

**200-Area End State Workshop
August 10-11, 2004**

Processing Facilities, Buildings, and Structures

Question: In order to develop some very specific tools and perspectives to assist in risk-balancing considerations associated with future risk assessments and remedial/closure decisions, the following questions were posed to solicit stakeholder input and values for process facility end states:

- What end state do you envision for the various classes of facilities (e.g., canyons, plutonium processing facilities, ancillary facilities, waste storage/treatment facilities) on the Central Plateau?
- How do you feel about leaving facilities in place (i.e., fully standing) versus demolishing them?
- Under what situations would you think it appropriate to remove, treat, and dispose of some or all of the waste within and/or under the facility or is consolidation and isolation of waste within the facility a viable option?
- If a canyon facility is left in place or is partially demolished, can additional waste be placed in it?
- How would the potentially high dose rates and hazards to workers encountered during cleanup activities affect these decisions?
- If data collection activities are purposely focused on defining the highest levels of contamination, how important is additional detailed characterization information in making these decisions? How does this change for different end states or hazards?

Input from Group 1

- We can't rely on institutional controls. The farther out in time you go, the less effective they become.
- Regarding ancillary facilities:
 - Distinguish if they are contaminated or not.
 - Demolish and remove them to avoid future maintenance costs.
 - Try to identify useful purposes for the uncontaminated facilities, although there is not likely to be any commercial demand for 200-Area buildings.
 - Many have reached the end of their useful life and it is not cost-effective to maintain them.
 - Demolish contaminated ancillary facilities and put the rubble waste into or adjacent to the canyons for disposal.
- Take care of worst facilities first before they cause groundwater contamination.
- What are the relative risks of the no-action alternative (i.e., no maintenance) for canyon disposition versus the alternative to collapse the structures and close them in place? (In the no-action alternative, water could leak inside the building and drive contamination to the groundwater.)
- Reduce the Hanford Site footprint by moving waste to the Central Plateau and consolidating it.
- It is acceptable to entomb the canyons with internal waste disposal.
- Fence the Core Zone, manage the risks, and do long-term stewardship.
- Reduce the size of the Core Zone as much as possible.

- The Core Zone will be contaminated for the foreseeable future. It makes no sense to demolish facilities and dispose of them in ERDF.
- Take down ancillary uncontaminated facilities and reduce the footprint.
- What is the half life of waste considered for disposal in the canyons? Is it 500 years? What about uranium and plutonium? Some minor amounts may be left in the canyons.
- If caps are protective/effective to prevent water infiltration, it should be OK to leave slab on grade even with waste sites below grade.
- How effective are the caps at protecting the groundwater and what is their lifetime?
- The public is entitled to participate in an EIS process to discuss waste inside buildings and surrounding waste sites in an integrated fashion that considers the cumulative impacts of all wastes disposed on site, rather than this “piecemeal” workshop process.
- Wastes left inside facilities must be treated the same as wastes outside.
- Where are the modeling results? They should be available to the public. People need to understand the risks before they can comment.
- Who would ever put a business out on the Plateau?
- How contaminated are the underground pipelines? (Some carried water, while others carried high-level waste or transuranic waste.) Getting rid of pipelines is part of reducing the footprint.
- More data is needed on how concrete behaves in a high-radiation environment (e.g., cracks, leaks). These workshops are premature. More information should be disseminated before holding workshops.
- Don’t sacrifice any workers to go into highly contaminated facilities. But if workers don’t clean them up, they could contaminate the public and the environment in the future.
- Does it further contaminate the environment to move wastes from a facility to ERDF?
- Preserve T-Plant as a historical museum if it’s not too contaminated.
- It’s OK to leave buildings full of grout if it is safe.
- The cost of full removal and disposal of a canyon looks pretty good considering the cost differential above collapsing the structure and closing it in place is only \$17 million (on the Canyon Facilities End State Alternatives poster).
- Leave canyons without caps to remind people that the Core Zone is a dangerous area.
- One participant hates the idea of putting caps on the canyons because it’s not worth the money. Collapsing the canyon structure and closing it in place is OK.

Input from Group 2

- What is the decision process for buried pipelines? Will there be public involvement?
- How good are the records about where the pipelines are and what they contained?
- We need a comprehensive, integrated picture of the whole Site cleanup with life-cycle cost analysis of all cleanup elements and tradeoffs between alternatives.
- What are the plans for the PUREX tunnels? They may not be as hot as people think they are.
- Would the canyons contain dry waste or liquid waste? (Dry waste only. Liquids would be pumped out and any heels in process vessels would be grouted.)
- What about the three evaporators in the 200 Area?
- Is there any limit on total curies for the Central Plateau?
- What are the relative worker exposures/industrial risks of leaving facilities in place versus demolishing them?
- Worker safety issues vary between the canyons, PFP, and the PUREX tunnels.

