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*Idaho National
Engineering and
Environmental
Laboratory*

**The INEEL
Environmental Management
Accelerating Cleanup:
Focus on 2006,
Discussion Draft
Executive Summary**



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Accelerating Cleanup:
Focus on 2006, Discussion Draft
Executive Summary**

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Environmental Management
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**Prepared for the
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Assistant Secretary for Environmental Management
Under DOE Idaho Operations Office
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EXECUTIVE SUMMARY

Idaho Operations/Field Office Overview

Environmental Management work at the Idaho National Engineering and Environmental Laboratory (INEEL) is performed on a site that encompasses 890 square miles in the Snake River Plain of Southeastern Idaho. This *INEEL Environmental Management Accelerating Cleanup: Focus on 2006, Discussion Draft*, hereafter referred to as the Discussion Draft, addresses all Environmental Management Program activities at the INEEL except: those underway at the Argonne National Laboratory-West which are administered by the Department of Energy (DOE)-Chicago Operations Office and those at the Naval Reactors Facilities which are administered by the Navy. Because the Environmental Management Program activities at Argonne National Laboratory-West are closely integrated with INEEL activities in support of DOE commitments, brief summaries of those activities are included in this report. Details of those activities can be obtained in the DOE-Chicago Operations Office Environmental Management Discussion Draft.

The document depicts an optimized Environmental Management Program in Idaho which meets compliance requirements, maximizes risk reduction, and completes the Environmental Management mission at the lowest possible life-cycle cost. The INEEL is committed to accomplishing cleanup and achieving the maximum progress possible by 2006. To achieve that goal, INEEL will complete cleanup of several waste streams and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remediation sites by FY-2006, while pursuing longer-term projects to accomplish cleanup of transuranic and high-level wastes, spent nuclear fuel disposition, and closure of remaining CERCLA remediation sites after FY-2006. Maintaining full compliance with applicable requirements and agreements is the foundation of the Discussion Draft. This Discussion Draft reflects the DOE commitments outlined in the Idaho Settlement Agreement, the Federal Facility Agreement/Consent Order (FFA/CO), the INEEL Site Treatment Plan, and other Consent Orders.

Several assumptions are key to achieving the final end state at the INEEL. The funding scenarios depicted in this document assume that the Waste Isolation Pilot Plant will open in FY-1998 as currently planned and will accept pre-1970 transuranic waste by FY-2004. It also assumes that a federal facility will be available by 2015 as a final repository for spent nuclear fuel and high-level waste. The current life-cycle plan assumes that funding will be available as needed to complete compliance work at the INEEL.

INEEL Program Goals

The Department of Energy-Idaho Operations Office (DOE-ID) has set a clear goal for the Environmental Management mission: *Finish it!* Four Environmental Management programs are in place at the INEEL to accomplish that objective:

1. The **Waste Management Program** will treat, store, and dispose of low-level waste, mixed low-level waste, transuranic waste, and high-level waste in compliance with agreements, the Site Treatment Plan, etc.

2. The **Environmental Restoration Program** will remediate all FFA/CO identified contaminated land/facilities as determined under CERCLA. Contaminated facilities used for previous INEEL nuclear reactor testing, spent nuclear fuel reprocessing, and waste treatment, storage, and disposal will undergo decontamination and dismantlement (D&D).
3. The **Nuclear Materials and Facilities Stabilization Program** will receive and store spent nuclear fuel until final disposition. This includes moving all spent nuclear fuel from wet to dry storage by 2006.
4. The **Infrastructure and Deactivation Programs** ensure adequate infrastructure support for the above mentioned programs.

In addition to completing the Environmental Management mission in Idaho, the INEEL has prepared a Long-Range Plan which will transform the laboratory from a DOE Multi-Program National Laboratory focused on site cleanup to a National Multi-Program Engineering and Environmental Laboratory with the following goals:

1. Provide engineering and technology leadership to DOE by building from and strengthening other environmental programs,
2. Expand support to other agencies and selected industries,
3. Reduce the global environmental threat,
4. Execute national missions of DOE and other agencies, and
5. Leverage technology investment via industrial collaborations.

Two projects included in this Discussion Draft request budget authorization for the construction of new facilities which are critical to INEEL's transition to a National Multi-Program Environmental Laboratory.

