level waste and hazardous waste storage facilities will be consolidated into a single permitted facility at the Idaho Nuclear Technology and Engineering Center. The 1,900 cubic meters of containerized legacy mixed waste remaining in storage at permitted facilities across the INEEL at the end of 2002 will be treated and disposed of offsite by the end of 2004, and the existing storage facilities will be cleaned and closed one to two years ahead of the current schedule. Benefits realized include eliminating environmental and health risks associated with continued storage of radiological and hazardous wastes; accelerating completion of the INEEL Site Treatment Plan; significantly lowering operational and maintenance costs associated with multiple facilities; and lowering the overall treatment and disposal costs due to volume efficiencies.

INEEL newly generated low-level waste and mixed low-level waste will be treated and disposed as they are generated, and will not accumulate at the INEEL. Through this approach, mixed low-level waste inventory will not be added to the INEEL Site Treatment Plan and multiple storage facilities will not be required. Accountability for waste disposition costs will transition to the waste generator will begin in October 2003, favoring increased waste minimization practices and reduced waste generation rates.

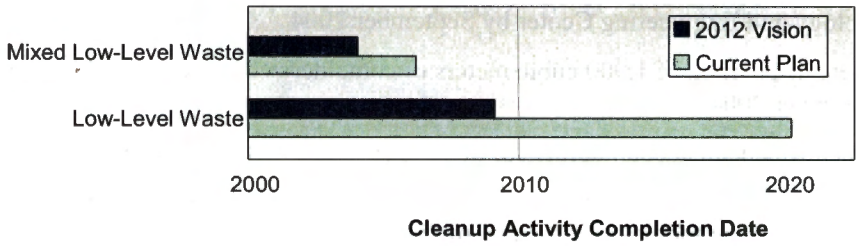
Land disposal of INEEL containerized low-level radioactive waste at the Radioactive Waste Management Complex will be halted and the waste will be sent offsite for disposal at a commercial facility or alternate DOE site. Bulk clean-up waste, such as soil and debris, generated from environmental restoration activities at the INEEL will be disposed at the INEEL CERCLA Disposal Facility. This criterion also supports Section 4.8, Remediation of the Buried Waste at the Radioactive Waste Management Complex.

At the end of 2012, the INEEL will maintain only one permitted waste storage facility at the Idaho Nuclear Technology and Engineering Center. The purpose of this facility will be to temporarily store newly generated hazardous and mixed waste to have sufficient volume to send offsite for treatment and disposal. The facility may also store small amounts of waste with no path to disposal, or waste being stored for short-term radioactive decay.

4.6.2 Strategy

Treatment and disposal of 1,900 cubic meters of INEEL containerized legacy mixed low-level waste, currently stored at six INEEL permitted facilities, will be completed by the end of 2004, two years ahead of schedule. This will be accomplished through the efficient use of off-site commercial facilities and alternate DOE facilities. Partnerships with one or more commercial vendors will be established to expedite waste disposition. The waste characterization and verification work will be performed at the

INEEL prior to shipment to ensure the waste meets the off-site vendor's criteria. Work progress under this accelerated schedule will significantly exceed current INEEL Site Treatment Plan commitments. The accelerated schedule will be paid for through improvements made to the EM program in 2003 and 2004. Through this accelerated schedule, INEEL mixed waste storage facilities will be able to be emptied, cleaned and closed sooner. Only one permitted mixed-low level waste and hazardous waste storage facility will remain open at the Idaho Nuclear Technology and Engineering Center to serve minimal storage needs past 2004.



A key strategy to reducing waste backlog at the INEEL is reducing the amount of waste being generated. Both newly generated mixed low-level waste and low-level waste will be treated and disposed of within one year of generation. Although INEEL waste generators currently pay for partial waste service, the intent of this initiative is to have the INEEL waste generators be fully accountable for the disposition costs for newly generated waste. This would be more in line with Environmental Protection Agency policy regarding waste minimization by providing a strong financial incentive to the waste generator for minimizing waste generation at the INEEL. Changes to the INEEL financial system supporting this will begin in 2003 and will be completed and implemented sitewide by the beginning of 2004. By that time, each INEEL waste generator will be responsible for the costs of waste characterization, including sampling and analysis, packaging and transportation, temporary storage, waste treatment, waste disposal, and upon storage facility consolidation, storage costs.

Land disposal of containerized low-level radioactive waste at the Radioactive Waste Management Complex will cease in 2009. Low-level contact-handled and remote-handled low-level waste will be packaged and transported for disposal offsite at either DOE facilities including the Nevada Test Site or the Hanford Site, or at a commercial radioactive waste disposal facility licensed by the Nuclear Regulatory Commission. INEEL onsite disposal of the contact-handled low-level waste will cease in 2008, and disposal of the remote-handled low-level waste will cease in 2009. INEEL onsite disposal operations will continue through the 2008/2009 timeframe; however, the containerized low-level waste inventory staged for disposal at the Radioactive Waste Management Complex will be maintained at less than 1,000 cubic meters and disposal operations will become further streamlined. Because the INEEL low-level waste disposal facility is within the Radioactive Waste Management Complex subsurface disposal area, achieving the 2009 closure enables the INEEL to complete expedited CERCLA remediation of the Radioactive Waste Management Complex subsurface disposal area.

4.6.3 Rationale

Several recent changes enable the INEEL to expedite work through this strategic initiative. These include increased availability of off-site commercial services for treatment and disposal of mixed low-level waste and low-level waste, and a clear pathway for using alternate DOE site treatment and disposal services through the DOE Environmental Management Programmatic Environmental Impact Statement. This allows use of a wider range of cost effective services, and results in accelerated disposition of INEEL waste. By reducing this inventory, additional operational efficiencies are gained, the environmental management footprint is reduced, and closures can be accomplished ahead of schedule.

4.6.4 Key Milestones

- Remove all mixed low-level waste from the Waste Reduction Operations Complex by the end of 2003
- Complete treatment of 807 cubic meters of containerized legacy mixed waste by September 2003
- Consolidate mixed low-level waste storage to a single permitted facility at the Idaho Nuclear Technology and Engineering Center by September 2004
- Complete disposition of 1,900 cubic meters of containerized legacy mixed low-level waste by September 2004
- Implement financial accountability for newly generated waste by the October 2004
- Complete Resource Conservation and Recovery Act closure of Waste Reduction Operations Complex permitted facilities by the end of 2004
- Discontinue contact-handled low-level waste disposal at the Radioactive Waste Management Complex by September 2008
- Complete first off-site shipment of remote-handled low-level waste by September 2008
- Discontinue remote-handled low-level waste disposal at the Radioactive Waste Management Complex by September 2009
- Transfer Radioactive Waste Management Complex low-level waste disposal pits to Waste Area Group 7 for closure/remediation under the FFA/CO.

4.6.5 Metrics

The following are examples of performance metrics. These metrics will be further developed in detailed plans:

- Transfer of mixed low-level waste offsite
- Cubic meters of waste in backlog reduced

4.7 Transfer All EM-Managed Special Nuclear Material Off-Site

4.7.1 Initiative Completion Criteria

Under this initiative, the INEEL will remove all EM-managed non mission-related special nuclear material to the appropriate program office(s) and site(s). Consolidation of special nuclear material to fewer locations within the DOE complex reduces potential national and INEEL security vulnerabilities, provides cost-effective oversight of the material by the appropriate program office, reduces the EM footprint at the INEEL, and reduces the life-cycle liability to EM.

Benefits

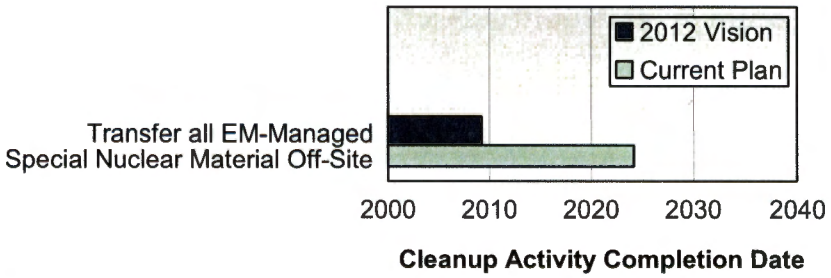
- Supports consolidation of special nuclear material to reduce safeguards and security risks
- Allows facilities to be deactivated or turned over to other DOE programs
- Reduces infrastructure costs
- Returns non-EM mission special nuclear materials to the appropriate program office

4.7.2 Strategy

Special nuclear material at the INEEL consists of unirradiated fuel (rods, elements, and plates), standards, oxides, and product. Two program offices at the INEEL manage special nuclear material at five INEEL facilities.

EM manages more than 40 categories of surplus special nuclear material at the INEEL. The majority of these materials are stored at two spent nuclear fuel facilities and in a dedicated special nuclear material facility at the Idaho Nuclear Technology and Engineering Center. Some U-233 special nuclear material is also stored at the Radioactive Waste Management Complex. None of the existing special nuclear material is necessary for the EM mission. A disposition strategy has been developed for most of this material whereby it will be transported to other DOE sites or commercial nuclear fuel facilities.

Although the existing baseline describes continuing management by EM of the inventory through FY 2044, the disposition strategy will describe accelerating the removal or transfer of responsibility for a majority of the EM special nuclear material at INEEL by 2004, with the remainder removed by 2009. This Performance Management Plan does not reflect EM accepting any additional special nuclear material. Remaining special nuclear materials and facilities will be transferred to appropriate program offices after agreements with appropriate programs and/or receiver sites are reached.



4.7.3 Rationale

Special nuclear materials are not part of the EM mission. DOE will develop an appropriate disposition strategy and schedule for the transfer of special nuclear material to appropriate program offices or sites. Consolidation of special nuclear materials to a reduced number of locations will reduce potential national security vulnerabilities, reduce infrastructure costs and liabilities, and place management of these materials with appropriate program offices.

Transfers of ROVER/PARKA special nuclear material from the INEEL to Oak Ridge are already under-way. Detailed planning for packaging and shipping of denitrator product is also well under-way. Movement of this material will lead the way for other special nuclear material transfers from the INEEL. Acceleration of these transfers to 2004 fits well with the administration's plans for consolidation of special nuclear material at a few DOE sites. Specific disposition and transport plans for the remainder of the special nuclear material, particularly for Shippingport Light Water Breeder Reactor Fuel (U^{233}), need to be developed with a goal of all material removed by 2009. The recipient DOE sites will need to have facilities ready to receive these materials.

