



Heart of America Northwest

The Public's Voice for Hanford Cleanup

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Joint Comments of Heart of America Northwest and
Heart of America Northwest Research Center on the
*Draft Tank Closure and Waste Management Environmental Impact
Statement for the Hanford Site, Richland, Washington*

May 3, 2010

Submitted to U.S. Department of Energy and Washington Department of Ecology

*The U.S. Department of Energy must withdraw decisions to use
Hanford as a national radioactive waste dump and issue a new draft
Tank Closure & Waste Management Environmental Impact Statement
for public comment*

TABLE OF CONTENTS

<i>Introduction</i>	4
<i>Comments on the alternatives</i>	
I. Using Hanford as a national radioactive waste dump	5
II. Tank waste retrieval alternatives.....	10
III. Tank closure alternatives.....	11
IV. Waste Treatment alternatives.....	14
V. Fast Flux Test Facility alternatives.....	15
<i>Heart of America Northwest's Key Concerns</i>	
I. Greater Than Class C wastes proposal.....	16
II. Transportation Risks.....	17
III. Relevant laws and standards violated or ignored.....	22
IV. Climate Change.....	24
V. Cumulative Impact Analysis.....	25
<i>Conclusion</i>	29
<i>The U.S. Department of Energy must withdraw decisions to use Hanford as a national radioactive waste dump and issue a new draft Tank Closure & Waste Management Environmental Impact Statement for public comment</i>	
<i>Comments on the public involvement process</i>	35
<i>Endnotes</i>	37

INTRODUCTION

These comments supplement our presentations made at hearings and submitted as a Powerpoint presentation to the United States Department of Energy, both of which are also part of our formal comments. Our organizations also adopt as comments, and support, the formal advice issued by the Hanford Advisory Board (HAB) on March 4, 2010, of which our organizations made a considerable effort to assist in development.

USDOE's plans for Hanford Clean-Up, outlined in the "preferred alternatives" in the Draft Tank Closure and Waste Management Environmental Impact Statement (TCWMEIS), are more properly described as a "cover-up", not a clean-up. The preferred alternatives – USDOE's planned actions – are to leave large amounts of waste and contamination in tanks and in soil sites under ineffective caps, which will not prevent the spread of contamination to groundwater at levels which will cause cancer in large numbers of people who are reasonably expected to be using the Hanford site and Columbia River for thousands of years.

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Resources for citizens reviewing the EIS or seeking to comment on other Hanford Clean-Up issues are available at www.hoanw.org

COMMENTS ON THE ALTERNATIVES

I. USING HANFORD AS A NATIONAL RADIOACTIVE WASTE DUMP

USDOE should withdraw its decisions to use Hanford as a national radioactive waste dump and commit to a preferred alternative and decision not to add any more wastes to Hanford. The impacts to health and the environment from existing wastes and contamination are shown in the draft TCWMEIS to be so high as to make it unconscionable, as well as illegal, to add more wastes.

USDOE proposes two major “waste management” alternatives for waste generated from on-site cleanup activities. Both alternatives for disposing of radioactive & mixed radioactive/hazardous wastes in landfills at Hanford include using Hanford as a national waste dump¹, starting when USDOE operates the vitrification plant. There is no alternative presented in which Hanford would not be used as a national radioactive waste dump. This is a significant violation of the National Environmental Policy Act (NEPA), which requires that all reasonable alternatives be considered in the EIS.

THE ALTERNATIVES

- Disposal of onsite & offsite generated wastes in two large landfills at Hanford’s Central Plateau Core Zone: 200 East (currently exists) & 200 West (USDOE would construct this). These wastes include the vitrified Low Activity Waste from the tanks.
- Disposal of all onsite & offsite wastes in the 200 East landfill.

USDOE’S PREFERRED ALTERNATIVE

Using Hanford as a national radioactive and mixed waste landfill beginning when the vitrification plant operates and disposing of all the wastes in the currently existing 200 East landfill (Integrated Disposal Facility, or IDF).

THE MISSING ALTERNATIVES

USDOE fails to consider these reasonable alternatives, which is a violation of the National Environmental Policy Act (NEPA):

- Not using Hanford as a national radioactive and radioactive/hazardous waste dump;
- Disposing of significant amounts of treated waste from Hanford Clean-Up at other sites that are not next to major rivers or above drinkable groundwater.
 - o The draft TCWMEIS shows that the levels of groundwater contamination and health risks from the wastes already at Hanford (including releases from proposed new landfills to dispose of vitrified tank wastes and River Protection Project wastes) will be hundreds of times the Drinking Water Standards for hundreds and thousands of years.
 - o Plutonium 239 levels, for example, are projected to be nearly 300 times the Drinking Water Standard at the Columbia River shoreline one thousand years from now.² Uranium 238 levels on Hanford’s Central Plateau outside the “Core Zone” are projected to rise to approximately 200 times the Drinking Water Standard. Technetium 99, Iodine and chemical contaminant levels will also be far above Drinking Water Standards.

The Drinking Water Standard is set at a level at which one adult out of every ten thousand who drink average amounts of water will die of cancer. Children are three to ten times more susceptible to cancer from the same exposure as an adult.
 - o The only responsible alternative to reduce the impacts projected from existing wastes is to remove from Hanford large quantities of wastes in the ground an projected to be

created from treatment processes (e.g., secondary wastes and ILAW) for proper disposal in landfills that are not above potable aquifers or along major Rivers or in deep geologic repositories.

o USDOE is obligated under NEPA to consider the reasonable alternative of disposing of wastes offsite at regulated facilities. USDOE has adopted commitments to consider commercial regulated facility disposal of its wastes in cleanup decisions, which it failed to consider in the draft TCWMEIS.

- Exhuming much more of Hanford’s buried wastes and contamination for treatment and proper disposal, with all Plutonium and Transuranic wastes removed, treated and disposed in deep underground repositories.
 - o USDOE should exhume significant quantities of waste, including the 161,000 cubic meters of TRU buried or disposed in soil prior to 1970, and send those wastes to be disposed offsite.

THE IMPACTS

Even without using a landfill in 200 East or 200 West as a national radioactive and “mixed” radioactive hazardous waste dump, USDOE’s analysis shows that either landfill location would cause very high contamination and high cancer risks lasting for thousands of years. USDOE prefers to use only the 200 East location because using the 200 West landfill would cause very high contaminant levels heading towards the Columbia River much faster than the 200 East IDF landfill.

Using the 200 East landfill at Hanford as a national radioactive waste dump for the wastes analyzed (which do not include USDOE’s proposal to also import and bury highly radioactive “Greater Than Class C” wastes) would increase radioactive contamination and cancer risk levels over the next thousand years by tenfold – to 100x WA State’s cancer risk standards for toxic cleanup sites.³

Even without disposing of more offsite waste and LAW vitrified waste, the cancer risks from the wastes in Hanford’s soil and unlined ditches – which USDOE proposes to leave – will cause shockingly high cancer risk rates to future groundwater users along the River. Plutonium levels entering the Columbia River are projected by USDOE to reach 300 times the Drinking Water Standard in the next thousand years – without adding any more waste to Hanford.⁴

HOANW’S RECOMMENDATION FOR USDOE’S PREFERRED ALTERNATIVE:

- **NO MORE WASTE GETS ADDED TO HANFORD.** Delaying the addition of more wastes until the vitrification plant operates does nothing to protect the River and the health of children for thousands of years.
- Limit disposal in Hanford landfills to amounts and types of Hanford clean-up wastes which won’t cause future leakage at levels which will violate cancer risk and other standards. This would involve using off-site landfills that are not next to major rivers or above drinkable groundwater, and not importing off-site waste to Hanford.
- Dig up Plutonium and other “Transuranic” wastes in unlined soil disposal ditches and tank leaks, treat the wastes and dispose of them in deep geologic repositories. Dig up other wastes from unlined soil ditches and tank leaks, treat them, and dispose of them in a regulated commercial radioactive waste facility which is not above drinkable groundwater or next to a river.
- USDOE should withdraw the Records of Decision to use Hanford as a national waste dump for radioactive Low-Level Waste (LLW) and Mixed Radioactive – Hazardous Waste (MW), instead of continuing to pursue its misguided and unsupported decisions to use Hanford as a national radioactive waste dump to bury 3 million cubic feet of radioactive wastes.
- USDOE should adopt a Record of Decision (RoD) that it will not add more waste to Hanford, due to the unacceptably high contamination and risk levels projected in the draft TCWMEIS from existing wastes. As shown in our comments, and those of Tribes and individuals, the TCWMEIS underestimates projections of contamination from existing wastes and risk by failing to include the full inventory of radionuclide and chemical wastes and contamination in the soil and likely to be left on-site.

USDOE has no credibility claiming that it prioritizes cleanup of Hanford while seeking to dump more waste at Hanford. The only way for USDOE’s cleanup program to move towards credibility is to withdraw the prior decisions to use Hanford as a national radioactive waste dump and issue a new decision that it will not add more waste to Hanford. USDOE can no longer feign ignorance that its plans to abandon existing wastes and contamination create unacceptable levels of risk, even without adding any more waste. Thousands of people have submitted comments to USDOE on the draft urging this. USDOE’s only credible course of conduct is to issue an immediate response that the preferred alternative will be revised to reflect a decision that more waste will not be added to Hanford.

- USDOE should commit to follow the principle of “Clean-Up First.” Under this principle, contamination would be demonstrably cleaned up and existing wastes brought into compliance, before USDOE considers adding more waste to a site. This principle was overwhelmingly supported by Washington’s voters in adoption of Initiative 297 in 2004, which USDOE spent four years and millions of dollars to overturn in federal court. Only after cleanup actions are completed will the public, USDOE or regulators know how much residual contamination and risk will remain at Hanford (or how well remedies perform)

The draft TCWMEIS continues USDOE’s misguided efforts to pursue a “preferred alternative” under which a landfill in Hanford’s 200 East Area (the IDF, or Integrated Disposal Facility) will be used as a national radioactive waste dump for approximately 3 million cubic feet of offsite radioactive Low-Level Waste (LLW) and Mixed Radioactive – Hazardous Waste (MW) (82,000 cubic meters is the quantity of off-site waste proposed for addition to Hanford under the preferred alternative, presented as implementing the 2004 Record of Decision. The 82,000 cubic meters is proposed to be comprised of 62,000 cubic meters of LLW and 20,000 cubic meters of MW).⁵

THE PRIOR DECISIONS TO USE HANFORD AS A NATIONAL RADIOACTIVE WASTE DUMP THAT NEED TO BE WITHDRAWN:

In 2000 and 2004, USDOE issued Records of Decision to use Hanford to dispose of off-site wastes, following issuance of the Waste Management Programmatic EIS (WMPEIS) and the Hanford Solid Waste Disposal EIS. Neither of those prior impact statements properly considered the impacts of disposing of offsite waste at Hanford. The WMPEIS Record of Decision stated that USDOE would perform a site specific impact analysis of its national level decision to use Hanford as one of two national waste disposal sites, acknowledging that the WMPEIS did not have any site specific impact analysis.

The Final Hanford Solid Waste Disposal EIS was issued after USDOE had to withdraw and reissue the initial draft due to woeful inadequacies. Thousands of people attended hearings and submitted comments on the drafts objecting to USDOE’s proposal to use Hanford as a national radioactive waste dump and objecting to the serious shortcomings of the EIS. After issuance of the Solid Waste Disposal EIS, USDOE’s internal analyses, revealed in legal discovery, showed that USDOE acknowledged that the EIS was inadequate in regard to human health risk analyses, transportation risk and groundwater risk analyses. USDOE agreed in settlement of *WA v. Bodman*, to a moratorium on waste import to Hanford until a new impact statement was completed, which USDOE hopes will be the TCWMEIS. Thus, the draft TCWMEIS represents USDOE’s fourth effort to prepare a legally adequate impact statement to support the improper decision made by USDOE in 2000 to use Hanford as a national radioactive waste dump. And, like the prior three efforts, the draft TCWMEIS fails.

The Draft TCWMEIS Summary misrepresents that Washington State has agreed to USDOE’s plan to import and dispose of 62,000 cubic meters of offsite waste at Hanford. The Summary, in reporting on public comment on scoping the TCWMEIS states that USDOE’s response is “This is the amount indentified in the Settlement Agreement for disposal at Hanford.” (page S-15.)

The Settlement Agreement sets this quantity as a limit and included a formal moratorium on offsite waste disposal until USDOE prepared and adopted a Final EIS that cured the inadequacy of the groundwater and cumulative impact analyses in the Hanford Solid Waste Disposal EIS.