INEEL Environmental Management Life-cycle Costs

INEEL Environmental Management work has an estimated life-cycle cost of \$16.9 billion (unescalated) and will require more than 40 years to complete. Figure 1 shows the escalated and unescalated cost estimates for the Environmental Management Program at the INEEL. The INEEL has been active in identifying strategies that have reduced life-cycle cost estimates, while accelerating program completion. To date, Environmental Management planning and integration initiatives have resulted in savings of about \$12.4 billion from the Baseline Environmental Management Report (BEMR) 95 life-cycle cost estimates and the cleanup schedule for the INEEL has been accelerated by decades. The schedule for high-level waste completion has been accelerated by 40 years; spent nuclear fuel by 25 years, and transuranic waste by 6 years. Figure 2 displays the comparison of the unescalated life-cycle costs of BEMR 95 and BEMR 96 with the unescalated life-cycle costs of this Discussion Draft.

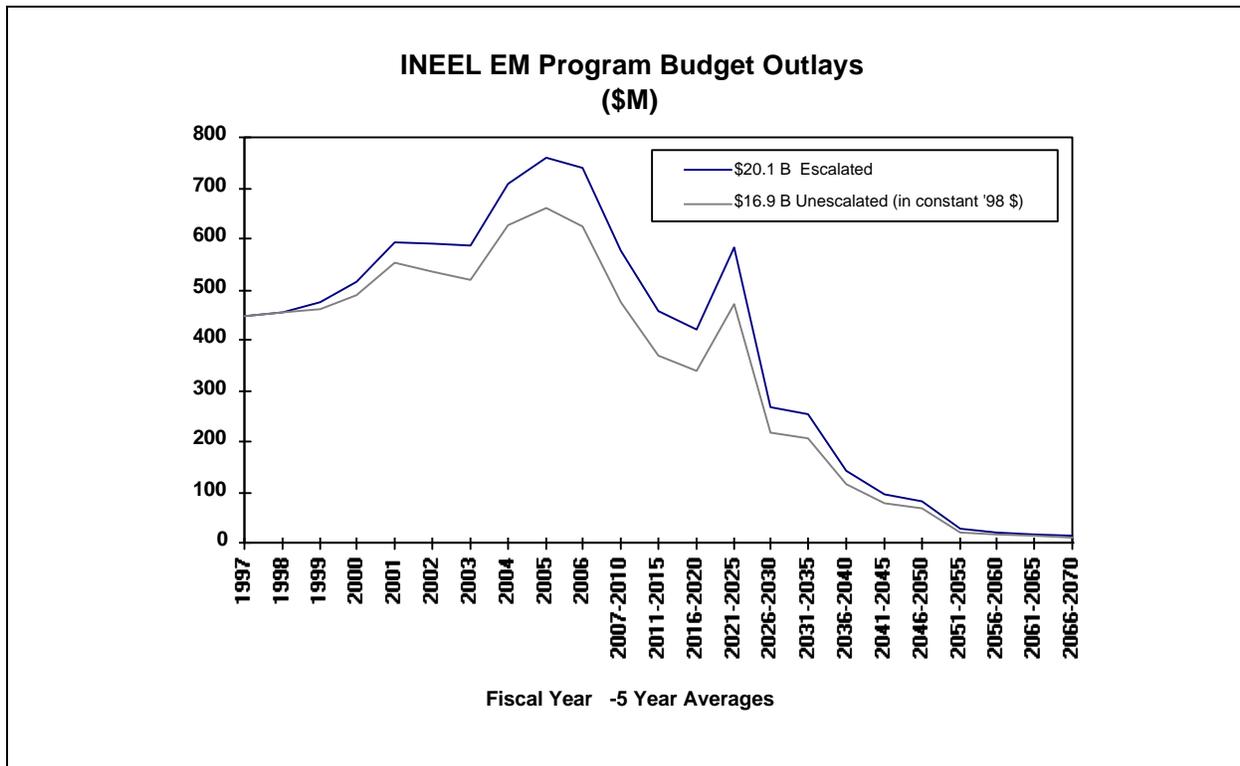


Figure 1. INEEL Environmental Management Program Budget Outlays

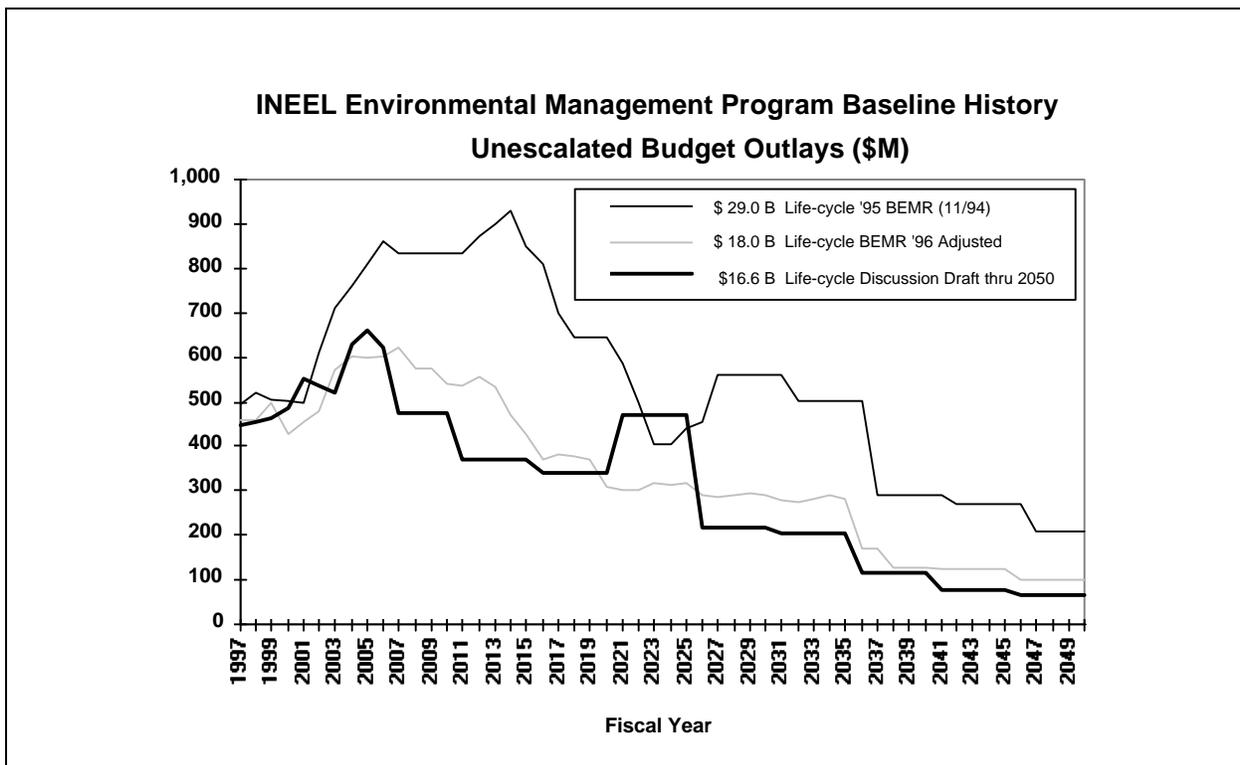


Figure 2. INEEL Environmental Management Program Baseline History Unescalated Budget Outlays

INEEL's FY-2006 Cleanup Status

By FY-2006, the INEEL will complete 27 of 52 planned Project Baseline Summary projects, while accomplishing the work associated with 61 enforceable milestones.

Low-level, Mixed Low-level, and Transuranic Wastes

Disposal of contact handled low-level waste at the Radioactive Waste Management Complex is ultimately limited by the physical capacity of that facility. This capacity is also potentially limited by the total amount of radioactivity disposed of at the facility in accordance with ongoing performance evaluations, in light of the continuing need for