

HANFORD ADVISORY BOARD

A Site Specific Advisory Board, Chartered under the Federal Advisory Committee Act

Advising:

US Dept of Energy
US Environmental
Protection Agency
Washington State Dept
of Ecology

April 4, 2008

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Re: Priorities for Restoring Hanford Clean-Up Funding for FY 2009, with
Recommendations for Action Needed in 2008

Dear Mr. Rispoli,

The U.S. Department of Energy's (DOE) request for Hanford cleanup funding for Fiscal Year 2009 (FY 2009) falls hundreds of millions of dollars short of what is essential for the protection of the Columbia River water resources, public health and the environment. The requested FY 2009 funding level for Hanford cleanup is completely inadequate to comply with the Tri-Party Agreement (TPA) and other legal requirements. The Hanford Advisory Board (HAB or Board) in this advice details approximately \$200 million that needs to be added to the current budget request to maintain progress on critical projects.

Background

The 2009 budget is particularly troublesome given shortfalls in the budgets from 2005 through 2008. The 2008 appropriation and allocation for Hanford cleanup failed to fund work slated for completion in 2009. The FY 2009 budget request for Hanford cleanup is \$250 million less than if DOE merely requested level funding from 2005, which was the year before Hanford cleanup funding was supposed to begin to increase.

Hanford cleanup funding since FY 2005

[Shown in millions]

	FY 2005 Appropriation	FY 2007 Appropriation	FY 2008 Appropriation	FY 2009 Request
Department of Energy - Richland Operations Office (DOE-RL)				
River Corridor, soils, groundwater, reactor areas, facility D&D	\$937	\$870	\$897	\$862
Department of Energy - Office of River Protection (DOE-ORP)				
High-level waste tanks	\$391	\$277	\$286	\$288
Waste Treatment and Immobilization Plant (WTP) construction	\$685	\$690	\$684	\$690

*Safeguards and security costs excluded as non-cleanup, despite using cleanup funds

In the early part of this decade, DOE sought agreement from the regulatory agencies to defer some cleanup work at Hanford through 2006 in order for DOE to fund the accelerated cleanup and closure of smaller DOE facilities, such as Fernald (Ohio) and Rocky Flats (Colorado). DOE committed at that time to use the funds saved from cleanup and closure of these small sites to fund Hanford cleanup and other large contaminated DOE facilities starting in 2006. Had this commitment been honored, Hanford would be expected to receive approximately \$650 million more funding in FY 2009 than the President and Secretary of Energy requested.

The current shortfall adds to a backlog of safety and environmental problems that will continue to grow in coming years. DOE and the Office of Management and Budget (OMB) have adopted formal "target" and outyear budgets, which are \$5 to \$10 billion short of what is needed to fund the existing schedules and requirements through 2018 at Hanford.

Impacts from Inadequate Funding for 2008 and Requested for 2009

Tank waste retrieval and treatment

Only six of the 143 aging single shell tanks (SSTs) with very hazardous high-level nuclear mixed wastes have been emptied. The TPA deadline for emptying those tanks is 2018. DOE has formally proposed that the deadline be moved back by 22 years, to 2040. The President's budget request for FY 2009 provides funding to

retrieve the wastes from only one tank per year (estimated cost: \$16 million), and the target and outyear budgets adopted by DOE continue to fund retrieval from only one or two tanks per year for the next ten years. 2008 funding is mostly unavailable for waste retrieval as it is being used to recover from the high pressure spray release of high-level waste from tank S-102 last July.

Waiting until 2040 to retrieve wastes from the leaky SSTs will likely lead to further major contamination releases. Some tanks will be nearly 100 years old (long past their design life) by the time DOE attempts to retrieve waste from them. Their integrity is already suspect. DOE should begin retrieving wastes from four to ten SSTs per year between now and 2019.

Transuranic and mixed waste retrieval and treatment

Transuranic waste (TRU) (e.g. plutonium) “retrievably stored” in drums in unlined soil burial grounds since 1970 pose a serious safety, health and environmental hazard.