Even though USDOE failed to revise analyses in the draft TCWMEIS for each of the areas in which the Solid Waste Disposal EIS was “indefensible” and inadequate, the draft TCWMEIS, nonetheless, demonstrates that adding offsite waste is indefensible.

The TCWMEIS (EIS) identifies unacceptably high impacts to human health and the environment due to contamination which will reach the groundwater from disposal, on-site, of existing waste and wastes which are projected to be created during Hanford clean-up. These impacts are compounded by high levels of groundwater contaminants, as estimated from USDOE’s preferred alternatives for High-Level Nuclear Waste tanks and their wastes (landfill closure).

Approximately three million cubic feet of offsite waste imported to Hanford landfills is projected in the EIS to increase the contamination levels in groundwater by as much as tenfold for key contaminants of concern. It could reach a cancer risk level for groundwater, over the next thousand years, in excess of one hundred times Washington State’s cancer risk standard for cleanup and landfills. (Another serious inadequacy of the draft TCWMEIS requiring revision and reissuance

is USDOE's failure to present and discuss Washington State's cancer risk and cleanup standards, discussed later in these comments).

USDOE undermines its credibility by seeking to include the import and burial of 82,000 cubic meters of offsite waste (approximately 3 million cubic feet of waste) in the TCWMEIS while saying that it will honor a moratorium on importing waste until the vitrification plant is operational – projected for the year 2022.

INADEQUATE ASSESSMENT OF THE IMPACTS FROM THE 3 MILLION CUBIC FEET OF WASTE WHICH USDOE PROPOSES TO IMPORT AND BURY AT HANFORD:

Appendix D notes that projecting wastes which USDOE would be importing from 2010 through 2035 is unquantifiable as to specific volumes, sources and great uncertainty as to its composition, because the waste is mostly yet to be generated. Compounding this problem is USDOE's poor management practice under which it discontinued forecasting specific waste streams which it will be generating and needing to dispose. Contrary to public assertions by officials at the TCMEIS hearings, the waste proposed to be disposed at Hanford is NOT from cleanup of existing legacy contamination at USDOE sites, but will be newly generated wastes (including from decommissioning of facilities). Even before USDOE said it would not import waste to Hanford until after the vitrification plant is operational, the contractor preparing the draft TCWMEIS warned that the nature of the wastes to be disposed at Hanford under the proposed preferred alternative could only be guessed at.

If USDOE intends to honor the moratorium on import until the vitrification plant is operational (estimated for the year 2022, then the uncertainty as to waste streams is greatly compounded. The draft EIS in Appendix D includes a "cover your a__" memo by SAIC about the uncertainty in waste stream estimates beginning in 2010. This uncertainty undermines the necessary quality of the site specific impact analysis required for NEPA and SEPA purposes for the Hanford TCWMEIS. If the estimates were uncertain for 2010, they are nothing short of politically motivated guesses as to waste streams for after 2022.⁶

In addition, these off-site waste streams have not been properly identified, with the EIS relying on unverifiable estimates. The Appendix acknowledges that there is no reliable information but does note that a significant portion may be extremely radioactive "Remote-Handled" wastes and contain large amounts of Transuranic elements just below the threshold which would require disposal in a deep geologic repository.

The contractor noted in Appendix D of the draft TCWMEIS, that the information used to model impacts from offsite waste – which would also affect the ability to project impacts from transportation – is not reliable:

"The information needed for the EIS was not readily available, so efforts were undertaken to use existing corporate information, supplemented by information from DOE waste managers. The EM program has corporate performance metrics that capture the actual and projected volume of LLW and MLLW for disposal from "baselined" projects. The information was not sufficiently detailed for modeling purposes, e.g. LLW and MLLW are combined, and data on radionuclide or hazardous chemical constituents is not collected and maintained corporately."

Page D-126.

"(T)here are significant uncertainties in waste volume projections because waste is yet to be generated, and little characteristic information is available as previously discussed. This is a change from the situation during the early years of the EM program when most MLLW was in storage awaiting treatment and disposition.

"In addition to uncertainties in waste volume, the newly collected LLW and MLLW waste data did not include radionuclide or hazardous chemical data needed for EIS modeling. EM has not collected radionuclide and hazardous constituent information since the 1990's, when data was collected to support the Federal Facilities Task Force and the WMPEIS development. Documented information on radionuclides is found in the Low-Level Waste Capacity Report, Revision 2, produced in 2000. This document continues to serve as a source for waste characteristics.

"It is difficult to predict the radionuclide and hazardous chemical composition of waste projected in the future..." Page D-127

Significant amounts of mixed waste with Plutonium and other TRU just below the legal cutoff requiring disposal in a deep geologic repository is likely to be included in the offsite waste sent to Hanford... However, the Draft TCWMEIS acknowledges that no reliable chemical composition data is available. E.g. LANL and West Valley, NY wastes. Pages D-127 and 128.

The method used to estimate these wastes is not reliable and reflects inherent biases from utilizing interviews with site managers seeking to ensure that wastes from their sites would be included in a decision to dispose of wastes at Hanford.

The amounts and hazards of the wastes proposed to be shipped to Hanford and buried are significant, even with this inherent bias: over 6,800 cubic meters of the wastes are projected to be extremely radioactive Class C and Remote Handled Wastes (over 200 mrem radiation at the cask surface); 1,800 Curies of Technetium 99 (which is a major concern because of the projected release of Tc 99 from the IDF landfill in excess of standards even without adding offsite waste); 1.5 Curies of Iodine 129 (similar concern about violation of standards from IDF releases); and 54.5 Curies of Plutonium 239 and 240. Pages D-134 and 135.

Despite estimating that the offsite wastes will include 5.34×10^1 curies of Uranium isotopes, the chemical estimate has NO Reported Uranium. Throughout the TCWMEIS, we have found that USDOE failed to include Uranium as a chemical of concern with significant toxicity hazards, even when documenting that Uranium was present in large quantities in the radionuclide inventories.

Since the IDF landfill is already built in 200 East, the only reason for the Waste Management portion of the EIS is to provide support for the decision to import and bury additional waste – which USDOE says it will not do for twelve years.

USDOE can not use the results of unreliable guesstimates about waste quantities and composition provided by site managers or from questionable assumptions that past cleanup wastes will be similar to future generated wastes, in assessing the impacts from disposing of those future wastes at Hanford. USDOE should withdraw the decisions to use Hanford as a national waste dump, and commit not to add any wastes to Hanford's problems. Then, if in 2022, if the vitrification plant is operational and if USDOE has significantly reduced the hazards and long term groundwater impacts from Hanford's existing wastes, then USDOE could issue a new reliable EIS utilizing real waste data.

The EIS's cumulative impact analysis projects that the Hanford site will persist in re-contaminating groundwater and the Columbia River over the next hundred to thousand of years, even after current allocated budgets and identified cleanup is done. There is no acknowledgement within the EIS of the need for additional retrieval from burial grounds, tank leaks, tank bottoms and other sources - where there are significant amounts of waste discharges and buried waste, in order to drive down cumulative impacts.

The quantity of waste already in the ground at Hanford and proposed to be buried in shallow landfills after being created during vitrification and other processes is simply too high. The waste volumes proposed to be disposed and already in the soil are projected by USDOE to result in extremely high contamination levels exceeding health and groundwater risk standards by magnitudes. These impacts are compounded by USDOE's intention to add more waste to the site.

II. TANK WASTE RETRIEVAL ALTERNATIVES

How much High-Level Nuclear Waste will USDOE remove from leaky Single Shell Tanks?

THE PROBLEM

53 million gallons of deadly liquid High-Level Nuclear Waste are stored in 177 aging underground tanks. 35 million gallons are in the oldest Single Shell Tanks (SSTs), which have already leaked over a million gallons. USDOE is seeking Washington State agreement to delay the deadlines for emptying the SSTs by 22 years, from 2018 to 2040.

THE OPTIONS

USDOE evaluated removing:

- 90% of tank wastes;
- 99% of tank wastes;
- 9.9% of tank wastes

USDOE'S PREFERRED ALTERNATIVE

Removing 99% of tank wastes.

THE IMPACTS

The EIS shows very significant increases in radioactive contamination of groundwater over thousands of years from all alternatives, but the removal of 99.9% of tank wastes decreases contamination significantly compared to removal of 99% or 90%. The tough to remove residues have a disproportionate amount of the radioactivity in the tanks.

USDOE's own analysis shows that the cancer risk from drinking well water miles away (at the Core Zone Boundary) due to the residues in tanks under USDOE's preferred alternative – leaving 1% of the tank wastes and capping the areas instead of cleaning up past leaks – would be approximately 50 times the State's cancer risk cleanup standard in the year 3600. Even if 99.9% of the wastes are removed and only two tanks farms are cleaned up, the cancer risk from the well water is nearly 10 times the State's cancer risk standard.⁷

HOANW'S RECOMMENDATION

USDOE must remove 99.9% of the tank wastes, or remove to the limits of technical capabilities. This must be followed by a formal commitment that USDOE will characterize contamination caused from leaks and discharges from the tank systems and commit to a risk based retrieval (permanent remedy) of contaminated soils instead of continuing to pursue just "capping" vast areas of the tank farms and liquid waste discharge crib areas. USDOE's current plan amounts to "cover-up" instead of "clean-up."

III. TANK CLOSURE ALTERNATIVES

How – or if – the 149 Single Shell Tanks and High-Level Nuclear Waste leaks will be cleaned up after the wastes are removed

THE PROBLEM

Over a million gallons of High-Level Nuclear Waste has leaked from Single Shell Tanks (SSTs), and billions of gallons of waste was discharged from tanks into the soils near the “tank farms”.⁸ The contamination is spreading rapidly through soil to groundwater and will move towards the Columbia River.

USDOE must legally “close” the tanks and tank farms after the wastes have been removed (with options ranging from removing 90% to 99.9% of the wastes). Legal closure includes cleaning up the contamination in the soil column and groundwater; and, either adding a cement grout to tanks with dirt caps on top of the tank farms and contamination (called “landfill” closure), or, removing the tanks and pipe systems and cleaning up the contamination in the soil (called “clean closure”). Washington State’s hazardous waste law says that landfill closure can only be used after practical efforts to cleanup contamination have been attempted.

Until fairly recently, USDOE claimed that tank leaks posed no significant environmental risk. However, characterization of tank leaks in the SX Tank Farm found that gamma radiation emitting Cesium 137 had moved deeply to the depth of groundwater. Cesium 137 is far less mobile in soil and groundwater than many other radionuclides. USDOE issued a report which acknowledged,

“(T)he SX Tank Farm vadose zone work essentially disproved some long-held assumptions that the contamination from the tanks did not migrate and therefore was not a significant environmental risk.”⁹

Unfortunately, USDOE’s preferred alternative still reflects the old views that tank leaks are not a significant risk. USDOE’s preferred alternative in the TCWMEIS is to leave forever the bulk of the contamination from tank leaks and deliberate discharge under caps, instead of cleaning up the contamination.

THE OPTIONS

- Not investigating the leaks & wastes in trenches; not cleaning up or capping the tanks (“no-action alternative”)
- Adding a cement grout to the tanks & leaving them in place; not investigating or cleaning up the leaks & wastes in trenches; capping the tanks (“landfill closure”)
- Investigating and cleaning up only two of the tank farms and leaving the other tank farms and their contamination under caps
- Removing the tanks and investigating and cleaning up the soil contamination in all the tank farms (“clean closure”).

USDOE’S PREFERRED ALTERNATIVE

Dirt caps (“landfill closure”) over the tank farms without removing tanks or pipelines; and without, investigating or cleaning up the contamination from tank leaks and discharge of tank wastes.

THE IMPACTS

The EIS shows that the contribution to groundwater contamination and cancer risks for future site users from tank leaks would be very high for thousands of years – growing worse over time. Capping does not prevent the contamination from spreading.