disposal of INEEL low-level waste beyond FY-2006, DOE is reviewing the technical, economical, and other related issues surrounding continued disposal at the Radioactive Waste Management Complex or elsewhere at the INEEL as well as investigating alternative disposal sites that meet applicable regulations. Any such reviews and subsequent planning will be coordinated with waste generators who currently rely on waste disposal at the Radioactive Waste Management Complex, to ensure their needs are supported.

Remote handled low-level waste disposal operations will likely continue at the Radioactive Waste Management Complex post FY-2006. These operations will accommodate the receipt and disposal of remote handled low-level waste until an acceptable off-site disposal location is operational that meets regulatory requirements and any associated transportation issues are resolved.

Mixed low-level waste treatment operations at the Waste Experimental Reduction Facility cease in FY-2003. At this time, the Advanced Mixed Waste Treatment Project will come on line and treat newly generated mixed waste for the INEEL. The Waste Experimental Reduction Facility Resource Conservation and Recovery Act (RCRA) closure will be completed by FY-2006. By 2006, the Advanced Mixed Waste Treatment Project will be processing approximately 5,000 cubic meters of waste per year.

The Transuranic Waste Project will ship approximately 3,100 cubic meters of waste out of the State of Idaho to the Waste Isolation Pilot Plant by December 31, 2002. The Advanced Mixed Waste Treatment Project facility construction will be complete in FY-2003 when it will begin to handle the remaining approximately 62,000 cubic meters of stored transuranic waste. Figure 3 shows the low-level, mixed low-level, and transuranic waste life-cycle budget/cost (budget authority [BA]/budget outlay [BO]).

