



Interagency Management
Integration Team (IAMIT)
Charter

Public Involvement Schedule

Public Workshop Outcomes
June 23 - 24, 2004
August 10 - 11, 2004
May 19, 2005

Background Material

Submit Comments/
RBES Mail Box

End State Vision

Hanford Site End State Vision
Home

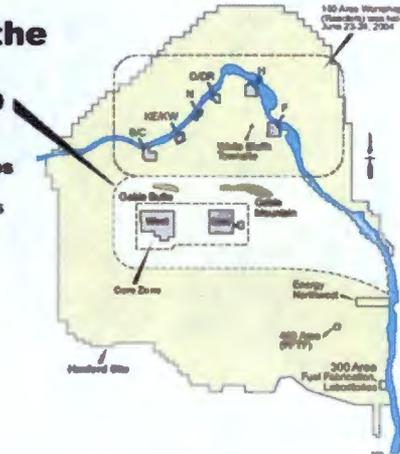
Hanford Home Page

200 Area End State Workshop

August 10 - 11, 2004

Focus of the 200 Area Workshop

- Break Out Groups**
- Central Plateau
Uses and Activities
 - Buried Waste and
Contaminated
Soil Sites
 - Legacy Facilities



This second in a series of three workshops to clarify a vision for the Hanford Site, focused on the 200 Area or central portion of the site. The handouts from each overview presentation are linked from the meeting agenda.

- [Meeting Agenda](#)
 - [Opening Session Graphics](#)
- Subject of Each Breakout Session:
 - Central Plateau Uses and Activities (Exposure Scenario Development)
 - [Discussion Questions](#)
 - [Graphics](#)
 - [Summary of notes taken](#)
 - [Verbatim bulleted notes](#)
 - Buried Waste and Contaminated Soils
 - [Discussion Questions](#)
 - [Graphics](#)
 - [Summary of notes taken](#)
 - [Verbatim bulleted notes](#)
 - Process Facilities, Buildings and Structures
 - [Discussion Questions](#)
 - [Graphics](#)
 - [Summary of notes taken](#)
 - [Verbatim bulleted notes](#)

At the end of the workshops, participants were asked again to write down comments on any aspect of the workshop, particularly lessons learned. You will find these comments in two forms:

- [Comment matrix](#)
- [Comment summary](#)

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For questions or comments, please send a message to RBES@rl.gov
URL: <http://www.hanford.gov/docs/rbes/6-10.CFM>
Last Updated: 07/19/2010 14:03:00





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TPA-Sponsored End States Workshop #2 Agenda

Purpose: Continue the End States public dialogue and portray the desired end states for the 200 Area of the Hanford Site

Venue and timeline: CIC (WSU library) - 2nd Floor conference room
2770 University Drive, Richland
August 10: 8 a.m. - 4:30 p.m.
August 11: 8 a.m. - 12:00 p.m.

Agenda:

August 10

8:00- Orientation: Welcome, Opening Comments, Participant Introductions
8:15 [Overview of the End States Development Process](#)

8:15- [Brief overview of the notes/results from the 100 Area Workshop](#)
8:30

Brief portrayal of site-wide current configuration of contaminants and current end state related decision making processes, analyses and activities (background information for all 3 breakout groups)

- 8:30-
9:40
- [Overview of 200 Area History and Challenges](#)
 - [Tank Closure EIS and the opportunities for public comment as part of that process](#)
 - [Exposure Scenarios Task Force Recommendations and the 7-Point Central Plateau Risk Framework](#)

9:40-10 Break
Set up group discussions at three stations

- 10-10:15
- Central Plateau Uses & Activities (Exposure Scenario Development)
 - Buried Waste and Contaminated Soil
 - Processing Facilities, Buildings, and Structures

Groups to introduce themselves to each other and to their moderators

10:15- 1st Breakout - one group at each station
11:45

11:45- Lunch
12:45

12:45- 2nd Breakout - rotate groups to other stations
2:15

2:15- Break
2:30

2:30- 3rd Breakout - rotate groups to other stations
4:00

4:00- Close out the day
4:15

4:15 Side Discussion of 100 Area Updates/Risk-Based End State variances as a result of the previous workshop for interested parties

August 11:

- 8:00-8:15 Overview of the day
- 8:15-9:00 Agencies: "What we've heard" from Day 1
- 9:00-10:15 Attendee feedback and discussion on "What we've heard"
- 10:15-10:30 Break
- 10:30-11:30 Additional discussions
- Path Forward
- 11:30 am
 - Next workshop dates, topics, invitations
 - Recommendations re: go or no-go public meetings Notes from this workshop to be reviewed at next workshop
- 12 noon Wrap-up

For questions or comments, please send a message to RBES@ri.gov
URL: http://www.hanford.gov/docs/rbes/8-10_agenda.cfm
Last Updated: 07/19/2010 14:03:12



200 Area End State Work Shop



August 10-11, 2004
Shirley Olinger



Welcome to the Second Workshop To Discuss Hanford End States

- *100 Area Workshop Held June 23 and 24th*
- *Today's workshop is on the 200 Areas*
- *300 Area Workshop to be held in the future
realigning with the City of Richland study and the
focused feasibility study on uranium in the 300 Area*



Drivers

- *DOE and the Regulatory Agencies are faced with a number of near term cleanup decisions and would like public, stakeholder and Tribal input*
- DOE would like to articulate end states as accurately as possible in near term acquisitions (2006)
- The Tri-Party agencies created a Hanford End States IAMIT to assist in developing a clear picture of the Hanford site when cleanup is complete.
 - A three dimensional description of the site (i.e., air, surface, soil/groundwater)
 - Illuminating structures, operations or waste left on-site, as well as contamination sources, pathways, expectations for land use and institutional controls at the conclusion of Hanford cleanup.



Background

Numerous public interest initiatives have provided perspectives on Hanford end states. These include the

- Future Site Use Working Group (FSUWG) (1992),
- the Tank Waste Task Force (1993),
- NEPA activities associated with the Comprehensive Land Use Plan (CLUP) (1999), and the
- Exposure Scenarios Task Force sponsored by the Hanford Advisory Board (2002)



Looking Forward

- These initiatives identified a range of acceptable end states for the Hanford site.
- More detailed end state definition is needed
 - to better focus remediation decisions and
 - support the many key decisions that need to be made in the next several years.
 - support near term acquisitions(2006)
- *The intent of the agencies is to build upon the principles and outcomes of these earlier public processes as well as add detail and clarity for cleanup.*



Process Overview

- Hold a workshop to provide background information and have focused discussions on pertinent questions
- Summarize results and make available for review and comment on website
(http://www.hanford.gov/docs/rbes/ES_Index.cfm)
- Use information to revise DOE's Risk Based End State Vision for Hanford
- Hold Public/stakeholder meeting(s) (early fall)
- Consider input received as Tri-Party agencies make cleanup decisions in the 200 Areas



Today's Focus

- Several Questions are being posed to solicit your input and values
- These questions are associated with the following three breakout groups:
 - Central Plateau Uses & Activities
 - Buried Waste and Contaminated Soils
 - Process Facilities and Buildings



Central Plateau Uses & Activities (Exposure Scenario Development)

Based on the possible post-cleanup land uses, the following end state related questions (primarily focused on the time frame of 50 years into the future and beyond) can be discussed:

- What **range of activities** could workers and/or visitors be involved in within the core zone?
- Outside the core zone?
- Should other alternative activities (beyond those consistent with the assumed land uses) be considered for comparison or other purposes?
- Based on the desired land-use and exposure scenarios, what types of **institutional controls** are appropriate, and over what time frames?



Buried Waste and Contaminated Soils

For **Solid & Liquid Waste Sites End States** CERCLA requires that decisions be made using 9 criteria. In weighing these criteria:

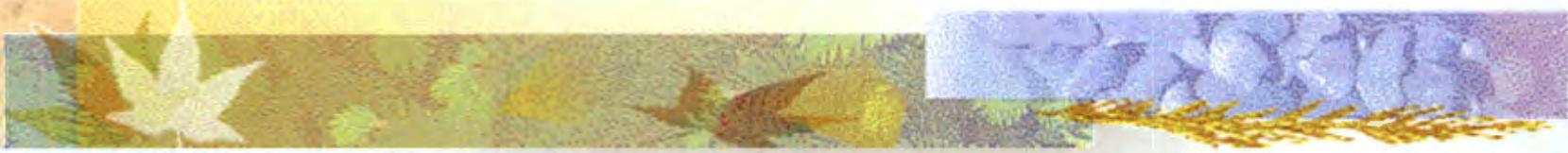
- If waste is left in place under an engineered barrier, what factors affecting public acceptance must the Tri-Parties consider?
- If waste must be removed for treatment and disposal, what factors affecting public acceptance must the Tri-Parties consider?
- What other options should be considered by the Tri-Parties and when is it appropriate to consider them?
- How would these considerations change depending on location inside or outside the core zone and could these decisions affect how the core zone is defined?
- 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?



Processing Facilities, Buildings, and Structures

For Contaminated Facility End States:

- What end-state do the stakeholders envision for the various classes of facilities on the Central Plateau?
- If facilities are left in place (i.e., fully standing) versus demolished and removed, what factors affecting public acceptance must the Tri-Parties consider?
- 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 and what factors must the Tri-Parties consider regarding consolidation and isolation of waste within the facility to make it a viable option?
- If a canyon facility is left in place or is partially demolished, can additional waste be placed in it? What factors must the Tri-Parties consider?
- How would the dose rates and hazards to workers 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?



Summary

- *We want to*
 - *Build on what we have heard in the past*
 - *Focus on 200 Area specific cleanup questions*
 - *Hear public, Tribal and stakeholder expectations on the kind of activities that might occur in the 200 Areas in the future*

Overview of 100 Area Workshop

John Sands

Discussion Topics

- Should the reactor blocks be moved to the Central Plateau? If so, when?
- Should the N Area Sr-90 plume be monitored or remediated?
- Should river pipelines be removed or left in place?
- Are current waste site interim remedies sufficient to be final remedies?
- What post cleanup activities do you see for the 100 Area?

Reactors

- B Reactor mostly favored as a museum
 - Work needed to find suitable caretaker
 - Tribal participants wanted B reactor removed when safe to do so
- All agreed to allow reactors to be cocooned and left up to 75 years for radioactive decay, however opinion split on final end state of reactors
 - May prove safe to leave
 - Serve as reminder of Hanford site
 - Move to Central Plateau after sufficient radioactive decay
 - Do not presume technology
 - Avoid one piece removal to minimize environmental impact

N Area Sr-90 Groundwater Plume

- Opinion split on end state of Sr-90 plume
 - Monitor and impose institutional controls until contaminant decays to acceptable levels
 - Clean it up by whatever means necessary
- More technical data needed

More information needed to make recommendation on Reactor River Pipelines

- Some participants preferred removal
 - Considered trash
 - Short term ecological damage (i.e. salmon spawning grounds) okay
- Others said if the removal does more harm to workers and the environment than the risk posed from the pipelines than it would be okay to leave
 - pipelines should be stabilized to minimize future physical hazard of pipe breaking off and going downstream

General consensus that current waste site cleanup would be adequate as final remedy

- Unrestricted surface use
 - Dig up to 15 feet
 - Dig further if needed to prevent future groundwater contamination from irrigation
 - Institutional controls will be required to prevent digging below 15 feet and groundwater consumption until drinking water standards met.

100 Area Post-Cleanup Activities

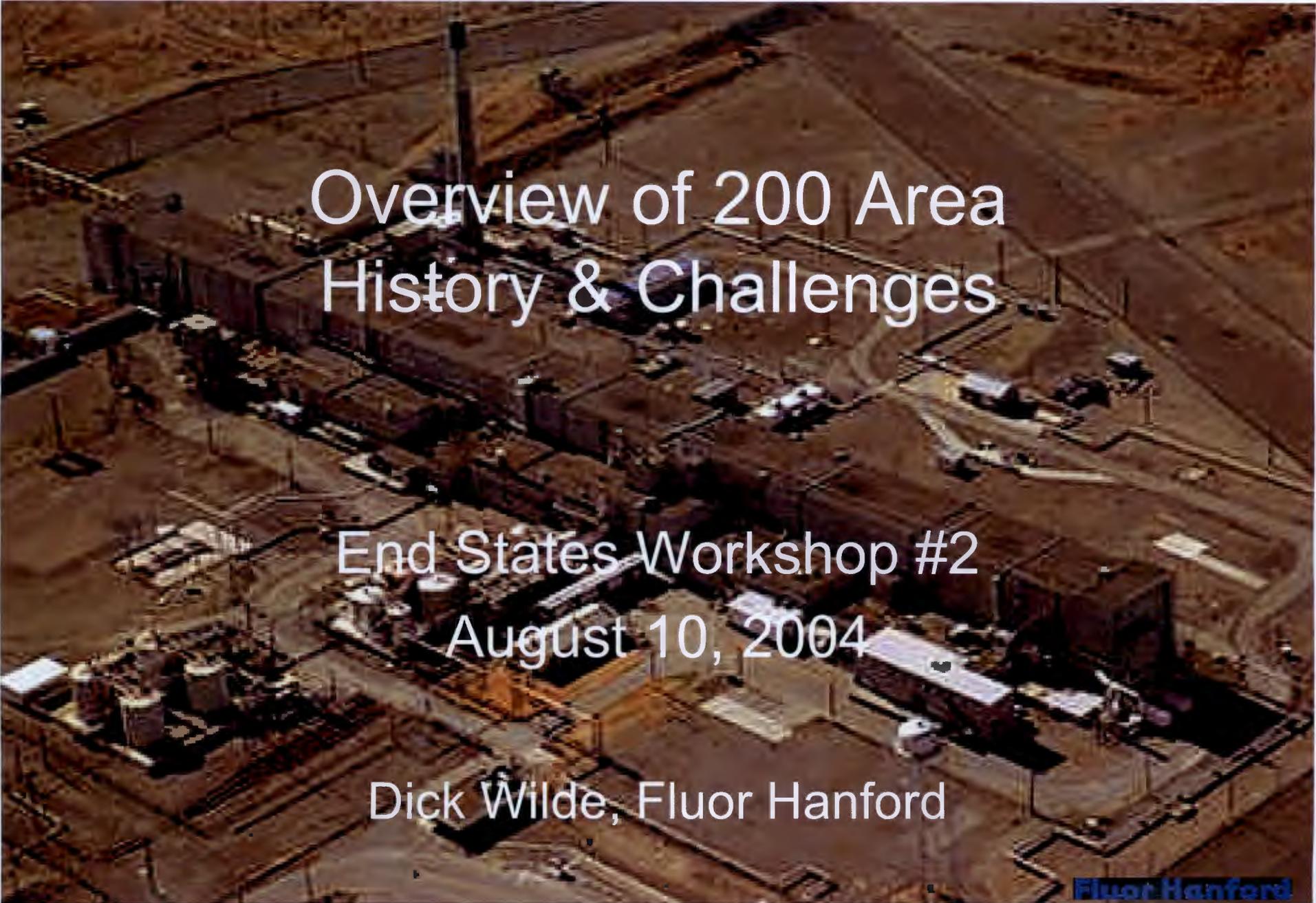
- Near term (~50 years) activities are consistent with conservation and preservation (National monument) land use as long as Federal entity is in control
 - Preserving shrub steppe habitat
 - Resident ranger
 - Boating
 - Fishing
 - Hunting
 - Swimming
 - Hiking

100 Area Post-Cleanup Activities

- Long term or after a Federal entity no longer controls the land, a broader range of activities should be evaluated for purposes of exposure scenarios development and remedy selection
 - Same as near term activities
 - Residences
 - Hotels with swimming pools
 - Agriculture
 - Oil and gas leasing
- These broader range of activities are thought to inevitable to land near a monument but were not necessarily endorsed for future land use planning

What will be done with the Input?

- Reactors (except B)– Input will be reflected in the deliverable to the regulators due in September 2005 to submit an engineering evaluation for final reactor disposition
- Sr-90 plume – Continue CERCLA process including public participation
- B Reactor – This information will be reflected in submittal of the final configuration determination to EPA due September 2005. DOE is looking at delaying decision as long as it does not impact River Corridor contract.
- Reactor pipelines in river – This information will be used in the engineering evaluation for the river pipelines due to the regulators in July 2005
- Activities – will be reflected in the development of exposure scenarios for the River Corridor risk assessment.