For example, the EIS predicts that in the year 3890, Uranium from tank farm releases under USDOE’s preferred alternative would contaminate groundwater below the areas that are expected to be open for public use to levels 10x higher than currently acceptable standards.¹⁰

Cumulative Impacts Without Adding More Waste or Considering Tank Wastes:

Maximum Peak Year Concentrations of the COPCs from Non-TC & WM EIS Sources at the Core Zone Boundary and the Columbia River Nearshore

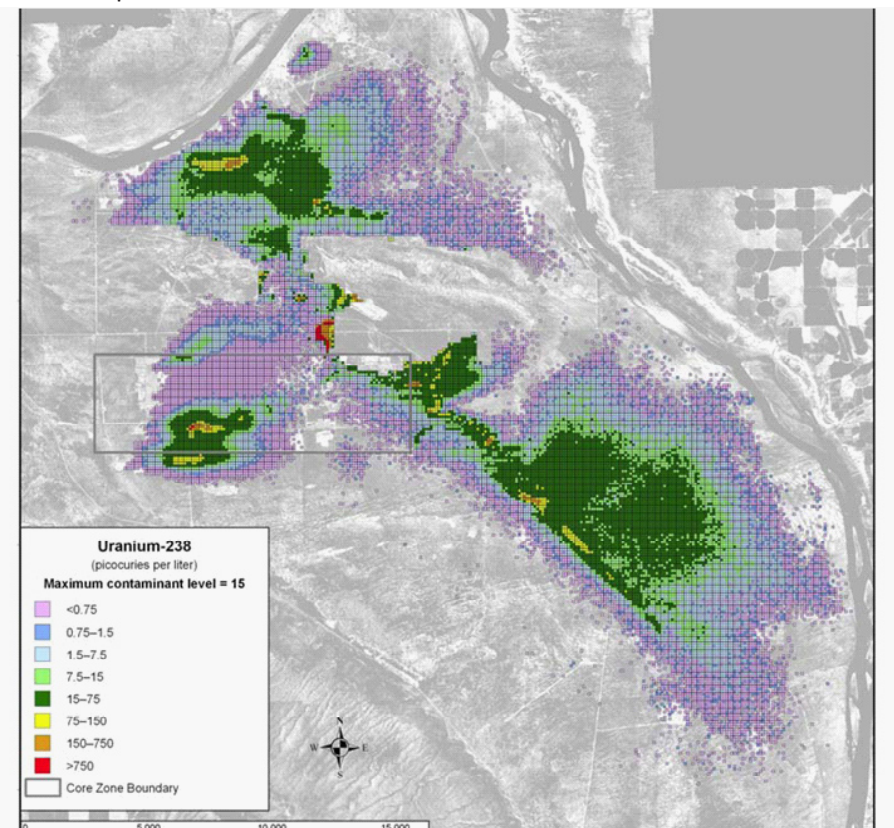
• Table U-2

Contaminant	Max concentration: Central Plateau Inner (year)	Max concentration: River shore (year)	DW Standard or benchmark
Plutonium (inc Pu239, 240)	2,660 (11,848)	4,250 (2983)	15 pCi/L
I-129	50.9 (4043)	9.1 (4540)	1. pCi/L
Chromium	2540 (2216)	16,100 (1978)	100

USDOE projects that Plutonium 239 levels at the River shore will increase to 300 times the Drinking Water Standard in the next thousand years under USDOE’s proposed actions, including from unlined discharge and burial grounds that USDOE plans to cap, instead of cleaning up

New plumes from tank leaks, residues and discharges will grow for thousands of years under USDOE’s plans to NOT clean-up tank leaks, waste discharge trenches and cribs, and to leave 1% in tanks (so-called “Landfill Closure”)

Example from the EIS: Uranium 238 in Groundwater in Year 2135¹¹



Dark red >50x Drinking Water Standard (DWS); DWS is set at level at which 1 adult male in 10,000 dies of cancer. This is just one contaminant out of many which will greatly exceed the Drinking Water Standard.

The draft TCWMEIS fails to provide maps or charts disclosing the cumulative risk from all contaminants to Native American children and other reasonably foreseeable exposed populations over time. It is very foreseeable that the scarcity of water, including restrictions on further Columbia River withdrawals and the projected decrease in River flow due to climate change, will lead to use of the immense groundwater resource under Hanford.

Uranium 238 in Year 3890 under Alt 2 - Uranium into River:

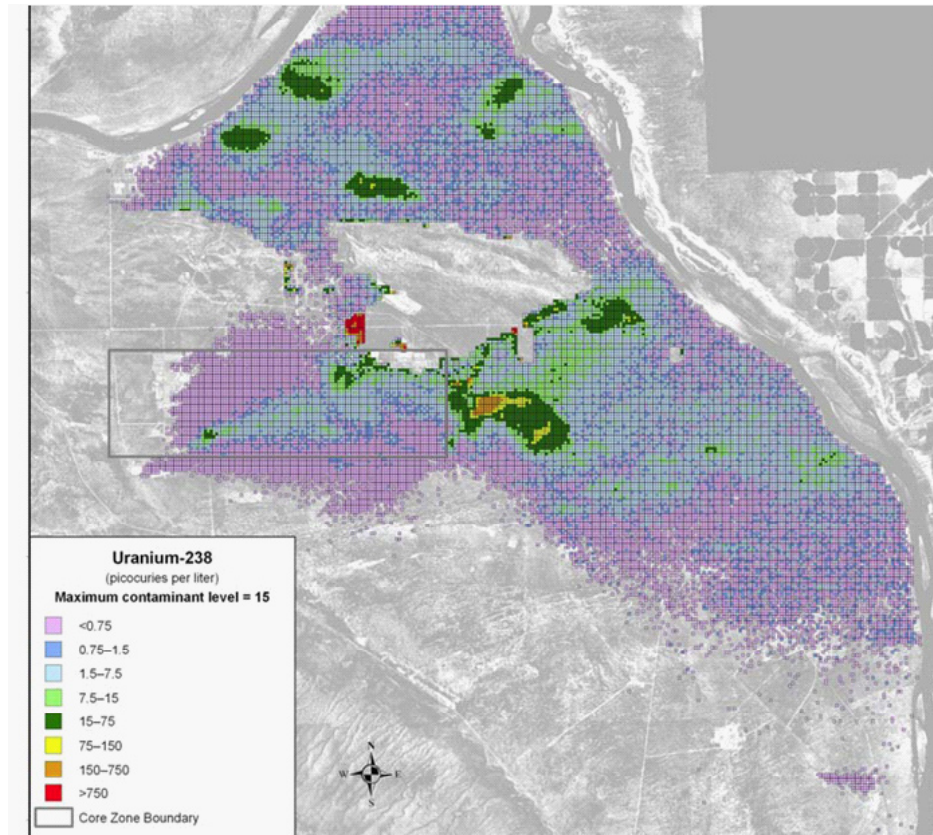


Figure 6–66. Alternative Combination 2 Spatial Distribution of Cumulative Groundwater Concentration for Uranium-238 During Calendar Year 3890 . Discussion page 6-70.

Note that the area USDOE uses to report groundwater contamination levels is what it refers to as the “Core Zone Boundary”, shown in charts as the box on the Central Plateau. This exceeds the 200 Area fence lines, and is a significant distance from the boundaries of the regulated hazardous waste units – allowing for significant dilution in groundwater before reaching the location USDOE is reporting on. Hazardous waste laws, however, require meeting the drinking water standard at the boundary of the unit itself – not allowing USDOE to contaminate large areas outside the units.

It is not realistic for USDOE to assume that the location of wells for drinking and irrigation will be where USDOE has drawn this line, since the area outside the fence line today will be unrestricted public access and use... and, it is foreseeable that there will be uses within the 200 Areas when the fences disappear.

See Figure 6–78. Alternative Combination 3 Cumulative Concentration Versus Time for Uranium-238:

Uranium 238 over time in groundwater: increases on Central Plateau to 100 x DWS in 1,000 years. Sources include tank residues, leaks, and billions of gallons discharged to cribs.

Heart of America Northwest’s review has found that USDOE has omitted billions of gallons of discharges from tanks and numerous other sources of buried or discharged Uranium from its analysis of cumulative impacts in the TCWMEIS.

HOANW’S RECOMMENDATION

USDOE must remove the tanks (“clean closure”) and investigate and remediate the soil contamination from tank leaks. Abandoning the contamination from tank leaks and deliberate discharges is not acceptable.

IV. WASTE TREATMENT ALTERNATIVES

How to treat the High-Level Nuclear Waste?

THE PROBLEM

The 53 million gallons of liquid High-Level Nuclear Waste at Hanford need to be treated and turned into a stable glass form, through a process called vitrification. The current vitrification plant under construction (called the Waste Treatment Plant, or WTP) is \$8 billion over budget and 8 years behind the 2011 schedule for opening in the Hanford Clean-Up Agreement (TPA). For \$12 billion, it is only planned to have the capacity to treat half of the volume from the High-Level Waste tanks.

USDOE has planned to separate the highest radioactive wastes with 90% of the radiation into 10% of the volume of the wastes to be vitrified as “High Activity Waste.” This glass would be stored until sent to a deep geologic repository. USDOE proposes to bury the other 90% of the waste volume (called Low Activity Waste, or “LAW”) – which still has a tremendous amount of radioactivity and chemical waste –, in a landfill at Hanford. The LAW portion of WTP is largely complete, but, it only has melter capacity to treat half of this waste stream in coming decades. Whether to vitrify or find another way to solidify LAW waste is a major controversy, referred to as “supplementary treatment.”

THE OPTIONS

- Use only the vitrification capacity currently being built at the Waste Treatment Plant (WTP) – this will take until 2095 and require replacing the plant after 60 years.¹²
- Supplement the Low Activity Waste vitrification portion of the WTP with another LAW plant with four melters, instead of just two. This would allow treatment to be completed around 2045.¹³
- Supplementing WTP with thermal treatment for the 50% of the LAW volume which WTP will not vitrify by 2050 using “bulk vitrification”; “steam reforming”; or non-thermal treatment such as “cast stone,” which involves mixing wastes with grout. None of these will protect groundwater as well as vitrified LAW.
- Remove or not remove Technetium-99 (Tc99) and sulfate from wastes before treatment – Tc99 is a major source of future groundwater contamination.

USDOE’S PREFERRED ALTERNATIVE

To separate the wastes into High-Level and Low Activity Waste streams; and, choose after the year 2015 whether to treat the other 50% of the LAW waste using vitrification, steam reforming, bulk vitrification or cast stone.

THE IMPACTS

Early startup of the LAW portion of the Vitrification Plant could enable USDOE to retrieve more waste from leaky Single Shell Tanks prior to 2022. None of USDOE’s alternative include this possibility.

Vitrification of LAW waste is the least problematic portion of the WTP, while the other technologies that USDOE wants to spend years researching have significant drawbacks, particularly for future contamination of groundwater and cancer risk if LAW is buried in a landfill at Hanford. If USDOE does not plan to start design and construction of a second LAW plant before 2015, the timelines for emptying tanks will be stretched out significantly.

HOANW’S RECOMMENDATION

USDOE should plan to start up the LAW vitrification portion of WTP prior to 2019; and start funding a second LAW facility in 2012 in order to have it ready to operate by 2022. The “supplemental treatment” options should be discarded as they are less effective and protective of the environment. The Hanford Advisory Board and the State of Washington also object to the supplemental treatment options for these reasons; however, Washington recently gave tentative approval to allow USDOE to take until after 2015 to decide. This does not give USDOE a basis for failing to present in the TCWMEIS the reasonable alternative of early startup of the LAW facility or the construction of new Double Shell Tanks to ensure that wastes are retrieved from SSTs prior to 2040.

USDOE must address the potential impacts from its delaying retrieval of SSTs from 2018 to 2040, including the risks from leaks and catastrophic failure or accidents.

V. FAST FLUX TEST FACILITY ALTERNATIVES

Decommission the Fast Flux Test Facility, a prototype breeder nuclear reactor, by fully removing the core and restoring the site:

THE PROBLEM

In 2001, as a result of massive public outcry, the FFTF, a 400 megawatt nuclear reactor at Hanford, was finally deactivated. However, it still stands at Hanford and it is time for finalizing its decommissioning.

THE ALTERNATIVES

For decommissioning the reactor:

- Entombing the FFTF reactor in cement
- Removing all of the above surface structures and restoring the site

For removing & treating radioactive sodium and highly radioactive components:

- Shipping the sodium and components for treatment at Idaho National Lab (INL) and reshipping it back to Hanford
- Treating the sodium at Hanford, with some of it reused in the vitrification plant

USDOE'S PREFERRED ALTERNATIVE

Entomb the reactor without dismantlement and removal. Treat the sodium at Hanford, but send the extremely radioactive pieces of the FFTF to INL for treatment.

THE IMPACTS

The risks from trucking the radioactive sodium back and forth to Idaho could be significant, and there is no approved shipping cask for the highly radioactive components to be trucked.

The site would not be restored and available for Tribal Treaty or conservation purposes under USDOE's preferred alternative. Washington State requires energy facilities to be decommissioned with site restoration – as Oregon also did with the Trojan Nuclear Reactor site on the Columbia River. However, the draft TCWMEIS fails to discuss Washington's energy site restoration requirements pursuant to RCW Chapter 80.50 and WAC 463-72-040. (this is another failure in regard to adoption of the TCWMEIS for state SEPA purposes).

The draft TCWMEIS also fails to compare and justify the proposal to leave the reactor significantly in place despite USDOE's Records of Decision to fully remove the nine reactors lining the Columbia River.