4.7.4 Key Milestones

- Complete disposition plan including shipping schedule to other sites by September 2003
- Complete repackaging and shipment of denitrator product special nuclear material to another site(s) by December 2004
- Complete shipment of unirradiated Light Water Breeder Reactor fuel to another site by September 2008
- Complete shipment of remaining EM special nuclear material to another site(s) by September 2009

4.7.5 Metrics

The following are examples of performance metrics. These metrics will be further developed in detailed plans:

- Percentage of special nuclear material transferred offsite

4.8 Remediate Buried Waste at the Radioactive Waste Management Complex

4.8.1 Initiative Completion Criteria

Benefits

- Provides decision makers with the information to select a remedy for the buried waste
- Reduces cost by coordinating remediation of buried waste with the Advanced Mixed Waste Treatment Project and closure of low-level waste disposal pits

Remediation of the 88-acres of buried waste at the Radioactive Waste Management Complex is one of the most significant environmental cleanup actions remaining at the INEEL. Completion of this remediation will depend on the results of the evaluation conducted under the FFA/CO, which will be established in a record of decision. The record of decision will identify the necessary remedial actions. Funding profiles for the Performance Management Plan and Site baseline will be revised once the record of decision is issued to reflect the workscope. The goal is to complete the required remediation by 2020 or sooner regardless of the selected remedial actions. Organic contaminants that have migrated from the waste into the vadose zone are currently being remediated. This remediation will continue.

In conjunction with the interim record of decision for a portion of the Radioactive Waste Management Complex, the recent agreement supporting a demonstration retrieval of waste from Pit 9 will be implemented. The demonstration retrieval will begin by March 2004 and will be completed by October 2004. This agreement includes the use of the Advanced Mixed Waste Treatment Project to cost effectively disposition the excavated waste.

4.8.2 Strategy

The decision on how to remediate the buried waste at the Radioactive Waste Management Complex will follow the process outlined in the FFA/CO. The draft remedial investigation and feasibility study will be completed by December 2005, with a proposed plan to follow. The remedial investigation and feasibility study will provide decision makers in DOE, the state of Idaho, and Environmental Protection Agency the information necessary to select a remedy or set of remedies for the buried waste. Public input will be a key element in that selection, with public review and participation accomplished in accordance with the provisions of the FFA/CO.

Opportunities to accelerate completion of the remediation will be evaluated with the state of Idaho and Environmental Protection Agency. The schedule for preparing the feasibility study will ensure that information from the Pit 9 demonstration retrieval can effectively be considered in the evaluation of remedial options for all the buried waste.

4.8.3 Rationale

Information and experience gained from past retrieval of waste at the Radioactive Waste Management Complex, from the recently approved demonstration retrieval of waste from Pit 9, and progress on the design from retrieval of the remainder of Pit 9 will be factored into the selection of the final remedy for the buried waste. Information will continue to be gathered from probes and monitoring wells placed in and around the Radioactive Waste Management Complex and will be factored into the final remedial investigation and feasibility study.

Closure of the active low-level waste disposal pit will be conducted as part of the CERCLA remediation of the Radioactive Waste Management Complex. INEEL will integrate the schedule and

closure actions for this pit with the remedial action selected for the buried waste under the FFA/CO to minimize interference and to reduce the cost of the comprehensive closure and remediation.

4.8.4 Key Milestones

- Complete glovebox excavator method excavation by October 1, 2004
- Submit comprehensive draft remedial investigation and baseline risk assessment by August 2005.
- Submit 10% design for retrieval of remainder of Pit 9 by September 2005
- Submit comprehensive draft feasibility study based on the approved remedial investigation and baseline risk assessment by December 31, 2005
- Submit comprehensive draft proposed plan by March 31, 2006
- Submit comprehensive draft record of decision for the Subsurface Disposal Area to the state of Idaho and EPA by December 31, 2006
- Complete the Remedial Design for Stage III and start Stage III construction by March 31, 2007

4.8.5 Metrics

TBD

4.9 Accelerate Consolidation of INEEL Facilities and Reduce Footprint

4.9.1 Initiative Completion Criteria

Benefits

- Reduces EM life-cycle cost by over $6.5 billion
- Reduces risk to human health and the environment
- Consolidates EM operations to one facility area
- Deactivates and/or places excess facilities in appropriate condition
- Transfers the INEEL infrastructure to a non-EM sponsor

Over 40% of the cost reduction expected to result from this accelerated cleanup plan comes from eliminating EM infrastructure costs by aggressive footprint reduction through consolidation of cleanup operations, primarily to the Idaho Nuclear Technology and Engineering Center, and inactivation and decommissioning of facilities at several other INEEL areas. Decommissioning is defined as taking place after deactivation and includes surveillance, maintenance, decontamination and/or dismantlement. Deactivation is the process of placing a facility in a stable and known condition including the removal of hazardous and radioactive materials to ensure adequate protection of the worker, public health and safety, and the environment, thereby limiting the long-term cost of surveillance and maintenance. Cost reductions are also achieved through elimination of previously planned activities that are not now required to support the accelerated cleanup strategy. This reduces the timeframe for cleanup and transfer of general landlord responsibilities for the INEEL from EM to other non-EM sponsors. Reduction or elimination of risk to human health and the environment is achieved through efforts such as restricted access to potentially hazardous facility areas and effluent reduction or termination. Footprint reduction will not impact or modify ongoing CERCLA remediation or monitoring activities.

The accelerated strategy is accomplished by moving to full integration of closing an entire site area instead of focusing on closure by facility or building. This integration allows the INEEL to get out of facilities not needed by EM and transfer the others to new missions. EM will not build new facilities unless they directly support EM missions.

The revised funding requirements for the INEEL Infrastructure and Deactivation and Decommissioning (D&D) Programs in support of the accelerated cleanup strategy reflects life-cycle cost reductions of $6.5 billion.

The INEEL currently comprises 527 buildings (511 owned and 16 leased) representing 5 million ft^2. Overall, the condition of INEEL buildings is good, with 70% of the square footage considered viable (in fair to good condition). INEEL buildings range in age from new to 60 years old, with an average age of 27 years. Twenty-four percent of INEEL building square footage is storage/warehouse space, 26% is office/administrative space, 17% is multipurpose/service space, 9% is production/plant space, 11% is research/laboratory space, 10% is excess, and 3% is categorized as reactor/accelerator space.

INEEL Infrastructure and D&D plans and objectives have been established to support the accelerated cleanup goals. Key to these programs' contribution to accelerated cleanup goals is reduction of risk and achievement of necessary cost savings by the removal of hazardous materials thereby changing the condition of the buildings from one requiring high surveillance and maintenance to one requiring minimal surveillance and maintenance. Additionally, cost savings will result from facility consolidation and footprint reduction. Specific INEEL facilities have already been identified, consolidation plans are in place, and facility footprint reduction goals have been established. The

remaining INEEL infrastructure will be maintained to support ongoing EM cleanup activities beyond 2012 and to meet the future needs of the INEEL under new, non-EM sponsors. EM will negotiate appropriate actions and agreements, and provide appropriate support, to facilitate transition of designated infrastructure and facilities to new sponsors.

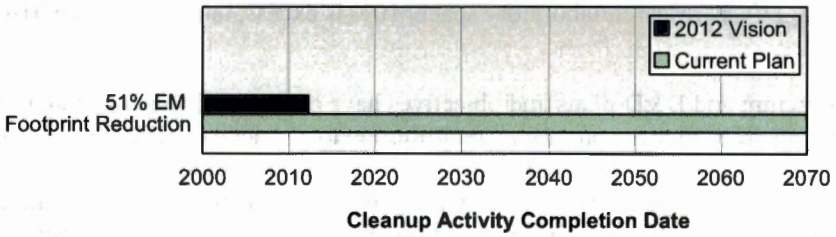
Facility consolidation at the INEEL means that personnel and/or work activities are relocated from disparate buildings and/or areas and concentrated to a single area and/or a single building—or a few, co-located buildings. Footprint reduction means that a building and associated infrastructure are inactivated, decommissioned, or evaluated for further action. Inactivation means a building and associated infrastructure are closed to a minimum state of surveillance and maintenance and/or a condition of cold, dark, and dry. Cold, dark, and dry is a condition where the facility HVAC systems have been shut down, electricity has been isolated at the feed source, and no wet systems remain in the facility. Methods of performing facility decommissioning include: the facility has been demolished and all residues removed; imploded and capped, grout-filled, or otherwise placed in a stable state; transported to an off-site location for non-INEEL use. The process for transitioning facilities between programs or to a final end state (i.e., decommissioned) is shown in Figure 1.

"Long-term stewardship" refers to all activities necessary to ensure protection of human health and the environment following completion of remediation, disposal, or stabilization of a site or a portion of a site. To ensure these activities take place, a Long-Term Stewardship Program is being formalized. The Program's mission is to protect human health and the environment from residual contamination following remediation; conserve ecological and cultural resources; and respond to regulatory, political, and technological changes related to long-term stewardship. The Program will consolidate the responsibilities for conducting the monitoring and maintenance of environmental remedies, (including engineered and institutional controls), information management, cultural and ecological resource management, and sitewide groundwater monitoring. By consolidating these activities under one program, efficiencies of scale can be achieved, information flow and sharing can improve, and greater efficiencies in management and comprehensive improvement can be realized without compromising the integrity of the remedies.

It is our intent to implement a policy requiring non-EM programs at the INEEL to fund final disposition of their currently active facilities. This will ensure EM does not assume cleanup liabilities that should be the responsibility of other, non-EM programs.

4.9.2 Strategy

INEEL facility consolidation plans and footprint reduction goals are developed and maintained for each INEEL area by assigned Infrastructure Program area planners. The goals are coordinated with INEEL Program and site area managers to ensure appropriate infrastructure is in place to support program work requirements. Following is a discussion of steps that are an integral part of achieving INEEL facility consolidation plans and footprint reduction goals.