Overview of 200 Area History & Challenges

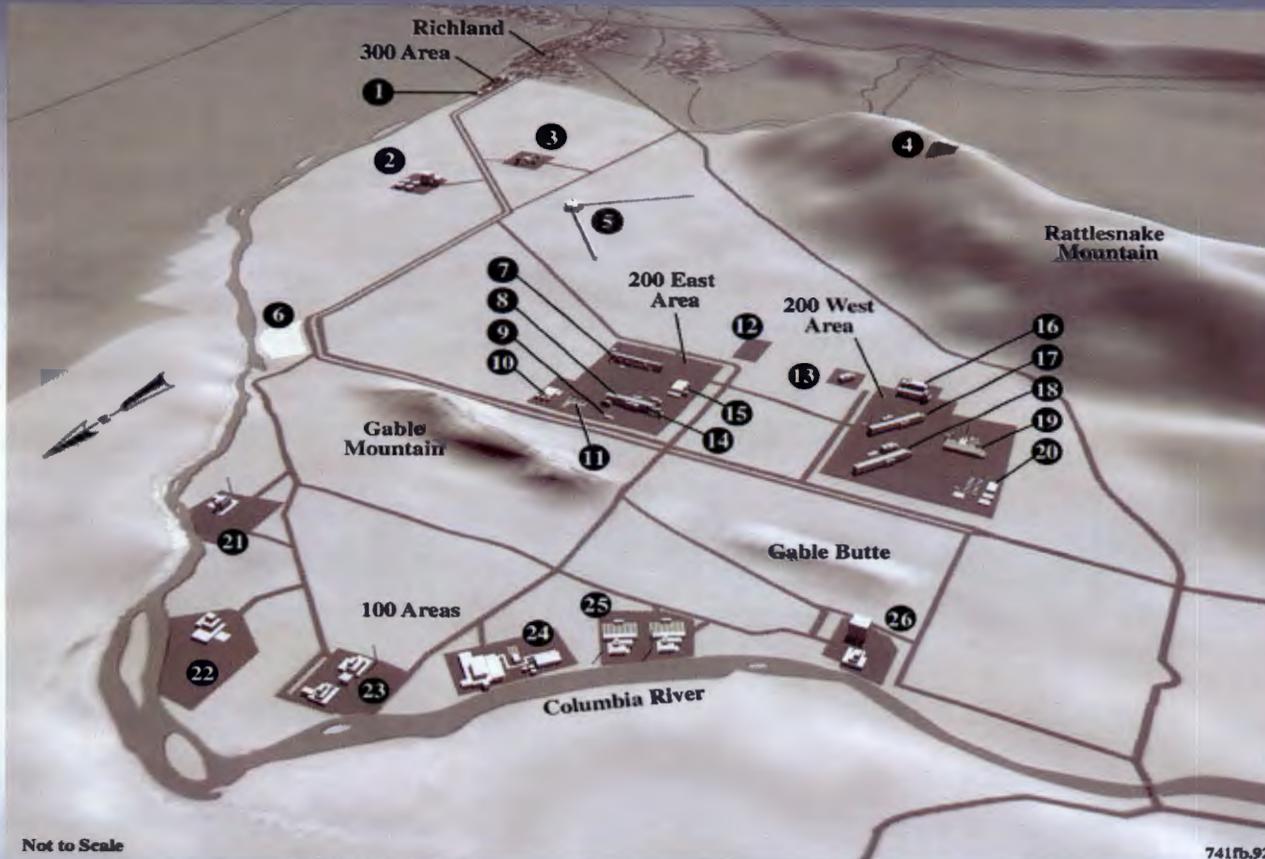
End States Workshop #2
August 10, 2004

Dick Wilde, Fluor Hanford

Fluor Hanford



Overview of 200 Area History & Facilities

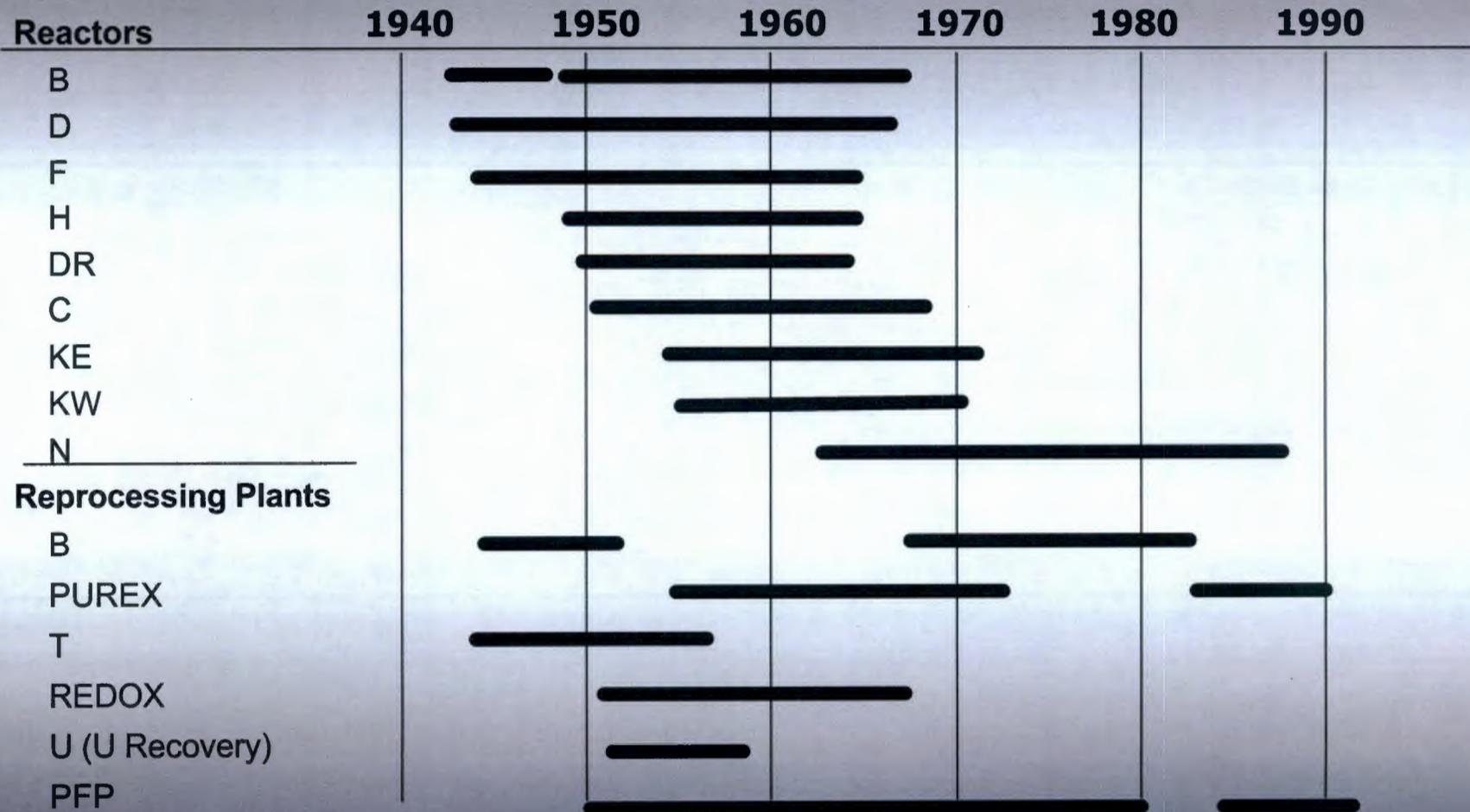


Not to Scale

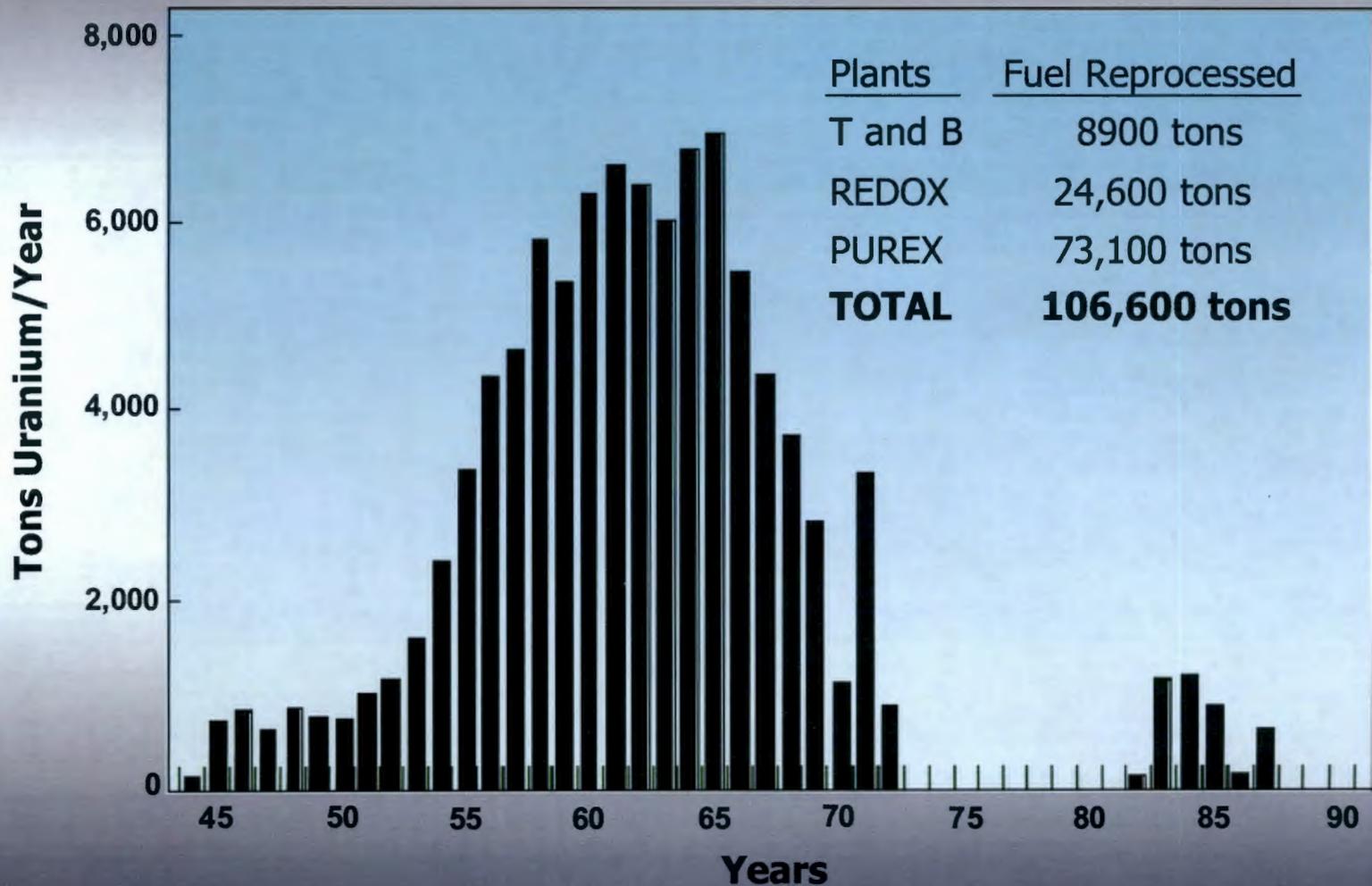
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- | | |
|---|---|
| 1. 300 Area Liquid Effluent Treatment Facility | 14. Waste Encapsulation and Storage Facility (WESF) |
| 2. Commercial Operating Nuclear Power Plant | 15. Canister Storage Facility |
| 3. Fast Flux Test Facility | 16. Reduction-Oxidation (REDOX) Plant |
| 4. Observatory | 17. U Plant |
| 5. Laser Interferometer Gravitational Wave Observatory (LIGO) | 18. T Plant |
| 6. Old Hanford Townsite | 19. Plutonium Finishing Plant |
| 7. Plutonium-Uranium Extraction (PUREX) Plant | 20. Waste Receiving and Processing (WRAP) Facility |
| 8. B Plant | 21. F Reactor |
| 9. Prototype Surface Engineered Barrier | 22. H Reactor |
| 10. 200 Area Liquid Effluent Treatment Facility | 23. D and DR Reactors |
| 11. Submarine Burial | 24. N Reactor |
| 12. U.S. Ecology Commercial Solid Waste Site | 25. KE and KW Reactors; Cold Vacuum Drying Facility |
| 13. Environmental Restoration Disposal Facility (ERDF) | 26. B and C Reactors |

Operation History for Hanford Facilities



Uranium Fuel Reprocessed at Hanford



Average Liquid Volumes from Reprocessing Plants in the 200 Area



T and B Plants (BiPO₄)

- 1 to 1.5 tons of spent fuel/day
- ~ 4000 gal/ton

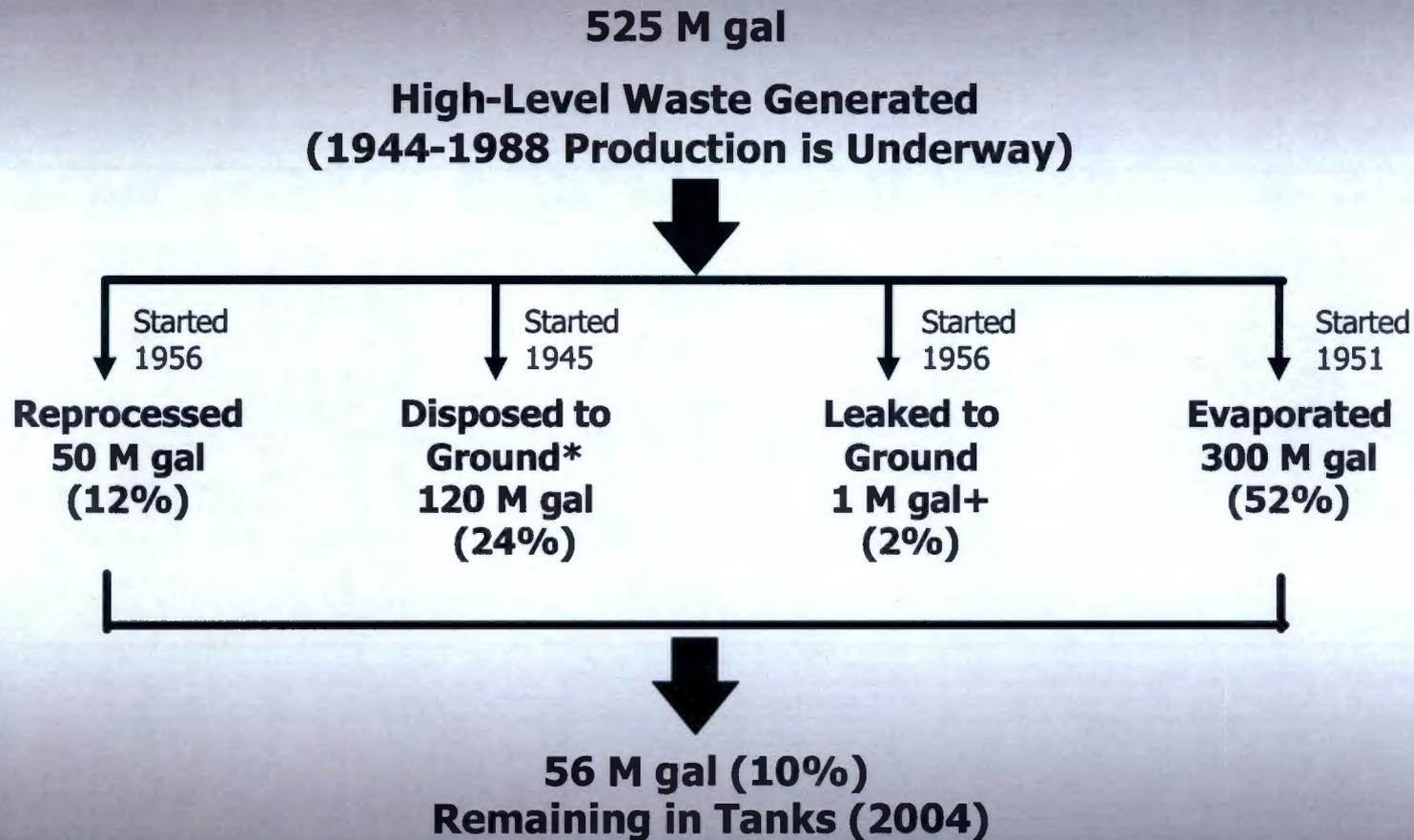
REDOX Plant (hexone)

- 3 to 12 tons of spent fuel/day
- ~2000 gal/ton

PUREX Plant (TBP)

- 10 to 33 tons of spent fuel/day
- ~500 gal/ton

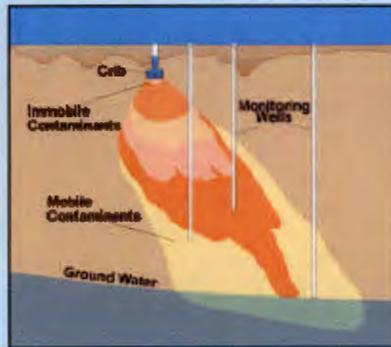
History of Hanford Tank Waste



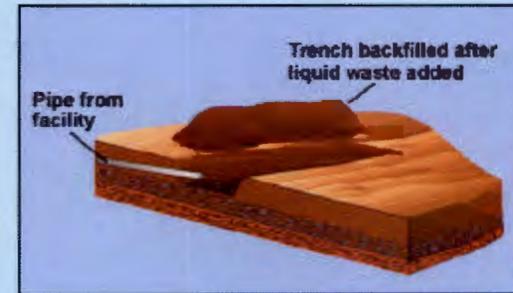
**After radionuclide scavenging or cascading. Planned liquid releases to the ground ceased in 1997*

Methods of Planned Liquid Releases to the Ground

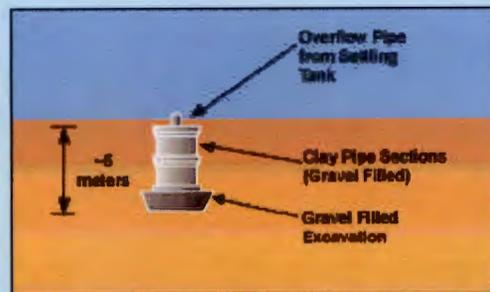
**Cribs
1944-1990s**



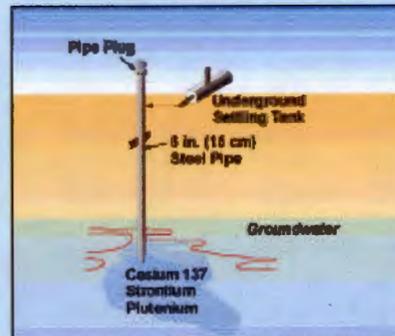
**Specific Retention Trenches
1944-1973**



**French Drains
1944-1980s**



**Reverse Wells
1945 - 1955
(one to 1980)**

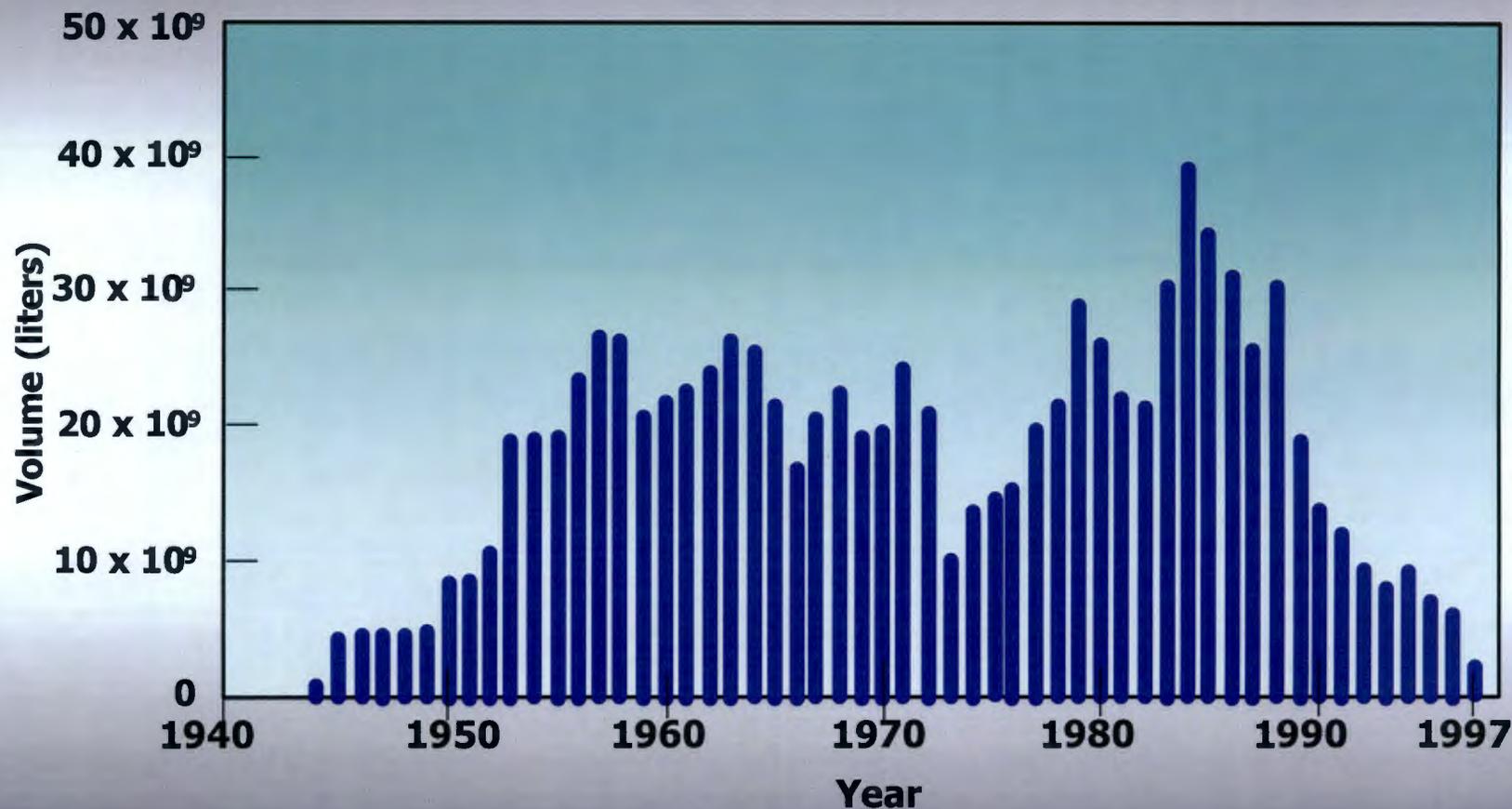


**Ponds
1944-1990s**



In addition to the planned releases to these engineered structures, unplanned releases, including spills and tank, pipeline and diversion box leaks, have also contributed to the liquid releases to the ground.