HOANW'S RECOMMENDATION for REVISING THE PREFERRED ALTERNATIVE

The Washington State standard for decommissioning nuclear reactors requires removal and site restoration. Oregon did this for the Trojan reactor. Do not put more radioactive waste on the road unnecessarily – treat the waste at Hanford.

HEART OF AMERICA NORTHWEST'S KEY CONCERNS

I. GREATER THAN CLASS C WASTES PROPOSAL

USDOE failed to disclose the pending and closely related formal proposal to truck to Hanford, and bury in Hanford landfills, highly radioactive mixed wastes, referred to as “Greater Than Class C” (GTCC) and “Greater Than Class C – like” wastes.

USDOE has a separate pending formal proposal to use Hanford to bury an undisclosed large quantity of GTCC and GTCC-like wastes. USDOE has announced that it will prepare a separate programmatic EIS on disposal of these wastes, and that Hanford is one of several leading proposed sites for disposal.

Instead of presenting the impacts from the related actions of using Hanford as a national radioactive and radioactive hazardous waste dump for 3 million cubic feet of waste disclosed in the draft TCWMEIS and from a yet to be disclosed quantity of GTCC wastes, USDOE seeks to impermissibly “piecemeal” disclosure and analysis of the impacts in separate impact statements. This deprives both the public and regulators, as well as USDOE officials, of the information needed to determine if regulatory conditions (mitigation measures) should bar all or some of the wastes.

The GTCC and GTCC-like wastes are highly radioactive – so radioactive that they are referred to as “Remote-Handled”, barring direct human handling. There is no facility in the USDOE complex available to assay and characterize or treat these wastes, which USDOE has acknowledged as mixed wastes.¹⁴ Amongst the GTCC-like wastes are wastes which USDOE had previously sought to ship to Hanford under its Western Hub proposal for consolidation of Remote-Handled Transuranic Waste (RH-TRU). Heart of America Northwest along with WA State and other co-plaintiff citizen groups successfully sued and obtained an injunction against USDOE shipping these wastes to Hanford in May, 2003, without an adequate EIS.

USDOE issued a formal Record of Decision in 2000, following adoption of the Waste Management Programmatic EIS that Hanford would be one of two “regional” disposal sites in the nation for USDOE’s Mixed and Low-Level wastes. Despite the use of the word “regional”, this designation is to use Hanford as a national mixed waste and LLW dump.

The other “regional” site designated for disposal of offsite LLW and MW is the Nevada Test Site. The State of Nevada has formally informed USDOE that the existing MW disposal landfill must be closed by the end of 2010. That leaves Hanford as the sole site for disposal of the GTCC and GTCC-like wastes under USDOE’s existing Record of Decision.

NEPA (and SEPA as well) requires that all related proposals and any formal or informal pending proposal which may increase the cumulative impacts of proposed actions must be disclosed in the EIS with cumulative impacts considered and alternatives with mitigation measures presented. USDOE’s GTCC proposal is not only related, but USDOE’s existing RoDs make it likely that Hanford will be the selected site for disposal. Therefore, in the draft TCWMEIS, USDOE must present the quantities of GTCC waste which it may truck to, and bury at, Hanford along with the impacts, cumulative impacts, alternatives and mitigation measures.

The impacts of disposing of GTCC wastes at Hanford are likely to be high, exasperating the already impacts from proposed actions leaving wastes in the soil and from landfills. USDOE estimates that the releases from both the IDF landfill and River Protection Project landfill will greatly exceed relevant standards. Adding GTCC wastes will add large unknown impacts, which the public and regulators must be allowed to see and comment upon

in one EIS.

Appendix S of the Draft TCWMEIS states that USDOE is preparing a draft EIS for GTCC waste and is considering Hanford for a burial site. Page S-15 last paragraph states that “These (GTCC) inventories were not included in the groundwater analysis for this TC&WM EIS because the Draft GTCC EIS is still under development.”

USDOE can not piecemeal the analysis in this manner. In its settlement of *WA v. Bodman*, USDOE committed to perform a cumulative impact analysis for all wastes at Hanford and proposed to be disposed at Hanford. USDOE is failing to meet this obligation by failing to include the impacts from storing, treating and disposing of GTCC wastes at Hanford.

GTCC wastes not only pose serious disposal impacts, they also greatly increase the cumulative potential impacts of trucking wastes to Hanford along specific truck routes which USDOE may use. The public is entitled to see and comment on the proposed cumulative impacts from USDOE’s related pending proposals to truck both 3 million cubic feet of LLW and MW as disclosed in the draft TCWMEIS plus the additional highly radioactive, and high risk GTCC wastes to Hanford.

Because they are highly radioactive – as “hot” as Spent Nuclear Fuel High-Level Nuclear Waste at the surface of the cask (above 200 mrem/hour) – the GTCC wastes create significant increased impacts from trucking the wastes to Hanford. In the USDOE’s 1998 draft GNEP (Global Nuclear Energy Partnership) EIS, USDOE estimated that trucking Spent Nuclear Fuel to Hanford for storage – with its similar radiation levels – would result in 816 fatal cancers in adults along the truck routes. Those 816 fatal cancers in adults would be from the radiation emanating from the shipping casks on the trucks even if there were no accident or terrorist attack on any shipment.

Clearly, the truck route matters in regard to exposure. If the trucks are travelling through cities such as Spokane, Portland, Salem, then the exposure will be greater. The impacts from a reasonably foreseeable accident with fire or terrorist attack are also far greater. In the Powerpoint presentation we have submitted accompanying these comments, we show the modeled impacts from either a reasonably foreseeable accident with high temperature fire or terrorist attack (using explosive power estimates from the Department of Defense for readily available terrorist weapons or explosive devices and NRC models for radiation dispersion) at the intersection of Interstate 5 and 205 in Portland.¹⁵ Over a thousand cancer deaths would result, and over 300 square miles of Portland would require evacuation and a never before attempted decontamination effort.

Therefore, as we discuss below in the section on transportation impacts, USDOE must assess the route specific impacts from both the 3 million cubic feet of waste presented in the draft TCWMEIS and the impacts from trucking GTCC wastes to Hanford, along with their cumulative impacts.

II. TRANSPORTATION RISKS

The risks of transporting radioactive waste to Hanford:

The Draft TCWMEIS fails to properly present and consider impacts from trucking 3 million cubic feet of radioactive wastes to Hanford:

USDOE proposes to truck nearly 3 million cubic feet of radioactive and “mixed” radioactive wastes to Hanford under its “preferred alternatives.”

That equals approximately 17,500 truckloads of radioactive wastes heading to Hanford up I-5, I-84, or I-90 – or, more than 2 trucks a day, every day for over twenty years.

Even without an accident or terrorist attack on a truckload of radioactive wastes, these shipments will cause cancer in our communities along the truck routes.¹⁶

USDOE has an obligation under NEPA to consider the route specific impacts from its proposal to truck these wastes to Hanford. Instead, USDOE officials admitted (at the Spokane public hearing in response to questions from Spokane City Council

Member and Heart of America Northwest board member Bob Apple) that the TCWMEIS only analyzed what USDOE and SAIC refer to as “a representative route.”

The “representative route” presented in the TCWMEIS is NOT representative of conditions and potential impacts along the other routes likely to be used for truck shipments to Hanford: Interstate 90 through Spokane, and Interstates 5, 205 and 84 through Portland, Eugene, Salem and other Western Oregon cities and the Columbia Gorge.

The draft TCWMEIS preferred alternative is for trucking and disposing at Hanford of the same quantity of wastes (approximately 3 million cubic feet, or 82,000 cubic meters) analyzed as the preferred alternative in USDOE Final Solid Waste Disposal EIS.

In the Solid Waste Disposal EIS, USDOE acknowledged that “incident free” transportation of the upper bound volume of wastes considered would cause 9 or 10 fatal cancers – in adults – along the transportation routes. USDOE failed to consider impacts on children and the number of other non-fatal health effects from transportation of wastes.¹⁷

USDOE’s figure of 9 to 10 fatal cancers in adults was based on transportation figures that reduced the impacts by over 50% compared to its own prior analyses, and failed to consider that Remote Handled TRU trucks, with the most radioactive of wastes, would not be able to stay solely on interstate highways, which was the basis of USDOE’s analysis.

USDOE has reduced the total waste volume from 12 million cubic feet to 3 million. The total number of fatal cancers should, at minimum, be reported by USDOE as one quarter of the number in the SWEIS. That should be 2.5 fatal cancers.

In the USDOE’s 2004 Solid Waste Disposal Final EIS, USDOE’s estimate for the same LLW and MW it proposes to ship to Hanford (82,000 m³, approximately 2.9 million cubic feet) would result in approximately 2.5 fatal cancers. This was not calculated for children. The draft TCWMEIS adopts the transportation analysis in the prior Final Solid Waste Disposal EIS along with the estimate of waste volume and the waste streams to be shipped to Hanford for disposal. USDOE continues to assert that the Record of Decision for the Solid Waste EIS and the Waste Management Programmatic EIS (2000) remain in effect, designating Hanford as the disposal site for 82,000 m³ of LLW and MW. On this basis, USDOE claims it need not analyze the alternative of NOT using Hanford for disposal of these offsite wastes.

USDOE’s analysis of transportation impacts in the Solid Waste EIS was one of five areas that its internal review documents found to be “technically indefensible.” That internal review was the basis of the settlement suspending the record of decision for groundwater analysis and a moratorium on offsite waste. However, Washington State did not ask that the transportation analysis be withdrawn. Nonetheless, USDOE can not rely on the Solid Waste Disposal EIS analysis for TCWMEIS purposes. Inexplicably, USDOE relies on the prior Solid Waste Disposal EIS, fails to perform any new route specific analysis for trucking wastes through the much more populated cities along I-90, I-5, I-205 and the Columbia Gorge compared to I-84 through Eastern Oregon, and, yet, somehow inexplicably arrived at a lower number of cancer fatalities for trucking the same wastes to Hanford.

SITE SPECIFIC TRANSPORTATION ANALYSIS REQUIRED UNDER NEPA AND RELEVANT HANFORD SPECIFIC COURT DECISIONS:

In 2003, Heart of America Northwest was joined by WA State, Columbia Riverkeeper and others in challenging USDOE’s transportation of Mixed TRU waste to Hanford for storage without an Environmental Impact Statement.

In its Order Granting Plaintiffs’ Motion for Preliminary Injunction (No. Ct-03-5018-AAM, May 3, 2003), the U.S. District Court for Eastern WA held (at 16, 18) that USDOE had failed to perform a site and route specific environmental impact statement when it sought to rely on a national programmatic EIS without site specific and route specific analyses:

It is not, however, just the language in the PEIS which gives the court pause as to whether the PEIS is comprehensive enough to cover the site-specific impacts of treating and storing off-site TRUW at Hanford, and/or whether the PEIS requires supplementation in order to consider new and significant information concerning transportation risk. In April 2002, before DOE decided to ship off-site TRUW to Hanford, it issued a "Draft Hanford Site Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement" ("HSW EIS"). The

It is difficult to ignore plaintiffs' argument that DOE intended the 2002 Draft HSW EIS to constitute the future sitewide or project-level NEPA review alluded to in both the May 1997 WM PEIS and the January 1998 ROD, and that the Draft amounts to an acknowledgement by DOE that additional NEPA review was necessary before it could ship off-site TRUW to Hanford. As plaintiffs point out, a Draft HSW-EIS does not end DOE's NEPA review obligation.⁴ The plaintiffs say a sufficient Final HSW EIS covering the site-specific impacts of treating and storing off-site TRUW at Hanford and updating transportation risks would satisfy DOE's NEPA obligation.

The decision at 32 and 33 addresses the failure to consider route specific impacts, when, as now with the draft TCWMEIS, USDOE instead chose to analyze only conceptual or representative routes, instead of the actual routes:

The September 6, 2002 ROD discussed transportation risk and concluded the risks were not significant based on information in the WIPP-SEIS II and the 1990 Environmental Assessment (EA) for Battelle Columbus Laboratories Decommissioning Project. The WIPP-SEIS II did not propose shipment of TRUW from Battelle to Hanford and therefore, DOE had to rely on the 1990 EA which preceded the PEIS by seven years.⁸ There is no reference to the 1990 EA in the PEIS, specifically the transportation analysis contained in Appendix E to the PEIS. Indeed, the PEIS selected "conceptual transportation routes . . . which may not be the actual routes that will be used in the future." (PEIS, Vol. IV at p. E-2). The PEIS added that:

Actual routes will be determined during the transportation planning process.