¹ DOE’s budget request for DOE – Richland Operations Office (DOE-RL) and current year plans will cause DOE to breach TPA milestone M-91-40 for retrieval of the retrievably stored contact-handled TRU in the burial grounds by December 31, 2010. DOE will fall behind the TPA requirements in 2008, and will have failed to exhume 1,900 cubic meters (m3) of TRU by the end of FY 2009.²

The FY 2009 budget request for Project Breakdown Summary (PBS) RL-13C (Solid Waste Stabilization and Disposition) will, in DOE’s own words, result in:

- “Slow downs of transuranic waste retrieval (RL-0013);”
- “Deferred design completion for the remote-handled TRU waste process capability (RL-0013);” and,
- “Deferral of mixed low-level waste treatment and disposition (RL-0013).”³

The Board has long advised that DOE must begin full characterization and retrieval of the burial grounds and liquid waste discharge sites into which it disposed vast amounts of plutonium and transuranic wastes prior to 1970. The pre-1970 disposal of these wastes included far greater quantities of hazardous chemicals, which increase the mobility of the contamination as well as increasing the risks of human and environmental exposure, than the retrievably stored post-1970 TRU. Indeed, there is an estimated 18 times more plutonium and transuranic wastes in the pre-1970 soil sites than is covered by the TPA milestones for the retrievably stored, post-1970 TRU.⁴

Once retrieved, it is imperative for safety and environmental protection that the mixed wastes which are not shipped immediately to the Waste Isolation Pilot Plant (WIPP) as TRU be treated. Approximately 50% of the wastes exhumed from these burial grounds are mixed wastes requiring treatment. Prolonged storage (without treatment) of these wastes is illegal under the Resource Conservation and Recovery Act (RCRA) and State of Washington's Hazardous Waste Management Act (HWMA) because of the severe risks from storing uncharacterized and untreated wastes. Many of the wastes disposed with the TRU were chemicals used in processing plutonium or uranium. These included powerful solvents, volatile chemicals, flammable, ignitable and reactive hazardous wastes. Merely exposing some to air or water could pose a health and environmental risk, as could storing incompatible wastes next to each other.

Despite these high hazards, DOE has no funding identified to pay for the proper treatment of these mixed wastes in 2008 and requested no funds to pay for treatment in 2009. Storage would violate TPA requirements for DOE to reduce the backlog of stored wastes, rather than increase the backlog. The Board advises that funds be allocated in 2008 and 2009 to treat mixed wastes.

The Board recommends that Ecology communicate to DOE that it views DOE's failure to allocate funds this year, and failure to request funding for next year, for treatment of mixed wastes as a serious violation. If Ecology communicates this to DOE, then the treatment will be funded.

The TPA requires DOE to treat the thousands of cubic meters (m³) of mixed waste stored in the Hanford Central Waste Complex.⁵ DOE has failed to request the funds to treat these wastes in 2009. The cumulative effect of increases in these backlogs is a growing concern as DOE proposes to add more mixed waste to Hanford from other sites. In November, the Board advised (HAB Advice #203) that Ecology disallow such additional mixed waste as a provision in the TPA or the Hanford Site RCRA/HWMA permit, until existing wastes are brought into compliance and the impacts are known from the wastes which will be left.

Completion of the characterization of hundreds of contaminated soil and groundwater sites, which is delayed under DOE's budget plans, will provide a basis for assessing the risks associated with wastes which may remain in Hanford's soil and groundwater. This would also aid preparation of the risk assessments related to the Tank Closure and Waste Management Environmental Impact Statement. The disposal of offsite wastes at Hanford should not be permitted without completing the credible assessment of the risks from existing wastes and without assurance that

offsite wastes will not increase cumulative risks. Disposal capacity at this time must be reserved first for disposal of Hanford site wastes.

DOE's budgets have also led it to violate the requirement that it have treatment capacity to treat the extremely radioactive remote-handled TRU and large box contact-handled TRU by June 30, 2008 (M-91-43 requires treating 300 m³ per year starting in June 30, 2008; M-91-01 requires DOE to build or update the facilities needed to begin treating and processing all post-1970 TRU and TRU mixed waste by June 30, 2012). Failure to meet this milestone means that DOE will not be able to retrieve the remote-handled TRU from underground sites posing a risk to the Columbia River (618-10 and 11 burial grounds).