Liquids Discharged to Ground (450 billion gal)



Since 1997 planned liquid discharges have continued at the State
Fluor Hanford Approved Land Disposal Site.

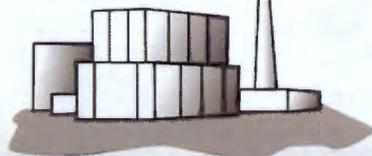
Examples of Contaminants in Hanford Soil and Groundwater

Single-Shell Tanks



- Cesium
- Cobalt
- Technetium
- Iodine
- Tritium
- Nitrate
- Transuranics

Uranium Fuel Fabrication, Reactors, and Reprocessing Facilities



Liquids to Ground

- Ponds
- Cribs
- Trenches
- French Drains
- Injection Wells



- Carbon Tetrachloride
- Iodine
- Tritium
- Technetium
- Cobalt
- Chromium
- Nitrate
- Strontium
- Transuranics

Buried Solid Waste

- Pits
- Burial Trenches
- Landfills
- Engineered Burial

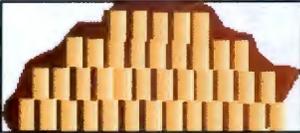
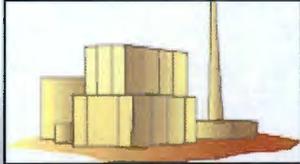
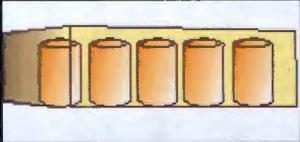


- Strontium
- Cesium
- Uranium
- Tritium
- Technetium
- Transuranics

Groundwater

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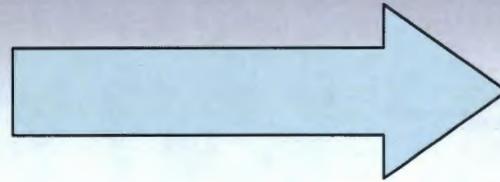
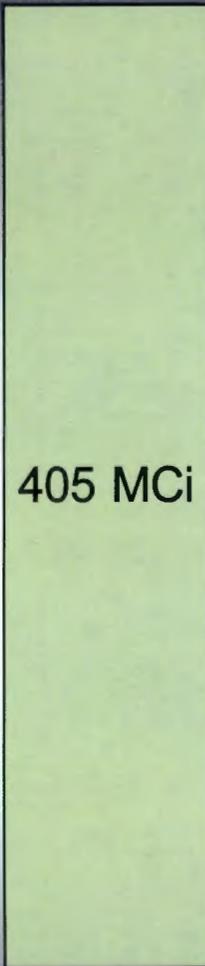
Hanford: Remaining Waste and Nuclear Materials

	Volume	Curies	Chemicals
 Tank Waste	56 million gal	190 million	240,000 tons
 Solid Waste	25 million ft ³	6 million	70,000 tons
 Soil and Groundwater	35 billion ft ³	2 million	100,000 to 300,000 tons
 Facilities	200 million ft ³	1 million	----
 Nuclear Material	25,000 ft ³	185 million	----

Potential Waste and Materials Coming To and Leaving Hanford (megacuries)

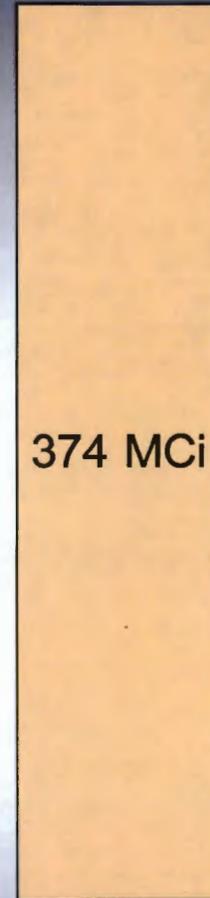
Hanford's Legacy Wastes:

- Tank Wastes,
- TRU,
- SNF,
- Sr/Cs Capsules,
- LLW, &
- MLLW



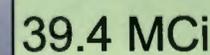
*Over 90% of
Hanford's Legacy
Wastes Will be
Sent Offsite*

Disposal in Geologic Repositories (WIPP and Yucca Mt)



Maximum

Estimated from
other Sites



Remaining at Hanford
(LLW, MLLW, and ILAW)



Hanford



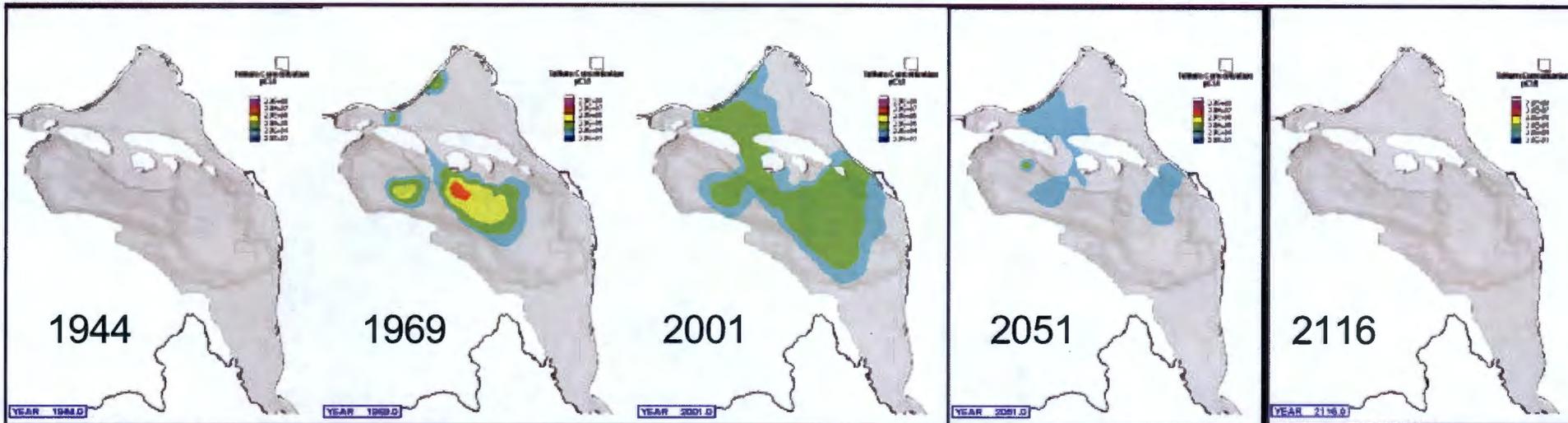
Other DOE
Sites

Fluor Hanford

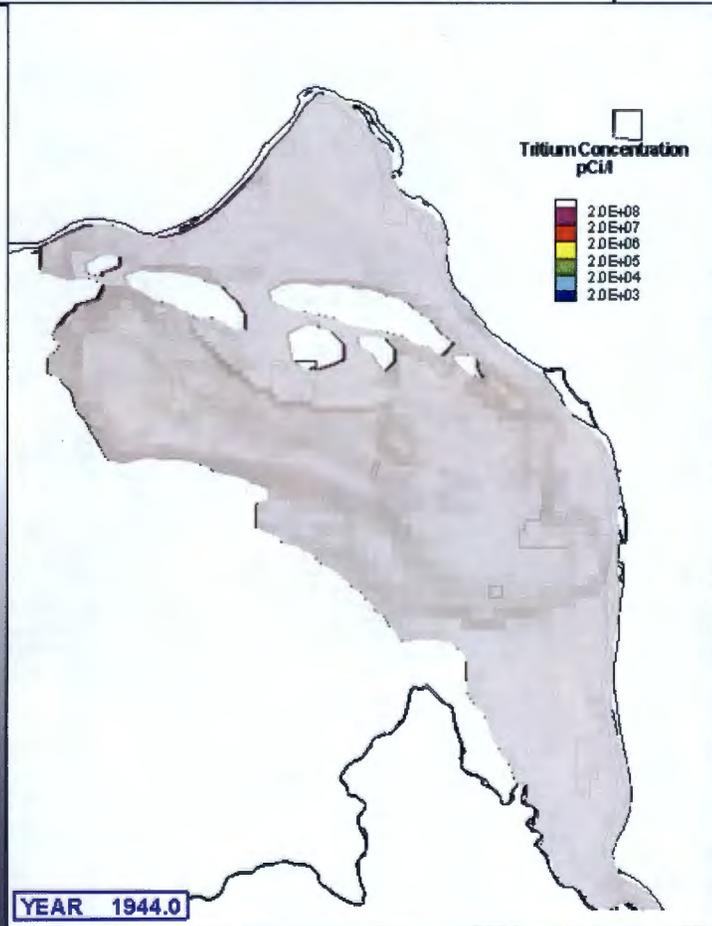
Source: Final Hanford Site Solid Waste EIS (DOE/EIS-0286F)

Groundwater Contamination

- Information on groundwater contamination is provided as background information only for this workshop
- End states for groundwater will not be covered here, however, they will be developed as part of the existing regulatory and public participation process.



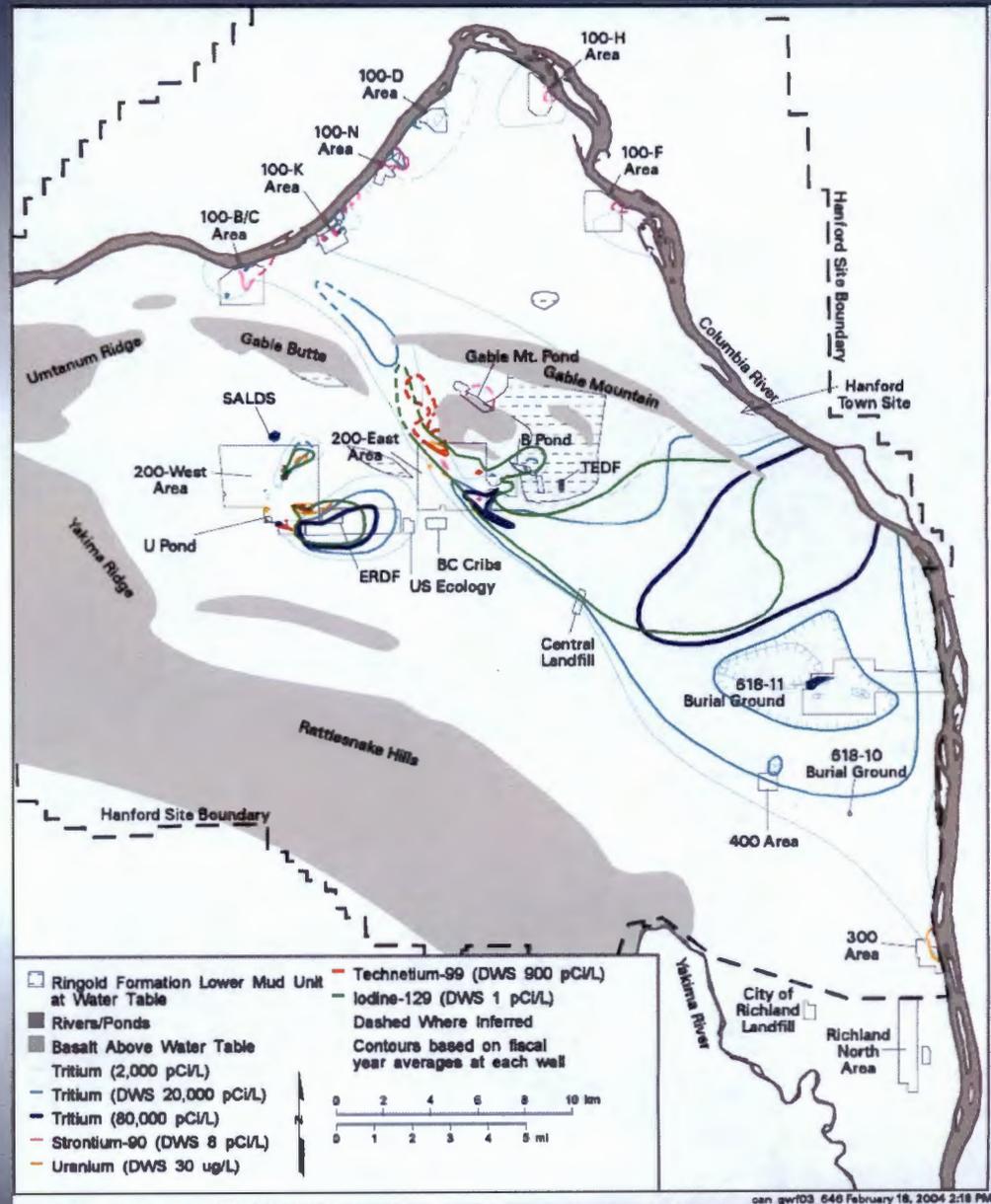
Tritium Plume



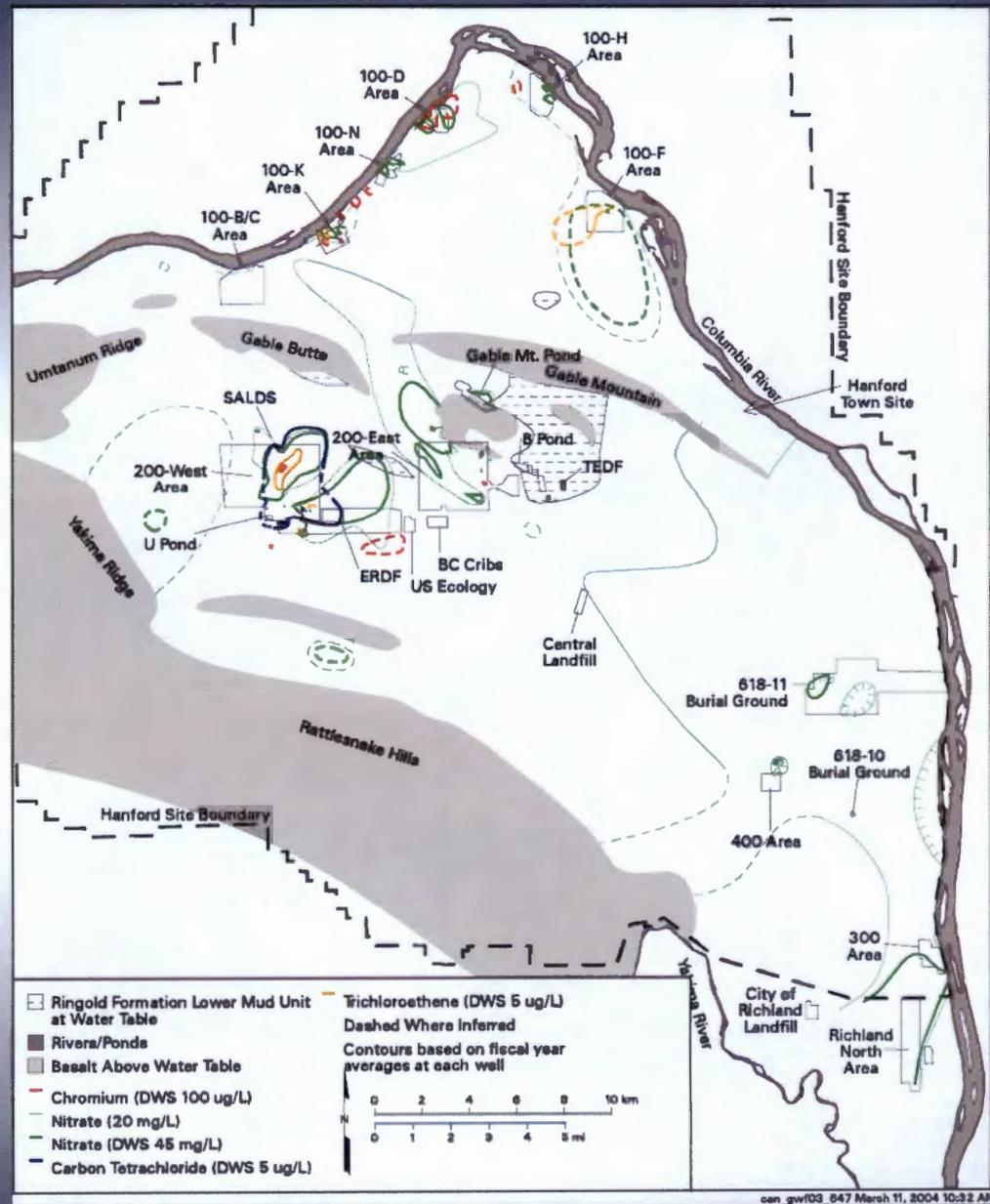
Fluor Hanford

YEAR 1944.0

Radioactive Contaminants Above the Drinking Water Standard

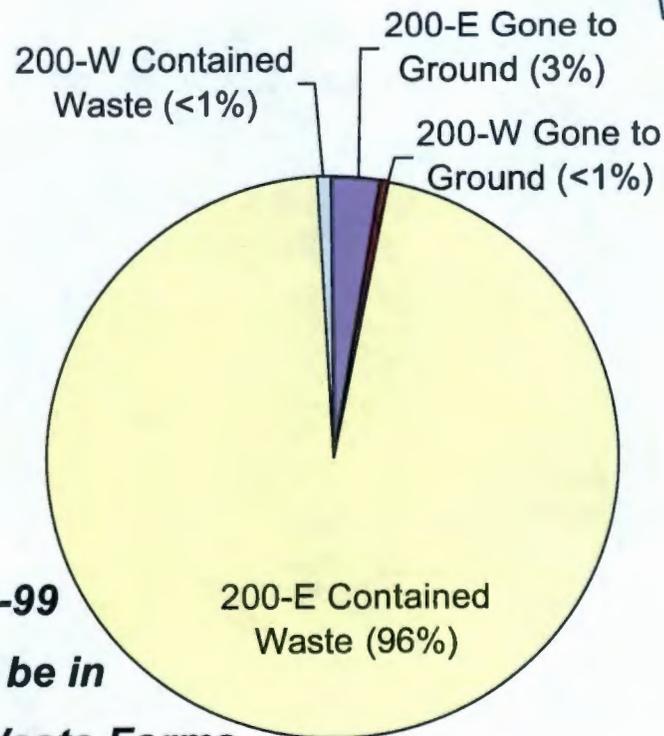


Chemical Contaminants above the Drinking Water Standard



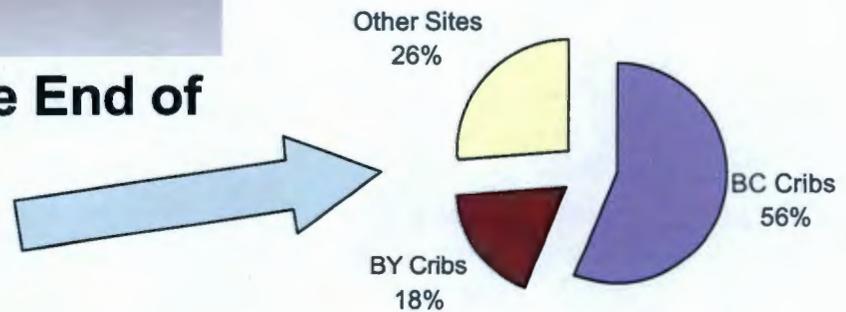
Portrait of 200 Area Technetium-99 Inventories (Ci, End of Mission)