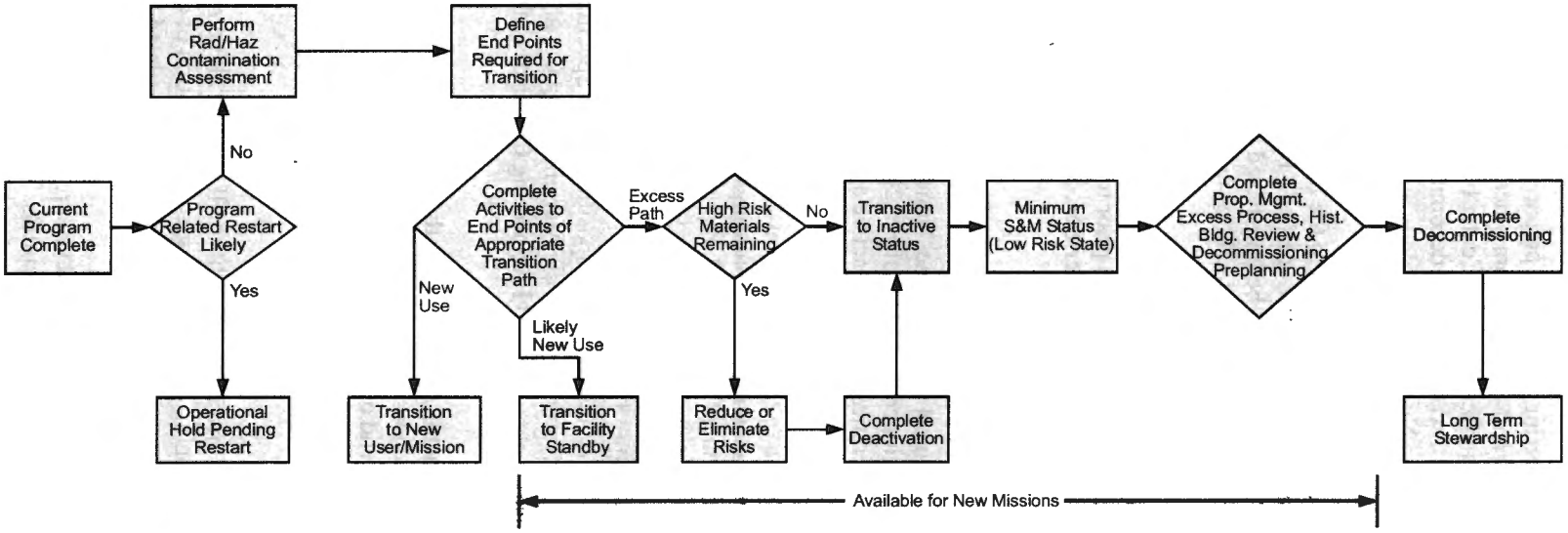

Current Program Complete
Program Related Restart Likely
No
Yes
Perform Rad/Haz Contamination Assessment
Operational Hold Pending Restart
Define End Points Required for Transition
Complete Activities to End Points of Appropriate Transition Path
New Use
Likely New Use
Excess Path
Transition to New User/Mission
Transition to Facility Standby
High Risk Materials Remaining
No
Yes
Reduce or Eliminate Risks
Complete Deactivation
Transition to Inactive Status
Minimum S&M Status (Low Risk State)
Complete Prop. Mgmt. Excess Process, Hist. Bldg. Review & Decommissioning Preplanning
Complete Decommissioning
Long Term Stewardship
Available for New Missions

Figure 1.

The Idaho Nuclear Technology and Engineering Center will prepare the infrastructure, as necessary, to accept consolidation of EM personnel and activities from other INEEL facility areas. All of the 148 facilities at the Idaho Nuclear Technology and Engineering Center belong to EM. By the end of 2012, 50 of those facilities will be inactivated and 11 will have been decommissioned. That will leave 137 EM facilities (87 active and 50 inactive) at the Idaho Nuclear Technology and Engineering Center beyond FY 2012.

The Central Facilities Area will relocate designated personnel to the Idaho Nuclear Technology and Engineering Center and inactivate 51 and decommission one of the area's 72 EM facilities by the end of FY 2012. The remaining 20 Central Facilities Area facilities will be transferred to a non-EM sponsor. That will result in 51 inactive EM facilities and 20 active non-EM facilities in the central Facilities Area at the end of FY 2012.

None of the 34 EM facilities located in the sitewide area (all of the INEEL site land area outside the boundaries of the primary facility areas) will be decommissioned prior to the end of FY 2012. However, five of the 34 facilities will be inactivated and remain under EM, and the remaining 29 active facilities will be transferred to an non-EM sponsor.

All of the 46 facilities located at the Radioactive Waste Management Complex are designated as EM facilities. Twenty-one of those 46 facilities will be inactivated by the end of FY 2012 and 16 of the active facilities will have been transferred to the control of BNFL, Inc. None of the 46 Radioactive Waste Management Complex facilities will be decommissioned at the end of FY 2012. That will result in 25 of the Radioactive Waste Management Complex's facilities remaining active and 21 being inactive, all under EM control, at the end of FY 2012.

Of the 81 facilities located at Test Area North (62 EM and 19 non-EM), 33 EM are scheduled for decommissioning by the end of FY 2012. Of the remaining 29 EM buildings, 18 will be inactivated, 10 transferred to a non-EM sponsor, and one EM building (TAN-1611 Pump and Treatment Facility) will remain active to support ongoing environmental restoration activities beyond FY 2012. EM and the non-EM Specific Manufacturing Capability (the major program at Test Area North) sponsor will negotiate an agreement on the long-term responsibility for the Test Area North facilities and infrastructure that support Specific Manufacturing Capability work and for final disposition of the Specific Manufacturing Capability complex. All Test Area North non-Specific Manufacturing Capability personnel will be relocated to the Idaho Nuclear Technology and Engineering Center or to facilities in Idaho Falls.

Forty-four of the 89 facilities at the Test Reactor Area are under the purview of a non-EM sponsor and will remain active to support their non-EM mission. Of the remaining 45 EM facilities, 20 will be decommissioned and 25 will be inactivated by the end of FY 2012. EM and the Office of Nuclear Energy, Science and Technology will negotiate an agreement on the long-term responsibility for Test Reactor Area facilities that support non-EM work, and the responsibility and actions for Test Reactor Area facilities not needed by the non-EM sponsor.

The Waste Reduction Operations Complex/Power Burst Facility will relocate all personnel out of the area prior to the end of FY 2012. Decommissioning of one building and inactivation of all remaining 25 Waste Reduction Operations Complex/Power Burst Facility facilities will be completed by the end of FY 2012.

Idaho Falls facilities will accept site personnel whose duties do not require them to be at the site. The majority of facilities in Idaho Falls are leased administrative facilities. Thirty of the 31 area facilities are under the purview of EM, and one is a non-EM facility. By the end of FY 2012, leases will be

terminated for eight facilities in Idaho Falls and the remaining 22 EM facilities will be transferred to a non-EM sponsor.

In summary, of the 527 INEEL facilities, 463 are currently under the purview of EM. Fifty are inactive prior to 2002. At the end of FY 2012, 66 will have been decommissioned, 81 will be assigned to non-EM sponsors based upon the condition of the facility and any currently identified missions for the facility, eight leases will be terminated, and the remaining 308 will remain under EM. Of those 308 EM facilities, 195 will be inactive and the remaining 113 will remain active (87 at the Idaho Nuclear Technology and Engineering Center, 25 at the Radioactive Waste Management Complex, and one at Test Area North).

4.9.3 Rationale

INEEL Infrastructure and D&D Programs will consolidate underutilized facilities and inactivate or decommission facilities that are no longer needed. Implementing facility consolidation and achieving footprint reduction goals associated with the accelerated cleanup strategy achieves facility planning, operations, and surveillance and maintenance functions at minimum cost, completes only those capital projects necessary to achieving the accelerated cleanup objectives and facilitates the timely transfer of INEEL land and facilities to a non-EM sponsor and transition the Test Reactor Area and Special Manufacturing Capability with associated infrastructure to their respective mission sponsors. It also implements an efficient and cost-effective Long-Term Stewardship Program to address ongoing remedy surveillance, maintenance, and monitoring obligations and establishes a non-EM sponsored Radiological and Environmental Sciences Laboratory.

4.9.4 Key Milestones

- Inactivate 34 EM buildings by the end of September 2002
- Initiate a footprint consolidation and reduction project with approved project execution plan by the end of September 2002
- Initiate a long-term stewardship project with approved project execution plan by the end of September 2002
- Complete INEEL laboratory consolidation and services analysis and make recommendation by the end of September 2002
- Complete consolidation and reconfiguration of Test Area North by the end of September 2004
- Complete consolidation and reconfiguration of Waste Reduction Operations Complex/Power Burst Facility area by the end of September 2004
- Inactivate an additional 52 EM buildings by the end of September 2005
- Inactivate an additional 74 EM buildings by the end of September 2010
- Inactivate an additional 51 EM buildings by the end of September 2012
- Decommission 66 EM buildings and terminate 8 leases by the end of September 2012
- Transfer 81 EM buildings to non-EM sponsors by the end of September 2012

4.9.5 Metrics

The following are examples of performance metrics. These metrics will be further developed in detailed plans:

- Facility reductions through inactivation, decommissioning, and transfers (#, sq. ft.)
- Number of facilities transferred to another PSO

4.10 INEEL in 2012/2020

This Performance Management Plan demonstrates a bias for action towards completing the EM mission. By reinvesting into accelerating cleanup, the INEEL can meet the principle objectives of significant risk reduction and continued protection of the Snake River Plain Aquifer, and consolidation of EM activities.

The following tables show the condition of the site areas in 2012 and 2020. The inactive status shows those items that have been accelerated and are no longer in operation. The active status shows ongoing EM activities.