Central Plateau soil and groundwater

DOE's budget request for FY 2009 would almost completely eliminate all work to clean up the B/C cribs and trenches, to acquire pump and treat equipment to remove carbon tetrachloride and technetium 99 from the ZP-1 operable unit groundwater near the Plutonium Finishing Plant, and to delay all work on the U-Canyon area remediation. Funding should be restored to RL-40 as we advise below for these efforts.

DOE failed to request the funds necessary to begin actual characterization of these Central Plateau soil sites and has no plan to fund retrieval and treatment of the wastes from these dangerous sites. The Board advises that funding be provided for characterization, retrieval and treatment of these sites.

River Corridor cleanup

Cleanup along the Columbia River is also significantly compromised by the President's FY 2009 budget request. This will preclude meeting milestones to restore soil and surface use along the Hanford Reach National Monument and the gateway to the river shorelines, the 300 Area, by 2012. This is a high profile failure that denies Tribal and public hopes for access to the shoreline. Funding proposed at \$165 million for this project (PBS RL-41) is inadequate to meet major TPA milestones due in FY 2009, including those for the 300 Area, F-Area and 618-7 burial ground, while the cleanup milestones for the soils around the K-Basins will be missed due to the delays in emptying and removing the basins.

Inadequacy of funding for the River Corridor is impacted by DOE's plan to spend \$65 million over FY 2009 and FY 2010 for design of K-Basin sludge treatment. Design of this system was already done once. The Board requests DOE to explain the cost and need for this.

Advice: Priorities for restoring cleanup funds

The following are the Board's consensus recommendations for the specific increases in funding for DOE-RL and DOE-ORP which are not listed by priority but are needed to reduce the serious impacts from the inadequate funds requested for FY 2009.

Department of Energy – Richland Operations Office (listed by PBS)

Solid waste stabilization/disposition, RL-13C

\$50 million should be added to this PBS to provide the funding required in 2009 for treating mixed waste, retrieving post-1970 TRU, and to begin to move forward on the facilities which are essential for supporting characterization and packaging of remote-handled TRU and R-H mixed waste (M-91 in the TPA). This PBS was reduced by nearly \$70 million under the budget request.^{6 7}

\$50 million

River Corridor, RL-41

Funds should be restored for cleanup of the Columbia River Corridor in order to keep cleanup on track to open some areas along the river to public use in 2012. Our recommended funding level will reduce delays and keep the closure contract on track. The workforce has been trained to efficiently and safely demolish contaminated buildings and remediate waste sites. Maintaining the continuity of this unique workforce has saved DOE significant money over the years. Laying off a large number of these skilled employees sets the stage for having to rehire and retrain them in the future. Remediation work should also begin on the 618-10 and 11 burial grounds that contain very hazardous materials.

\$50 million

300 Area and other groundwater units, RL-30

The uranium and other contaminant plumes are spreading and increasing in concentration in the Central Plateau and along the Columbia River. Viable technologies are needed to remediate these plumes. Half of the apparent increase in

this PBS in the President's budget request is due to a transfer of \$30 million of work from another PBS (RL-13C), and is not a real increase in funded work. Funds are needed to begin active control of the spread of contamination in the Central Plateau as well as work on 100 Area groundwater units along the Columbia River.

\$25 million

Nuclear material stabilization and disposition, RL-11

These savings would occur if Congress requires DOE to fund movement of special nuclear material/plutonium for mixed oxide nuclear fuel and other programs using the appropriations for those nuclear energy or defense programs. Packaging and shipment of the material for use as mixed oxide or in other programs is not a proper EM expense.

\$35 million

Central Plateau soil; vadose zone/nuclear facility decontamination and decommissioning; remainder of Hanford, RL-40

This project is cut by \$12 million in the President's budget request, at a time when the work was supposed to begin for actual soil characterization and cleanup of seriously contaminated sites with spreading contamination.