- PFP has thin sheet metal walls and a significant source term. Its end state should be slab on grade.
- DOE should not leave PFP standing in place with equipment inside it.
- We should determine how much could be done robotically.
- Plutonium is not likely to move into the food chain.
- Perhaps DOE should consider interim safe storage for the canyon facilities.
- Facility-specific criteria make sense (e.g., worker risk, cost, relative exposure).
- DOE should consider intermediate approaches for the canyons somewhere in between the no-action alternative and the full-removal alternative.
- When comparing canyon disposition alternatives, be sure to consider the benefits of life-cycle cost reduction and reduction in potential public dose.
- The no-action alternative for canyon disposition must include the cost of removing contaminated equipment from the canyon.
- Caps over the existing canyon structures would be huge. If the canyon structures were collapsed and closed in place, smaller caps would be needed and they would also cover the surrounding waste sites, which is an added benefit.
- Are we sure the canyon walls are still in good shape? (The canyon interiors would be grouted for waste immobilization as well as additional structural integrity.)
- What is the status of the old tank waste disposal grout vaults? Originally Ecology objected to putting radioactive waste into an uncontaminated site.
- Concrete porosity is an issue. What is the half life of the material to be grouted?
- Knocking down facilities with waste enclosed differs from knocking down empty facilities.
- Would the preferred alternative for U-Plant resemble an ERDF cell? (Not physically, but it would meet LDR/MTR)
- The drawing for Alternative 5 (Close in Place – Collapsed Structure) on the Canyon Facilities End State Alternatives handout is misleading. That cap is actually about 40 feet high, although it doesn't look that high in the drawing.
- Knocking a building down to slab would result in a more natural looking cap.
- Areas above the caps would have to be off limits for industrial uses.
- If PFP is demolished to slab on grade, we need to characterize waste beneath it.
- We need more data on facility inventories and risks.
- Could use crane to remotely move failed equipment on railcars in PUREX tunnels back inside canyon building and thereby avoid the need for a mile-long cap on the tunnels. Also, the tunnels do not have the structural integrity of the canyons.
- Do we need to remediate the soil beneath the tunnels?
- Is any monitoring done beneath the tunnels now? (No.)
- We need to do more characterization beneath the tunnels and an assessment of their structural integrity.
- We need specifics on the source terms to decide between remote and contact cleanup operations.
- We could send a robot in to map the contamination in the tunnels.
- Regarding the ancillary facilities, we need to consider possible presence of asbestos, radionuclide/hazardous chemical inventory, structural integrity, purpose, filters/stacks, worker risk, and impact to the comprehensive assessment.
- What to do with the coal-fired power plant depends on the end state of the Core Zone.
- We could send remote crawlers through the underground pipelines.
- We should do an inventory of all pipelines in the 200 Area and then search historical records for information on materials of construction, service uses, depth, and past leaks.

- Pipelines should be treated as separate entities and not tied to any specific facility.
- We need to assess the extent of soil contamination related to pipelines.
- Need consistent characterization and closure requirements for all pipelines.
- Look at all infrastructures, not just pipelines.
- We should do systematic interviews with retired workers to capture as much of their historical knowledge as possible.

Input from Group 3

- Cost is only one of the CERCLA criteria and it should not be shown in bold font on the Canyon Facilities End State Alternatives poster.
- Are there criteria for waste types that might be disposed inside canyons?
- How much work and risk are involved in collapsing the structure and closing it in place for any of the canyon facilities?
- The term “disposal” is relative if you’re just hauling waste down the road to ERDF.
- Do the various canyon end state alternatives require different amounts of material for caps? (Yes. We could also put debris/rubble under the caps.)
- Is the necessary equipment (e.g., a crane) available for the various canyon end state alternatives?
- If all the canyons were demolished and moved to ERDF, would the Core Zone footprint decrease?
- The collapsed structure closed in place looks good for the long term.
- Is the waste in acceptable form for disposal in a canyon facility?
- How much TRU will be left in U-Plant? (Not a significant amount.)
- Leave the canyons as is to let the beta and gamma decay for 200-300 years.
- There is no precedent for handling massive concrete canyons with thick walls.
- Will the use of saws on the concrete walls result in cracks in the remaining structure?
- Wouldn’t hurt to leave old lab facilities, but must take down stacks and put caps on the contaminated sand filters.
- The concrete in PFP isn’t secured; it’s just resting on metal. The pipe gallery beneath is contaminated. The ventilation system is contaminated and must be sealed up.
- What is the deterioration rate of facilities left as is? Canyons are more structurally sound than other 200-Area facilities.
- Consider the fact that global climate change may result in increased precipitation at Hanford in the future.
- We need a monitoring system to ensure caps are performing and a plan to address potential problems that could occur.
- Worker safety is important, but Hanford workers have a good track record of doing work safely.
- “Cocooning” the canyons is not an option under the TPA. These facilities must be removed. (Reactor interim safe storage is being done under the TPA and the CERCLA process.)
- Either entombment with internal waste disposal or collapsing the structure and closing it in place are acceptable end state alternatives for the canyons. Will there be leachate monitoring?
- Will we ever go back to the Core Zone (to finish cleanup with improved technology after letting contamination decay in place) and reduce the footprint? DOE should consider maintaining above-ground structures.

