

## Hanford Advisory Board Draft Advice

**Topic:** Central Plateau Cleanup Completion Strategy

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**Originating Committee:** River & Plateau

**Version #1: Color:** pink yellow green buff purple blue goldenrod

### Background

The U.S. Department of Energy (DOE) recognized the need for a comprehensive cleanup approach to address the finalization of cleanup at Hanford. This effort started with the Hanford Cleanup Completion Framework which describes completion of cleanup activities along the River Corridor, and the division of the Central Plateau into Inner and Outer Areas. The next step in the process, the Central Plateau Cleanup Completion Strategy (*Cleanup Strategy*), which shrinks the Inner Area even further and describes DOE's approach, has been presented to the River and Plateau Committee at several of the recent meetings, and to the Hanford Advisory Board (Board) at the June Board meeting. In addition, a committee of the whole workshop was held in October to facilitate a detailed discussion about the *Cleanup Strategy*. At the November Board meeting, a Sounding Board was held for HAB *Cleanup Strategy* concerns. What follows is a compilation of the issues and concerns about the *Cleanup Strategy* expressed at those meetings; and advice to the Tri-Party Agencies (TPA Agencies) regarding these matters.

### Commentary

In the *Cleanup Strategy*, DOE proposes the use of four Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Records of Decision (RODs) units for the Inner Area. EPA and Ecology have asked for feedback from the Board on the limited number of decision units. It is important to consider the trade-offs connected with the number of RODs. The bigger the ROD, the more complicated it is for the regulators and the public to evaluate and to understand. However, a larger area ROD provides a more comprehensive cleanup picture and more consistency across the site.

There are areas where the waste sites are pretty well understood and there is agreement among the TPA Agencies on the remedy. In other areas, the TPA Agencies do not agree on a remedy and not much is known about the waste sites. When the later type of waste areas are packaged with the waste areas that are understood in large contiguous areas, the result may postpone a remediation decision (ROD) from being made and prevent work from progressing on some of the easier sites.

DOE's *Cleanup Strategy* identifies principles that would be universally applied across the large contiguous waste management areas. There are important differences between the 200-West area and the 200-East area that would influence the set of cleanup levels protective of groundwater. By trying to apply consistent principles, it seems that DOE is trying to apply a comprehensive cleanup effort evenly across the Central Plateau. However, in the *Cleanup*

*Strategy* DOE appears to be somewhat pre-decisional about how they are approaching types of waste sites. When DOE was proposing completing fewer decision documents, it seemed that waste-site evaluation was taking place on a conceptual level, rather than based on characterization specific to a particular site. The Board has always preferred that DOE apply strict CERCLA and Resource Conservation and Recovery Act (RCRA) methodology to specific waste sites because of site-specific issues.

The Board recommends that, no matter what approach is finally adopted for the Central Plateau, DOE should embrace cumulative effects analyses that aggregate and evaluate the net impact of the total of the cleanup decisions that are being undertaken, rather than proceeding waste site by waste site. The recently released Draft Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington (TC&WM EIS) clearly demonstrates the value of understanding the potential overall impact of DOE's cleanup decisions. An estimate of the cumulative risk of the sum of DOE's future actions should be an integral part of the cleanup planning process.

The *Cleanup Strategy* would combine cleanup decisions, though some waste disposal units might need more characterization data or there might be TPA Agency disagreements about how much characterization is enough. This would delay cleanup decisions that could be made now. There is Board concern with the use of the comparison of the proposed cleanup of the Outer Area to that which was done in the River Corridor. There were different waste streams generated or disposed of in those disparate parts of Hanford and using the River Corridor approach may not be adequate for the Outer Area. There was the assumption that when the surface cleanup was done along the river, "nothing will reach the River," but that assumption may not be valid. The waste sites in the Central Plateau are quite different from the River Corridor, and the HAB recognizes that there are opportunities where the TPA can confidently proceed with enough characterization and waste site information.

There has not been enough characterization of the deep vadose zone (below 15 feet) incorporated into the *Cleanup Strategy*, especially in and around the tank farms. The HAB is concerned about potential future impacts from the deep vadose zone to groundwater and to the confined aquifer in 200 East. If there is not an accurate characterization data set, DOE cannot develop an accurate model or determine the potential level of risk to human health and the environment, particularly in regard to pre-1970 burial of transuranic elements.

The *Cleanup Strategy* includes defense-in-depth for protection of the vadose zone and groundwater, but the HAB has expressed preference for treatment and active remedies. The *Cleanup Strategy* should not rely as much on Institutional Controls (IC) and measures that require waiting for contamination to reach the groundwater. Past HAB advice has encouraged DOE to pursue treatability studies and new technologies to apply to the deep vadose zone

contamination problem. The HAB's concern is the lack of focus on dealing with and protecting the Vadose Zone that may extend to creation of a separate ROD(s).

DOE is proposing dealing with burial grounds under EPA guidance for landfills. DOE differentiates between waste sites and burial grounds because of the "presumptive remedy." While landfills at military bases in Washington State have used the presumptive remedy, burial grounds and landfills are different. While it is not typical to dig up and characterize a landfill, which is relevant to some of the disposal sites on the site, the majority of the Hanford burial grounds and other solid waste sites contain dangerous materials that require thorough characterization. Preference for a retrieve, treat, and dispose (RTD) remedy should be considered. One of the biggest concerns may be about the pre-1970 burial grounds, since these are difficult to characterize, and seem to be escaping remediation through a regulatory limbo.