Transportation mode and routing decisions will be made on a site-specific basis during the transportation planning process. Sites can use the transportation analyses in this WM PEIS to make site-specific transportation decisions or, if necessary, conduct additional transportation analyses.

(Id.) (Emphasis added).⁹

The 2002 Draft HSW EIS relies on 2000 census data, as opposed to the 1990 census data relied on by the PEIS and WIPP SEIS II, and the 1980 census data relied upon by the Battelle EA. The 2002 Draft HSW EIS observes that the population of Benton County increased from 26.6 percent from 1990 and that the Franklin County population increased 31.7 percent. (Draft HSW EIS, Vol. I at 4.80-4.81). Furthermore, the March 2003 Revised Draft HSW EIS contains a section regarding "Transportation Impacts Within Washington and Oregon of Offsite Shipments." The section calculates the impacts of offsite transportation of solid wastes to and from Hanford. (Revised Draft HSW EIS, Vol. II at H.32-H.38).

Just as there is a "serious question" whether the Draft HSW EIS represents implicit acknowledgement by DOE that the WM PEIS contemplated a sitewide or project-level NEPA analysis before off-site TRUW could be treated and stored at Hanford, there is a "serious question" whether the Draft HSW EIS represents implicit acknowledgement by DOE that reevaluation of transportation risk is necessary because of the recent decision to ship off-site TRUW to Hanford.

"there is a risk of release and exposure from handling and transporting TRUW." (at 32).

The sources of waste in the TCWMEIS and assumptions about the chemical composition and whether/how the waste will be treated prior to shipment to Hanford are areas which we and others have found to be inadequately supported and contain significant errors.

In addition, the three million cubic feet / 82,000 cubic meters of off-site waste streams have not been properly identified, with the EIS relying on unverifiable estimates, for purposes of: a) projecting truck routes; b) sites and dates for shipping; c) modeling impacts from exposure along the truck routes (incident free); and, d) projecting impacts from accidents or terrorist attacks on trucks carrying hypothetical waste loads to Hanford (The EIS does not use reasonable maximum potential waste types in regard to potential harm, such as RH-TRU shipments, despite the fact that similar shipments may be part

of the waste streams trucked to Hanford). The Appendix acknowledges that there is no reliable information but does note that a significant portion may be extremely radioactive “Remote-Handled” wastes and contain large amounts of Transuranic elements just below the threshold which would require disposal in a deep geologic repository.

The contractor noted in Appendix D of the draft TCWMEIS, that the information used to model impacts from offsite waste – which would also affect the ability to project impacts from transportation – is not reliable:

“The information needed for the EIS was not readily available, so efforts were undertaken to use existing corporate information, supplemented by information from DOE waste managers. The EM program has corporate performance metrics that capture the actual and projected volume of LLW and MLLW for disposal from “baselined” projects. The information was not sufficiently detailed for modeling purposes, e.g. LLW and MLLW are combined, and data on radionuclide or hazardous chemical constituents is not collected and maintained corporately.”
Page D-126.

The contractor’s interviews with site managers seeking to ship waste to Hanford, the basis for the waste estimates used in the draft EIS, revealed that a large amount of the waste proposed to be shipped to Hanford will be extremely radioactive Class C and Remote-Handled Wastes. This requires that the TCWMEIS should present a bounding estimate of the potential impacts from incident free exposure to RH wastes along each potential truck route – e.g., trucks going directly past Lewis and Clark High school in Spokane – and of the impacts from a potential accident or terrorist attack involving mixed Remote Handled wastes with a maximum Plutonium inventory.

III. RELEVANT LAWS & STANDARDS VIOLATED OR IGNORED

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

NEPA requires that USDOE disclose and consider reasonable alternatives. USDOE failed to present reasonable alternatives: a) to using Hanford as a national waste dump; or, b) for retrieving, treating and removing wastes from Hanford for disposal in geologic repositories and landfills which are not projected to cause impacts to groundwater in violation of standards.

New monitoring data showing contamination levels higher than projected in the EIS’ model, e.g., chromium upwelling into the Columbia River and contamination spreading from tank leaks and discharges, cast doubt that the modeling projecting very high impacts is conservative. As discussed above, the modeling for impacts from offsite waste is NOT conservative, since the forecasts of wastes are unverifiable estimates, with a likelihood that the wastes awaiting disposal beginning in 2022 will be of higher radioactivity levels and have greater concentrations of Plutonium, Uranium, Tc99, Iodine 129 and harder to treat chemicals than those projected in appendix D as available for disposal starting in 2010.

The EIS should contain a full evaluation of the potential to reduce cumulative impacts by exhuming burial sites, to the degree practical, before capping; and, consider reasonable alternatives which would remove and treat long-lived, extremely radioactive or mixed chemical hazardous wastes for disposal in deep geologic repositories or regulated offsite landfills which are not projected to cause contamination in excess of relevant standards (e.g., remove and dispose in a deep geologic repository TRU buried before 1970 or in soil discharge sites; and, remove and dispose of tank farm equipment, piping, equipment and residues as Greater Than Class C waste in a geologic repository).

OFFSITE WASTE RULE OF THE FEDERAL SUPERFUND LAW (CERCLA)

One key law ignored by USDOE in the TCWMEIS is known as the Offsite Waste Rule of the federal Superfund law (CERCLA). CERCLA 121(d), 42 U.S.C.A. § 9621(d); and 40 CFR 300.440.

Under the Offsite Waste Rule, waste from other Superfund sites may not be added to landfills of units which are not in compliance, are releasing contaminants, or which are located on a facility at which other units or sites have uncontrolled releases of contamination into the environment.

USDOE proposes to use Trenches 31 and 34 for offsite waste at Hanford, prior to utilizing the IDF landfill and under the No Action Alternative, ignoring that these trenches have never been permitted. They were opened in the 1990s without a

RCRA/HWMA Part B permit – illegally. They still have no permit.

As the TCWMEIS makes amply clear, there are hundreds of sites at Hanford with uncontrolled releases of contamination spreading into the environment. Some of them will not be subject to a specific remedial action decision or closure decision for decades. These are not “controlled.” Thus, under the Offsite Waste Rule, neither the IDF landfill nor the existing MW Trenches 31 and 34 are eligible to receive wastes from other USDOE sites undergoing closure or cleanup under the Superfund law.¹⁸

WASHINGTON STATE’S STATE ENVIRONMENTAL POLICY ACT (SEPA)

The IDF landfill permit conditions are never mentioned in the TCWMEIS. Under both NEPA and SEPA, USDOE and Ecology are obligated to assess – in the draft EIS for public review – the adequacy of those conditions as mitigation measures to prevent the forecasted releases from IDF from violating standards in the future. Under NEPA and SEPA, USDOE is also obligated to present the permit conditions for IDF as relevant legal standards, which the TCWMEIS fails to do. Because no EIS was prepared for IDF, and the draft shows probable significant impacts to health and the environment from projected releases, the TCWMEIS must assess both the impacts and adequacy of mitigation measures (conditions in the permit).

Washington State’s State Environmental Policy Act (SEPA) requires that an agency disclose for comment specific conditions that will mitigate projected impacts in order to bring a facility into compliance; and, requires enforceable mitigation commitments as part of SEPA. The EIS could not, as currently written, support RCRA/HWMA permitting under SEPA.

The impacts of relying on caps without remediation are shown to greatly exceed relevant standards. USDOE does not discuss, within the EIS, state requirements to remove contamination, to the degree practicable, before capping.

Secondary waste disposal, from the Waste Treatment Plant, is projected to cause significant groundwater impacts. Technetium is a driver for elevated impacts.

MODEL TOXICS CONTROL ACT (MTCA)

The EIS fails to discuss and consider the relevant State cleanup standards (MTCA) in comparing projected contamination levels to what are referred to in the EIS as “benchmark standards”. MTCA standards are more protective of human health for cancer risk than the levels shown in the EIS. Washington’s MTCA (RCW Chapter 70.105D) is not even listed in the draft EIS’ list of authorities. As we discuss in the section on SEPA adoption in greater detail, this failure requires revision and reissuance of the draft for comment.

ENDANGERED SPECIES ACT (ESA)

In preparing the draft TCWMEIS and developing its preferred alternatives, USDOE has failed to consult with the National Marine Fisheries Service (NMFS) and USFWS as required by the Endangered Species Act.

To cure this serious defect, USDOE must consult under Section 7 of the ESA and provide the public with the opportunity to comment on the results of that consultation in a revised draft EIS.

USDOE’s proposed actions and the contamination from existing wastes are shown in the draft TCWMEIS and numerous other USDOE documents to affect the critical habitat of listed endangered salmonid species in the Hanford Reach of the Columbia River. For example, chromium and Uranium levels flowing into the River and at shorelines are currently unacceptably high and are projected to grow.

USDOE’s proposed actions are “actions” under the ESA triggering formal consultation requirements with the expert agencies regarding whether the proposed actions will impact critical habitat or harm the endangered species.¹⁹ For example, USDOE must consult as to whether contaminants projected to flow into the River are of concern to salmon and critical habitat, and what levels should require additional actions:

Section 7(a)(2) of the ESA requires the Secretary of the Interior to ensure that an action of a federal agency is not

likely to jeopardize the continued existence of any threatened or endangered species. To this end, section 7(b) sets out a process of consultation whereby the agency with jurisdiction over the protected species issues to the Secretary a “biological opinion” evaluating the nature and extent of jeopardy posed to that species by the agency action. 16 U.S.C. § 1536(b). In order to maintain the status quo, section 7(d) forbids “irreversible or irretrievable commitment of resources” during the consultation period. Id. § 1536(d).

Section 7 specifically provides that a federal agency (the “action” agency) shall “in consultation with ... the Secretary [of the Interior], insure that any action authorized, funded, or carried out by such agency ... is not likely to jeopardize the continued existence of any endangered species or threatened species....” Id. § 1536(a)(2) (emphasis added).

Procedural guidelines for complying with this consultation requirement are codified at 50 C.F.R. Part 402. The FWS implementing regulations under the ESA require agencies to review their action “at the earliest possible time to determine whether any action may affect listed species.” Id. § 402.14(a). The FWS defines agency “action” broadly to include “all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies....” Id. § 402.02.

Lane County Audubon Society v. Jamison, 958 F.2d 290 at 294 (9th Cir. 1992).

IV. CLIMATE CHANGE

The TCWMEIS fails to address the likely impacts from climate change (global warming):

Projections of increased precipitation and significant precipitation events in Eastern Washington have been forecast by Washington State and independent scientists due to the impacts of global climate change. The forecasts also call for significant reductions in the summer flow of the Columbia River due to decreased snow pack and snow melt.

These two important sets of projections have not been taken into account by USDOE in preparing the TCWMEIS. Instead, USDOE has assumed a constant value for infiltration from precipitation for ten thousand years, in modeling the migration of contaminants in soil and under caps. This is likely to result in a serious error in forecasting the releases from individual waste sites and the cumulative impacts from releases on groundwater, health and the River (and, potentially on fauna, since increased precipitation and uptake by plants may lead to increased exposure).

Reduced flow rates in the Columbia River will increase the relative concentrations of contamination in the River as well as in the groundwater flowing into the River (due to decreased River bank storage and River infiltration inland). This will increase the exposure from reasonably foreseeable use of groundwater; river shorelines (e.g., Native Americans exercising their treaty rights to live along and fish the Hanford Reach); consumption of fish, plants and other animals; and the River itself.

Withdrawals of water from the River will be far less likely to be allowed in the future. This will increase pressure on the use of groundwater resources. USDOE erroneously asserts that it will control access to Hanford for thousands of years and that there will be governmental reviews of proposed uses of groundwater which will prevent use in conflict with CERCLA or RCRA decisions. However, under Washington State law, no permission is needed to drill and withdraw significant amounts of water for domestic use by fewer than five households. It is reasonably foreseeable that over the next hundred years, and certainly a thousand years, that people will use the groundwater resource under Hanford. If wastes are not cleaned up via retrieval, the TCWMEIS shows that preferred alternatives of leaving waste in place under caps – the cover up, rather than clean up plan - will result in many cancer deaths.

Under NEPA and new directives from the Council on Environmental Quality, USDOE is obligated to take into account the projected impacts of global warming / climate change in the TCWMEIS. The EIS must be revised to do so.

V. CUMULATIVE IMPACT ANALYSIS

The cumulative impact analysis fails to provide the relevant view of likely human health impact and risk from all projected releases of existing wastes and wastes proposed to be disposed.

U.S. ECOLOGY SITE SHOULD BE CONSIDERED

TCWMEIS fails to include the full estimated Uranium releases from the US Ecology company operated commercial low-level waste dump in the center of Hanford along with the resulting radiation doses and likely cancers in the cumulative impact analysis for the Hanford Central Plateau and groundwater. This is compounded by the failure to include the full inventory of Uranium, Plutonium, TRU and chemical wastes in the commercial LLW dump.