200 Technetium-99 Inventories at the End of Mission



96% of the Tc-99 Inventory will be in Engineered Waste Forms

Tc-99 Inventories Gone to Ground - 200 East Area



3% of the Tc-99 Inventory has gone to Ground in 200E – with the majority to the BC Cribs

What is Important for Groundwater

- Large inventories of mobile long-lived contaminants residing in the vadose zone
 - BC Cribs & Trenches – Technetium-99
 - Past tank leaks from SSTs
- Future potential losses and disposals
 - Retrieval losses from SSTs
 - Primary treated tank waste (LAW and Supplemental LAW)
 - Secondary treated tank waste streams
- Existing Groundwater Contaminant Plumes above the DWS
 - Tritium, Iodine-129 – Natural Attenuation
 - Uranium, Technetium-99 and Carbon Tetrachloride – Pump & Treat & Alternate Technologies

Other Important Considerations

- The presence of contamination in the environment (both within engineered structures or already released to ground) requires remediation decisions which are not only protective of the groundwater but also consider:
 - Protection of workers, visitors, Native Americans, and the general public,
 - Protection of individuals that inadvertently intrude into the waste areas, and
 - Protection of resident plants and animals (ecological receptors)

Drivers & Values To Frame Our Groundwater Remediation Program

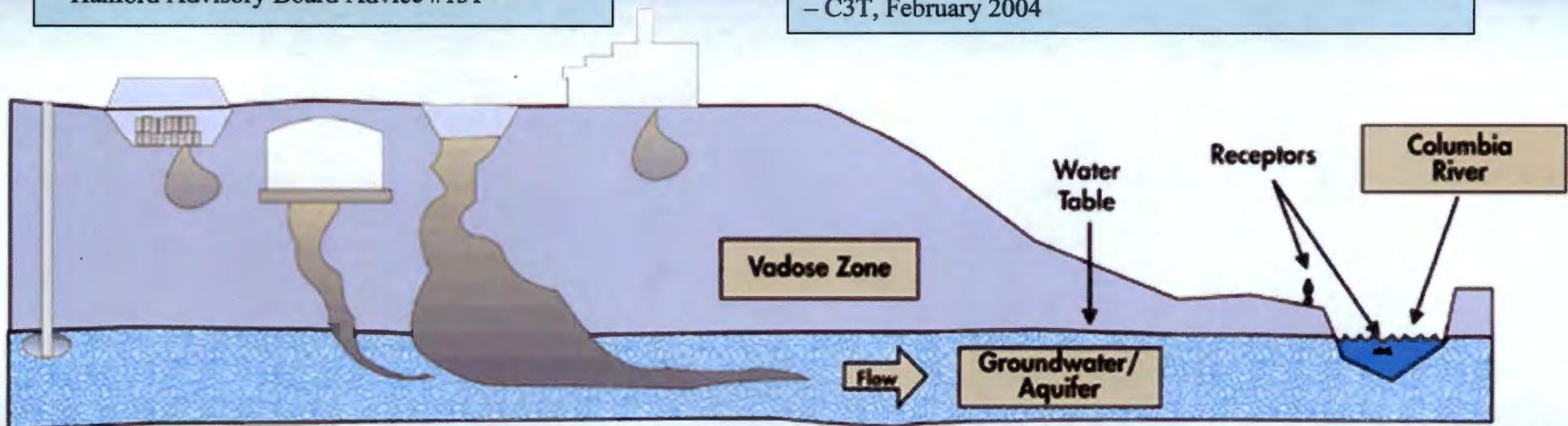
Reduce Highest Risks First:

“....developing plans for groundwater cleanup.... are priorities for the Board.”

– Hanford Advisory Board Advice #131

“Once groundwater becomes contaminated it is difficult and costly to remediate. Therefore, prevention of future groundwater contamination is the primary means of protecting groundwater.”

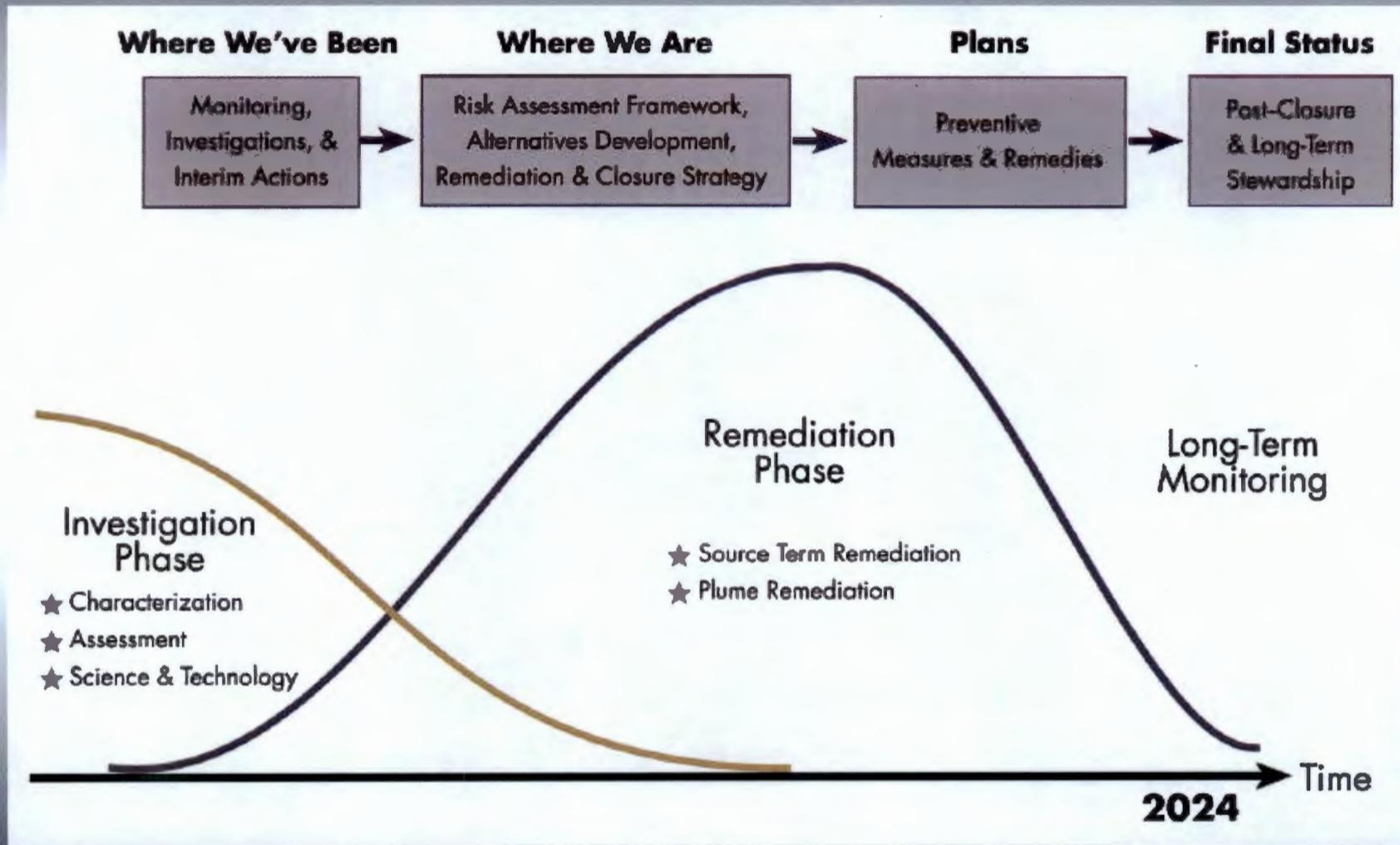
– C3T, February 2004



“EPA expects to return usable ground waters to their beneficial uses wherever practicable, within a time frame that is reasonable given the particular circumstances of the site. When restoration of ground water to beneficial uses is not practicable, EPA expects to prevent further migration of the plume, prevent exposure to the contaminated ground water, and evaluate further risk reduction”

– EPA - 40 CFR 300.430(a)(1)(iii)(F).

Groundwater Program Moving to Implementation Phase



Completed Actions: What have we already done?

- Stopped unpermitted discharge of liquid waste to the soil (1995; TPA milestone M-17-00).
- Operated pump-and-treat systems since March 1994
 - 200-UP-1; groundwater processed 707 million L; removed 179.5 kg of uranium, 1.73 Ci (102 grams) of Tc-99, and 27,344 kg of nitrate.
 - 200-ZP-1; groundwater processed 2,150 million L; removed 7,668.3 kg of CCl₄
- Soil Vapor Extraction – through FY2003 removed ~78,000 kg of CCl₄
- Completed transfer of liquid waste from single-shell tanks (2004 – except for S102 & S112 which are being retrieved).

Groundwater Remediation Program

1. Cleanup of High-Risk Waste Sites
2. Substantially Reduce Artificial and Natural Recharge Conditions by 2008
3. Implement Final Groundwater Remedies
4. Shrink the Footprint; Clean Up Waste Sites Outside the Core Zone
5. Integrate Site Monitoring Needs

High-Risk Waste Sites on the Central Plateau

U-Plant Area



Plutonium Finishing Plant



Tank Farms



Waste site cleanup to be integrated with Tank Farm closures.

BC Cribs

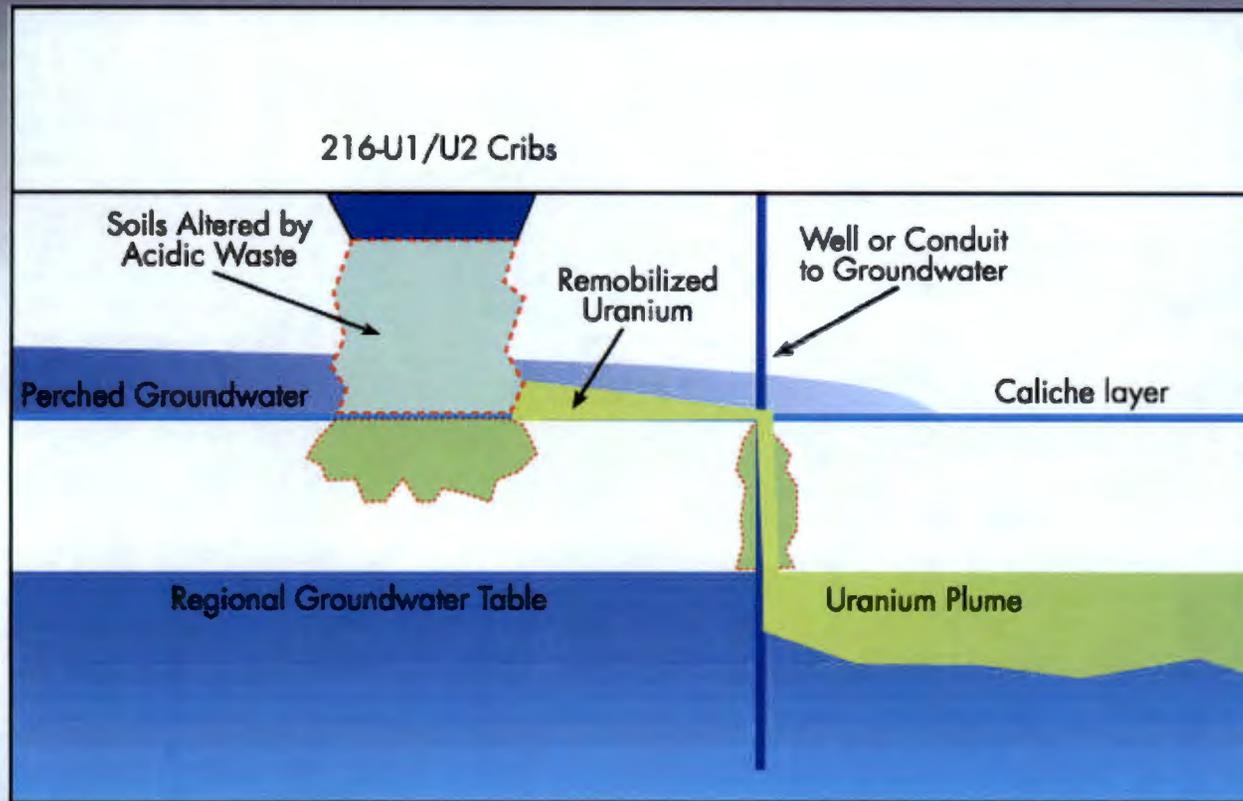


PUREX Plant



All waste sites will be cleaned up by 2024.

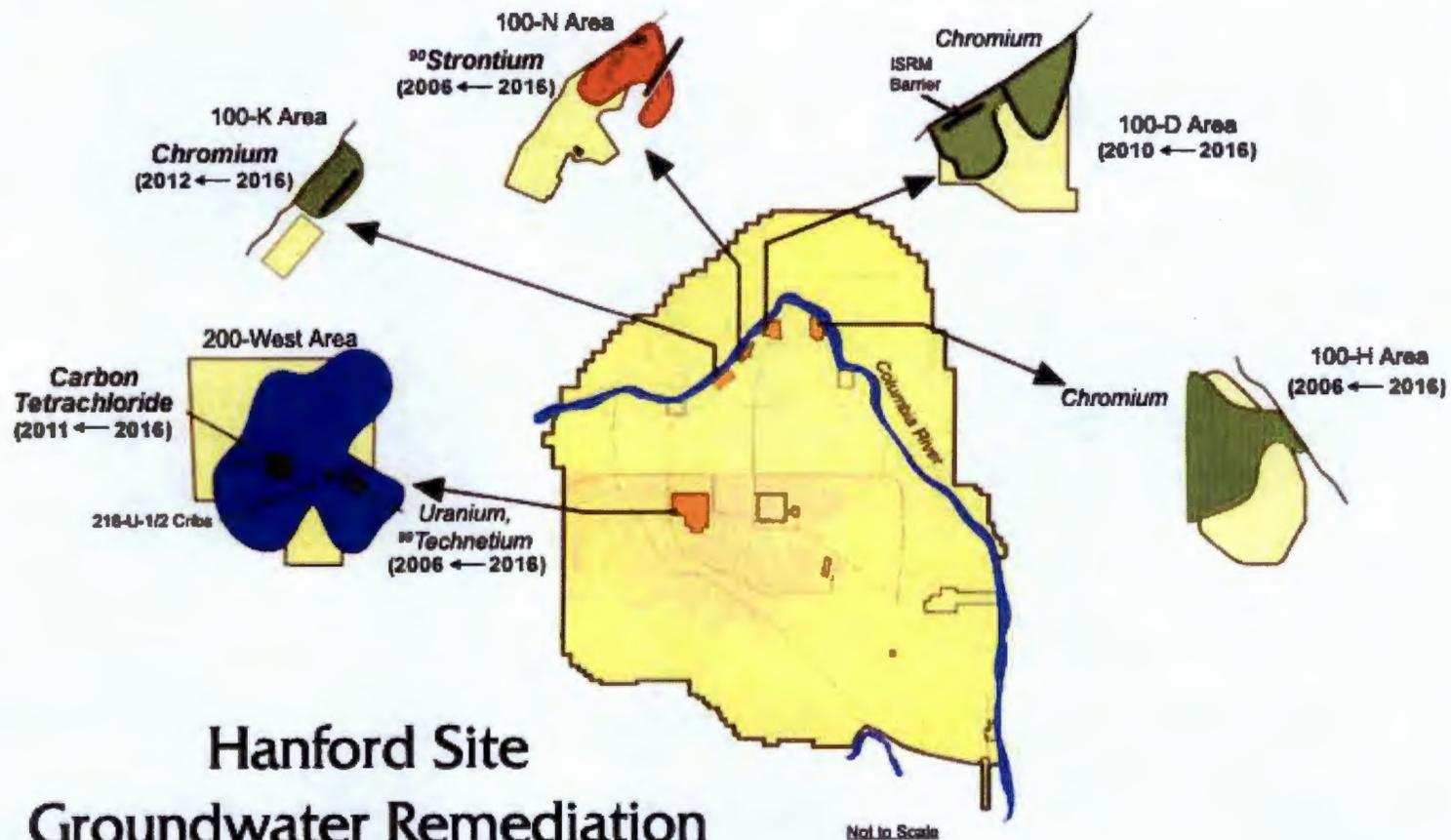
Elimination of High Risk Wells



More than 500 wells to be decommissioned by 2006

“Any well which is unusable, abandoned, or whose use has been permanently discontinued, or which is in such disrepair that its continued use is impractical or is an environmental, safety or public health hazard shall be decommissioned.”