Idaho Nuclear Technology and Engineering Center		
Status	**2012**	**2020**
Inactive	• Sodium-bearing waste treated and shipped to the Waste Isolation Pilot Plant • Tank farm closed • Wet basin in CPP-603 deactivated • Spent nuclear fuel and water removed • Spent nuclear fuel removed • Inactive buildings in cold/dark/dry state • Mixed low-level waste backlog gone/storage building reduced • EM-managed special nuclear material shipped off-site • Special nuclear material facility cold/dark/dry • HEPA filter leach backlog completed • Debris treatment backlog completed • Fermi/Epoxy fuel shipped for treatment • Voluntary Consent Order actions completed • CERCLA Tank Farm Interim Action completed • CPP-601/627/640 deactivated	• Calcine retrieval, packaging, and transportation ready to begin • Tank farm soils remediation complete, monitoring turnover to long-term stewardship • Spent nuclear fuel shipments to repository by 2015 • One permitted hazardous, mixed low-level storage area • CPP-601/627/640 decommissioned
Active	• Spent nuclear fuel dry storage • Calcine storage • Newly generated liquid waste treatment • Spent nuclear fuel dry storage project • Waste Area Group 3 remediation • INEEL CERCLA Disposal Facility and Storage, Staging and Stabilization Treatment Facility operations • Long-term Stewardship Program implemented	**Beyond 2020** • Calcine retrieval, packaging, and shipping to repository • Spent nuclear fuel repackaging and shipping to repository • Long-term Stewardship Program implemented

Radioactive Waste Management Complex		
Status	**2012**	**2020**
Inactive	• Active use of facilities complete by 2012 based on Subsurface Disposal Area decision. • Contact-handled low-level waste disposal closed in 2008 • Remote-handled low-level waste disposal closed in 2009 • Stored remote-handled transuranic waste shipped to the Waste Isolation Pilot Plant by the end of 2012 • Stored contact-handled-transuranic waste shipped to the Waste Isolation Pilot Plant by the end of 2012 • Stored U-233 shipped to special nuclear material consolidation sites	• Subsurface Disposal Area remediation (based on record of decision)
Active	• Subsurface Disposal Area remediation (depending on record of decision) • Removal of volatile organic compounds from the vadose zone • Long-term Stewardship Program implemented	• Closed • Continuation of volatile organic compound remediation • Long-term Stewardship Program implemented

Power Burst Facility/Waste Reduction Operations Complex		
Status	**2012**	**2020**
Inactive	• Site area inactivated • Spent nuclear fuel removed • All facilities inactivated • Stored waste removed • CERCLA soils remediation completed • Voluntary Consent Order actions implemented	• Power Burst Facility decontaminated • Only low-risk facilities remain to be decommissioned
Active	• Closed • Long-term Stewardship Program implemented	• Closed • Long-term Stewardship Program implemented

Test Area North		
Status	**2012**	**2020**
Inactive	• TAN-607 and Contained Test Facility deactivated and inactivated • Most facilities dispositioned • Infrastructure utilities configured to support only the Specific Manufacturing Capability • No spent nuclear fuel/mixed low-level waste/low-level waste remains • CERCLA remediation of soils completed and continuing groundwater remediations • Voluntary Consent Order actions implemented	• TAN-607/Contained Test facility ready to be decommissioned • Only low risk facilities remain to be decommissioned
Active	• Specific Manufacturing Capability operational • Fire station • Long-term Stewardship Program implemented • Infrastructure utilities and support functions transitioned to Specific Manufacturing Capability Program sponsor	• Long-term Stewardship Program implemented

Test Reactor Area		
Status	**2012**	**2020**
Inactive	• Material Test Reactor/Engineered Test Reactor deactivated • EM-spent nuclear fuel removed • CERCLA soils remediation completed • Voluntary Consent Order actions implemented	• No EM-operations at Test Reactor Area. Some facilities may remain to be decommissioned
Active	• Advanced Test Reactor operating • Long-term Stewardship Program implemented	• Advanced Test Reactor operating • Long-term Stewardship Program implemented

Central Facility Area		
Status	**2012**	**2020**
Inactive	• Consolidation of EM activities to the Idaho Nuclear Technology and Engineering Center • CERCLA soils remediation completed • Only low-risk facilities remain to be decommissioned	• Remediation of site-wide soils (10-04) completed. • Only low-risk facilities remain to be decommissioned
Active	• Long-term stewardship program implemented • Fire station, Health Physics Instrumentation Laboratory, medical and transportation services • INEEL landlord responsible transitioned to a new sponsor • Radiological and Environmental Science Laboratory transitioned to new sponsor	• Long-term stewardship program implemented • Fire station, Health Physics Instrumentation Laboratory, and medical and transportation services active with new Program Secretarial Office

Site-Wide/Idaho Falls Facilities		
Status	**2012**	**2020**
Inactive	• Consolidated facilities discontinue lease	• Other consolidated facilities discontinue lease
Active	• Facilities and infrastructure required to support transitioned to new Lead Program Secretarial Office • EM Program taxed proportional amount to fund infrastructure and support functions • Ongoing remediation for site-wide groundwater (10-08)	• Facilities and infrastructure required to support INEEL transitioned to new Lead Program Secretarial Office • EM Program taxed proportional amount to fund infrastructure and support functions • Remediation of site-wide groundwater (10-08) completed.

5. BUSINESS STRATEGY

5.1 Business Model

DOE-ID fully recognizes that our success in accelerating the cleanup at the INEEL, and delivering on each of the commitments made in this plan, is largely contingent upon our ability to re-engineer our business management approach/processes. The accelerated cleanup will need to be organized and managed as a single, fully integrated project; oversight and contract administration must be streamlined and efficient; innovative business practices implemented and efficiencies achieved. A deliberate, comprehensive and global shift is needed to move beyond current practices and methodologies to make the step changes to achieve this vision, focusing on the following key elements:

Benefits

- Provides a contemporary business framework to support acceleration of cleanup work
- Aligns business processes to enable single, integrated project management
- Eliminates extraneous business requirements and gains operating efficiencies to achieve cost savings for reinvestment
- Continues contract reform
- Clarifies roles, responsibilities, accountabilities, and authorities supported by effective oversight

- Comprehensive analysis of current business processes
- Efficient funds management approaches
- Innovative contractual alternatives
- Streamlined requirements to enable success
- Assignment of clear roles, responsibilities, accountabilities, and authorities
- Contemporary human resource management practices
- Integrated detailed work plans for all cleanup activities
- Effective overhead management practices
- Effective contractor oversight

5.2 Funds Management

Over the last seven-plus years, DOE-ID has modified many of its management and operations contract strategies in order to improve bottom-line performance. DOE-ID has consolidated contractors to improve efficiency; privatized major portions of the EM workscope using fixed-price approaches; adopted Performance Based Incentive fee techniques; reviewed, modified, and improved the majority of core business and operational processes; and adjusted the INEEL skill mix to better reflect current and future missions. Much progress has been achieved in making INEEL operations and administration more efficient and effective; however, in order to make the next major step, fundamental changes will be necessary to INEEL's historical business management model.

Many of the current business management policies, practices, and methodologies (business model elements) generally exist as a result of:

- Historical standards that were developed and implemented during the Cold War when the INEEL's mission was much different than it is today.
- Single-event policies and/or practices implemented to affect a change and/or emphasize importance relative to the business culture at the time.
- Prior contractor and/or federal management-driven preferences, which have become so embedded in the framework of managerial and operational mindsets they are simply accepted as standards/requirements.

These factors, have resulted in a business model which may not be aligned (both in effectiveness and efficiency) or optimally integrated with future projected programs/missions.

The DOE-ID Operations Office, in concert with the management and operations contractor, has initiated and will complete a comprehensive analysis of business model elements and alternatives to current practices, and will prepare an integration analysis and implementation plan. It is anticipated, given the magnitude of these changes, that this revised business model will drive the routine everyday "how we manage" approach at the INEEL. The success of DOE's management approach also depends on effective financial management including strong internal controls and effective and efficient processes and reporting systems.

5.3 Contracting Options

Successful mission accomplishment requires effective utilization of federal assets, sound contracting strategies, capable and motivated contractors, and selective but deliberate contract oversight. DOE's management and business practices must be consistent with and supportive of implementing the accelerated cleanup strategy. The time span encompassed within the INEEL's accelerated cleanup plan exceeds the duration of the current management and operations contract, even if the contractually allowed extensions are exercised. DOE will consider a variety of contracting strategies and alternatives in order to obtain the best results for the dollars provided.

A critical attribute of any future contract is the transference of project risk to the contractor and using systems analysis to ensure progress and accountability. DOE will maintain its oversight/owner role allowing contractor success by being predictable and delivering the Government Furnished Services And Items as specified.

A critical first step is clearly articulating the desired performance to be achieved under the accelerated cleanup plan. Priorities and initiatives have been identified and continue to be refined, as are the associated schedules for completion. Initial cost estimates must be revised and refined to ensure the integrity of life-cycle baselines at the onset of the acceleration activity. Fully supportable and credible life-cycle baselines based on the work requirements are crucial to performance measurement and assessment. The life-cycle baselines cannot be based on assumed or mandated cost reductions, but on a reasonable estimate of costs associated with full performance. Regardless of new requirements, work efficiencies/innovations, and funding shortfalls and resulting reprioritization of work scope and/or schedules, progress against original key cleanup priorities outlined in baseline documents will be maintained. Actual work breakthroughs, substantial changes to laws or regulations, or revised scope and schedule will drive revisions to the life-cycle baselines. Any variance derived from the execution year detailed work plans will be factored into the life-cycle updates and those changes will be monitored

against the original baselines. The integrity of the life-cycle baselines will allow consistent assessment of contractor proposals and costs, both when evaluating bidders for award, or in tracking contract performance.

The current management and operations contract period is approaching expiration and DOE must make a determination whether to extend or compete within the next several months. As DOE considers options for that upcoming decision, as well as future contract awards, the possibilities of shifting from the traditional management and operations, at least in part, to a variety of other alternatives will be evaluated. Any contract or contractor change will be mindful of the original intent of management and operations contracts—to obtain mission accomplishment while ensuring site and worker safety, security and stability. Any transition must not jeopardize, but rather enhance, mission accomplishment in accordance with the accelerated cleanup plan. The government's decision would be based on a number of specific criteria, including a careful assessment of bidders' past performance and experience, commitment to reform and innovation, understanding of and commitment to executing accelerated clean up, and best value. Successful contractors will not compromise environmental safety and health, but instead be able to demonstrate full integration of Integrated Safety Management System into basic business strategies, decisions, and actions.

Incentives will be performance-based, with an emphasis on building structured incentives into the contract at formation, rather than throughout performance. Cost, schedule, and desired results will drive incentive provisions. Fee amounts can be set for achieving the end result, with payments tied to critical path milestones. Additional fee incentives could be based on a sliding share ratio for cost efficiencies and savings, important schedule accelerations, or work scope breakthroughs. Conversely, fee penalties could be identified and imposed for failure to achieve the desired results, failure to perform to contractual requirements, failure to perform to acceptable safety standards, or cost or schedule overruns.