- The canyon buildings are in pretty good shape, but we must protect the roofs for 300 years. We need to monitor natural attenuation in the canyons and other contaminated buildings. Otherwise, there are no real risks.
- Consider maintaining part of the 200 Area as part of the historical record (e.g., leaving T-Plant as an Historical Museum).
- Take down all pre-fabricated uncontaminated structures since it's relatively inexpensive to do this.
- Remember that construction, surveillance, and maintenance activities also entail worker risk, and that surveillance and maintenance activities get more and more risky as time goes by.
- For demolition debris from uncontaminated facilities, use the most cost-effective option that meets regulatory requirements.
- Shrink the footprint as much as possible.
- Reduce the profile by putting wastes into the underground tunnels and grouting them to fill any void spaces.
- We need an algorithm for landscaping the Core Zone, with decision criteria for selecting the preferred alternative, a comprehensive closure strategy to tie things together, and consistency to aid decision-making.
- PFP is a disaster waiting to happen and needs to be demolished. But the canyons don't pose as much risk, and demolishing them is a huge undertaking.
- The regulators are concerned about protecting both the workers and the public, but they favor the TPA bias toward cleanup. We need to ensure the path forward for cleanup and not abandon difficult problems that we encounter.
- What about RCRA TSD facilities (e.g., cribs)? Need to be consistent on how they are handled.
- It is not appropriate to bring in wastes from other locations and put them into the canyons unless the canyons are considered disposal facilities and get licensed.
- We must maintain a level of knowledge regarding the wastes that might be moved into a canyon facility for disposal (e.g., no suspect TRU).
- Keep in mind that future risks to workers and the public might not be monitored like we monitor the current work force.

Additional input received via email:

The workforce

Worker safety has always been a consideration during Hanford's operating years as well as the years of characterization and remediation. There is a dedicated workforce at the site who not only perform the work, but reside in the community and therefore have a vested interest in the outcome. Recent contracting practices attempted by the Dept. Energy to save money would seem to favor a transient workforce who would be here only as long as work exists, but move on to another site when work was complete. A transient workforce is NOT in the best interests of the Tri City community and economy and should be discouraged. Use the experienced, trained, and dedicated workforce that resides in this community.

Disjointed remediation

Several comments were made regarding the piecemeal approach for remediation that is presented to the public; i.e, comments/reactions are requested for one or a few projects at a time without the benefit of the synergistic overview that would allow one to see how each piece fits together into the "big picture." Some of this perception of piecemeal results from DOE's project organization, with different projects often managed by different contractors

with different performance objectives and financial incentives. There needs to be someone who oversees the total cleanup from a systems engineering perspective that is aware of the synergism among the various activities that are both ongoing and planned for the sum total of all the remediation projects. NASA's space program would be a good example.

Continuing Access to Decision Making Information

Information and data used to make key decisions needs to be made available to stakeholders and the public and this information needs to be maintained in a format such that it is always easily accessible to the public and stakeholders. The example presented at the workshop of some recovered data on health physics from the 1960s that was found to be in punch-card format underscored that need.

Data from Cancelled Projects

For whatever reason, there is a tendency to purge data/information gathered from projects that have been cancelled, without regard to possible future applications of this information for ongoing and future projects. Two examples come to mind: 1) the shutdown of the Grout Treatment Program in the early 1990s, and 2) the termination of the Basalt Waste Isolation Project in 1987-88. Both programs produced valuable data and samples, but once the projects were terminated, the data was purged and difficult to recover. These data and reports were gathered at taxpayer expense and need to be kept available in some kind of accessible archival storage.