Pump-and-Treat Systems for Groundwater Remediation



Hanford Site
Groundwater Remediation
Contaminant Plumes

Waste Sites Outside the Central Plateau Core Zone

200 North Area



Gable Mountain Pond



Central Landfill



B Pond



Breakout Groups

- **Central Plateau Uses & Activities (Exposure Scenario Development)**
- **Buried Waste and Contaminated Soils**
- **Processing Facilities, Buildings, and Structures**



Tank Closure EIS Overview

*Steve Wiegman,
Senior Technical Advisor
DOE-Office of River Protection*

*End States Workshop
August 10-11, 2004*

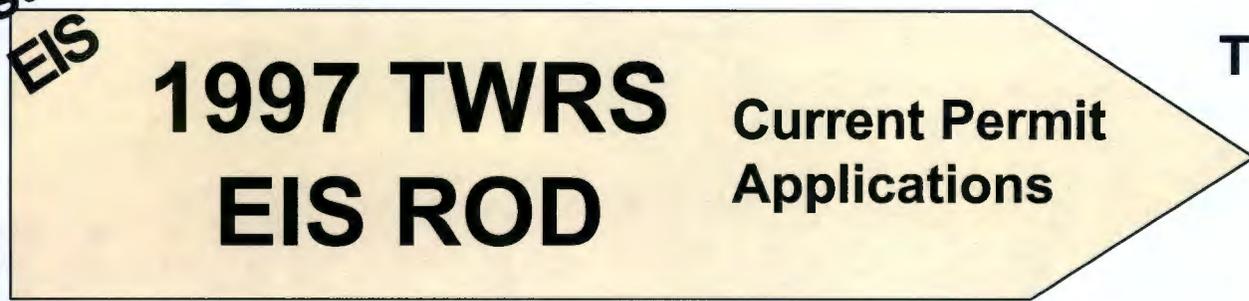
Office of River Protection



Why Do This EIS?

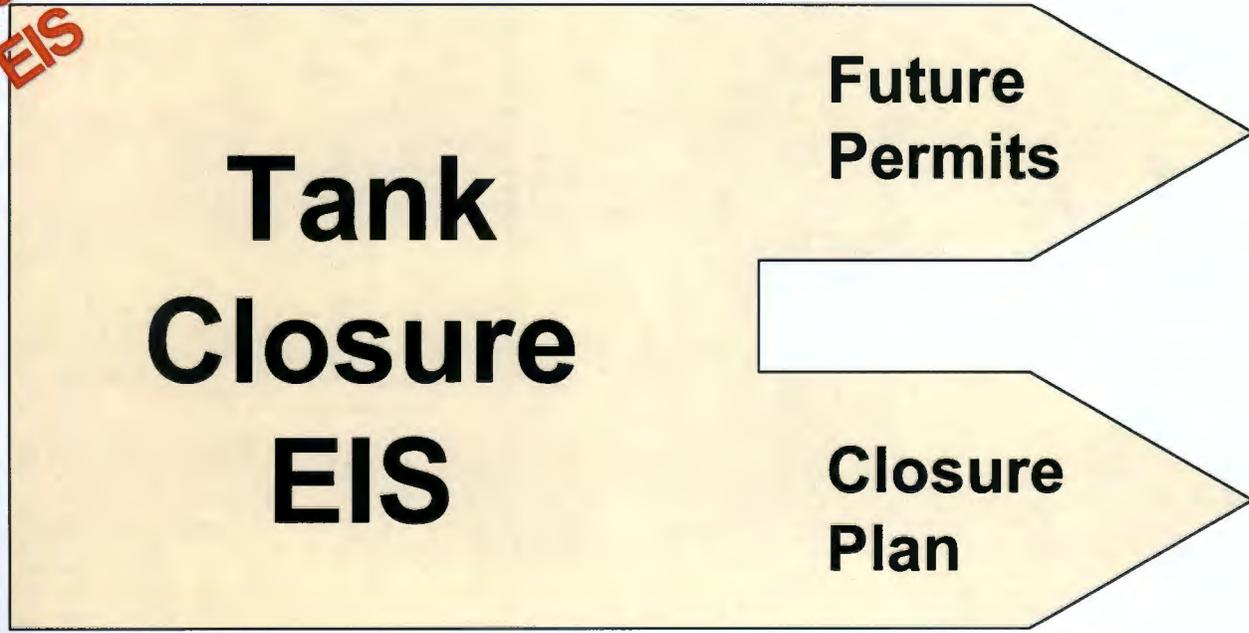


**Existing
EIS**



**Treatment and Long
Term Storage of
Tank Waste**

**New
EIS**



**Alternative
Treatment and
Disposal of
Tank Waste**

Tank Closure



Range of Actions Addressed in the Tank Closure EIS

Retrieval

None

90 percent

99 percent

99.9 percent

Treatment

None

WTP (HLW/LAW)

WTP (HLW/LAW)

Mixed TRU Waste Treatment, and Thermal Treatment

WTP (HLW/LAW),

Mixed TRU Waste Treatment, and Nonthermal Treatment

WTP (HLW/LAW),

Mixed TRU Waste Treatment, and Thermal and Nonthermal Treatment

WTP (all HLW)

Tank Farm Closure

None

Landfill Closure
(no soil removal)

Landfill closure
(with soil removal)

Selective Clean Closure/
Landfill Closure

Clean Closure
(all SST farms)



Schedule

- Draft Environmental Impact Statement for public review by October 2004
- 60-day public comment period
- Seeking opportunities to discuss content ahead of release of the draft
- Record of Decision in 2005

The Exposure Scenario task Force and Resulting Central Plateau Risk Framework

Moses Jaraysi

CH2M HILL Hanford Group

August 10, 2004

Background

- The Tri-Parties needed to develop exposure parameters and scenarios to support the upcoming cleanup planning and analysis documents for the Central Plateau waste sites in 2001 - 2002.
- Technical workshops around this topic were held among the Tri-Parties, HAB members, and the Tribal Nations.
- The Exposure Scenarios Task Force on the 200 Area developed HAB advice #132, in June of 2002
- Based on the technical work and the HAB advice, the Tri-Parties finalized and adopted the 7 point Risk Framework in July of 2002.

Organization and purpose of the Final Taskforce report

- Report is not consensus advice. Advice 132 and 135 represent full board consensus.
- Format for the Task Force meetings were minimal presentations with breakout groups to capture breadth of diversity in attendees.
- Includes all information collected during the 5 days that discussions took place
- Well attended by stakeholders (beyond the HAB as well). And contains valuable insights into the concerns and ideas

Maps of Clean-up

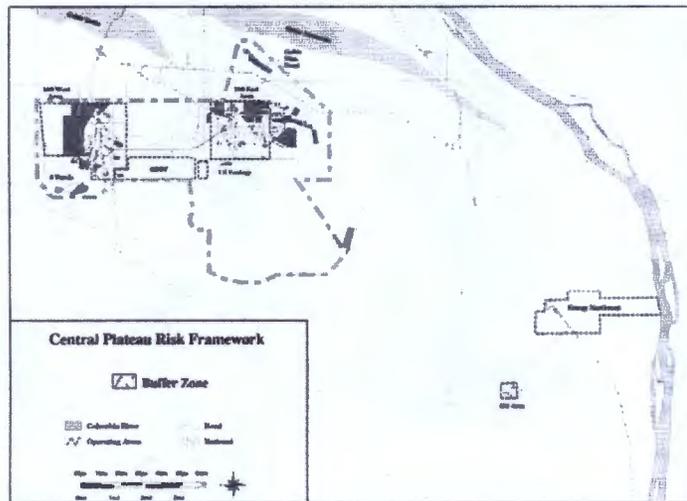
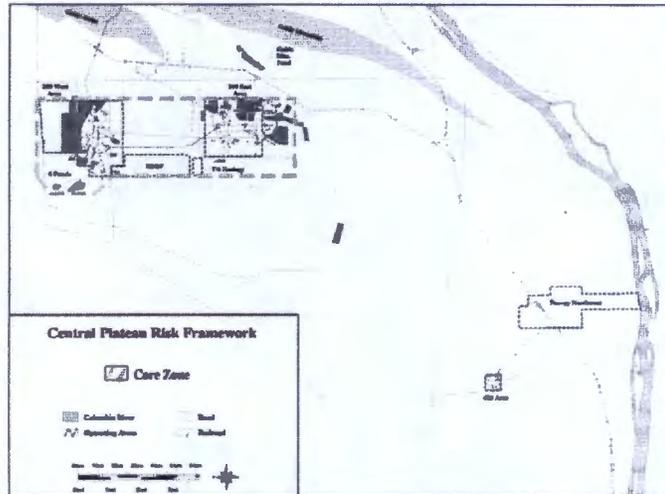
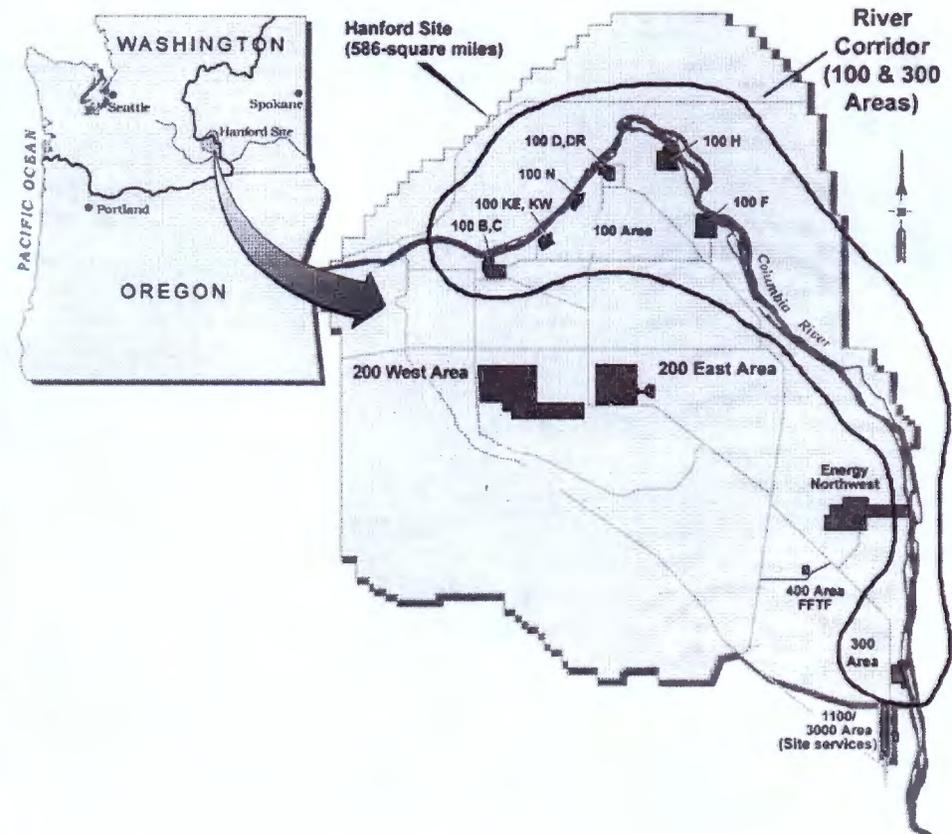
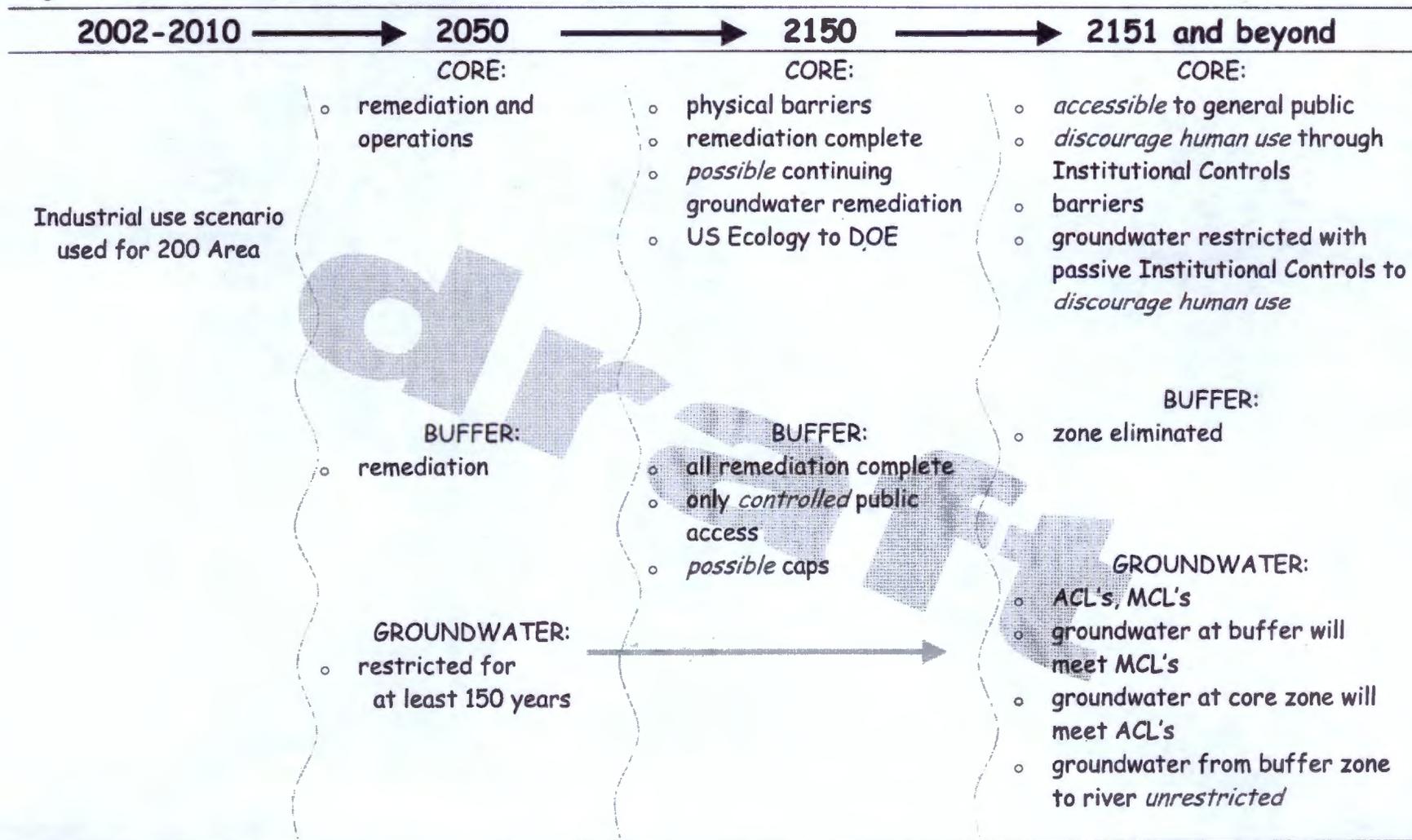


Figure 4. Map of the Hanford Site Showing the River Corridor.



Timeframes for clean-up

Figure 2. US DOE's Proposed Timeline for 200 Area Remediation



Note: Items in *italics* indicate areas for further definition/discussion

Major Group Discussion Points

- Groundwater integration with surface decisions was the most common theme for both the river corridor and the central plateau (the integration and consideration of groundwater in conjunction with surface use decisions.)
- Acknowledgement of waste remaining in core zone, and continued human presents for core zone is preferred

Public Involvement process

- Used BC Pilot as example
- Better public *understanding* and “involvement” in risk assessment process

HAB ADVICE #132

- While acknowledging that some waste will remain in the Core Zone, this zone must be as small as possible, with no contaminated areas outside the 200 Area fences.
- Maximize the potential for any beneficial use of the accessible areas of the core zone.
- Groundwater remediation effort should include aggressive technology development and implementation.
- A coalition of groups, to include the Tribes, local government, and other affected entities as appropriate to be created to administer the Long-term Stewardship responsibilities for this site.
- Analyze a range of potential human health and ecological risks, including the reasonable maximum risk expected over time.
- DOE to continue to refine its ability to make accurate risk projections by gathering data necessary to accurately characterize waste inventories and locations.

C.P. Risk Framework

- 1 Core Zone (C.Z.) will have an Industrial Scenario for the foreseeable future
- 2 Core Zone will be remediated and closed allowing for "other uses" consistent with an industrial scenario that will maintain active human presence in this area
- 3 DOE will follow regulations in establishing groundwater remediation points of compliance and remedial standards.
 - GW contamination will preclude beneficial use for ~ 150 years under C.Z.
 - Tritium & I-129 levels will exceed standards beyond C.Z. boundary for ~150 to 300 years
 - Other contaminants are assumed to be below standards outside C.Z.
- 4 No drilling for water use or other wise will be allowed in C.Z. An intruder scenario will be calculated for in risk assessment
- 5 Waste sites on C.P. but outside C.Z. will be remediated considering multiple land use scenarios
- 6 Industrial land use will set cleanup levels on C.P. Other scenarios may be used for comparison
- 7 This framework does not deal with the tank retrieval decision

Central Plateau Uses & Activities (Exposure Scenario Development) – Breakout Group

Land uses for the Central Plateau region of the Hanford Site have been generally articulated as part of a number of already conducted public involvement processes and activities. Based on these possible post-cleanup land uses, the following end state related questions (primarily focused on the time frame of 50 years into the future and beyond) can be discussed:

What **range of activities** could workers and/or visitors be involved in within the core zone? Outside the core zone? Should other alternative activities (beyond those consistent with the assumed land uses) be considered for comparison or other purposes?

Based on the desired land-use and exposure scenarios, what types of **institutional controls** are appropriate, and over what time frames?



Interagency Management
Integration Team (IAMIT)
Charter

Public Involvement Schedule

Public Workshop Outcomes
June 23 - 24, 2004
August 10 - 11, 2004
May 19, 2005

Background Material

Submit Comments/
RBES Mail Box

End State Vision

Hanford Site End State Vision
Home

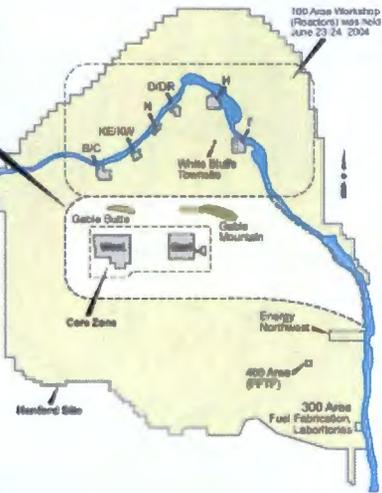
Hanford Home Page

Central Plateau Uses and Activities

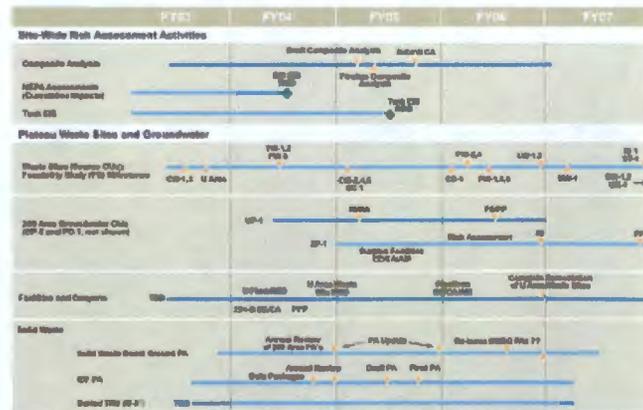
Click on Graphic to enlarge.