Washington Departments of Ecology and Health have released an Addendum to the Final EIS for the US Ecology site closure and licensing which estimates that Uranium releases from the US Ecology site alone will result in radiation doses of 22 millirem per year to a reasonably foreseeable resident adult at the fence line of the commercial LLW dump facility, and 107 millirem per year for a resident Native American living within the boundary after a reasonably foreseeable intrusion into the landfill for drilling of a well.

USDOE says that the US Ecology EIS prepared by the State agencies was the basis for the Uranium inventory presented in the draft TCWMEIS.

However, the draft TCWMEIS fails to show levels of Uranium releases or radiation doses from the state forecasted exposures. The fence line of the US Ecology site is either at or beyond the “core zone boundary” utilized as the point of analysis in the draft TCWMEIS for cumulative impacts.

Figures 6-8 and 6-9 show Uranium 238 and Total Uranium levels far above Drinking Water Standards. Uranium 238 is projected in Figure 6-8 to reach concentrations of approximately $3E3$ (3×10^3), or 3,000 picocuries per liter; or approximately 200 times the Drinking Water Standard (15 picocuries per liter) around the year 3100 and remain in the vicinity of $8E2$ for another 7,000 years before rising again to $1E3$.

Uranium 238 levels entering the Columbia River are projected to be above the Drinking Water Standard for another 1,500 years.

Plutonium 239 levels in groundwater at the Columbia River shoreline are projected to peak at 300 times the Drinking Water Standard in one thousand years.

INACCURATE & INADEQUATE ESTIMATES OF RADIOACTIVE AND CHEMICAL WASTES AND CONTAMINATION

The EIS is based on Woefully Inaccurate and Inadequate Estimates of Radioactive and Chemical Wastes and Contamination, Seriously Underestimating Health and Environmental Impacts. Documentation of all hazardous chemical constituents should be included in the EIS (e.g., chemicals known to be disposed in, or releasing from, landfills; and, total uranium).

The chemical inventory is incomplete; certain chemicals are missing or under-reported from the non-tank inventories (e.g., numerous volatile organic chemicals in burial grounds, or uranium volumes) and certain chemical analyses appear to be lacking as well. (Uranium, which has to be considered a toxic metal as well as a radionuclide, is under reported for tank discharges and leaks, and entirely missing from chemical toxicity inventory for proposed imported wastes along with volatile organic chemicals).

The US Ecology company operated commercial Low-Level Waste Landfill located in the center of Hanford’s Central Plateau provides a case study in the serious shortcomings of the draft TCWMEIS in regard to inventory and failing to present cumulative health impacts from releases. The US Ecology landfill is between the 200 East and 200 West areas and within the “core zone” lines drawn by USDOE for the draft TCWMEIS analyses and for USDOE’s proposed Central Plateau Strategy (which is a formal proposal that USDOE failed to present for the public to review in this EIS). It is close to the ERDF landfill (which is leaching Uranium at rates higher than projected, which the draft TCWMEIS fails to disclose and consider) and

adjacent to the contaminated B-C Cribs Control Area.

Washington Dept. of Ecology is conducting a MTCA investigation of the documented releases from US Ecology's trenches of numerous hazardous chemicals, particularly volatile organic chemicals (VOCs) that are dangerous to human health and the environment. The WA Dept. of Health is reviewing Uranium release data and reports that it projects uranium release from the landfill to result in doses of 22 millirem per year and 107 millirem per year to an offsite resident adult using groundwater on the Central Plateau and to a resident adult after well intrusion on-site. SEE Addendum to Final EIS for the US Ecology LLW Facility jointly issued by WA Health and Ecology, April, 2010.

The documented high levels of VOC in soil gases escaping from the trenches has been available for over a year.

However, nowhere in the draft TCWMEIS is there any data on these hazardous substances already documented as being released from the US Ecology landfill. Indeed, the inventory in the draft TCWMEIS fails to show ANY of the VOCs as even being present!

The 43 miles of unlined burial grounds operated by USDOE on the Central Plateau are also likely contain numerous VOCs similar to the US Ecology site (which took USDOE and US Navy wastes) – yet, the inventory for the cumulative impact analysis fails to show any VOC other than Carbon Tetrachloride (and fails to show any chloroform, which is the degradation product of Carbon Tetrachloride).

In regard to health impacts from releases, the cumulative impact analysis should show the estimated dose for reasonable maximum exposure scenarios (Native American children exercising treaty rights to live on and utilize the resources on, Hanford's Central plateau and river shore) from all sources. We know that the state agencies estimated the dose from releases of Uranium from this one landfill to be 22 millirem per year, equal to a cancer risk of 6 to 18 fatal cancers for every ten thousand adult males exposed. Children are three to ten times more susceptible to develop cancer from the same dose – which USDOE fails to address.²⁰ We believe it is genocidal for USDOE to propose actions with cumulative health impacts which would result in cancers in significant numbers of Native Americans exercising treaty rights to live on, and use the resources at, Hanford.

ADDITIONAL MAJOR INVENTORY FAILINGS OF THE TCWMEIS

The following is a list of additional major inventory failings of the draft TCWMEIS, provided by HoANWRC consultant and board member Richard Heggen:

1. The EIS grossly underestimates the actual uranium inventory for both US Ecology and the Environmental Restoration Disposal Facility (ERDF). Page S-91, Table S-50b in the EIS lists US Ecology with 1,820 curies of uranium and ERDF with 54 curies of uranium. A March 1998 PNNL report (PNNL-11200) prepared for the US Department of Energy (USDOE) lists a far greater amount of uranium inventory for both facilities on page 3.31, Section 3.5.2.7 as follows: ERDF = 54,300 curies, and US Ecology = 10,900 curies. Although the PNNL report indicates the ERDF estimate is perhaps too high, it is still orders of magnitude greater than the 54 curies provided in the EIS. The EIS must be revised to include the actual uranium inventory. Risk modeling in the EIS must also be revised to accommodate the increased inventory.
2. Uranium chemical inventory in kilograms is missing for both ERDF and US Ecology (Page S-141, Table S-76b). The EIS must be revised to include the actual uranium inventory. Risk modeling in the EIS must be revised to accommodate the increased inventory.
3. Significant uranium inventory is missing from Appendix S. Although curie inventory for uranium chemical inventory is listed for many of the burial grounds, uranium chemical inventory is missing for all but two burial grounds. The two burial grounds are 218-W-4C and 218-W-5. While W-4C has 72.8 curies and 83 kilograms (kg) of uranium, W-5 has 654 curies and only 0.055 kg. It appears the chemical inventory for many burial grounds including W-5 is either missing or grossly underestimated. See table and respond to concerns attached at end of these comments.
4. Comparing the plutonium inventory kilogram estimates from the Hanford History of the 200 Area Burial Ground Facilities (September 1996 – Westinghouse Hanford Co. – WHC-EP-0912) to the plutonium curie estimates provided in the EIS reveal several discrepancies. While the EIS lists no plutonium curie inventory for 218-W-2A, W-3A, and W-4B, the

Westinghouse report lists plutonium inventory at 6.38 kg, 29.32 kg, and 66.47 kg respectively. By comparison, the WHC report lists 218-W-3 plutonium inventory at 68 kg and the EIS has a corresponding 4,930 curies of plutonium for the same burial ground. It appears that thousands of curies of plutonium are missing from above noted burial grounds.

5. Throughout Appendix S, the relation between radioactive uranium inventory in curies and the chemical uranium inventory in kg varies drastically. The EIS provides no explanation for this wide range of ratios. For example, appendix S table S-43a lists a total of 914 curies uranium (almost all due to three burial grounds) and table S-69b lists a corresponding total of 3,127 kg uranium. This is in contrast to the ratio of uranium curies to kg found in tables S-48a and S-74b where the ratio of 25.45 curies to 106,530 kg is far different and not explained in the EIS. There are many examples of this apparent lack of consistency in the data. At first glance it seems that some uranium inventory is missing.
6. Appendix S, Table S-26 lists the volume of discharged liquid to ground for 216-B-3 pond at 280 billion liters which translates to 154 billion gallons. However, the 2005 Groundwater Monitoring Plan for the Hanford Site 216-B-3 Pond RCRA Facility (PNNL-15479), Section 1.1.1, page 1.3 lists the total liquid discharge to ground at over one trillion liters = greater than 260 billion gallons. The EIS needs to be revised to include the missing 106 billion gallons from 216-B-3 pond.
7. There is a large difference in the ratio of uranium curies to kilograms between the total numbers for Appendix S and the total numbers for Appendix D (the specific tank farm area with selected discharge areas). The ratio found in appendix S for uranium kg to curies = 70:1 while the ratio for Appendix D = 633:1. This implies missing data or errors in the data. No explanation was found in the EIS. The EIS needs to be revised to either include an explanation or to include all missing data.²¹
8. The EIS lists the uranium chemical inventory as total uranium as soluble salt. Apparently the EIS omitted insoluble uranium compounds from the inventory data. If so, this is a serious oversight due to the toxicity of uranium as a chemical/metal which is in addition to the toxic effects of uranium due to radioactivity. The EIS needs to be revised to include all forms of uranium in the inventory data. All relevant risk modeling and discussion must be revised to reflect the additional uranium inventory and resulting risks.
9. The EIS appears to focus strictly on water/liquid related pathways for all risk scenarios. Missing from this EIS is a future failed cover scenario that allows animal and plant life to access contamination remaining in the ground. There is a long history of plants and animals accessing and spreading toxic materials in the ground at Hanford, including radioactive plants (especially long rooted tumbleweeds), radioactive insects, and radioactive animals. In addition, in the future, direct exposure of humans may occur if the waste is exposed through direct contact and air pathways. Although much of the tank farm contamination may be deeper than other areas at Hanford, the EIS lacks information about how USDOE will address and cleanup significant shallow contamination related to the miles of pipelines related to tank farms and other units. The EIS must be revised to include these potentially significant future risk scenarios.
10. In section 6.4.3.1, Tables 6-31 lists only lists mercury as having a potential cumulative impact to Ecological receptors via on-site surface soil. Under ecological risk (Table 2-46) other contaminants are addressed including benzene, toluene, xylene, and formaldehyde; however these limited additional compounds are assumed to only reach the environment through a water pathway. Missing from the ecological risk direct soil exposure (direct contact, ingestion, and air inhalation) are many other significant toxic isotopes, compounds, etc. Many toxic constituents are potentially available to the ecology the future due to either failed landfill covers or through natural or man-made disturbances to the site soil. Revise the EIS to include these additional contaminants and scenarios.
11. The EIS failed to discuss Land Disposal Restrictions with respect to any scenario that proposes to leave toxic material on site. This would include a comparison of best available technologies to meet equivalent land disposal treatment standards.
12. The EIS failed to provide a specific description and diagrams of all of the structures/equipment included in the "SST" system. The EIS must be revised to include a complete description of the entire SST system.
13. Missing in the EIS are miles of pipelines including the old SST cross-site pipelines that extend beyond the SST tank farm fencelines to interconnect with cribs, trenches ponds, vaults, and process facilities. Although USDOE included some selected cribs and trenches located beyond the SST fencelines, there is no mention of the large system of buried SST pipelines that remain in the ground. The EIS failed to address the contamination associated with these old abandoned pipelines.

In the past, many if not most of these old pipelines were removed from service due to leaks, and plugging problems that rendered the lines inoperable. In a few cases the leaks were discovered when liquid waste formed wet areas above the defective piping. Revise the EIS to include a description of these structures and all estimates of associated leaked and plugged inventory remaining in the pipelines. Additionally, include a description of how the past leaks were remediated.

14. The EIS fails to discuss the realities of tank sampling at Hanford. All tank core samples stop short of the bottom of the tank to avoid damaging the tank steel shell, which is well beyond the engineered design life and the condition of which is unknown. Several cores are taken from each tank and indicate that the layering of toxic tank sediments/constituents is uneven and therefore the information from a few cores is not very representative of the specific toxic nature of an individual tank. Finally, the original wastes were added to tanks in a liquid form and heavier materials concentrated in the bottom of each tank. Since no sample data is available for the bottom layers of any tank, drawing any conclusions relating to the heavier toxic materials including all the radionuclide content would be flawed. Revise the EIS to address this fact and include revised estimates of the residual heavy radionuclides projected to remain in the SSTs.
15. There is a lack of sufficient characterization for many units at Hanford. Specifically there is very little characterization relating to burial grounds. This is especially a problem for the older burial grounds that lack records of materials dumped in the burial grounds. Additionally the older burial grounds operated with few restrictions and received a wider range of toxic materials than some of the newer burial grounds. Missing from the EIS is a basis for the estimated contamination listed in the EIS. A cross check of documents found discrepancies in a number of burial grounds (see comments #3 and #4). Revise the EIS to include the basis for burial ground estimates in the EIS.