Every effort will be made to scrutinize contract terms, conditions, and governing orders for pertinence and applicability to desired work requirements. A preference to default to industry or commercial standards will prevail wherever possible and practicable. The current contractor and federal work force has been successfully engaged in assessing such opportunities to review and eliminate unnecessary requirements and practices, adopt standards based requirements, apply process improvements to existing practices, and achieve efficiencies in order to perform additional work within existing funding. That activity must continue in order to transition to a more focused and responsive business model.

Roles and responsibilities will continue to be defined and clarified. The prime contractor or contractors must be responsible for managing workforce levels and skills mix sufficient to meet, but not exceed, project and contract requirements. The prime contractor(s) should be responsible for identifying and managing capital and human investments needed to execute the accelerated clean up, and for the subcontract support they will need as they perform work. DOE intends to structure contracts to eliminate transaction level approvals wherever possible, requiring contractors to demonstrate and adhere to acceptable management systems, including systems covering accounting, cost estimating, compensation, insurance and pensions, cost accounting standards, property management, quality and safety, security, etc.

The on-going oversight role of the federal staff would be more effectively employed through periodic systems level reviews and approvals (or ensuring corrective action against deficiencies until acceptable), and strategic sampling of activity under those management systems to validate contractor self-oversight. For operational activity, project management execution plans will include a comprehensive plan for government oversight to complement the contractor self-inspection. The government will continue to assess and streamline its review process to ensure timely delivery of government required services and approvals. Effective contract management must ensure integration of a defined, comprehensive contractor self-oversight program with a deliberative and systematic federal validation

program. Performance metrics that are specific to measuring the progress and success of each initiatives will be implemented by March 2003.

5.4 Standards Based Management System

One of the challenges facing the DOE and Site contractors is defining an integrated set of systems, work processes, and procedures by which to manage the work at the INEEL. This effort had been seriously complicated by the fact that in recent past, five different contractors using different procedures and techniques managed the work. Consolidation of the work under one management and operations contract was accomplished in 1994, with the most recent change in contractors occurring in 1999. Our current management and operations contractor, Bechtel BWXT Idaho, LLC, has set a course for defining a set of management systems through their Standards Based Management System initiative.

Standards Based Management System establishes the framework for managing the laboratory by defining and maintaining an integrated set of systems and processes. Through Standards Based Management System, policies and standards of performance establish the INEEL's top-level operating philosophy and communicate expectations. Integrated management systems align with the policies and standards of performance and are detailed in management system description documents. Management systems provide clear roles and responsibilities, and institutionalize boundaries and interrelationships to enable collaboration between operations and research and development in support of the laboratory programs and missions.

Standards Based Management System provides procedures, guidelines, and forms based on an evaluation of internal and external requirements. Once requirements are identified, they are linked to implementing work processes. When the requirements change, impacted information is identified and revised as needed.

To date, the policies and standards have been issued, management systems have been defined, management system owners identified, and draft management system description documents finalized. A communications plan has been developed and is underway.

5.5 Roles, Responsibilities, Accountabilities, and Authorities

The roles, responsibilities, accountabilities, and authorities (R2A2s) are a key element of the approach to managing performance at the INEEL. The R2A2s provide a clear understanding of roles, responsibilities, accountabilities, and authorities in relation to the strategic objectives of the organization and creates the foundation for managing business effectively.

The R2A2s are summary descriptions of the roles, responsibilities, accountabilities, and authorities associated with a position or assignment. They describe the role a person in this position performs in the organization, the responsibilities involved in carrying out that role, to whom they are accountable and for what, and the authorities they have to carry out assigned responsibilities. R2A2s are a management tool and can be used in a variety of ways to support role clarification and establish performance expectations. In essence, R2A2s set the stage for empowering staff to perform.

The R2A2s have been deployed in a top-down approach to ensure not only horizontal integration but vertical alignment as well. Linkage between the R2A2s and the Integrated Safety Management System is evident through the responsibilities identified at all levels of the organization. Detailed position and process specific roles and responsibilities are clarified in employee position descriptions, policies, procedures, and other documents. Functional positions are being clarified through this process.

Integration of the federal R2A2s and the management and operations contractor R2A2s, will be enhanced to support the new business model initiatives that are underway.

The R2A2s have proven to be an effective way to communicate expectations, align work with the mission and vision, and establish appropriate accountabilities and authorities.

5.6 Human Resource Management

The diversity, size, and complexity of INEEL operations, combined with changes to INEEL program/project deliverables and schedules, requires a re-evaluation of all aspects of human resource management (compensation, benefits, hiring/termination practices, labor relations, diversity, etc.). The current practices and policies governing human resource management at the INEEL have been developed and modified over the history of the site. Although current methodologies are considered contemporary in content, industry-competitive, and in compliance with all regulatory and legal requirements, a comprehensive top-to-bottom analysis and review has not been completed since the early 90's. Given the magnitude of change associated with the accelerated cleanup strategy and the potential of its effects on human resources at the INEEL, a broad comprehensive evaluation of the current human resources management approach has been initiated. Completion of this plan and implementation of its recommendations will establish the framework to ensure that the INEEL improves the effectiveness and efficiency of its work force to complete our accelerated cleanup mission.

5.7 Detailed Work Plan

The detailed work plan process has been implemented at INEEL and provides for the consistent, integrated, baseline management of scope, budget, schedule, and financial data for EM activities. Involving contractor and federal staff, the detailed work plan is developed using a top-down, bottom-up approach for planning work scope. The top-down approach uses the company work breakdown structure to define projects that support the INEEL mission and objectives. The bottom-up approach identifies quantities, resources, and costs required to complete individual tasks to accomplish project scope. The detailed work plan is a subset of the EM life-cycle baseline, describing in detail the tasks required for the next three fiscal years. Under this process, detailed scope statements, bases of estimates, plan narratives, schedules and budgets are developed and incorporated into the Integrated Project Management Reporting System (P3 – CPM scheduling processor, Cobra – cost integrator, and IPS 2000 Project Management reporting and data warehouse). This system is used to ensure that the overall work is under financial and managerial control. Project management system descriptions and procedures are in place to govern project management practices such as earned value, and cost and schedule performance monitoring.

Once DOE approves the detailed work plan, it becomes the baseline for the current execution year and plan for the next two fiscal years. The performance data from the project management systems serves as the benchmark for monitoring actual performance against planned accomplishments. Status meetings are held monthly with contractor and federal staff to review progress, issues and areas where corrective action may be necessary. Baseline configuration is maintained through a formal change control process involving contractor and federal staff. A trend program provides additional information to alert staff of potential or actual changes in scope, schedule, or cost, and provides the basis for developing sound forecasts and estimates at completion. The trending and project management metrics will be incorporated into a comprehensive variance analysis that will facilitate the change control to the current baseline and be factored into life-cycle updates.

5.8 Overhead Management Model

The INEEL's overhead model (charging practices, allocations, distributions, etc.) was developed and implemented during the 1980s, and although it has experienced numerous adjustments and changes (some substantive, others minor), the basic foundations of the cost model remain largely the same. This model has worked well and may in fact represent the best approach for INEEL costing policies and practices as it relates to the accelerated cleanup strategy. However, an in-depth review of the model to ensure it does, in fact, represent the best methodology for facilitating accomplishment of the INEEL's future mission will be initiated.

5.9 Contractor Oversight

DOE-ID has made significant advancements in moving from a transactional to a systems based contractor oversight model. This transition is intended to provide the contractor with increased flexibility to determine the most effective and efficient manner for accomplishing work activities within a broad set of guiding principles, performance metrics and sound internal controls. This approach provides the federal employee the ability to monitor systems and results rather than focusing exclusively on transactions. Additionally, it allows the contractor to focus additional time and resources on program activities and clearly aligns authority and accountability where it belongs.

The transition to this new oversight model began with a significant reduction in the number of federal employees authorized to give direction to the contractor, establishment of improved processes for providing that direction, and development of an agreement between DOE-ID and the INEEL contractor for completing system based reviews on all business management functions. Although this represents a strong beginning, the Department and its INEEL contractor are in the process of identifying, negotiating, and implementing further improvements to facilitate contract execution.

6. COSTS, FUNDING AND SCHEDULE

The aggressive pursuit of the initiatives identified in this plan, combined with an innovative and collaborative effort by DOE, its contractors, regulators, and stakeholders can significantly reduce the current life-cycle costs, reduce the risk to the environment and the public, and dramatically reduce the time to complete the cleanup of the INEEL. The Accelerated Cleanup Project strategy builds on concepts that have been previously discussed with the regulators, incorporates innovative cleanup approaches, and considers cleanup priorities as identified by the Idaho Department of Environmental Quality, Environmental Protection Agency and stakeholders. The project integrates schedules and requirements across EM activities at the INEEL resulting in reduced risk and life-cycle costs.

> The **Accelerated Cleanup Project** approach
>
> - Results in estimated life-cycle cost savings to the taxpayer of up to $19 billion
> - Accelerates cleanup by up to 50 years

Cost and schedule improvements are anticipated in the one project approach for accelerated cleanup, which benefits from and relies upon:

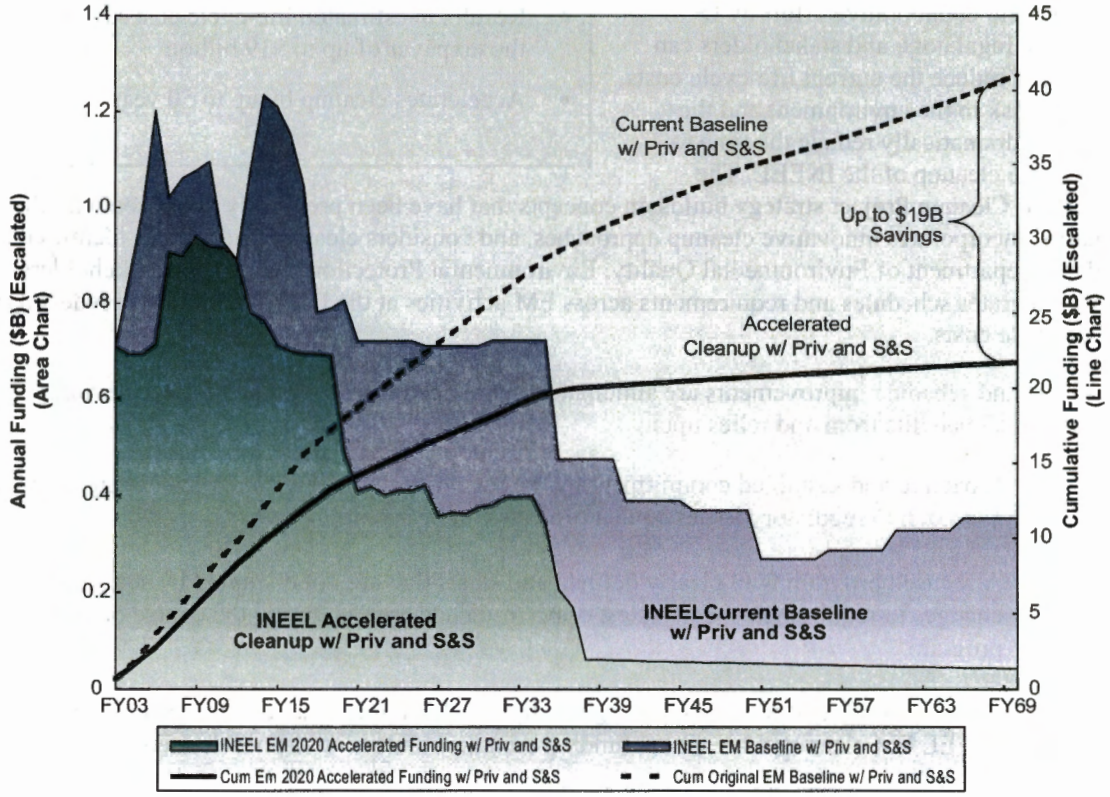
- Proactive and sustained commitment by the regulators and DOE to implement an integrated approach to regulatory issues so that projects can be accomplished as responsibly as possible
- A focused program with clearly defined end states that are not disrupted by significant changes to requirements, end states, or performance criteria during the course of the program.
- DOE, the Office of Management and Budget, and congressional commitment to support INEEL EM cleanup with annual funding commensurate with the accelerated cleanup estimates

6.1 Accelerated Cleanup Funding Profile to Complete All Active Cleanup by 2020

The current life-cycle cost for completing cleanup at the INEEL is estimated to be in excess of $41 billion through 2070. This profile does not reflect best available business practices and would present DOE with challenges in light of requirements for a balanced federal budget, other funding demands (including cleanup of other DOE sites), emerging federal fiscal priorities, and wise stewardship of taxpayer funds. By accelerating cleanup and reducing risk as proposed in this plan, DOE believes the overall life-cycle cost of cleanup up the INEEL can be substantially reduced.

The current INEEL baseline, estimated at $41 billion is shown with the revised "accelerated cleanup" baseline, estimated at $21.7 billion superimposed. Savings of up to $19 billion can be realized from accelerated cleanup at the INEEL and as much as 50 years can be cut from the cleanup schedule by full implementation of the strategic initiatives. These cost and schedule savings result primarily from shortening the time over which the fixed infrastructure costs must be carried and also by assuming more innovative, and less costly technical approaches for the cleanup baseline. For example, the cleanup approach now proposed for Sodium-Bearing Waste and High Level Waste calcine eliminates the need for construction and operation of a vitrification facility, which will save about $7 billion, while achieving equivalent risk reduction in less time. Another example is the dramatic footprint reduction achieved by 2012 through consolidation of EM's major activities to the Idaho Nuclear Technology and Engineering Center. The consolidation eliminates new facilities that were planned and facility upgrades that are not

required to support the "accelerated cleanup" baseline. By accelerating cleanup and right-sizing the fixed infrastructure commensurate with the cleanup program, infrastructure and support costs can be reduced by up to $8.5 billion from the current baseline.



6.2 Estimates

The funding estimates in the plan were primarily derived from engineering studies that analyzed scope and schedule departures from the current life-cycle baseline. Where technical approaches were considered that are significantly different than the current baseline, the responsible programs developed estimates to coincide with specific timeframes and end states. The data used was extracted from source documents such as program-specific feasibility studies and design bases. Base program activities that provide minimum safety and essential services for EM programs, as well as landlord services to the site in general, was estimated using historical data and modified to downsize infrastructure consistent with the shortened cleanup schedule requirements.

At the start of FY 2003, the INEEL will use an estimating program to refine and format the accelerated cleanup estimates to a level of detail and rigor consistent with that required for life-cycle baseline purposes. A combination of several estimating techniques, as outlined in INEEL Environmental Restoration Cost Estimate/Cost Engineering Guide, will be used to meet the estimating standards of DOE Order 413.3, "Program and Project Management for the Acquisition of Capital Assets." Completion of these "bottom up" estimates will culminate in replacing the current EM baseline with the accelerated cleanup baseline, which will then be used for life-cycle project planning and execution and as the basis for recording and reporting the EM liability (this submission is scheduled for delivery to DOE-HQ by

April 2003). In parallel, the project cost will be included in the detailed work plan—which provides expenditure forecasts, project baseline summary performance data, and labor and resource profiles on three-year increments. The contingency and basis assumptions will be contained in the life-cycle baseline and the detailed work plan and both will be updated annually.

The accelerated cleanup baseline costs were developed under the existing Project Baseline Summary structure. An effort is underway to crosswalk costs from the Project Baseline Summary structure to provide estimates for each strategic initiative. Some ongoing EM work scope are not included in the strategic initiatives and that work will be identified as well. During the period between now and February 2003, detailed life-cycle planning for the accelerated cleanup work breakdown structure will be completed. This will enable the INEEL to provide life cycle cost profiles by each strategic initiative. These costs will be present in subsequent updates to the plan.

6.3 Project Performance

6.3.1 Performance Measures

Project and contract performance will be measured on percent complete as determined by the project manager and project team with identifiable objectives. Measures may also be based on milestone completion, engineering standards, or equivalent units. True level-of-effort tasks will be based on a calculation of productive hours for the period as identified in the appropriate fiscal year accounting calendar.

The contractor uses INEEL MCP-9106, "Management of INEEL Projects," and Manual 5, "Project Cost and Schedule Controls," to perform the following: baseline management, baseline change control, performance reporting, trend identification, monitoring and analysis, work authorization, and authorizing and controlling expenditures. Additional metrics will be included in future versions of this plan.

6.3.2 Trending

The trend program will be used as an early warning project control tool. This tool is designed to alert the project team of potential or actual changes to scope, estimated-at-completion, and/or the schedule. The trend program also provides guidance for identifying, documenting, tracking, and controlling variances against the approved project technical, cost, and schedule baselines.

The trend program uses the current approved fiscal year budget, as defined by the detailed work plan, plus any approved changes as a basis for project performance measurement. Trends reported by the project/project baseline summary include potential or actual deviations from the latest published estimate-at-completion; including any changes to the estimate of a trend reported previously or any newly identified trends. The minimum definition required for a trend is a description and the cause sufficient to ensure that all those concerned can understand and evaluate the significance and validity of the change. Trend estimates are developed as trends are identified. These estimates are refined as additional trend information becomes available.

Besides providing early warning of potential project execution issues, the trend program also facilitates identification of project efficiencies and potential cost savings (under runs) that can be applied to "stretch" work that can further accelerate the cleanup program by pulling forward work scheduled for future periods into the current execution year.

6.3.3 Master Schedule

Two major activities, preparation and shipment of spent nuclear fuel and Subsurface Disposal Area remediation, comprise the critical path towards completion of all EM activities. Shipment of the spent nuclear fuel will be completed in 2035. Near term critical path work for FY 2003 includes completion of the 3100 m^3 project and initiating Advanced Mixed Waste Treatment Project operations followed by receipt of the Waste Isolation Pilot Plant Waste Acceptance Criteria for remote-handled transuranic waste. In the FY 2004-2005 time period, the initiation of special nuclear material shipments offsite, the Subsurface Disposal Area (WAG 7) Record of Decision and initiation of the sodium-bearing waste plant construction comprise the critical path work activities. Completion of Subsurface Disposal Area remediation will be dependent on the final remedy selected under the CERCLA process. The master schedule for the project will be prepared (see Appendix A) and DOE-HQ will be the INEEL's advocate to facilitate meeting the master schedule.

6.3.4 Reporting

The EM project team will use monthly reports for managing schedule, cost, and risk. Example reports include:

- Cost/schedule performance (earned value)
- Cost and schedule analyses, including discussion of variance causes, impacts, and corrective actions
- Milestones and project baseline summary status
- Estimate-at-completion information
- Trending and trend analysis
- Issue identification and discussion.

Project managers will use reporting mechanisms to identify issues and seek resolution. As appropriate, regulators will be brought on board with issues they should be apprised of or can help resolve. Additionally, total project critical path reporting will be maintained and analyzed to identify issues that could jeopardize the overall accelerated cleanup schedule.

Quarterly project reviews with DOE-HQ will be conducted to status the implementation of INEEL's cleanup project and HQ Government Furnished Services and Items. These management interactions will be focused on resolving emerging issues and developing work-arounds to maintain the project schedule and cost baseline.

7. REGULATOR AND STAKEHOLDER INTERFACE PROCESSES

Implementing decisions that endure is dependent on upfront stakeholder participation in decision-making, including reaching agreement with regulatory bodies on cleanup strategies and specific technical solutions. The INEEL will build upon its established process for stakeholder involvement, including consulting the INEEL Citizens Advisory Board, to ensure all interested stakeholders have an opportunity for input into the decision-making process.

7.1 Regulator Interface

A senior project management team will meet routinely to assess the status and progress toward accelerated goals and assist in resolving issues and barriers that stand in the way of successful implementation. The senior project management team will facilitate integration of the various compliance agreements and requirements and address overarching issues such as significant funding, scheduling, or policy issues to effectively integrate and accomplish accelerated cleanup. The formal dispute processes in the FFA/CO and other agreements will remain intact. It is DOE's belief that establishing a senior project management team would result in fewer formal disputes under those agreements. The DOE-ID manager, the Idaho Department of Environmental Quality director, and the Environmental Protection Agency regional administrator constitute the senior project management team.