Focus of the 200 Area Workshop

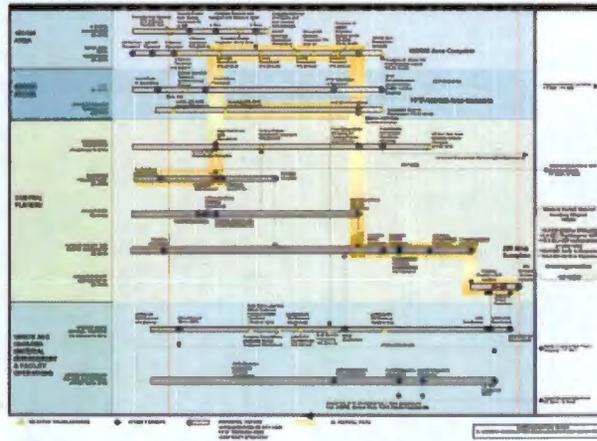
- Break Out Groups
- Central Plateau Uses and Activities
- Buried Waste and Contaminated Soil Sites
- Legacy Facilities



Hanford 200 Areas Near Term Assessments & Decisions



Hanford 200 Areas
Master Site Cleanup Schedule



Hanford 200 Areas
200 Area Risk Framework (July 2002)

Hanford 200 Areas
Land Use Planning
Previously Conducted Public Involvement Activities...



Future Site Uses Working Group
Use the Central Plateau wisely for waste management, including consolidation of waste from off the plateau and minimizing the land needed for WM activities, the working group desires that the Central Plateau be suitable for other general uses 100 years after closure of waste disposal areas.

Comprehensive Land Use Plan EIS
For the core zone an industrial-exclusive area, dedicated to waste cleanup and waste management activities, was identified and the area outside the core zone of the Central Plateau was listed as a conservation/preservation area.

Exposure Scenario Task Forces
Core Zone should be as small as possible and wastes should be protected from inadvertent humans and animals, maximize the potential for any beneficial use of the accessible areas within the core zone, analyze for a range of activities.

Central Plateau Uses & Activities (Exposure Scenario Development)

Breakout Group

Land uses for the Central Plateau region of the Hanford Site have been generally articulated as part of a number of already conducted public involvement processes and activities. Based on these possible post-cleanup land uses, the following end state related questions (primarily focused on the time frame of 50 years into the future and beyond) can be discussed:

- What **range of activities** could workers and/or visitors be involved in within the core zone? Outside the core zone? Should other alternative activities (beyond those consistent with the assumed land uses) be considered for comparison or other purposes?
- Based on the desired land-use and exposure scenarios, what types of **institutional controls** are appropriate, and over what time frames?

For questions or comments, please send a message to RBES@rl.gov
URL: http://www.hanford.gov/docs/rbes/8-10_Breakout_CP_Graphics.cfm
Last Updated: 07/19/2010 14:26:08



**200 Area End State Work Shop
August 10-11, 2004**

Central Plateau Uses & Activities (Exposure Scenario Development)

Question: Based on the possible post-cleanup land uses, the following end state related questions (primarily focused on the time frame of 50 years into the future and beyond) can be discussed:

- **What range of activities could workers and/or visitors be involved in within the core zone?**
- **Outside the core zone?**
- **Should other alternative activities (beyond those consistent with the assumed land uses) be considered for comparison or other purposes?**
- **Based on the desired land-use and exposure scenarios, what types of institutional controls are appropriate, and over what time frames?**

The following is the summary as developed by the entire group

Land Use and Timeline Considerations

- **Active Remediation until about 2050**
 - Waste management and facility cleanup
 - Tank waste vitrification
 - ERDF; US Ecology; Facilities/Tanks decommissioning
 - Should consider shrinking the Core Zone (CZ) especially into smaller sub-zones that would release areas such as between the 200-E and 200-W areas.
 - Need to better define area outside CZ – what’s needed to supplement CZ as Buffer or for Institutional Controls (IC) enhancement
- **Active Management of Engineering Controls (ECs) and ICs expected for 100 years thereafter – probably can control land uses**
 - Institution(s)/handoffs must be determined
 - Tribes recognize need for Federal jurisdiction in CZ
- **ICs will fail at undefined time beyond that**
 - Any use possible (Same as 100 Area)

- **Remedies should be sufficiently robust as to prevent intrusion by “realistic” future intruders (i.e., if Institutional Controls fail)**

- **The area Outside of the CZ should be used to establish a “buffer zone” around CZ. It is expected that this “buffer zone” will shrink and be eliminated over time.**

- **Conflicting Input**
 - Robust Remedies Versus Reversible Remedies
 - Institutional Controls that Prevent Access Versus Encourage Access

Future Uses Enhance Institutional Controls

- CZ – industrial use
 - ICs could be enabled/enhanced by encouraging the location of future industries with an interest in retaining knowledge of the residual materials that remain in the Core Zone.

- The CZ and area Outside the CZ possess attributes that could enhance the location of compatible businesses, such as:
 - “Mecca” for Environmental Cleanup technology firms
 - Remoteness (low light astronomy, bio-chemical research, etc.)
 - Manhattan Project historical preservation
 - Waste management
 - National Monument support infrastructure
 - Energy Production (Natural gas, nuclear, renewable...)
 - Include full Tribal use ASAP

General Considerations

- Population will continue to increase – will increase value and demand for land for productive uses
- Configuration after facility and tank clean up, e.g., cap size/location affects CZ size
- Continue to characterize source and risk
- G/W should be cleaned for future resource
- Mineral exploration possible – drilling
- Buried waste a future resource?
- US Ecology closes - 2064
- 5 year reviews needed – don’t preclude further clean up
- New technologies will come in 50 yr, 100 yr, etc., horizons

Central Plateau Uses & Activities – Exposure Scenario Development (Notes from 3 Breakout groups : Gariann's Group, Susan's Group, Maynard's Group)

	Now – 2050 (Active Cleanup Period)	2050-2150 (Active Institutional Control)	2150 and Beyond
Core Zone	<ul style="list-style-type: none"> DOE has a continuing waste management mission. Also, U.S. Ecology. Current actions (remedies) are not absolutely final. Avoid "irreversible" actions during initial actions. Consider separately isolating materials that could have future value (e.g., don't put uranium in ERDF). Use for nuclear and power applications. Also other energy supply (e.g., natural gas). Conduct CERCLA 5 year reviews to verify effectiveness of remedies. Core Zone (CZ) should be defined by "active waste management" areas. Consider major external decisions/actions with potential impact: removal of dams, WNP-2 operation, Black Rock Reservoir, etc. Stabilization of waste. Monitoring of waste sites. Consider cleanup (removal) to reduce the "footprint" (all time periods). Cleanup levels and the need for ICs are directly linked. No Groundwater use, only active remediation and monitoring. Consider shrinking the middle portion between East and West (ecological driver). Consider future use implications of the end points for facilities and burial grounds. Cleanup GW to enable MCLs outside of the CZ. Historical preservation of the Manhattan Project facilities. ICs need to be coordinated with engineering controls (ECs). Create a "Mecca" for businesses with cleanup technologies. Consider development of private businesses related to environmental cleanup. Hanford's continuing missions include: US Ecology, submarine compartment disposal, PNNL/EMSL, long-term waste management, power and water assets. Cleanup GW to enable future use. Monument visitor center? Encourage access or limit access? 	<ul style="list-style-type: none"> Consider small or multiple core zones, e.g., East, West, ERDF, or release area between East and West. Need to retain organized institutional control (IC) under federal control. Consider risk (and consequence) to the likely population that could be exposed (also 2150+) Consider a minimum threshold for radiological exposure (i.e., use scientifically based dose-risk assumptions). (Also 2150+) There are two big "imponderables": <ul style="list-style-type: none"> Technology (what is possible in the future?) Institutions (how to maintain control?) Don't preclude potential future beneficial actions. Consider the potential for "mining" valuable materials in the future. (Also 2150+) How can we make ICs real and viable? How to link cleanup levels to hypothetical future industries? Consider CZ future industrial requirements for water (no available clean water). Consider finding uses to maintain a human presence within the CZ. US Ecology lease ends in 2064. Will require some post-closure monitoring. Consider industries that rely on isolation provided by the CZ and BZ. Cleanup to enable non-waste management industries is probably not cost beneficial. Future development on the Plateau will be dependent on water supply. Can development around the CZ enable better long term IC? Implement "hard" controls, not just deed restrictions or fences. Robust remedies that keep all except the most determined intruders. Preference of industries with specific interest in retaining knowledge. ICs should remain under federal or other government authority. Use future access activities to fund continued ICs. Value should be placed on preservation: monument, museums, library. What is the institution that will maintain the integrity of ECs? Maintain realistic information on residual risk. 	<ul style="list-style-type: none"> Consider the potential for future solutions to enable removal of end state inventories. Given large uncertain in the future, remedies should enable unrestricted citizen use.
Both	<ul style="list-style-type: none"> The safety buffer zone around the WTP (and other operating facilities) will preclude some potential uses. Consider the location of environmental technology industries on the Plateau. Consider the potential for energy production (nuclear, other). 	<ul style="list-style-type: none"> Boundaries of the CZ and buffer zone (BZ) can/should shrink over time. 	<ul style="list-style-type: none"> Consider Tribal uses far in the future.
Outside Core Zone	<ul style="list-style-type: none"> Consider "Manhattan Project" historical preservation. Apply similar activities as are assumed in the 100 Area. Consider expansion of the 100 Area toward the Plateau. Consider the requirements for materials (e.g., barrier construction) to support CZ activities. Ensure that potential uses are protective of CZ materials and activities (i.e., provide necessary "buffer"). Consider restricted "beneficial" uses 10 CFR 61 contemplates golf course on closed waste disposal facilities. Identify the prohibited activities (e.g., agriculture) to define the necessary controls. Develop risk-based (scientific) standards for cleanup (how much cleanup is required to enable agriculture?) Tribal use and access (all time periods). Consider impact of potential future uses on the viability of LIGO (< 50 years). Restrict activities in the BZ (limit their duration). No motorbikes where "spots" of contamination may still exist. Retain a protective buffer zone. Consider potential for land to revert back to tribal uses. 	<ul style="list-style-type: none"> Develop IC from "ring" of industry without incremental cleanup within the CZ. Restrict agricultural use – consider impact from agricultural irrigation. Low-light resource – amateur astronomy. Consider use of groundwater, OR ICs to prevent use, OR treat GW? Industry is more viable in the BZ where little or no cleanup is required. Consider potential for future resource extraction (e.g., natural gas wells); or deployment of other renewable energy forms (e.g., wind). IC: Retain conservation or preservation through Controls or merger with National Monument. Use a BZ as an active IC to protect the CZ activities. Could include potential recreational industries (e.g., hotels and other uses associated with the Monument). Limit accessibility. Retain a protective BZ, but shrink as appropriate Expect growing population pressure for demand on land uses, including agriculture and residential. (and 2150+) 	<ul style="list-style-type: none">

200 Area End State Workshop
August 10 - 11
Central Plateau Uses and Activities

Group 1 – Facilitator - Gariann Gelston

Area of discussion goes all the way to River – but not including riparian area. Does include ground water plume area.

Core zone size – lots of “open space” in there. Does this make more than one core zone?

Surface and near surface areas. What could be done there?

Are there just two types of institutional controls, surface and ground water? No, could be many kinds and ranges. Depends what is being controlled and size of areas, e.g., buffer zone around core zone.

For institutional controls, keep information in useable form – think about future access to information. Need to plan for or information could be lost if in wrong formats.

An active presence is helpful.

What criteria will be used to define boundary between core zone and area outside core zone (buffer zone) and between buffer zone and beyond? Is it a bright line? Surface lines and ground water lines may differ. Could move in or shrink over time.

For risks, need inventory information. Characterization needed over next 50 years – this effort will involve workers and pose risks.

What is the “institution” for institutional controls? Based on time frames – federal entity while waste is there.

Clarify – will core zone always be a “hot zone”? Yes, based on current plans and thinking, don’t put waste there, e.g., ERDF, if it’s not staying.

Don’t like assuming it will always be a hot zone. Agree could change with future technology.

What failed with institutional controls at other sites. Example at Hanford, cut communication cable – “forgot” where it was.

Basic CERCLA – self-fulfilling? Assume it can’t be cleaned up? Not really, develop remedial action objectives and screen based on what can be done. 5 year reviews after final Record of Decision, so revisited.

Likely to be mining tomorrow for what is waste today?

For consequences part of risk equation – what are the number of people impacted? Will have maximum institutional controls to 2050. Hiking and biking is different from farming and other activities. The number of people and their intent should be factored in.

Aspirin analogy – 100 at once harmful, 1-2 a day may extend life expectancy. What is harmful radiation dose today based on linear no-threshold may not be correct science in future.

Is beyond a 50 year span consideration legitimate? Aren't these interim decisions that may change? Think about what happened 50 years ago. Not really an end, what we know now will change.

True, but need goals. Suffering from lack of goal – we know these are assumptions but goal helps workers, budget focus.

This is evolutionary process. Need to map out by agency who leads the charge.

Key concern – finality of decisions based on shrinking budget. It's OK to take longer to get more cleanup. Don't preclude more cleanup.

DOE has mission until when? Undetermined, but useful for public to know for decision context. Public input might change if known. Must have continued public involvement.

Interim may be final by default if no future organization is assured.

Nez Perce and Confederated Tribes of the Umatilla – Concern – hopefully or should assume federal control if not safe to use an area or ground water. Federal government works for tribes benefit by treaty.

Technology will develop and likely improve. Also social change – could be different structure in future.

If surface is as clean as 100 Area, what about release of BC controlled area from control? EPA thinks need to address hot spots to determine clean.

“No drilling” does not apply to drilling for characterization needs.

Unrestricted use will not happen in 50 years - based on 1) length of active cleanup; 2) length of active controls; 3) when active controls end. No dates.

Nuclear Park outside core zone – should actively seek?

Human occupation leads to more activities and then unrestricted.

Goals must be clear. Don't give up cleanup. How clean do we think it will be versus how clean can it be?

Should buffer zone outside core zone be same as "extension of" 100 Area?

Where is the capping material going to come from?

Should look at security force exposure scenario.

200 Area is also Manhattan Project. Add to B Reactor to preserve history. A Visitor's Center?

Day care center for industrial workers? 10 CFR 61 criteria contemplates golf course.

Should have list of "don'ts" – no farming, grazing.

Define/Clarify "unrestricted" – for surface use means ground water could be contaminated. For exposure assumptions need the big picture first.

Alternative energy uses – solar farm.

Like Brownfields approach, e.g. BC controlled area?

Cleanup standard also needed – risk based - over whole time line.

Is oil exploration possible? Could be, there is natural gas. A natural gas power plant?

Institutional controls: monitoring; information preservation; transfer of controls (will controls change based on transfer?). Decision document needs to be clear on institutional controls as component of remedy for communication about plans and what institutional controls are in remedy.

Is Long Term Stewardship the same as institutional controls? DOE Legacy Management will carry out what institutional controls require. EPA is reviewing institutional control issues at headquarters level.

Policy should be maximize engineering controls and minimize institutional controls – but use a graded approach.

Group 2 – Facilitator – Susan Leckband

Stabilizing and Monitoring – not cleaning up, just moving within same area. Will find new problems.

Surface – BC controlled area size is due to hot spots. Also, remember tumbleweed path goes east to River. This may not be risk free.

Surface cleanup (e.g., to 3 feet deep) – still must consider other contamination below, e.g., tanks. Will it affect overall footprint?

Do you want kids riding bikes in BC controlled area? Will you be able to find all contamination? Need approximately 1 mile buffer zone around core zone. Just restrict core zone access until 2150 timeframe.

Not important now to shrink the buffer zone – maybe do it later. Will not prevent future cleanup.

Do not exclude ground water from discussion. Try to restore. Is this beyond 2050? 2150?

What are the possible scenarios that have not been considered?

How does configuration from cleanup affect the answer, e.g., caps and facility demolition?

Think about in chunks, e.g., center of core zone.

What proposed activities would trigger more characterization, cleanup, if there was interest in these uses?

What if institutional controls fail and there is no money available to address, say after 2150? Good intentions will not be met.

Personnel being present helps institutional controls, e.g., industrial activity.

US Ecology lease ends in 2064. Will need monitoring for 100 years and active care for 30 years. Is a trust fund available?

If institutional controls fail, what protection for resulting activities is needed?

Area is mostly pristine – opinions on preservation and conservation and recreational use vary.

Not a broad enough spectrum of community represented here. Other opinions needed.

Multi-use is OK, but location is important. Don't put in clean area right next to contaminated area.

Exclude some uses outside the core zone. No farming and irrigation. No industry because industry needs water.

Three dimensional issue. Any surface uses with water will impact beyond the use area.

Outside of core zone expect recreational development. Trails - same as 100 area assumptions after 100 years and beyond.

What uses are economically viable outside the core zone. Area goes all the way to the River, so some uses may be viable there. Range of facilities, but rustic/minimal. Boat landing, not industrial.

What is mineral extraction potential? Gas wells in past. After 2150 exploration holes. Wind farms after 2050? Other renewable energy uses? LIGO vibration issues?

Monument controls part of institutional controls because discourages other activities.

A buffer zone is also part of institutional controls for core zone. Waste management support industries may be potential around the core zone.

In core zone, extra cleanup to locate non-waste management industries not cost effective. So direct support activities preferred if there is less cleanup.

Look at technologies that may be available.

Enable industries that need open space or remote facility – still must balance amount of cleanup needed against risks during cleanup.

Amateur astronomy – no light pollution. Also possible use in core zone after 2150.

Foresee ground water use. Should it be made a resource for future – 2050? 2150? Could be treated (by industry) when needed for use. Also, need institutional controls if can't be cleaned.

No new water available now in Benton County for use.

What will it take for good long term institutional controls? Industry presence may enhance (ring around the core zone). Won't need additional core zone cleanup.

Land use – include full tribal use ASAP outside the core zone. Accept idea that core zone may not be available. Enclose everything that can't be used, as long as not deeded out of federal or state government. Cleanup buffer zone and eliminate controls to allow tribal use. Cleanup core zone if tribal use is anticipated. Institutional controls wont last – think long term.

Less cleanup equals less land use options. More cleanup equals less institutional controls.

Could be possible that people will walk on surface in core zone sometime in future.

Nice to be able to take down fences.

Make core zone inhospitable. Eliminate infrastructure: no roads, water.

Group 3 – Facilitator – Maynard Plahuta

Do you expect future nuclear weapon production in this area? There is no DOE weapons mission for Hanford.

Looking at whole Tri-Cities job growth projections? Will demographics be considered? If no economic growth foreseen, what will site be used for?

Site has waste management mission. Navy, US Ecology, Office of Science, Lab facilities, new missions possible.