\$15 million

Community and regulatory support, RL-100

DOE has failed to meet its commitment and legal obligation to fully fund operation of the Hanford Advisory Board.⁸ In addition, DOE-RL unsuccessfully requested \$2 million for FY 2009 to proceed with Natural Resource Damage Assessment activities under Comprehensive Environmental Response, Compensation, and Liability Act which DOE has agreed to do. This budget proposal reflects the decision to begin this process in a time frame where injury determinations can affect cleanup actions, therefore reducing eventual costs of meeting both cleanup and resource restoration legal requirements and minimizing additional injuries to natural resources during cleanup. Other increases are for regulatory and Tribal oversight.

\$4 million

Total additional DOE-RL funding needed (if non-cleanup work is not paid by EM): \$109 million

Department of Energy – Office of River Protection

The incremental funding recommended here for \$90 million will allow reasonable continuity and progress towards goals for treating wastes under the TPA. However, far more funding would be needed to put the program on track for emptying tanks, treating wastes and cleaning up leaks.

Early Low Activity Waste (LAW) facility startup; acceleration of the LAW facility
Emphasis within the WTP project should address the requirements to bring the LAW facility to hot operation as early as possible so that radioactive waste from SSTs can begin to be processed. The intent is to enable this important environmental risk reduction activity to begin soon, and incorporate sufficient LAW processing capacity as soon as practical so that the total WTP mission can be completed as early as technically practical. These efforts should include evaluating the options of starting the first LAW plant as early as possible, incorporating a third melter in the first LAW plant, beginning work on the second LAW plant as early as practical, and evaluating alternate glass formulations to address sulfate problems and other throughput capacity limitations.

\$16 million

Interim Pretreatment System

To provide retrieved SST waste feed to the WTP if there is early startup of the LAW facility (before the WTP pretreatment facility is operational), DOE-ORP has identified technical options for an Interim Pretreatment System. Funds need to be provided to support the systems analysis, and support project initiation efforts to proceed with such pretreatment capability to provide SST waste feed for the early startup of the LAW facility. In addition to shifting some priorities in the WTP project work for FY 2009 this work will need incremental funding of \$13 million. The Board recommends that none of the incremental funding be devoted to the bulk vitrification approach,⁹ which has funds in the baseline budget to conduct additional small-scale, cold non-radioactive tests.

\$13 million

SST waste retrieval and SST integrity

The tank farms are currently not funded to develop the necessary technical approaches for retrieval and to proceed with retrieval of multiple tanks per year. Removal of waste from tanks should be limited only by the availability of DST storage space and the WTP throughput, once hot startup of the WTP is achieved. Retrieval of waste from each SST costs on average \$16 million. Because the SSTs will be needed for waste storage for at least an additional decade as a result of the WTP delay in startup, it is essential to complete all aspects of SST integrity analysis and testing so that any corrective actions can be implemented to ensure safety of the work force and minimize risk to the environment.

\$40 million

Upgrade to the tank farm system

As early startup options for the WTP are considered, including supplemental, interim pretreatment systems in the 200 East and/or 200 West tank farms to support ongoing SST waste retrieval, the upgrades to the tank farms must be identified and implemented to ensure safety of the work force and minimize risk to the environment. Recent DOE-ORP Systems Plan considerations suggest that the rate and sequence of SST waste retrieval will become limited by the tank farm infrastructure to support retrieval. Appropriate upgrades need to be identified and planned to eliminate or minimize this constraint.

\$11 million

Soil contamination in the tank farms

Attention in the tank farms will shift to closing SST farms after the waste is retrieved. This closure appears to be delayed by years. The Board's advice may shorten those delays from decades (as sought by DOE) to years. Funds must be made available to initiate the characterization efforts associated with the contaminated soils and vadose zone in the tank farms. The Board's ideal for remedial action at all tank farm waste sites continues to be to first characterize, then retrieve, treat and dispose of all wastes. The waste that remains must be left in a facility or configuration that will be protective of human health and the environment for generations to come. Engineered barriers should be a last resort remedy. The term "engineered barrier" is synonymous with other terms commonly used to describe methods of protecting waste sites from long-term water infiltration (caps, covers, barriers, etc.). HAB Advice #174