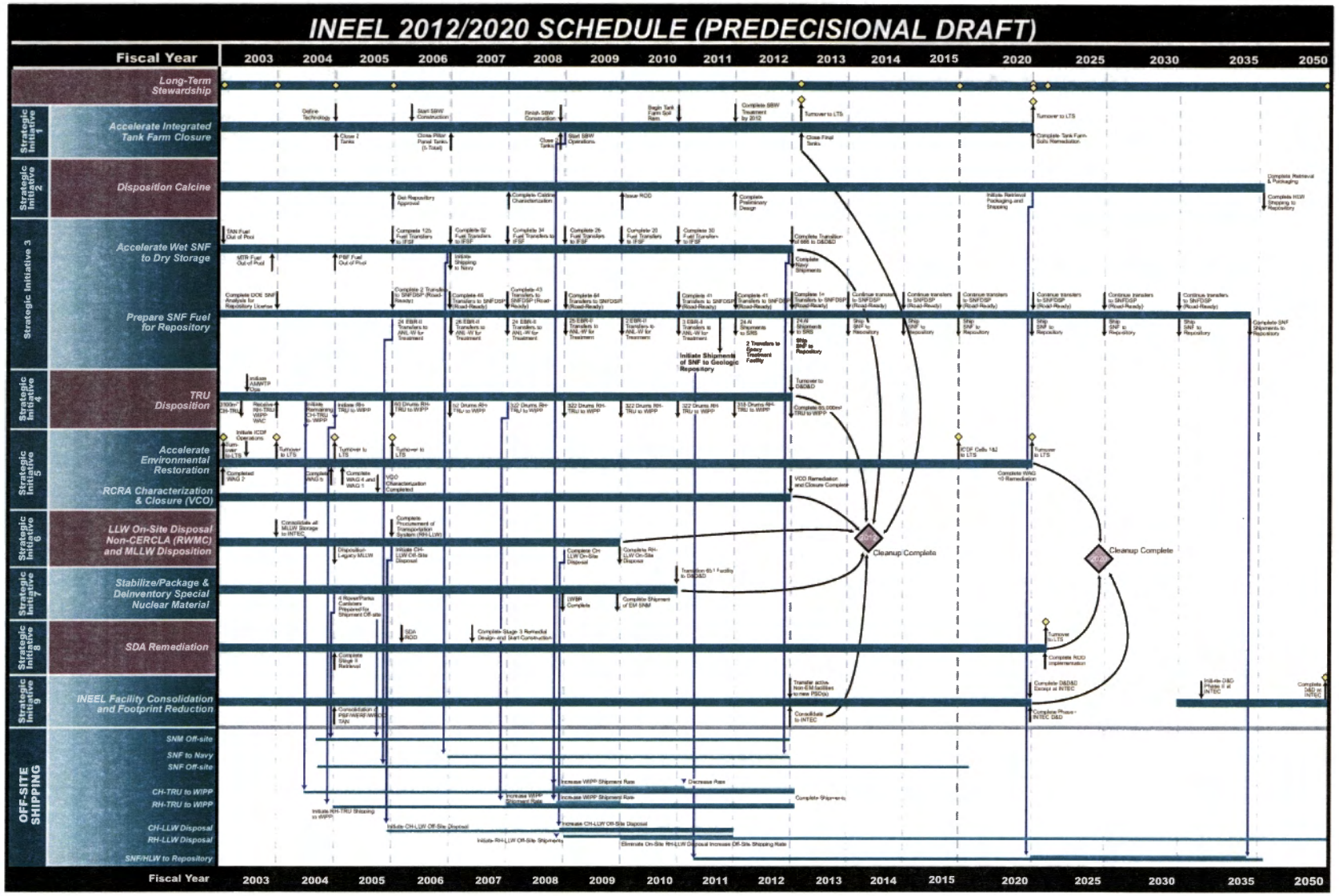
7.2 Ongoing Stakeholder Relationships

In addition to an integrated interface with the regulators, this plan also envisions ongoing public involvement in the decision-making process. The three parties are required by law to involve the public in decisions made under CERCLA (cleanup of release sites and associated waste), Resource Conservation and Recovery Act (hazardous waste) and National Environmental Policy Act. These involvement activities, which include public comment periods, hearings, briefings and meetings on draft documents and proposed decisions, will continue under the accelerated cleanup process. DOE believes the development of relationships with interested stakeholders is the most productive form of public involvement. This development will take the form of keeping the INEEL Citizens Advisory Board, the Shoshone-Bannock Tribes, congressional staff, state and local government, environmental groups and other interested stakeholders informed and involved as decisions are under consideration.

In addition, DOE is committed to holding an annual public meeting to report on its progress in meeting the milestones established by this plan, and to hear public concerns and input on the process. DOE also will establish an Internet site that will be updated on a regular basis to keep the public informed on cleanup progress, challenges and upcoming public involvement opportunities.

Appendix A

INEEL Master Schedule


INEEL 2012/2020 SCHEDULE (PREDECISIONAL DRAFT)
Fiscal Year
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2020
2025
2030
2035
2050
Long-Term Stewardship
Strategic Initiative 1
Accelerate Integrated Tank Farm Closure
Strategic Initiative 2
Disposition Calcine
Strategic Initiative 3
Accelerate Wet SNF to Dry Storage
Prepare SNF Fuel for Repository
Strategic Initiative 4
TRU Disposition
Strategic Initiative 5
Accelerate Environmental Restoration
RCRA Characterization & Closure (VCO)
Strategic Initiative 6
LLW On-Site Disposal Non-CERCLA (RWMC) and MLLW Disposition
Strategic Initiative 7
Stabilize/Package & Deinventory Special Nuclear Material
Strategic Initiative 8
SDA Remediation
Strategic Initiative 9
INEEL Facility Consolidation and Footprint Reduction
OFF-SITE SHIPPING
SNM Off-site
SNF to Navy
SNF Off-site
CH-TRU to WIPP
RH-TRU to WIPP
CH-LLW Disposal
RH-LLW Disposal
SNF/HLW to Repository
Cleanup Complete
Cleanup Complete

Appendix B

Strategic Initiative Milestones

Key Milestones

Strategic Initiative 4.1 Accelerate Tank Farm Closure

Sodium-bearing waste treated and ready for shipment

- Submit Critical Decision-0: justification of mission need by September 2002
- Cease receipt of newly generated liquid waste in the 11 high-level waste tank farm tanks by September 2005
- Start construction of sodium-bearing waste treatment facility by December 2005
- Complete construction and readiness review of a treatment facility for sodium-bearing waste by September 2008
- Complete sodium-bearing waste and tank solids treatment and ship offsite by 2012

Closure of the high-level waste tanks

- Empty the five pillar and panel vaulted tanks by June 2003
- Complete cleaning and grouting of first pillar and panel vaulted tank by September 2003
- Complete cleaning and grouting of second pillar and panel vaulted tank by September 2004
- Complete cleaning and grouting of the remaining pillar and panel vaulted tanks by December 2006
- Close remaining pillar and panel vaulted tanks by December 2006
- Complete cleaning and grouting of two more tanks by September 2008
- Close remaining tank farm tanks by September 2012

Strategic Initiative 4.2 Accelerate High-Level Waste Calcine Removal from Idaho

- Complete characterization analysis of bin set 2 calcine samples by September 2003
- Define technology development needs and initiate development work for non-intrusive calcine characterization by September 2004
- Complete a sample retrieval and characterization demonstration by September 2007
- Issue record of decision on calcine treatment path forward by December 2009
- Submit Resource Conservation and Recovery Act Part B Permit for calcine treatment, retrieval, and packaging process by TBD

- Complete retrieval, packaging, alternative treatment and shipping to repository by December 2035

Strategic Initiative 4.3 Accelerate Consolidation of Spent Nuclear Fuel to the Idaho Nuclear Technology and Engineering Center

- Complete transfer of all spent nuclear fuel from the Test Area North pool to existing dry storage casks on a storage pad by September 2002
- Complete transfer, dry, and store all spent nuclear fuel from the Materials Test Reactor canal to the Idaho Nuclear Technology and Engineering Center in the Irradiated Fuel Storage Facility by December 2002
- Complete transfer of all spent nuclear fuel from the Power Burst Facility pool to the Idaho Nuclear Technology and Engineering Center and store in the Irradiated Fuel Storage Facility by December 2003
- Complete transfer of all spent nuclear fuel from the Test Area North storage pad to a new cask storage pad at the Idaho Nuclear Technology and Engineering Center by September 2005
- Initiate repackaging into and storage of repository-ready standard canisters for shipment to the repository by December 2005
- Cease acceptance of Advanced Test Reactor fuel by September 2010
- Remove sodium-bonded fuels (Experimental Breeder Reactor, EBR-II) by September 2011
- Remove all spent nuclear fuel from underwater storage pools at the Idaho Nuclear Technology and Engineering Center by September 2012
- Remove naval fuels from the Idaho Nuclear Technology and Engineering Center by September 2012
- Complete final shipment of all EM-managed legacy spent nuclear fuel to a repository by January 1, 2035

Strategic Initiative 4.4 Accelerate Off-Site Shipments of Transuranic Waste Stored at the Transuranic Storage Area

Stored contact-handled transuranic waste

- Complete shipment of 3,100 cubic meters of transuranic waste to the Waste Isolation Pilot Plant by December 31, 2002
- Complete construction of the Advanced Mixed Waste Treatment Project by December 2002
- Complete transition of selected transuranic waste management facilities and equipment to the Advanced Mixed Waste Treatment Project by January 2003
- Initiate Advanced Mixed Waste Treatment Project shipment operations by March 2003

- Complete Waste Isolation Pilot Plant certification of the Advanced Mixed Waste Treatment Project retrieval operations by March 2003

- Initiate Advanced Mixed Waste Treatment Project treatment operations by October 2003

- Complete processing and disposal of remaining contact-handled transuranic waste stored at the Transuranic Storage Area by the end of 2012

- Initiate closure of Advanced Mixed Waste Treatment Project facilities in 2012, subject to decision made under Strategic Initiative 4.8

Stored Remote-handled transuranic waste

- Complete initial acceptable knowledge development supporting waste characterization in 2002

- Complete technical strategy document and Critical Decision 0 for mission need by September 2003

- Initiate shipment of remote-handled transuranic waste not requiring repackaging to the Waste Isolation Pilot Plant for disposal as early as 2004

- Complete repackaging capability design activities by September 2005

- Complete construction and startup of repackaging capability by September 2006

- Complete transfer/shipment of unirradiated U-233 stored at the Transuranic Storage Area to another DOE site by September 2008

- Complete repackaging and shipment of remote-handled waste stored at the Transuranic Storage Area to the Waste Isolation Pilot Plant in September 2011

- Turnover remote-handled transuranic waste facilities to deactivation, decontamination, and dismantlement (DD&D) by 2012

Strategic Initiative 4.5 Accelerate Remediation of Miscellaneous Contaminated Areas

- Complete remediation of Central Facilities Area (WAG 4) by September 2004

- Complete remediation of Auxiliary Reactor Area and Power Burst Facility areas (WAG 5) by September 2004

- Complete characterization of all Voluntary Consent Order tanks by September 2005

- Complete remediation of Test Area North (WAG 1) by September 2005, except for the on-going pump and treatment of the groundwater.