DOE proposes to collapse the canyon structures to be protected with a barrier cap. A part of this proposal is to enclose nearby waste sites under this barrier in lieu of RTD remediation. The HAB does not believe that this is a protective remedy and has concerns about DOE's reliance on caps as a long-term remedy. There is already so much contaminant material in the soil that exceeds expected protective values (per TC&WM EIS modeling) that leaving any more relatively easy to remove and treat contaminant is not a reasonable decision.

Ecological protection and exposure scenarios (whether for a traditional industrial worker or for someone driving over an area to do IC management) have an important role in indicating whether there is a need for an active remedy. If the exposure scenario is set too low (not appropriate to ensure human health and ecological protection), more waste can be left in place and still meet the exposure limit requirement.

Washington State's standards forbid use of an industrial exposure scenario where there is a reasonable prediction that future use will include anyone other than industrial site workers within buildings or on asphalt surfaces for more than forty hours per week, or where contamination will spread to adjoining unrestricted areas. DOE has not met the burden of showing that designating the entire 200 West and 200 East areas as a contiguous waste site will meet this industrial scenario, as opposed to using specific waste management areas. Further, DOE proposes to utilize a new exposure scenario that would allow even more contamination to remain by assuming that the future site users for the entire inner Central Plateau area will be monitoring or maintenance workers or an occasional intruder. This unlikely scenario, especially at a distant future, would not meet Washington State's standards.

The HAB is concerned about the current plans for long term stewardship (LTS) in the Inner Area. DOE talks about federal control of Hanford "in perpetuity." There should be more transparent planning made available about how this would happen over the tremendously long (~10,000

year) period required for radioactive decay of long-lived actinides. Is the potentially long “Interim” storage of high level waste (without the Yucca Mountain repository) being considered? The HAB would like to know if a cost and schedule had been developed for accomplishing the cleanup strategy, including LTS and national resource damage assessment (NRDA) concerns and costs. We urge that DOE make its updated LTS plan publicly available as early as possible.

#### Draft HAB Advice

- The Hanford Advisory Board (Board) urges DOE to consider the implications of the limited number of Decision Units proposed in the Central Plateau Cleanup Completion Strategy. We suggest that decision units based on major process facilities (U-Plant, REDOX, etc., and their associated facilities and disposal sites) may be a more reasonable option. Perhaps a number of decision units between these alternatives would be appropriate. We urge DOE to consider each waste site to be cleaned up separately.
- There has not been enough characterization of the deep vadose zone, particularly within the Central Plateau. The Board recommends that DOE undertake a much more serious view of the importance of the contamination mass contained in the vadose zone. The future cost of continued cleanup of this groundwater contamination source and potential natural resource damages costs should be evaluated carefully. The HAB believes that the vadose zone has enough importance that a separate ROD should be assigned to the vadose zones under each of the 200-West and 200-East Areas. We suggest the use of the “Hanford Advisory Board – Groundwater Values Flowchart” will help guide groundwater cleanup decisions. DOE should ensure that sufficient and additional funding is directed to address the Vadose Zone contamination problem.
- The Board advises DOE to reconsider the concept of covering waste sites adjacent to canyons and other structures to be capped in other than very special circumstances. Only waste sites that through characterization can be demonstrated to contain no contaminant that might endanger the vadose zone or groundwater should be considered for cover (see HAB Advice #174, “Considerations for Barrier Application”).
- Burial grounds in the Central Plateau need the attention and characterization that the dangerous wastes potentially contained there deserve. The HAB urges DOE to drop the presumptive remedy approach, and give these waste sites proper attention. In some cases it may be less costly to simply Remove-Treat-Dispose the material in a burial ground than to spend money to fully characterize the site. Unlined trenches and cribs or other liquid waste discharge units need actual and adequate characterization to determine their

contents, and to determine the extent of their current and future threat. These are not analogous to closing landfills. The “presumed remedy” for these sites should be retrieval and treatment to the extent practicable in keeping with Washington State’s waste management and remedy priorities. Those priorities place an emphasis on retrieval to the extent practicable, before relying on caps. The Board urges DOE to progress through the cleanup of Hanford with a “RTD if possible” attitude, falling back to IC’s and caps only where RTD is not possible (Advice #173, “Central Plateau Values” and the corresponding flowchart). This approach will make LTS, Natural Resource Damage Assessment and federal control issues much smaller in magnitude and much easier to deal with.

- The Board believes the use of exposure scenarios based on the Land Use Plan is inappropriate. We suggest that DOE add more exposure scenarios, and continue to use the standard 40-hours/week Industrial worker exposure scenario as the standard for specific waste management areas where the only reasonably foreseeable use is industrial. Even for these areas, analysis must show that long-term intrusion or movement of contaminants is not likely. For other areas, remediation must be based on protecting the sensitive population that may receive the reasonable maximum exposure, including from use of resources per the Treaties of 1855. Remedies must be designed to meet standards which protect sensitive populations from the likely failure of institutional controls (see report of the Exposure Scenarios Task Force, December 2002).
- Unlined trenches and cribs utilized after the effective date of RCRA should continue to be monitored and subject to closure pursuant to RCRA, rather than being transferred into CERCLA. EPA has far fewer resources to oversee closure than the Washington State Department of Ecology. RCRA requires more extensive monitoring (including early soil column monitoring and monitoring for purposes of tracking migration, rather than monitoring solely to reach remediation decisions), and more characterization than CERCLA.
- DOE is urged to complete its updated long term stewardship plan and make it publicly available as soon as possible (Advice #141, “Long-Term Stewardship Program Plan”).