Context should be same growth rate now assumed to continue. Feasible to do anything at Site.

Water is supplied from 100 B and D areas to 200 Area. No plans to change, but process water needs are shrinking. Water needs could impact 200 Area development.

Area compatible for chemical weapons production? "Level 3" bio lab concept being looked at?

Technology testing area for research. Utility uses – Nuclear energy.

Not clear whether core zone can be reused based on perceptions. Some industry types may want, though. US Ecology Site – attractive to nuclear related businesses.

Outside core zone, up River from reactors, resort development.

Isn't land surplus to DOE supposed to be transferred to National Monument by Presidential Proclamation?

Does land revert to Tribes? Consultation under Cultural/Historical Resources law with Tribes ongoing for transfer of jurisdiction from DOE to Fish and Wildlife Service.

Will Fish and Wildlife Service take 200 Area if contaminated? Probably not easy to do.

Through 2050 vitrification operations ongoing. What does that Risk Assessment provide for? Required safety Buffer for Waste Treatment Plant, but design meets requirements so its fence line is Buffer Zone boundary. Not so for Plutonium Finishing Plant with

holdup. As holdup removed safety buffer will shrink/go away. Still could have businesses come in, but case by case.

Does ground water limit uses? No uses now and none foreseen.

Institutional Controls: fences; signs; deed restrictions; guards; someone doing monitoring.

Who will be in charge of area outside core zone? City, police department? Legacy Management will be in charge of administering institutional controls. Open to many possible means to do this.

Is there precedent for idea of having surrounding industrial presence? Yes.

Institutional Controls: need to include education in community. Have industries that are interested in remembering, not just being there.

Use public art project to preserve memory of place – a national art initiative. Museum will help, so will architecture. Monument and Visitors Center will help.

Conservation and preservation uses – denying access is not the answer. Should minimize the need for institutional controls. If they fail, hopefully “fail well” not fail poorly.

Monuments success will bring people – inevitable to be attractive. Could fees help fund institutional controls?

Yes, but not part of Monument yet. Pressure for people to come – just question of when – need to be prepared.

Might there be mining for plutonium?

Perspective on risk – don't be cavalier.

Type of industry affects who will come.

Controls need to be substantial and “idiot proof”.

Legislation in Congress now for Park Service to evaluate Manhattan Project facilities for historical value - B Reactor included.

Engineering controls must be backed up by institutional controls. But, who will be responsible. Don't see anything happening from Legacy Management office. They have started process, but for Hanford a few years away.

Is core zone just a big cap? That's one view, but could work to minimize caps. Will need material for caps – where will that come from?

Monument Environmental Impact statement has 15 year planning horizon.

Do ground water cleanup so no institutional controls needed eventually. Must find technologies for ground water cleanup. Need to do better – if we can invent the bomb, can cleanup ground water.

Make a cleanup technology mecca rather than area for weapons.

Ground water cleanup outside of core zone more important? Won't it flow down from higher elevation core zone? If cleaned up in core zone will protect outside core zone.

Pressure to use land will grow. Will be housing and roads in the future. Long-term you can't limit growth, so any use possible.

Should comment on Fish and Wildlife Service Monument Environmental Impact Statement and Comprehensive Conservation Plan that clean land should be open for use. Yes, but Refuge first priority is wildlife. Human use must be compatible.

Fish and Wildlife Service not expected to take contaminated areas. Will DOE allow all these possible land uses before transfer to Fish and Wildlife Service? No, these uses just for exposure scenario development.

Agricultural use is a driver for ground water contamination – is this still correct assumption or changing?

Buried Waste and Contaminated Soils – Breakout Group

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 can be posed to solicit stakeholder input and values. Specifically for **Solid & Liquid Waste Sites End States** CERCLA requires that decisions be made using 9 criteria (see handout). In weighing these criteria:

When would you consider leaving waste in place under a barrier?

When would you consider removal, treatment, and disposal of the waste?

What other options would you consider and when would you consider them?

How would these considerations change depending on location inside or outside the core zone and could these decisions affect how the core zone is defined?

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?

Hanford 200 Areas
B/C Cribs - End State Alternatives

Inside the Core Zone & High Contamination








Alternative 1 No Action	Alternative 2 Standard Soil Cover, IC, & Monitored Natural Attenuation	Alternative 3 Remove & Dispose	Alternative 4a Modified RCRA C Cap	Alternative 4b Partial Removal with Capping
<p>STATUS</p> <ul style="list-style-type: none"> Low short term impacts Minimal regulatory burden associated with this site, but which does not meet levels 	<ul style="list-style-type: none"> Less short term risk to workers Not required to remove waste or handle it accordingly Reduction of nearby residential and welfare through reduced ground water or volatilization Highly implementable <p>\$1000</p>	<ul style="list-style-type: none"> Immediate elimination of non-hazardous waste Protection in the long term Highly implementable Estimated cost: \$1,000,000 	<ul style="list-style-type: none"> Protection of human health and environment Low cost over project Reduction of nearby residential and welfare through reduced volatilization of non-hazardous waste Highly implementable <p>\$1000</p>	<ul style="list-style-type: none"> Reduction of nearby residential and welfare through reduced volatilization of non-hazardous waste Highly implementable Reduction of nearby residential and welfare through reduced volatilization of non-hazardous waste Highly implementable <p>\$1000</p>
<p>ISSUES</p> <ul style="list-style-type: none"> Not prohibitive to future plans and development of track Minimal environmental regulatory burden 	<ul style="list-style-type: none"> Not prohibitive of future health and welfare of communities Minimal environmental regulatory burden Highly implementable 	<ul style="list-style-type: none"> Significant ecological benefits of waste site early site leaving large areas requiring long term maintenance including hydrology Highly implementable Highly implementable 	<ul style="list-style-type: none"> Highly implementable Highly implementable Highly implementable 	<ul style="list-style-type: none"> Highly implementable Highly implementable Highly implementable

Buried Waste and Contaminated Soils Breakout Group

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Hanford 200 Areas

CERCLA Evaluation Criteria

Threshold Criteria

- 1. Overall protection of human health and the environment**
- 2. Compliance with ARAR's**

Alternatives that do not protect human health and the environment or that not comply with ARAR's are eliminated from further consideration.

Balancing Criteria

- 3. Long-term effectiveness and performance**
- 4. Reduction of toxicity, mobility, or volume through treatment**
- 5. Short term effectiveness**
- 6. Implementability**
- 7. Cost**

Each Alternative is evaluated against these criteria in a detailed analysis prior to a comparative analysis.

Modifying Criteria

- 8. State acceptance**
- 9. Community acceptance**

These criteria are addressed in the Proposed Plan which is provided for public review and comment.

Highlight C: Explanation of CERCLA Evaluation Criteria

The CERCLA criteria are divided into three categories of weighted important including threshold, balancing, and modifying criteria. The first two criteria, *Overall Protection of Human Health and the Environment* and *Compliance with ARARs* are threshold criteria. This means that only those remedial alternatives that provide adequate protection of human health and the environment and comply with ARARs (or justify a waiver) are eligible for selection. The five primary balancing criteria help describe relative technical and cost trade-offs among the remedial alternatives. The two modifying criteria (*State and Community Acceptance*) can be fully considered only after public comment is received on the Proposed Plan. In the final balancing of trade-offs between alternatives for remedy selection, modifying and balancing criteria are of equal importance.

1. **Overall Protection of Human Health and the Environment** is the primary objective of the remedial action and determines whether an alternative provides adequate overall protection of human health and the environment. This criterion must be met for all remedial alternatives.
2. **Compliance with Applicable or Relevant and Appropriate Requirements** addresses whether an alternative meets Federal and State environmental statutes, regulations, and other requirements that apply or are relevant and appropriate to the site. This criterion must be met for a remedial alternative to be eligible for consideration. A waiver of ARARs can occur if specific CERCLA criteria for waiver authorization are met.
3. **Long-Term Effectiveness and Permanence** refers to the magnitude of residual risk and the ability of an alternative to maintain long-term protection after RAOs have been met.
4. **Reduction of Toxicity, Mobility, or Volume Through Treatment** refers to an evaluation of the anticipated performance of the treatment technologies that may be employed in a remedy. Reduction of toxicity, mobility, and/or volume contributes toward overall protectiveness.
5. **Short-Term Effectiveness** refers to evaluation of the speed with which the remedy achieves protection. It also refers to any potential adverse effects on human health and the environment during the construction and implementation phases of a remedial action.
6. **Implementability** refers to the technical and administrative feasibility of a remedial action, including the availability of materials and services needed to implement the selection solution.
7. **Cost** refers to an evaluation of the capital, operation, and maintenance, and present value costs for each alternative.
8. **State Acceptance** indicates whether the state concurs with, opposes, or has no comment on the preferred alternatives based on review of the feasibility study and the Proposed Plan.
9. **Community Acceptance** assesses the general public response to the Proposed Plan, following a review of the public comments received during the public comment.

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For questions or comments, please send a message to RBES@rl.gov
 URL: http://www.hanford.gov/docs/rbes/8-10_Breakout_buried_Graphics.cfm
 Last Updated: 07/19/2010 14:35:18



**End States Workshop #2 – 200 Area
August 10/11, 2004
Buried Waste and Contaminated Soils – Breakout Group**

Question: For Solid & Liquid Waste Sites End States CERCLA requires that decisions be made using 9 criteria. In weighing these criteria:

- **If waste is left in place under an engineered barrier, what factors affecting public acceptance must the Tri-Parties consider?**
- **If waste must be removed for treatment and disposal, what factors affecting public acceptance must the Tri-Parties consider?**
- **What other options should be considered by the Tri-Parties and when is it appropriate to consider them?**
- **How would these considerations change depending on location inside or outside the core zone and could these decisions affect how the core zone is defined?**
- **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?**

The following is the overall summary of comments including modifications discussed on August 11.

Significant Common Themes

1. First and foremost is protecting the groundwater. Address the high risks first.
2. There should be an aggressive plan to develop technology for remediation for the contamination that could get to the groundwater (particularly the Tc-99).
3. We should allow for “nature doing its job” over reducing the footprint in certain cases (Gable Mountain as an example where there is an active and healthy ecosystem there. Also there is low risk if there is a failure in institutional controls). This includes maintaining the appropriate institutional controls during a predetermined time period. Emphasis on “certain”. Need good data and characterization. Need to consider human and ecological risk, and look holistically.

Group 1 Themes

1. Cost appears to be the main driver as displayed on the posters.
2. Mobility of contaminants could be worse than previously thought.
3. Costs: would it be less expense to do some of the work now versus later when the problems have more time to develop?
4. Do not forget the risk to cleanup workers.

5. There are many conditions for allowing keeping waste in place under a barrier.
6. When would you consider removal, treatment, and disposal of the waste? Always consider this first.
7. If you do not have control, then you have to clean it up.
8. Must define the ultimate end use will be (activities, etc.) first.
9. Do we have adequate knowledge of what contamination is really there in all areas???

Group 2 Themes

1. Institutional Controls – how reliable are they and for how long???????
2. When would you consider removal, treatment, and disposal of the waste? Always consider this first.
3. For any significant risk, you should have a bias against institutional controls.
4. We are approaching the cleanup piecemeal versus looking from the site overall.
5. There is a CONSISTENCY problem with old waste versus new waste.
6. The government can not “cap it” and walk away.
7. How stable does the waste have to be to allow for “temporary storage”?
8. Need to bridge generational knowledge gaps.

Group 3 Themes

1. We need to capture both chemical and radiological risks.
2. When analyzing risk, we need to include the risk to workers, ecological damage and other factors.
3. We need to know the inventory to determine the risks.
4. Cost figures should be life cycle costs.
5. Point of contamination (time, space, concentration) versus anti-degradation policy.
6. Institutional controls criteria:
 - a. Graded approach
 - b. Look at the risk after the 2nd half-life
 - c. Have to look at contamination criteria
 - d. Risk over time is reduced
7. Timeframes should be related to the level of characterization.
8. Simply “moving it down the street” does not make sense.

End States Workshop #2 – 200 Area

August 10/11, 2004

Buried Waste and Contaminated Soils – Breakout Group

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Buried Waste and Contaminated Soils – Breakout Group

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Group #1

- Costs appear to be most important in the displays (posters)

- It would be helpful for a 3D presentation of the 200 Area with different levels and plumes
- Is capping a solution for deep contaminants, even with a large cap?
- Deep contamination stabilization technology is needed.
- Beneficial use ideas displayed on posters (along with costs, etc.) per alternatives
- Are we talking about using the same technology for each location or using the same technology for all locations?
- The life of the caps do not last as long as the contaminants
- Mobility of contaminants could be worse than currently thought
- Costs: may be less expensive to do the work now before it (contaminants) expand
- Dilution effect not talked about
- Dissolution is not solution
- In what circumstance would you allow to keep waste in place under a barrier:
 - o Not if it could migrate
 - o If every isotope is identified and stabilized
 - o Need plan of action if there is new migration
 - o Need agency with funds to act if necessary
 - o If technology is not available to clean up, then cap for now
 - o If contaminants did go into the River, what are the consequences (risk)
 - o If risk to workers for direct removal today exceeds potential risk for the future
 - o If surrounded by waste that will be staying in place, work from the edge to the core
- Do not forget the workers risk
- How would these considerations change depending on location inside or outside the core zone:
 - o Clean it up outside the core zone so that you do not need institutional controls versus letting the area be cleaned up by natural means (keep area large until clean up). Except if "returning" to the area to other uses earlier.
 - o Considerations should not change
- When would you consider removal, treatment, and disposal of the waste? Always consider it.
- Need to get on with clean-up where it will affect groundwater
- If you do not have control, then you have to clean it up.
- Gable Mountain Pond: leave it alone
- Moving it from outside the core zone into the core zone does not reduce total footprint.
- Must define what the ultimate end use (activities, etc.) will be first
- Do we have adequate knowledge of what is there? Not all areas! We need the knowledge to reduce the footprint
- Are you willing to wait for better technology if risk is not too high?
 - o What is your time frame?
 - o You need to focus effort on developing those technologies
 - o You have to know how valid your current mobility data is
- need to understand the behavior of contaminants

Group #2

- Need to determine the longevity of the barriers to determine whether they are valid.
- Institutional controls only last 2 years without ongoing presence. How reliable are they?
- Need to answer the question of how quickly contaminants will get into the water.
- When would you consider removal, treatment, and disposal of the waste? Always consider it first.
- For any significant risk, you should have a bias against institutional controls.
- We are approaching this clean-up piecemeal versus looking at the Site overall (e.g. OK for monolith on Plateau if the rest of the Site is cleaned up and address ground water).
- Consistency problem: old waste versus new waste
 - o Need risk analysis of options.
 - o Do the right thing whether pre or post 1970 (TRU).
- Government can not "cap it" and walk away
- If we can not count on ongoing institutional controls, we should clean it all up now.
- We do not have the adequate risk numbers yet to answer these questions.
- We need to think outside the box to develop the technology to clean up the Site. We could do it if we had the will.
- First and foremost is protecting the groundwater – high risk first.
- Focus on the threats to the River.
- How stable does the waste have to be to be safe for temporary storage?
- Do not hear enough about the risk to the workers.

Group #3

- Amount of characterization to determine contamination is needed for answers.
- When would you leave waste under a barrier:
 - o Based on SAC how rapidly is waste moving toward groundwater
 - o Look at contaminants differently based on half life
 - o Will waste (cesium/strontium) half life cause deterioration before it is a risk to groundwater
 - o If long lived contaminants are expected to get to groundwater – remediation should be planned. If new technology is required it should be pursued.
- Missing:
 - o Modeling showing the movement of contaminants
 - o Kind of contaminants
- Encourage to be certain of methods used in each situation
- Good to capture both chemical and radiological risks.

- Risk reduction versus dollars
 - o Need to include worker exposure risk
 - o Other ecological damage
 - o Others (community impact, etc.)
- “no action” could be viable for a certain time period (e.g. Gable Mountain Pond for 50 years)
- Need to know the inventory to determine the risk.
- Tc 99 should be looked at in total. There are high levels in BC cribs and also in tank waste. How will it be managed and stabilized? Where will it end up? Can it be prevented from getting to groundwater and drinking water?
- Cost figures should be life cycle costs
- Need aggressive plan to develop technology for remediation for contamination that could get into the groundwater (particularly Tc-99).
- Point of contamination (time, space, concentration) versus anti-degradation policy.
- Footprint can be re-configured (core area zone).
- Institutional controls criteria:
 - o Graded approach
 - o Look at the risk after the 2nd half-life
 - o Have to look at contaminate criteria
 - o Risk over time is reduced
- Different footprints at different levels
- What is the inventory and where is it?
- Impact of geology?
- Timeframes must be related to the level of characterization.
- “moving it down the street” is not valid.
- Be careful how you compare risks – must include worker risk.
- For long range planning, need to have strong agency accountability

Processing Facilities, Buildings, and Structures – Breakout Group

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 can be posed to solicit stakeholder input and values. Specifically for **Contaminated Facility End States**:

What end-state do the stakeholders envision for the various classes of facilities (such as canyons, plutonium processing facilities, ancillary facilities, waste storage/treatment facilities, etc.) 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 retrieve, 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?



Interagency Management
Integration Team (IAMIT)
Charter

Public Involvement Schedule

Public Workshop Outcomes
June 23 - 24, 2004
August 10 - 11, 2004
May 19, 2005

Background Material

Submit Comments/
RBES Mail Box

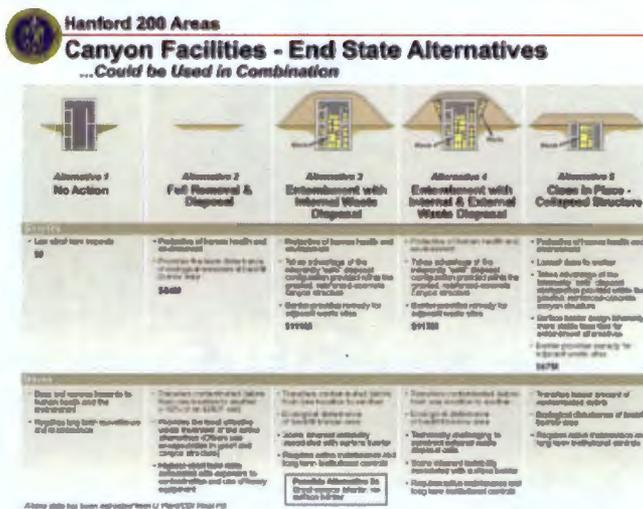
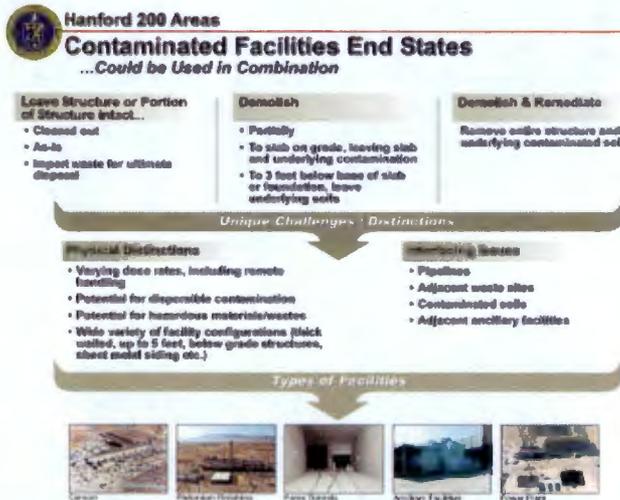
End State Vision

Hanford Site End State Vision
Home

Hanford Home Page

Process Facilities, Buildings and Structures

Click on Graphic to enlarge.