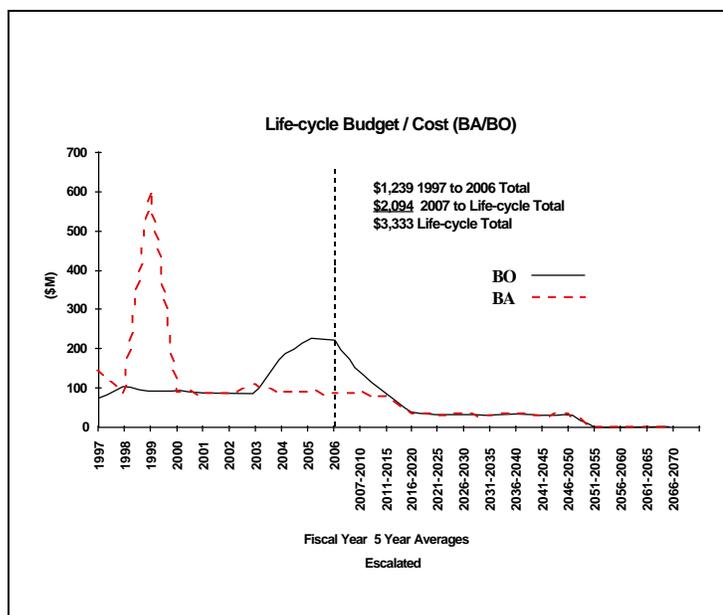


Figure 3. Low-level, Mixed Low-level, and Transuranic Waste

High-level Waste

The high-level waste projects will calcine 3827 cubic meters of sodium and non-sodium bearing liquid waste to 1546 cubic meters of granular solids by 2006. Figure 4 shows the high-level waste life-cycle budget/cost (BA/BO).

Spent Nuclear Fuel

By the end of FY-1998, all spent nuclear fuel will be transferred out of CPP-603. Three Mile Island fuel will be transferred from underwater storage at Test Area North to new dry storage at the Idaho Chemical Processing Plant by FY-2001. Construction of the Spent Nuclear Fuel Dry Transfer Station will be complete in FY-2003 allowing Phase I fuel types to be placed into new dry storage. By FY-2006, all DOE-owned fuel at the INEEL will be transferred from wet storage to dry storage in existing or new dry storage facilities. Figure 5 shows the spent nuclear fuel life-cycle budget/cost (BA/BO).

Environmental Restoration (Closure)

Although remediation and closure continues beyond FY-2006, all Records of Decision (ROD) will be negotiated by FY-2000 and remediation will be essentially complete in six of the eight INEEL Waste Area Groups (WAG) addressed in this plan by FY-2006.

Long-term groundwater pump and treat operations will continue through 2025 at WAG 1. Cap construction and long-term monitoring and maintenance will continue at WAG 3. The