- Complete remediation and closure of all Voluntary Consent Order tanks by September 2012

- Complete removal of soils destined for the INEEL CERCLA Disposal Facility by 2013

Strategic Initiative 4.6 Eliminate On-Site Treatment and Disposal of Low-Level and Mixed Low-Level Waste

- Remove all mixed low-level waste from the Waste Reduction Operations Complex by the end of 2003
- Complete treatment of 807 cubic meters of containerized legacy mixed waste by September 2003
- Consolidate mixed low-level waste storage to a single permitted facility at the Idaho Nuclear Technology and Engineering Center by September 2004
- Complete disposition of 1,900 cubic meters of containerized legacy mixed low-level waste by September 2004
- Implement financial accountability for newly generated waste by the October 2004
- Complete Resource Conservation and Recovery Act closure of Waste Reduction Operations Complex permitted facilities by the end of 2004
- Discontinue contact-handled low-level waste disposal at the Radioactive Waste Management Complex by September 2008
- Complete first off-site shipment of remote-handled low-level waste by September 2008
- Discontinue remote-handled low-level waste disposal at the Radioactive Waste Management Complex by September 2009
- Transfer Radioactive Waste Management Complex low-level waste disposal pits to Waste Area Group 7 for closure/remediation under the FFA/CO.

Strategic Initiative 4.7 Transfer All EM-Managed Special Nuclear Material Off-Site

- Complete disposition plan including shipping schedule to other sites by September 2003
- Complete repackaging and shipment of denitrator product special nuclear material to another site(s) by December 2004
- Complete shipment of unirradiated Light Water Breeder Reactor fuel to another site by September 2008
- Complete shipment of remaining EM special nuclear material to another site(s) by September 2009

Strategic Initiative 4.8 Remediate Buried Waste at the Radioactive Waste Management Complex

- Complete glovebox excavator method excavation by October 1, 2004

- Submit comprehensive draft remedial investigation and baseline risk assessment by August 2005
- Submit 10% design for retrieval of remainder of Pit 9 by September 2005
- Submit comprehensive draft feasibility study based on the approved remedial investigation and baseline risk assessment by December 31, 2005
- Submit comprehensive draft proposed plan by March 31, 2006
- Submit comprehensive draft record of decision for the Subsurface Disposal Area to the state of Idaho and EPA by December 31, 2006
- Complete the Remedial Design for Stage III and start Stage III construction by March 31, 2007

Strategic Initiative 4.9 Accelerate Consolidation of INEEL Facilities and Reduce Footprint

- Inactivate 34 EM buildings by the end of September 2002
- Initiate a footprint consolidation and reduction project with approved project execution plan by the end of September 2002
- Initiate a long-term stewardship project with approved project execution plan by the end of September 2002
- Complete INEEL laboratory consolidation and services analysis and make recommendation by the end of September 2002
- Complete consolidation and reconfiguration of Test Area North by the end of September 2004
- Complete consolidation and reconfiguration of Waste Reduction Operations Complex/Power Burst Facility area by the end of September 2004
- Inactivate an additional 52 buildings by the end of September 2005
- Inactivate an additional 74 EM buildings by the end of September 2010
- Inactivate an additional 51 buildings by the end of September 2012
- Decommission 66 EM buildings by the end of September 2012
- Transfer 81 EM buildings to non-EM sponsors by the end of September 2012

Appendix C

Government Furnished Services and Items

Government Furnished Services and Items

Strategic Initiative 4.1 Accelerate Tank Farm Closure

- Waste Incidental to Reprocessing Determination issued for liquid sodium-bearing waste and tank solids by October 2002 (DOE-ID Manager)
- Idaho High-Level Waste and Facilities Disposition Environmental Impact Statement Record of Decision is issued by February 2003 (EM-1)
- Off-site disposal is available to receive treated sodium-bearing waste by March 2009 (EM-1)
- Off-site disposal shipping schedule and capacity for sodium-bearing waste material receipt meets delivery schedule TBD (EM-1)
- Government approval of design and build approach for sodium-bearing waste and tank solids processing by TBD (EM-1)

Strategic Initiative 4.2 Accelerate High-Level Waste Calcine Removal from Idaho

- Issue the high-level waste and calcine treatment Record of Decision for calcine path forward by 2009 (EM-1)
- Off-site disposal is available to receive the calcine waste form by 2020 (EM-1)
- Off-site disposal shipping schedule and capacity for calcine material receipt meets delivery schedule TBD (EM-1)

Strategic Initiative 4.3 Accelerate Consolidation of Spent Nuclear Fuel to the Idaho Nuclear Technology and Engineering Center

- Disposition path identified for Fermi blanket sodium-bonded fuel by TBD (EM-1)
- Establish end date with NE to discontinue fuel receipt and service for Advanced Test Reactor fuel by September 2005 (EM-1)
- Repository shipping schedule will be issued by 2005 (EM-1)
- Repository is open to receive DOE spent nuclear fuel by December 2010 (EM-1)
- Decision issued on spent nuclear fuel one-for-one transfers between the INEEL and Savannah River Site by September 2005 (EM-1)
- Repository spent nuclear fuel acceptance criteria will include bare intact fuel for foreign research reactors and domestic research reactors by September 2008 (EM-1)
- Decision issued on transfer of remaining fuels by September 2011 (EM-1)
- Decision issued on transfer of sodium-bonded fuels (Experimental Breeder Reactor, EBR-II) by September 2003 (EM-1)

- Decision issued on transfer of naval fuels to the U.S. Navy by September 2004 (EM-1)

Strategic Initiative 4.4 Accelerate Off-Site Shipments of Transuranic Waste Stored at the Transuranic Storage Area

- Establish Waste Isolation Pilot Plant waste acceptance criteria for remote-handled transuranic waste using acceptable knowledge as the basis for waste characterization by May 2003 (EM-1)

- Offsite disposal is available for remote-handled transuranic waste in 2004 (EM-1)

- Issue environmental and safety approvals supporting remote-handled transuranic repackaging design efforts by 2005 (DOE-ID)

- Define treatment disposition strategy for transuranic waste forms, such as organic sludge, that currently do not meet the Waste Isolation Pilot Plant acceptance criteria by December 2005 (EM-1)

- Decision issued for transuranic-contaminated wastes that lack a defined disposition path including stored non-defense and irradiated beryllium component waste by December 2005 (EM-1)

- Offsite disposal (Waste Isolation Pilot Plant) shipping schedule and capacity for material receipt meets delivery schedule supporting up to 100 remote-handled transuranic waste shipments per year and 1,140 contact-handled transuranic waste shipment per year from the Transuranic Storage Area TBD (EM-1)

Strategic Initiative 4.5 Accelerate Remediation of Miscellaneous Contaminated Areas

- Critical Decision 4 approval to start operations of the INEEL CERCLA Disposal Facility by March 2003 (DOE-ID Manager)

- Decision issued defining path forward for ordnance remediation by TBD (DOE-ID Manager)

- Decision issued for treatment and disposal of radioactive and PCB contaminated mixed waste by March 2003 (EM-1)

- Issue Record of Decision amendment for Test Area North V-Tanks by TBD (DOE-ID Manager)

Strategic Initiative 4.6 Eliminate On-Site Treatment and Disposal of Low-Level and Mixed Low-Level Waste

- Off-site disposal is available for mixed low-level waste by the start of FY 2004 (EM-1)

Strategic Initiative 4.7 Transfer All EM-Managed Special Nuclear Material Off-Site

- Decision issued on disposition of all EM-managed unirradiated special nuclear material located at the INEEL by September 2003 (EM-1)

- Decision issued on transfer of storage building ownership, with contents, to another program by September 2003 (EM-1)

- Complete National Environmental Policy Act analysis to allow for the transport and disposition of the special nuclear material to the DOE designated site by September 2004 (EM-1)

- Licensed shipping containers and transporters are available to support accelerated shipments of special nuclear material by September 2006 (EM-1)

- Ensure continued National Nuclear Security Administration resources for packaging and shipment of the denitrator product by TBD (EM-1)

Strategic Initiative 4.8 Remediate Buried Waste at the Radioactive Waste Management Complex

- Critical Decision 2/3 to support procurement of long-lead time items and mechanical/ electrical/facility construction for the glovebox excavator method project on or before August 2002 (DOE-ID Manager)

- Disposal facility available for waste retrieved from the Pit 9 demonstration retrieval by April 2003 (DOE-ID Manager)

- Critical Decision 4 approval to proceed to the operations phase of the glovebox excavator method project on or before March 2004 (DOE-ID Manager)

Strategic Initiative 4.9 Accelerate Consolidation of INEEL Facilities and Reduce Footprint

- Determine INEEL D&D disposal path forward by the end of September 2002 (DOE-ID Manager)

- Complete agreements with Test Reactor Area and Specific Manufacturing Capability sponsors by the end of September 2003 (DOE-ID Manager)

- Complete transition to new Program Secretarial Office(s) by January 2012 (EM-1)

- Complete transition of Radiological and Environmental Science Laboratory to new Program Secretarial Office(s) by September 2012 (EM-1)

Business Strategy

- Extend/compete decision for management and operating contract by September 2003 (EM-1)

- Complete R2A2s for key positions in September 2002 (DOE-ID Manager)

- Complete contract strategy for EM scope of work by September 2002 (DOE-ID Manager)

- Issue revised policy from quarterly allocation of allotments to single allotment consistent with Defense Facilities Closure Projects approach, October 2002 (EM-1)

- Provide increased authority for the contractor relative to workforce management/ administration in November 2002 (DOE-ID Manager)

- Complete business process improvements plan in September 2003 (DOE-ID Manager)

- Obtain authority for expansion of funds and latitude in reprogramming, use flexibility for project approach in September 2004 (EM-1)