Processing Facilities, Buildings, and Structures

Breakout Group

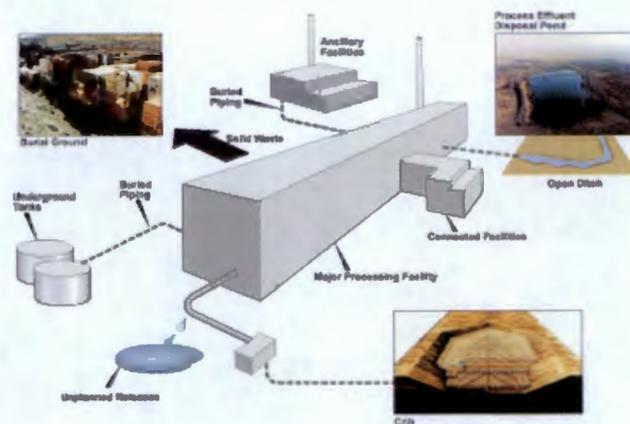
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Hanford 200 Areas

Interrelationship of Waste Sites and Facilities



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 URL: http://www.hanford.gov/docs/rbes/8-10_Breakout_buildings_Graphics.cfm
 Last Updated: 07/19/2010 14:36:44



**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?

Common Themes

- Maintain a Core Zone in the 200 Area where site-wide contamination is consolidated.
- Minimize the size of the Core Zone.
- Deal with the highest-risk facilities first, and make decisions regarding whether to leave or demolish facilities based on risk.
- Leave "robust" facilities (e.g., the canyons) in place if the contamination is contained to a similar degree as it would be in an engineered waste disposal facility.
- It makes little sense to demolish facilities and move them to ERDF if they can be made safe where they are.
- Demolish "less robust" facilities that cannot be placed in a configuration that would be protective of the environment. Since PFP is a high-risk facility and its construction makes demolition relatively easy, then get rid of the building and the equipment inside it now. Recent success and lessons learned with 233-S demolition could be utilized.
- Additional waste can be disposed in the canyon facilities because the general feeling is that they will be as protective as, or even more protective than, ERDF.
- People had serious doubts about the effectiveness and duration of institutional controls.
- Develop Waste Acceptance Criteria (WAC) for any waste left inside or waste imported into the canyon buildings.
- Evaluate current worker risks (radiation/chemical exposure, industrial accidents, and maintenance activities) for specific remedial alternatives and compare those risks with the risks that remaining wastes could pose to future generations and the environment.
- There is a need for a comprehensive remedial action work plan for the Central Plateau that integrates all components in a logical, cost-effective, and protective manner and includes life-cycle costs as well as the pros and cons of remedial alternatives.

- There is a need to conduct comprehensive interviews of retired workers to take advantage of their vast process knowledge.
- There is a need for cap monitoring systems to ensure cap performance and mitigation action plans for potential future problems.

Diverse Opinions

- Participants generally accepted the idea that caps will work for canyon facilities and are protective, but some felt that caps are not necessary, and some felt that we would be better off without them. Reasons for not capping included: 1) the large facilities would serve as a reminder of what has been left in the area, and 2) we would cause more environmental damage digging up the huge volumes of borrow source materials needed for these caps.
- A general theme of the workshop was that we cannot rely on institutional controls, but it was not heavily discussed in our breakout groups, probably because the Core Zone concept assumes reliance on institutional controls for quite some time.
- Pipeline discussions included a request to use a consistent, logical approach for all pipelines. Some felt that pipelines should be closely associated with the facilities they served, and others felt that they should be considered separate entities and not tied to any specific facilities.
- Certainly worker safety is a very important consideration, but some felt that we should avoid doing high-risk work and close facilities in place, whereas others felt that the Hanford workers have the expertise to do the high-risk work and that we should do it now while we have the funding and the historical knowledge. There is a difference between informed workers accepting risks today and unknowing members of the public being exposed to risks in the future.
- Reduce the footprint of the Core Zone by consolidating waste. It appeared that moving the waste to reduce the footprint was a much greater concern than the concern over the potential future human health, environmental, and ecological risks/impacts from leaving waste on-site and capping in-place.
- Some participants said to leave the canyon buildings without caps to remind people of the hazards. Others said to leave the canyons as is for 200-300 years so the beta and gamma can decay, then go back and perform the final remedy, which may include caps. The benefits of waiting include reduced worker risk and the possibility of better D&D technologies in the future.
- Consider global climate change and the potential impacts of increased precipitation on future remedial actions (opinion stated by only one individual).

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

Processing Facilities, Buildings, and Structures

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- 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.

LESSONS LEARNED – 200 AREA END-STATES WORKSHOP

Participant Comments – August 10 – 11, 2004

COMMENT SUMMARY

112 comments were received from the 75+ attendees/participants of the 200 Area End States Workshop conducted in Richland August 10 and 11. The comments were solicited at the end of the workshop session (August 11).

The comments were sorted into five topic categories. Neither the comments nor categories are prioritized. Although some comments touched on a variety of issues, each comment was assigned to only one category.

Individuals who signed their comments were assigned a random code to reduce bias by reviewers. A participant comment submittal code is provided at the end of the document.

The following table summarizes the number of responses within each category.

CATEGORY	COMMENTS
Participation / Demographics	12
Meeting Format, Facilitation & Process	70
Information Needs	16
Meeting Logistics – Facility & Hospitality	10
Miscellaneous	4
TOTAL	112

Response to the second workshop of the series was generally favorable with a number of respondents noting improvements over the first workshops. The majority of comments focused on issues related to the meeting process with concerns expressed over the following: the questions posed for participants to address; overall comprehensiveness of information and end-state vision; and, issues related to facilitation – specifically the second day. There were additional comments admonishing the over use of acronyms and Site jargon as well as continued calls to engage a broader segment of the general public in the discussions. There was also acknowledgement that information needs were better met at this workshop with continued suggestions for improvement.

LESSONS LEARNED – 200 AREA END STATE WORKSHOP

Participant Comments

August 10 – 11, 2004

PARTICIPATION / DEMOGRAPHICS

1. Public participation improved, but still need better ratio of public to DOE-PNL-contractor employees often with vested interests.
2. Include more retirees with historical knowledge of operations. Most retirees were not aware of these sessions and the value of their input. Their input was very valuable here. Process knowledge common here 20-30 years ago is having to be relearned.
3. Shirley Thanks for your outreach. The participation of retired workers was fantastic. We need to keep them involved.
4. Need evening sessions to bring in more voices from 'Non Site' people.
5. Please clearly state goals, objectives, and process at meeting and breakouts. This will eliminate a lot of confusion at purpose.
6. Groups need to have more diversity – Better mix of Hanford RET. Activist and contractors.
7. The turnout was much better than the 100-area workshop, so good job on recruiting attendees.
8. Good format...Good facility...Good cross-section of folks (i.e.-not all HAB and good current site workers cross-section.
9. Good discussions, but I'm still concerned that almost all participants are current or former Hanford/Regulator/Stakeholder Groups, not General Public.
10. Wish there were more "general public" in the process. (and know and how do you get them involved?)
11. Good exchange of ideas. Try harder to get more of the general public to attend. This was mostly HAB, regulators, and contractors. Do a more aggressive ad campaign.
12. Ability to interact with people with so many different backgrounds, expertise, and perspectives is very useful.

MEETING FORMAT, FACILITATION & PROCESS

1. The operational organization was excellent. Group break out
2. Discussions better organized than 100 Area meeting.
3. Meeting shows major effort by facilitator and meeting team to provide information and useful meeting.
4. Addressed major issues and obtained range of view points.

5. DOE is too defensive of existing programs. Ditto for EPA and Ecology. Need to keep it in the sphere of brainstorming.
6. Excellent meeting good prep; good forward; good building; good attendance – build a 200 exposure area.
7. Appreciate DOE responses to input of participants.
8. Too much domination of agency folks in breakout sessions. Tendency to talk too much instead of eliciting conversation from others.
9. Did not particularly like perceived rudeness/glibness of primary facilitator.
10. Need to better coach presenters/speakers better on how to respond to public comments. A defensive response is not helpful and it makes it appear DOE-RL is not truthfully interested in public input.
11. Second day summary was not facilitated very well – attack on DOE by facilitator inappropriate.
12. There are many potential topics for 200 area. Workshop focused on the key questions.
13. One facilitator does not need to be rude to another facilitator.
14. Real difference between basic science and applied engineering. Not enough in applied engineering funds directed at site problems.
15. Some of the questions were too broad or too vague.
16. Some discussion leaders were too dominating, not allowing or encouraging full discussion, and then too quick to give a rebuttal or their vision to the participants – FRUSTRATING! No wonder there's a lot of spinning of wheels!
17. I appreciate Mike Guddu protecting the public interest, when agency people got their agendas in the way!
18. Overall, I thought the format and discussions were good.
19. I appreciate the work done on this by all involved.
20. Some of the discussions, especially when leaders got their agenda out of the way were fantastic, more of which needs to happen – success depends on discussion leaders.
21. The diversity of source locations and inventories in the 200 areas made it very difficult to answer the rather general questions we were asked to address. As a result, we were often driven to attempting to answer those questions on a site-by-site basis. Thursday, the emphasis on DOE/EPA/Ecology to develop a comprehensive holistic overview of the total problem is strongly encouraged.
22. Meetings emphasized the need for good overview (not piece meal) approach to cleanup AND need to effectively communicate this information to public and workers
23. (Related topic) public needs evidence that its concerns are being heard AND acted upon.
24. This is a worthy model to use for future public meetings e.g., tank waste EIS.
25. It would be helpful to have some of the handout information available on the website ahead of the workshop.

26. I think the public did not have enough information on inventories of contaminants and their associated risks to really answer some of the questions that were posed. The answer in many cases would be "it depends" (on a lot of things we have not been told yet).
27. I have been at Hanford since 1965. For 30 years, I have heard of the need to preserve nuclear knowledge. RIDS are supposed to do this – but they do not!! The long-term memory is disappearing. This was even an IAEA topic in 2001. But nothing is being done. – B04
28. Facilitation was rude to DOE, which is not helpful if we're trying to facilitate a productive dialogue.
29. The issues are complicated – Job well done on simplifying without over simplification.
30. Mike did a great job as the public's voice.
31. Workshop was too broad – would have been better to get a better focus of a few questions/issue that would have been most helpful for regulators and DOE.
32. Mike Goddu does an excellent job as facilitator.
33. Presenters in plenary and in breakouts generally did a very good job – issues were reasonable well focused.
34. Handouts were useful – but would have been able to acquire them (via web or e-mail) prior to the workshop.
35. Second day would have preferred to attempt to focus on a handful of key issue/values – rather than spend so much time re-hashing so many thoughts from day one.
36. There should be some type of pre-meeting discussion of the agency presenters about when to clarify or respond to issues. There is an internal conflict on when to respond to a comment that is factually wrong or when to let the comment slide for the sake of the cadence of the meeting. Does lack of response imply agreement?
37. For the informational segment (1st half day) provide a lecture hall format so we have desks for note taking. Then have one "big" breakout group so everyone can hear all the discussion. Would eliminate the need for a 1/2-day summary.
38. It is hard to see the "big picture" in a two-hour presentation. DOE should put "tutorials" about the entire Hanford site (and each facility) on the internet. So the public can easily access it. Right now, they need to know where to look and go to multiple documents to find it.
39. Would help to have a clearer presentation about where outcomes go – into multiple processes - and what near term follow on activities will be. Too much reliance on "it'll come up in normal CERCLA process."
40. Workshop 2 – Great appreciation for openness, candidness and hard work by Mike, Yvonne and Shirley, EPA and Ecology. A very big Thank you.
41. Breakout groups and rotations pretty effective.
42. Would have helped to have some visual(s) of extensive capping used on cocooning in 200 area.
43. Workshop 2 – Please put a glossary of acronyms on the web site. Use of acronyms is a norm. We use about 20-30. It will help and people will not disrupt the meeting for this reason.

44. Unless you are deeply involved in Hanford details, there is no way to have any valuable input.
45. Presentations – Time and detail were appropriate. Would have liked more info on tank remediation. Let me know when tank workshops are scheduled.
46. Agree with general comment that comprehensive central complex plan/strategy needs to be discussed BEFORE making decisions on individual elements, e.g. B/C cribs, canyons, or even Core Area.
47. Outstanding organization of sessions and topics/questions!
48. Comments on meetings – Good format, some opinionated individuals were given too much time on their views, more info (facts) on real risks to public is needed. (Don't spend big bucks on minor risks.)
49. Graphics were very good and very helpful.
50. Although discussions were interesting there was no real value to real regulatory (CERCLA) decision making for cleanup. So why waste the time?
51. Good exchange of ideas and materials.
52. Need to provide a comprehensive overall plan for review, perhaps prior to the workshop.
53. The handouts at the group discussions were helpful. Recommend this continue for future workshops.
54. Need to do a better job on selecting/presenting question to be covered/addressed in the group sessions.
55. Nick's comment relative to comprehensive strategy is very appropriate. I support such an approach for future workshops.
56. I found the entire thing very education/informative.
57. I like that each station had handouts on what they were talking about so everyone had a copy to hold.
58. I still think there was a lot of information to take in if you don't work with the agencies. It makes it hard to come up with solutions when you don't know all the facts.
59. A lot of the information was over my head so it seemed like the session went on and on. If there could be a few more breaks just for us to wake up and maybe ask some questions things might actually move along better so we don't spend the entire session time asking questions instead of coming up with solutions.
60. The questions were very broad. It seemed as if you have already made up your mind on what's going to happen. As an after thought you are asking the public.
61. The public is not completely aware of your DOE terminology. Make it more public friendly. Less acronyms.
62. A concrete end use of the land must be determined to evaluate clean up standard. Who will own the land when DOE gives it up makes a critical pivot point on the decision.
63. The 200 area graphics would be a more helpful visual aid if you predicted an after picture with the before picture for the entire CZ.
64. A greater lead time to become familiar with the topics of discussion would be productive use of the session time.

65. "Old" knowledge needs to be passed to younger generation, encourage universities to restart classes/degrees in nuclear physics, biology, chemistry etc. congrats you stayed on schedule, size of breakout groups good, large room adequate to hear all speakers, presenter very knowledgeable, agenda and all handouts clear and very helpful, Yucca Mountain the impossible dream.
66. This was better than 100 N workshop, information better organized, more public.
67. I initially was concerned that input from the public was limited to just a few outspoken persons. Ultimately, I was led to believe that they carried the banners of significant constituencies.
68. Overall process was effective. I particularly benefited from the Wednesday AM interaction. The rotating group methodology allowed for presenters to modify/improve with subsequent groups to enhance participation that was good.
69. On the process side all the handouts in one folder and grouped by topic would be helpful. I dropped mine once and then it became a mass of unconnected info.
70. Good [unintelligible] used on individual groups. Some of the presenters had to be constantly reminded to speak in non-scientific jargon. Pick your speakers somewhat in their presentation style. Some put me to sleep.

INFORMATION NEEDS

1. Remember to "de-acronym" for the lay, non-employee, non-contractor folks.
2. I know it is a complicated, scientific process, but need to definitely "simple-up" and widely dispense a summary of proceedings.
3. More emphasis is needed on historical preservation of the Manhattan project facilities. (Learn from past.)
4. Oral Histories – A program to capture knowledge and experience on past Hanford practices and their experience is sorely needed.
5. Long day but handouts very good and improved – need more copies available.
6. Would have been helpful to give a mental picture of the surface barriers that are expected to be in place in 2050. The focus could use that as baseline – OR challenge the baseline.
7. Not enough overview of surface contamination, contamination at 5 foot depth, 10 foot, 20 foot, 50 feet, 100 feet, 200 feet to better communicate to the public the nature of the problem in 200 areas.
8. I would like to see a similar workshop on risk assessment - in particular – in foundation and limitations.
9. Provide brief summary documents at each break out so that the public has a clear view of issues and research.
10. Show models, risk assessment, and feasibility analysis. Do not simply refer to them I want to see it! Where possible, use 3-D models and provide documents that talk about the impacts and outcomes of options.
11. Please provide a diagram for the public input a decision making process. (Whole process)
12. Do not use acronyms. It inhibits true public involvement.

13. Provide historical documents and database with specific references for those interested in pre or post research.
14. We (RL and contractors) have an obligation to provide clear and comprehensive depictions of characterization results, anticipated impacts, etc. to educate the public. If the public does not understand the problem, it is our obligation to address their "ignorance." 3-D depiction of GW [groundwater] contamination (vadose zone, too) for large area rather than individual waste site wear could be very illustrative.
15. More background info before workshop or emphasize that some knowledge out. The issue is recommended.
16. As strongly suggested, a more complete near-term plan needs to be developed.

MEETING LOGISTICS - FACILITY & HOSPITALITY

1. Meeting room and style of presentation were great.
2. Facility and facilitators performed well. Good facility.
3. Appreciated all advance work for each session! Poster boards were great.
4. This is a terrible location for these workshops. Putting a group in the hall was unbelievably rude! Not comfortable.
5. Great facility. Should be used more often.
6. Good job on refreshments! The cooler with water was excellent. Please provide water at future meetings.
7. Ask people not to wear colognes, perfumes, after shave, etc. (Many public meetings make this a requirement.)
8. Don't change the process, facility perfect, facilitator (Mike) and groups leader terrific, time/duration on the mark, A/V, handouts great, snacks improved from 100 [Area Workshop] but could be more i.e. (quantity) of the same (quality).
9. Good facility, need better refreshments (no pretzels), good focus by asking specific questions, I'm still a little cynical about the process and DOE's reliance on the input.
10. The facilities are inadequate! Need microphone taken to those making comments. Difficult for those in back to see screen. Need an auditorium for group meeting.

MISCELLANEOUS

1. Does info from the workshop indicate a mandate exists to do all of the things discussed by the groups and if so what next?
2. Will be difficult to implement the feedback from this workshop – very diverse.
3. Suggest future sessions address the near term decisions to be made and gather input on these topics/questions/decisions.
4. Please email location of web site to me (location of results of this meeting)