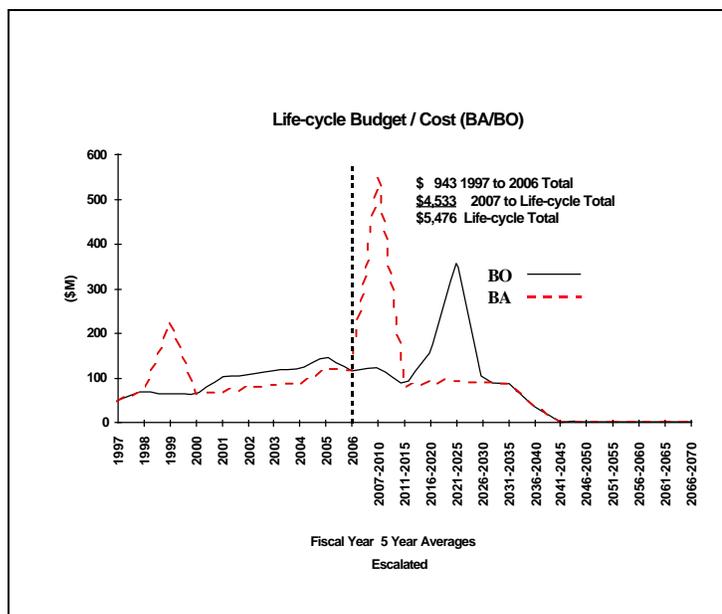


Figure 4. High-level Waste

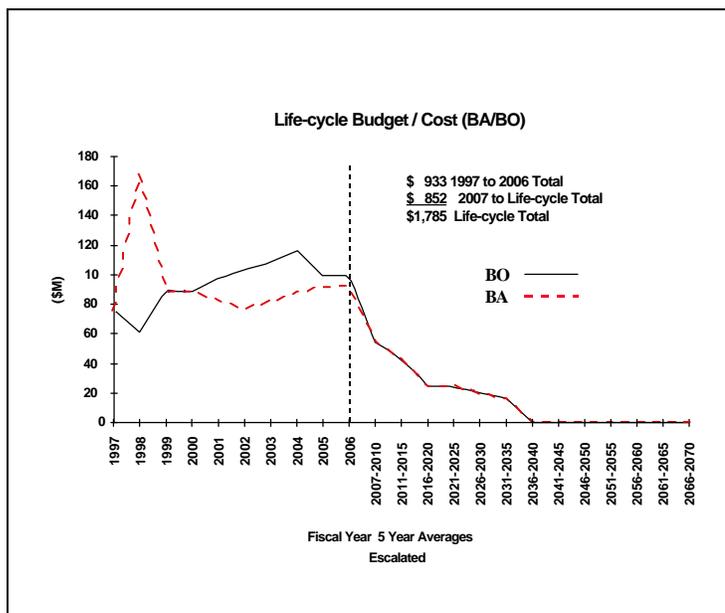


Figure 5. Spent Nuclear Fuel

Transuranic Waste Pits and Trenches (WAG 7) may have significant remediation work to complete after FY-2006. D&D of surplus facilities will continue through 2044. Figure 6 shows the Environmental Restoration (Closure) life-cycle budget/cost (BA/BO).

Infrastructure and Deactivation

The INEEL has environmental management and cleanup activities that continue beyond FY-2006 and Infrastructure projects must continue at a level adequate to ensure the integrity of required facilities for the period required to complete all commitments. Six Infrastructure Line Item Construction Projects will be completed by FY-2002 to provide infrastructure continuity. Eight additional proposed Line Item Construction Projects are identified and will complete by FY-2006, if approved. In addition, multiple General Plant Projects, General Purpose Capital Equipment acquisitions, and selected line items will be necessary to assure adequate infrastructure throughout the Environmental Management mission life cycle.

INEEL has several mortgage reduction/closure projects planned to ensure that the final end state is achieved in the most cost effective manner. The Advanced Reactivity Measurement Facility, the Power Burst Facility, and Materials Test Reactor canal will be ready for decontamination and closure by FY-2006. Also by that date, several Idaho Chemical Processing Plant buildings, the Waste Calcining Facility, CPP-601, CPP-603, CPP-640, and CPP-627, will be dispositioned. Figure 7 shows the Infrastructure and Deactivation life-cycle budget/cost (BA/BO).

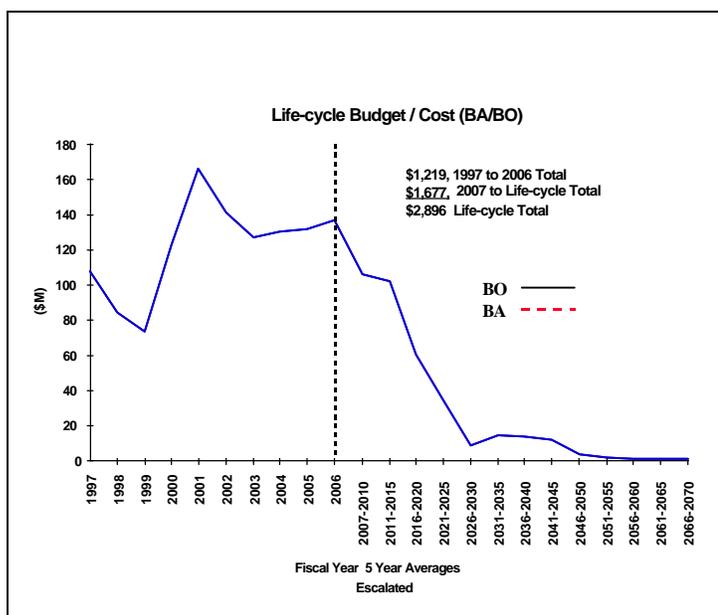


Figure 6. Environmental Restoration (Closure)