The EIS fails to include a discussion of specific field sampling used to verify the results of modeling used in the EIS. Revise the EIS to include adequate modeling verification with field samples sufficient to validate the models used in the EIS.

FINAL COMMENTS REGARDING CUMULATIVE IMPACTS

1. Points of compliance and analysis of groundwater contaminant levels and health risks should be disclosed at unit boundaries; not taking credit for dilution of contaminants in groundwater at the edge of what USDOE designates the "Core Zone Boundary". It is important to present River shore data as well.
2. Cumulative impacts should be analyzed and disclosed for exposure to all sources at the point of highest contamination where it is reasonably foreseeable that there will be future wells, buildings, intrusions – without assuming that there will be a fence or demarcation of a "Core Zone Boundary" surrounding the 200 Areas in 100 or 2,000 years.
3. USDOE should present in the Summary and in the body of the EIS projected future maximum concentrations for all potential contaminants rather than reporting concentrations in groundwater which occurred in the past while liquid wastes were being discharged straight to the soil. These past concentrations are of historic interest, but are not relevant to the impacts from proposed actions. The tables presenting maximum concentrations should be prospective, rather than retrospective – otherwise, USDOE decision makers, regulators and the public are denied the ability to see projected impacts from current wastes and proposed actions.

CONCLUSION

BECAUSE OF THE SERIOUS DEFICIENCIES IN THE DRAFT TCW-MEIS, USDOE SHOULD WITHDRAW THE DRAFT AND REVISE IT FOR REISSUANCE – DROPPING ANY PROPOSAL TO ADD OFFSITE WASTE TO HANFORD.

The public is entitled to review and comment on an adequate and complete draft EIS. Therefore, USDOE should commit to cure the significant errors and omissions in the draft TCWMEIS and resubmit the EIS for public comment. This view is shared by the Hanford Advisory Board (HAB) in its formal advice to USDOE and Washington Ecology (Adopted March 4, 2010). The flaws in the current Draft TCWMEIS, despite USDOE having spent \$50 million in preparation, are an embarrassment, heightened by the apparent incompetence and/or bias of the contractor which prepared the draft EIS, SAIC.

The draft TCWMEIS fails to include known inventories of key wastes and contaminants, rendering the cumulative impact analysis inadequate. Other examples of serious inadequacies include:

1. Human health impacts are not presented from projected exposures, violating NEPA;
2. The draft TCWMEIS fails to include site specific transportation route analyses for USDOE's plan to truck 3 million cubic feet of waste to Hanford, despite court decisions that a legally adequate EIS must include route specific impact analyses;
3. The draft TCWMEIS fails to consider and disclose the direct and cumulative impacts from pending formal proposals to add other wastes to Hanford, particularly USDOE's pending proposal to import and bury large quantities of highly radioactive mixed wastes referred to as "Greater Than Class C" (GTCC) and "Greater Than Class C like" wastes;

THE TCWMEIS DOES NOT SATISFY SEPA

The TCWMEIS fails to present and consider Washington State's cleanup standards, including its cancer risk standard, in comparison to USDOE's projected contamination levels from its proposed actions and cumulative impacts.

It also fails to present and commit to substantive mitigation measures designed to bring proposed actions into compliance with relevant state and federal standards. Failure to present mitigation measures for comment in the draft EIS and failing to include proposed mitigation measures for adoption (e.g., RCRA permit limits) means that the TCWMEIS can not be accepted for use by Washington Ecology under the Washington State Environmental Policy Act (SEPA).

USDOE has responded orally to this concern by saying it will prepare a separate mitigation summary document after adoption of the Final EIS.

SEPA requires that Ecology offer the public the opportunity to review and comment on the proposed mitigation measures in the EIS; and, that Ecology propose adoption of specific mitigation measures. The draft TCWMEIS is devoid of all reference to specific mitigation measures to bring proposed actions and contaminant or risk levels into compliance with relevant standards. Indeed, based on our review seeking references to MTCA and Washington's HWMA and RCRA permit, there appears to be not one reference in the entire draft EIS to either Washington's MTCA standards and rules or to any potential provisions in the RCRA/HWMA permit for Hanford to achieve standards (except in the language quoted below in Ecology's Foreword).

Ecology's Foreword to the TCWMEIS (presented in the Readers' Guide and Summary) misrepresents the standards under SEPA in regard to when the public must be able to review and comment on proposed mitigation measures. The Foreword states:

"After this TC & WM EIS is finalized, Ecology will proceed with approving regulatory actions required to complete the Hanford cleanup. These include actions under the Hanford Federal Facility Agreement and Consent Order (HF-FACO, or Tri-Party Agreement) and actions that require state permits or modifications to existing permits, such as the Hanford Sitewide Permit. This permit regulates hazardous waste treatment, storage, and disposal activity at Hanford, including actions such as tank closure and supplemental treatment for tank waste.

Ecology must comply with SEPA when undertaking permitting actions. It is Ecology's hope that the Final TC & WM EIS will be suitable for adoption in whole or in part to satisfy SEPA."²²

The TCWMEIS, however, can not be "suitable for adoption in whole or in part to satisfy SEPA" unless the draft for public comment was prepared and the comment period conducted in a manner which satisfies SEPA. As of now, USDOE has failed to prepare a draft for public review which meets fundamental requirements of SEPA. For example, the public has been denied its rights to review and comment on a draft EIS which discloses and considers Washington State's cleanup and cancer risk standards, mitigation measures, reasonable alternatives, and even a summary for public review which presents impacts and mitigation measures. These violations of SEPA are substantive and can not be cured in a Final EIS. They can only be cured by revision and reissuance of the draft EIS for comment.

Pursuant to WAC 197-11-792, alternatives to be presented for review and for the agency officials to act upon are "mitigation measures", which may include measure outside the proposed action (e.g., regulatory actions beyond USDOE's proposals).

WAC 197-11-440(4) requires that the Summary of the EIS include a statement of " the effectiveness of mitigation measures."

The Summary – like the rest of the EIS – is devoid of discussion of mitigation measures. This is not only the view of our organizations, but also of the Hanford Advisory Board (representing a wide range of geographically diverse communities of interest).

To be adopted by Washington State, the DRAFT EIS must present for public review and comment a section (or incorporate into the sections describing the impacts and loss of use of resources from impacts [e.g., loss of use of groundwater due to projected contamination – which the EIS fails to discuss]) describing specific mitigation measures. WAC 197-11-440(6) requires:

(6) Affected environment, significant impacts, and mitigation measures.

(a) This section of the EIS shall describe the existing environment that will be affected by the proposal, analyze significant impacts of alternatives including the proposed action, and discuss reasonable mitigation measures that would significantly mitigate these impacts....

(iii) Clearly indicate those mitigation measures (not described in the previous section as part of the proposal or alternatives), if any, that could be implemented or might be required, as well as those, if any, that agencies or applicants are committed to implement....

(v) Summarize significant adverse impacts that cannot or will not be mitigated.

The Hanford Advisory Board (HAB) formally found that mitigation measures were not considered or presented – representing a widespread consensus about the draft TCWMEIS, and advised USDOE and Ecology (in advice we share and include as

part of our comments to be responded to):

“Most tank closure and the waste management alternatives appear to lack necessary actions to ensure that soil and groundwater are not further contaminated, that risk to human health and the environment does not increase in the future, and that the soil and groundwater are restored.” (HAB Advice 229, March 4, 2010, Page 3)

“Each alternative presented in the draft TC & WM EIS should be amended to identify mitigation measures to protect the soil, groundwater, environment and uncounted future generations.” Id page 4

“The draft TC & WMEIS should include specific conditions to mitigate impacts from all wastes supposed (sic) for disposal, which include treatment methods and waste acceptance criteria, to prevent contamination of groundwater above standards from any landfill.” HAB Advice 229 Page 11

Also, at page 12, the HAB advice found:

“The estimated risk arising from the quantity of waste already in the ground at Hanford and from the proposed volumes to be buried in shallow landfills... exceeds Model Toxics Control Act (MTCA) standards. Mitigation measures should be identified to reduce this risk to meet regulatory standards. These risks would be further compounded by DOE’s intention to add more waste to the site.”

The only way to cure this major deficiency of the EIS, if it is to be adopted by Ecology for support of RCRA/HWMA and TPA actions is for dramatic revision of the EIS to incorporate the elements describing:

1. limits on the use of resources;
2. human health impacts from reasonably foreseeable exposures; and,
3. a description of potential regulatory measures and changes to the proposed actions which would mitigate the impacts.

If mitigation will not bring proposed actions into compliance with standards (which is likely that it is impossible to do), then changes to the proposed actions must be included in the EIS description of alternatives. *Such mitigation measures and changes should include regulatory and permit provisions barring any addition of offsite waste; requirements barring capping of all waste disposal, tank farm and unplanned release sites without characterization of releases and “distribution of hazardous substances” in trenches, burial grounds, discharge sites and contaminated soil sites (SEE WAC 173-340-350(7)(c)(iii): remedial investigation must be sufficient to characterize the “distribution of hazardous substances as well as the threat....”).*

Ecology must propose a mitigation measure under which no further waste is added to the site, so long as existing wastes and proposed actions are projected to violate relevant standards; and, because the projected impacts from disposal of offsite waste will violate relevant standards. As noted earlier, Figure S-21 at S-100 demonstrates that offsite wastes increase the degree of violation above MTCA’s risk and cleanup standards ten-fold.

Energy’s proposed voluntary, unenforceable moratorium on offsite waste until the vitrification plant is “operational” does NOTHING to mitigate the long term violations of standards or to reduce the long-term contamination and health impacts from adding offsite waste over hundreds and thousands of years. And, in addition to the lack of reducing any long-term impact, because it can be lifted at any time, USDOE’s voluntary moratorium is not even a proper mitigation measure.

For Ecology to adopt the TCWMEIS, the TCWMEIS must be revised and reissued for public comment with specific shortcomings addressed, including, but not limited to, presentation for comment of specific mitigation measures, a summary which describes the likely impacts on health and the environment from proposals, and a description of resources whose use will be limited due to contamination or other impacts. To be legally adequate, the draft EIS should be reissued for comment with identification of specific mitigation conditions that could bring proposed landfills and other waste management units into compliance with relevant state and federal standards.

For Ecology to adopt the TCWMEIS, it must independently review and respond to comments – it can not merely accept and adopt USDOE’s (the polluter’s) comments.

These shortcomings are not solely relevant to adoption of the TCWMEIS by Ecology. The TCWMEIS fails to meet CEQ guidelines and NEPA requirements and must be revised and reissued for public comment.

THE TCWMEIS DOES NOT DISCUSS WA STATE CANCER RISK STANDARDS, VIOLATING NEPA

A serious legal inadequacy of the draft TCWMEIS requiring revision and reissuance is USDOE's failure to present and discuss Washington State's cancer risk and cleanup standards. NEPA requires discussion of relevant standards. Under the federal Superfund law, CERCLA, Washington State's cleanup standards are "applicable and relevant standards" for the cleanup decisions at Hanford. Under federal hazardous waste laws, including RCRA and the Federal Facilities Compliance Act, Washington's closure standards govern mixed waste units such as the High-Level Nuclear Mixed Waste tanks. Washington's cleanup standards, including Washington's cancer risk standard for residual contamination used to establish cleanup levels, are found in the Model Toxics Control Act (MTCA), RCW Chapter 70.105D, and WAC Chapter 173-340.

The most fundamental cleanup standard under State law is the cleanup carcinogen risk level.

Nowhere in the draft EIS is there a single mention of these standards.

This is either a deliberate choice, reflecting political beliefs by Department officials that they do not wish to meet State standards (continuing a decades long fight against application of state cleanup standards by the Department – despite clear Congressional direction), or gross incompetence.

The EIS section describing "Hanford Regulatory Requirements" (Section 1.2.1) fails to mention MTCA or Washington's Hazardous Waste Management Act (HWMA), RCW Chapter 70.105, which governs "closure", construction and operation of tank systems and other units used to store, treat or dispose of hazardous wastes. Closure of tank systems and past practice units under HWMA requires compliance with MTCA's standards. WAC 173-303-64620.

Washington State's cleanup standards in the Model Toxics Control Act [MTCA], RCW Chapter 70.105D and WAC Chapters 173-303 and 340, are important guide posts regarding acceptability of health impacts from projected levels of contamination. Failure to discuss the standards and failure to provide the public with comparisons of proposed actions to the standards can only be cured by revision and reissuance of the Draft TCWMEIS for public comment.