\$10 million

Total additional DOE-ORP funding needed: \$90 million

Total additional Hanford cleanup funding (DOE-RL and DOE-ORP) advised for FY 2009 necessary to protect the environment, Columbia River resources and human health for present and future generations: \$199 million
(Non-cleanup work removed and funded from the appropriate accounts)

Sincerely,



Susan Leckband, Chair
Hanford Advisory Board

This advice represents HAB consensus for this specific topic. It should not be taken out of context to extrapolate Board agreement on other subject matters.

cc: David Brockman, Manager, U.S. Department of Energy Richland Operations Office
Shirley Olinger, Manager, U.S. Department of Energy Office of River Protection
Elin D. Miller, U.S. Environmental Protection Agency, Region 10
Jay Manning, Washington State Department of Ecology
Doug Shoop, Co-Deputy Designated Federal Official, U.S. Department of Energy, Office of River Protection
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Nick Ceto, Environmental Protection Agency
Jane Hedges, Washington State Department of Ecology
Doug Frost, U.S. Department of Energy Headquarters
The Oregon and Washington Congressional Delegations

END NOTES:

¹ DOE's own assessments of the relative prioritization which should be given to retrieving those wastes based on risks, said:

“If TRU waste retrieval operations do not occur, radioactive/hazardous waste will remain underground in deteriorating containers that have exceeded their design life potentially causing soil and eventually ground water contamination. There is a risk that ground water contamination could lead to radioactive/hazardous constituents reaching the Columbia River upstream of significant population centers....”

“There is increased risk to site workers...as the levels of contamination increase due to failing waste containers...The waste has been buried in containers that were not intended to be in the ground for more than twenty years.”

FY 1997 Mission Planning Guidance and Unit of Analysis Sheet (#183, 185, 189);
2nd paragraph quote from: MPG-17, DOE, Sec. 4.4 and 4.5; third quote from: MPG-16, also MPG-17 for RH-TRU.

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- ² The TPA requires DOE to retrieve 3000 m³ of Suspect TRU in 2008
- In 2008, DOE expects to retrieve 2,500 m³ (Briefing to Budget Contracts Committee [BCC] 2-12-08)
 - In 2009, the TPA requires DOE to retrieve 2,500 m³ plus the 500 m³ it will fall behind in 2008.
 - However, DOE only requested funding to retrieve 1,100m³ in 2009.
 - To come back into compliance with the TPA, DOE would need to fund retrieval of 1,900m³ more suspect TRU than it plans to do in 2009.

³ Briefing to BCC 2-12-08; page 8.

⁴ DOE reporting documented in: “Transuranic Waste at Hanford: Large Quantities Lost”, Heart of America Northwest, 2004. Available on www.hoanw.org. citing DOE’s “Buried Transuranic - Contaminated-Waste Data Information for U.S. Department of Energy Facilities (2000).”

⁵ 8,150 m³ per TPA milestone M-91-42.2.E are required to be treated by 12.31/08. 81 m³ of RH-mixed waste were in storage as of 2002 awaiting treatment per M-91-43. None of this waste has been treated and DOE has not funded the treatment facility for this waste, which is extremely radioactive as well as having uncharacterized hazardous wastes which may be flammable, ignitable, reactive or corrosive.

⁶ We are aware that \$30 million of that decrease in the Request for RL-13C compared to FY 2008 is a transfer of groundwater work from RL-13C to another PBS. However, the funding level for 2008 fails to include mixed waste treatment, or the RH-TRU/RH-mixed waste treatment facility.

⁷ The Board asks DOE to explain why Canister Storage Building maintenance and operation should cost over \$20 million per year. The building is designed to store spent nuclear fuel and vitrified waste with minimal surveillance costs. In contrast, Fast Flux Test Facility surveillance and maintenance will be brought down to \$6.5 million.

⁸ The shortfall for the Board is less than \$200,000.

⁹ DOE-ORP identified \$54 million more for bulk vitrification as a top priority for additional funds. The Board disagrees with this and recommends against any additional funding. The Board recommends deleting \$1 million from RL-13C and