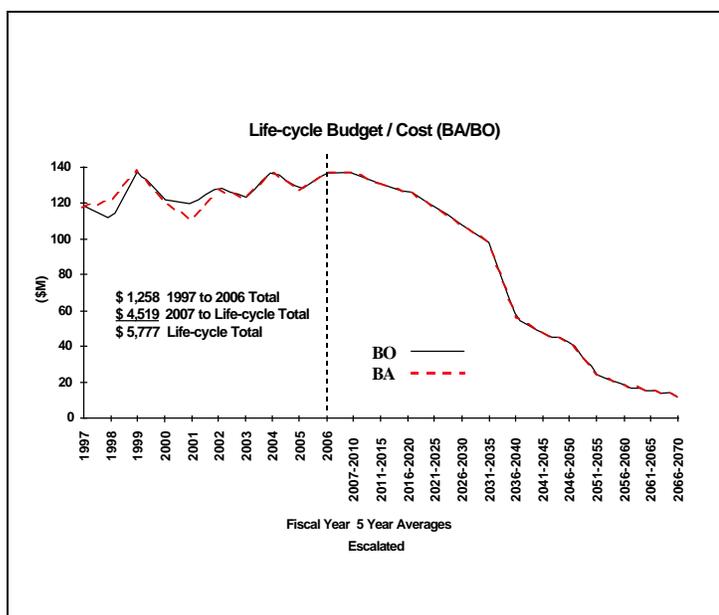


Figure 7. Infrastructure and Deactivation

INEEL's Final End State

The INEEL's final end state is described in the *INEL Comprehensive Facilities and Land Use Plan* issued March 1996. With completion of the projects identified in this Discussion Draft, the INEEL will be restored to industrial and open space use standards (ordnance on the site may require deed restrictions). This degree of cleanup supports the 100 year future land use projection analysis, which indicates no residential use of the INEEL within the next 100 years. INEEL's end state objective is to complete cleanup per FFA/CO requirements and disposition all waste and other materials in accordance with existing and future agreements.

The Idaho Settlement Agreement contains several milestones key to the INEEL reaching its final end state. Following is a list of the key milestones contained in the Idaho Settlement Agreement.

- The first shipments of transuranic waste from the INEEL to the Waste Isolation Pilot Plant shall begin by April 30, 1999.
- No less than 3,100 cubic meters of transuranic waste shall be shipped out of the State of Idaho by December 31, 2002.
- Removal of spent nuclear fuel from the State of Idaho by January 1, 2035.
- DOE shall commence calcining sodium-bearing liquid high-level waste by June 1, 2001 and be completed by December 31, 2012.
- All high-level waste currently stored at the Idaho Chemical Processing Plant will be treated and ready for disposal by 2035.

Funding and Cost Challenges

One of the key challenges facing the Environmental Management Program is to achieve program commitments in an era of declining budgets. The Government is striving to balance the national budget by 2002 and this has resulted in level funding targets, with no increases for inflation for the Environmental Management Program during the next ten years. To address this, the INEEL has incorporated cost savings expected from the re-engineering of some of the existing management processes of \$80 million into the Program Baseline estimates for the period thru FY-2002. The INEEL has further committed to the redirection of \$33 million in support costs, to be applied to further accelerating cleanup. Additionally, a \$50 million efficiency challenge has been set for the period from FY-1999 thru FY-2003. Any additional efficiencies achieved will be reinvested at the INEEL to further accelerate cleanup and reduce mortgage costs. Even with these expected cost savings, based on current estimates, the outyear funding targets show a total funding shortfall of \$129 million for the period of FY-1998 thru FY-2003.

This \$129 million shortfall is based on the assumption that the capital asset portion of Privatization Funding (BA) and Outlays (BO) would not be addressed within the INEEL's base Environmental

Management program funding targets. As this Discussion Draft was developed, a concern has been raised that privatization outlays may have to be scored against the base program funding available. This would create a very difficult, if not impossible situation that is not currently provided for in the funding scenarios depicted in this document.

The Assistant Secretary for Environmental Management has assured INEEL and stakeholders that DOE will meet compliance with all enforceable agreements. To this end, as the Draft 2006 Plan funding scenario is developed, options will be explored to close funding shortfalls. These options include transferring funds from other sources to the INEEL, identification of further program and support efficiencies, and critical analysis of estimates. Both DOE-HQ and INEEL expect to fully resolve any funding shortfalls prior to finalizing the Initial 2006 Plan in early 1998. For years beyond FY-2003, there currently appears to be adequate budgetary resources within the DOE Environmental Management's flat funding profile at the \$6.0 billion level to accomplish the INEEL program. This condition results from near term completion of cleanup at other DOE sites, which allows shifting of funding resources to INEEL.

Path Forward/Site-specific Strategies

The INEEL has implemented a contracting philosophy which incentivizes the contractor to develop a results oriented program to complete Environmental Management work safely, on or ahead of schedule, and within or below estimated costs while continuously looking for and implementing productivity improvements. In keeping with the objective to finish Environmental Management work, the site is enhancing cost and schedule management techniques to improve program management effectiveness. Implementation of additional Performance Measures tied to incentive fees will be another positive step toward more effective operations.

Additionally, DOE-ID has employed the U.S. Army Corps of Engineers to work jointly with Lockheed Martin Idaho Technologies Company (LMITCO) to perform critical analysis of the INEEL Environmental Management Program cost estimates. This effort will focus on identifying costs savings through elimination of duplicated or unnecessary work and will assist in improving cost estimating methodology. Assessments scheduled for FY-1997 will review costs, schedules, deliverables, and requirements in five key areas including indirect costs, Waste Experimental Reduction Facility incinerator operations, transuranic waste preparation and shipping, WAG 7 (pits and trenches) remediation, and high-level waste treatment. The assessment process will examine these projects in depth and provide recommendations for cost reductions and/or restructuring of work activities to produce more cost efficient operations. The INEEL plans to continue with this critical assessment activity until all project baselines have been independently scrutinized, with the expectation that this process will identify substantial cost savings.

The INEEL is also pursuing several privatization projects which increase accountability and eliminate duplication of activities in the government system resulting in savings to the taxpayer. Several projects have been identified that show potential savings in life-cycle cost estimates associated with privatization. An example of a privatized project is the Advanced Mixed Waste Treatment Project, awarded in December 1996, is expected to save \$670 million (unescalated) over previous cost estimates for that same work. The proposed President's FY-1998 Budget requests funding for three additional privatization projects at the

INEEL, which could result in cost savings of over \$134 million. Examples include the Low Activity Waste Treatment Project and the Spent Nuclear Fuel Dry Storage Project. This Discussion Draft also identifies a future privatization project for the High-level Waste Immobilization Facility. The INEEL will continue to evaluate privatization alternatives as a means to achieve more efficient and effective results.

Complex-wide Integration

Eleven major DOE site contractors are chartered by the Assistant Secretary to develop and evaluate cost saving opportunities across the DOE Complex. This initiative, known as Complex-wide Environmental Management Integration, is led by the INEEL and considered a key element in achieving the Environmental Management Program vision. The integration effort is based on systems engineering principles of defining requirements, developing alternatives for meeting those requirements, and then applying well defined criteria for selection of alternatives. Through this prescriptive process, the Complex-Wide Environmental Management Integration initiative provides sound technical alternatives for DOE and stakeholder consideration.

The effort is focused on disposition of the following waste streams and materials: transuranic waste, mixed low-level waste, low-level waste, hazardous waste, high-level waste, spent nuclear fuel, and the environmental restoration programs. Waste volumes and locations, treatment options, and storage and disposal facilities were evaluated, as were transportation systems and technology development issues. This analysis will be used to support further analysis of alternatives which can be used to accelerate cleanup while reducing costs. Consistent with the Discussion Draft Planning and NEPA Process, these alternatives will require input and discussion with the regulatory agencies and stakeholders.

Complying with the National Environmental Policy Act

DOE-ID will ensure compliance with the NEPA and other applicable Federal, State of Idaho, and local environmental laws, regulations, and DOE Orders through adherence to DOE Order 451.1 and LMITCO MCP-469. DOE-ID will prepare appropriate NEPA documentation to evaluate currently planned, proposed, future action at the INEEL. Other activities, such as the proposed INEEL Environmental Engineering and Science Center Project, will be evaluated using Environmental Assessments. These and other environmental documents will tier from the existing *Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Environmental Impact Statements (EIS)*. Projects beyond the two-year DOE-ID *Annual National Environmental Policy Act Planning Summary* would be discussed in DOE-ID's NEPA Planning Board Meetings to decide the best strategy to ensure compliance with Federal, State of Idaho, and local regulations and requirements.

Safety and Health

The INEEL is committed to perform all work in a safe and healthful manner. This means compliance with all applicable Federal, State and local laws, regulations, rules, and standards relating to safety and health. However, the INEEL safety and health program goes beyond routine compliance, it also incorporates the

DOE Voluntary Protection Program. The Voluntary Protection Program is demonstrated by management leadership and employee involvement resulting in a very proactive safety culture. It is expected that INEEL employees, as well as subcontractors, visitors, and vendors who perform work activities at the INEEL, perform at this level of safety excellence. Safety is a value at the INEEL, and is looked at as a positive, cost effective way of producing quality products in support of INEEL missions.

Intersite/Interstate Interactions

Several INEEL Environmental Management projects rely on intersite and interstate cooperation. Opening of the Waste Isolation Pilot Plant is critical to achieving the transuranic waste project commitments to the State of Idaho. If this commitment is not met, the State of Idaho is prepared to stop INEEL receipts of DOE-owned spent nuclear fuel which will severely impact the planning in several states. Likewise, readiness of a final geologic repository for spent nuclear fuel and high-level waste is also key to achieving the final INEEL end state.

Spent nuclear fuel shipments will be received at the INEEL from various DOE sites, universities, and foreign research reactors for consolidation in preparation for final off-site disposition. Large volumes of low-level waste will be shipped to various off-site commercial treatment facilities. All transuranic waste will be shipped to the Waste Isolation Pilot Plant. Mixed low-level waste will be shipped to the Oak Ridge Reservation. Some spent nuclear fuel will be shipped to Savannah River for consolidation and final disposal. The remaining spent nuclear fuel and all vitrified high-level waste will be shipped to a Federal Repository for disposal.

Costs and regulations associated with transporting fuel or waste between states need to be managed with a consistent approach to ensure that the accelerated cleanup vision is achieved. It is difficult to estimate the costs of moving spent nuclear fuel from foreign research reactors to the INEEL because of the complexity of dealing with a multitude of foreign governments. A National Transportation initiative is proposed in the INEEL Long-Range Plan which would address these transportation issues.

Stakeholder Involvement

Beginning with the Environmental Management Assistant Secretary video-conference on June 26, 1996 with members of the public to kick off the accelerated cleanup planning effort, stakeholder involvement has been central to INEEL's planning process. The Citizens Advisory Board and other stakeholder groups have been briefed and provided specific recommendations. Letters from DOE-ID management were sent to key stakeholders inviting them to participate in meetings and briefings. Note cards, newspaper ads, news releases, toll-free telephone access, and opportunities for communicating information have been used to involve Idaho stakeholders, and to solicit public interaction. Comments received during the public comment period on the July 1996 version of the draft Ten-Year Plan have been assessed and some are reflected in specific changes incorporated in this Discussion Draft.

The INEEL has three goals for involving stakeholders in preparing the Discussion Draft. These are:

1. continue to inform stakeholders about environmental management projects at the INEEL;
2. continue to involve stakeholders in dealing with changes in the INEEL's environmental management work and budget allocations; and
3. continue the process that includes stakeholder participation and provides feedback concerning stakeholder interests.

According to Al Alm, Assistant Secretary for Environmental Management, "We cannot succeed in the critically important endeavor without strong public and institutional support." INEEL stakeholders are encouraged to get involved in planned activities by commenting on this, the national Discussion Draft, and other sites Discussion Drafts during the 90-day comment period. Please note that comments must be submitted by the end of the comment period, September 9, 1997. Tours of INEEL facilities and briefings with INEEL project managers is also encouraged. Workshops and information exchanges with the public, regulators, and Tribes are being planned during the comment period. Reviewing the Discussion Drafts and attending information sessions are effective ways for stakeholders to interact and influence the Environmental Management path forward at the INEEL. Specific details of these workshops and information exchanges will be forth coming.

Additional information and requests for briefings or discussions can be arranged by calling the INEEL's toll-free citizens' inquiry line at 1-800-708-2680. The Discussion Draft document will be available on the INEEL's website at "www.inel.gov/documents" and instructions on how to submit comments via the Internet will be included. Written comments on the INEEL Discussion Draft may be submitted to:

Accelerating Cleanup: Focus on 2006, Discussion Draft Coordinator
DOE-ID Environmental Management Program
P.O. Box 2047
Idaho Falls, ID 83403-2047

The Office of Environmental Management is asking the public to help it formulate a long-term approach to cleaning up the weapons complex, and to help it resolve issues that have often been submerged in the past. Environmental Management is focusing on ways to increase efficiencies and make the best use of its resources across the Environmental Management Program. For additional information or questions regarding the national Discussion Draft call 1-800-736-3282 or E-mail at FocusOn2006@EM.DOE.GOV (not case sensitive). Comments focused on issues related to the national Discussion Draft or concerning cross-site or policy issues should be submitted directly to the Environmental Management Program at the following address:

U.S. Department of Energy
Mr. Gene Schmitt
P.O. Box 44818
Washington, D.C. 20026-4481
E-mail address: FocusOn2006@EM.DOE.GOV (not case sensitive)
Call (800) 736-3282 to request a copy of the national Discussion Draft