- CERCLA applies at federal facilities "in the same manner and to the extent as such guidelines, rules, regulations, and criteria are applicable to other facilities" 42 USC 9620 (a)(2).
- State Cleanup laws apply to federal facilities that are not on the Superfund National Priorities List (NPL) to the same extent that they apply generally to all other sites in the state. 42 USC 9620 (a)(4).
- If Hanford does not meet state cleanup standards when taken off the NPL, it would be subject to cleanup under the state's more protective Model Toxics Control Act standards.
- Because a more protective state cleanup standard would apply after a federal facility is removed from the CERCLA NPL... cleanup of the federal facility should meet the state's more protective cleanup standards when designing the cleanup. Therefore:
- **CERCLA requires that cleanups meet more protective state requirements:** any applicable, relevant and appropriate standard or requirement under state laws or rules for any pollutant that would remain after cleanup. 42 USC 9621(d)(2).
- CERCLA's requirement from Sec. 120 that applicable or relevant state standards (ARARs) be applied in selecting the remedy requires that standards which EPA may not view as enforceable must still be explicitly considered and applied if they are "relevant".
- Thus, Washington State's standard for total carcinogen risk is a requirement that must be met whether the site is being cleaned up under CERCLA or Washington's Hazardous Waste Management Act (using delegated authority under the federal RCRA hazardous waste law, which allows the state to have more protective standards).
- The applicable and relevant Washington State standard for carcinogens – explicitly including all radionuclides – is one additional cancer for every one hundred thousand persons exposed (expressed in scientific notation as 1E-5). SEE RCW Chapter 70.105D and WAC Chapter 173-340; and, RCW 70.105E.050
- CERCLA includes radionuclides in definition of hazardous substances and authority for cleanup, including for federal facilities.
- MTCA standards apply at federal facility Superfund cleanups as ARARs

- Fundamental Difference is Cancer Risk: CERCLA risk range allows up to one additional fatal cancer for every 10,000 adults exposed (1×10^{-4} ; or $1E-4$)
- MTCA protects more sensitive individuals to one additional cancer for every 100,000 persons exposed (1×10^{-5} ; or $1E-5$) from ALL carcinogens at site

MTCA has a more protective standard than CERCLA requiring use of permanent remedies to maximum extent practicable. RCW 70.105D.030(1)(b):

“In conducting, providing for, or requiring remedial action, the department shall give preference to permanent solutions to the maximum extent practicable and shall provide for or require adequate monitoring to ensure the effectiveness of the remedial action”

Caps are recognized as not being preferred permanent remedies versus removal and treatment.

This is yet another failure of the draft TCWMEIS to address and present relevant Washington State standards applicable to cleanup at Hanford; and, a failure to meet SEPA’s requirement that mitigation measures must be presented in the draft EIS. Clearly, use of Washington’s preference for use of permanent remedies, in contrast to USDOE’s preferred alternatives’ reliance on the use of caps without retrieval of waste discharges, buried wastes or tank leaks, must be considered in any EIS under SEPA as a mitigation measure.

The public deserves to see how proposed releases from individual units (e.g., the IDF landfill, tank farm units) and cumulative impacts from releases of all sites and units on the Central Plateau compare to Washington State’s cleanup standards and determinations of “acceptable” cancer and toxicity or other illness risks. Only if this comparison is provided in a revised draft for public comment will the public have this vital opportunity to consider and comment.

Mitigation measures must include actual characterization of wastes in tanks, in soils and in discharge and burial ground/ landfill units. Instead, USDOE proposes to cap without characterization. This fails to meet legal requirements:

- The HWMA requires characterization *for investigation* of contamination at units, including burial grounds, cribs and release sites. See WAC 173-340-350(7)(a).
- WAC 173-340-350(7)(c)(iii) requires that field investigations shall be: “Sufficient investigations to *characterize* the distribution of hazardous substances present at the site, and threat to human health and the environment.” (emphasis added).

Without providing an opportunity for the public to comment on a revised draft TCWMEIS that discusses the projected impacts, contamination and risk levels in comparison to State standards, Washington State’s Department of Ecology CAN NOT accept and adopt the TCWMEIS for use in its decisions on tank farm closure and other RCRA/HWMA decisions.

Essentially, USDOE will have wasted \$50 million on the TCWMEIS unless it is revised and reissued for comment with a full discussion of Washington State’s cleanup standards.

HEALTH RISKS NOT CONSIDERED, CONTINUED

USDOE failed to disclose and consider Washington State’s cancer risk standard governing cleanup; and, failed to assess how proposed actions would violate this level of “acceptable” risk:

- CERCLA’s requirement from Sec. 120 that applicable or relevant state standards (ARARs) be applied in selecting the remedy requires that standards which EPA may not view as enforceable must still be explicitly considered and applied if they are “relevant”.
- Thus, Washington State’s standard for total carcinogen risk is a requirement that must be met whether the site is being cleaned up under CERCLA or Washington’s Hazardous Waste Management Act (using delegated authority under the federal RCRA hazardous waste law, which allows the state to have more protective standards).
- The applicable and relevant Washington State standard for carcinogens – explicitly including all radionuclides²³ – is one additional cancer for every one hundred thousand persons exposed (expressed in scientific notation as $1E-5$). SEE RCW Chapter 70.105D and WAC Chapter 173-340; and, RCW 70.105E.050
- CERCLA includes radionuclides in definition of hazardous substances and authority for cleanup, including for federal facilities.

- Cancer Risk under CERCLA is less protective than MTCA; However, USDOE only presents impacts in comparison to the CERCLA NCP risk level or USDOE's own far less protective radiation exposure limits:
- CERCLA risk range allows up to one additional fatal cancer for every 10,000 adults exposed (1×10^{-4} ; or $1 \text{E-}4$)
- MTCA protects more sensitive individuals to one additional cancer for every 100,000 persons exposed (1×10^{-5} ; or $1 \text{E-}5$) from ALL carcinogens at site

USDOE fails to present the potential non-cancer health impacts from exposure to radionuclides and fails to present any potential impacts from chemical exposures. These should be presented in the summary. Sadly, they are not to be found anywhere in the EIS.

USDOE errs in presenting cancer risk in its impact statements in terms of additional adult fatal cancers rather than total cancers caused from exposure: USDOE presents risks in terms of fatal cancers only, and removes from its estimates individuals who die early from exposure but would eventually have died from a cancer.

See for example, draft GNEP PEIS At C.2, page C-8:

“Current DOE guidance (DOE2002h) from estimating public and worker cancer risk from exposure to ionizing radiation recommends using a conversion factor of 6×10^{-4} fatal cancers per rem, and a factor of 8×10^{-4} per rem for estimating excess cancer morbidity (incidence). Based on this guidance, the probability of an individual worker or member of the public contracting a fatal cancer is 6×10^{-7} per rem....

This approach estimates excess cancer fatalities (i.e., those above the naturally occurring annual rate).

The “number of cancer fatalities” corresponding to a single individual’s exposure over a (presumed) 70-year lifetime to 0.3 rem per year is the following... = .01 cancer fatalities... estimated effect of background radiation exposure on the exposed individual would produce a 1.3 percent chance that the individual might incur a fatal cancer caused by the exposure.”

COMMENTS ON THE PUBLIC INVOLVEMENT PROCESS

Significant Public Involvement Flaws Marked the Comment Period on the Draft TCWMEIS. A New Comment Period is Necessary on a Revised Draft TCWMEIS Which Cures the Major Flaws, Inaccuracies and Inadequacies of the Current Draft.

Public review and comment on the draft TCWMEIS got off to a rocky start. Recognizing the importance of the TCWMEIS for both decision making and public knowledge and input regarding the impacts of the major decisions for how to cleanup the most contaminated area in the western hemisphere, Assistant Secretary Triay and Office of River Protection Manager Olinger committed in the spring of 2009 to a very extensive comment period. This comment period, it was understood, would allow for the detailed public and advisory board review necessary to offer comments on a 6,000 page environmental impact statement governing decisions as diverse as High-Level Nuclear Waste tank closure to decommissioning of the FFTF Reactor and use of landfills for on-site and off-site waste. An extended comment period was crucial to allow for review of the draft, followed by preparation of Citizens' Guides and materials for public hearings and workshops.

Despite years of delay and time to plan, USDOE's EIS management did not respond to requests for a collaborative effort to plan for public hearings and workshops until two months of the comment period had elapsed, and we had complained (shortly after Christmas) to USDOE Headquarters about the failure to collaboratively plan with stakeholders for when and where hearings and other public involvement efforts would occur.

The first hearing was held with far less than 30 days of notice to regional stakeholders and the public – preventing us from preparing and mailing Citizens' Guides and conducting other information outreach to encourage attendance and comment. USDOE's own mailed notice for the hearing was nothing short of awful, and criticized by all regional stakeholders involved in review in collaboration with the Hanford Advisory Board's Public Involvement Committee.

USDOE should commit to advance review of draft notice mailings (email and USPO) by the Hanford Advisory Board Public Involvement Committee and other stakeholders 30 days in advance of the start of a major comment period. USDOE should not claim that NEPA documents are not subject to TPA Community Relations Plan and other state and federal public involvement and notice requirements, deadlines and processes when the proposed actions will require TPA adoption, or adoption via permits, etc...

In contrast to the poor collaboration for the first two months of the comment period, USDOE's ORP then committed to hold seven hearings across Washington and Oregon – which was a major public education and involvement success.

Over 600 members of the general public attended seven hearings in Oregon and Washington. Through Heart of America Northwest's holding pre-hearing workshops in adjoining rooms with USDOE support, more than half the attendees were able to have the information needed to testify and have their questions answered. (USDOE and State officials attended and participated in a number of those pre-hearing workshops).

Evaluations and surveys of attendees show that USDOE's notices failed to provide meaningful notice of the impacts of the proposed actions and failed to inform and encourage attendance. Indeed, few people attending the hearings came because of USDOE's mailed or emailed notices, and fewer than ten percent even reported seeing USDOE's notices.

Notices for impact statements, like notices for TPA actions, must include a clear description of impacts and how the proposed actions may affect public values and concerns, and be designed to communicate that at first

glance in order to encourage the public to read the notice and attend hearings. USDOE's notices, even after revision, failed to provide any indication to the public of the impacts from USDOE's proposed actions. Environmental Impact Statements are supposed to provide the public with that critical information – and, to meet State SEPA requirements, the Summary must provide that information as well as notice.

The evaluations and surveys of attendees showed that over 75% of the public attending the hearings did so because of the notice received from Heart of America Northwest and Heart of America Northwest Research Center via Citizens' Guides and fact sheets mailed and emailed; phone banks; presentations in communities or on campuses. These results show the importance of collaboration with citizen groups.

USDOE failed to provide access to the comments presented at the Portland hearing and to the presentations and answers to public questions despite repeated requests from citizen groups. This failure to provide timely access to information critical for preparation of our comments and those of other citizens and citizen groups has undermined our ability to comment and violated both NEPA rules, and ultimately violated the Freedom of Information Act.

Members of Heart of America Northwest and the Rosemere Neighborhood Association requested a copy of the Portland hearing transcript and a record of the answers to public questions given by USDOE and Washington state officials at the hearings. These requests were denied.

Access to the transcript and to be able to review both comments by the public and state officials; and, to review the responses given by USDOE and Washington's representatives to questions was essential for preparation of our comments. A Freedom of Information Act Request was filed with a request for expedited response and a waiver of fees (since the information would be used in workshops, webinars, fact sheets and Guides to assist the public in commenting before the end of the comment period, a fee waiver was entirely justified). USDOE formally denied both the waiver of fees and expedited response --- leaving the public without the information and records which we believe were important for our preparation of comments.

Failure to provide timely access to records which the public believes are essential to preparing informed comments warrants extension of the comment period and penalties against USDOE officials for failing to provide information.

A significant cause of the failures to provide essential information appears to be USDOE's contractual reliance on SAIC, its contractor for the EIS. If transcripts are completed for USDOE and delivered to SAIC, they are subject to FOIA.

It is inappropriate to ask the public to send comments on a federal agency environmental impact statement to a private contractor, instead of directly to the federal agency. In this case, it was wrong to require people to submit comments electronically to an address "@SAIC" instead of directly to USDOE.

SAIC officials revealed incredible biases bringing into doubt their qualification to prepare this EIS and certainly precluding their ability to fairly receive and evaluate comments. A senior manager of SAIC wrote a rude email to our organization revealing that he equated advocacy for cleanup with anti-nuclear views and failing to recognize facts vetted by Ecology and USDOE. USDOE officials apologized for this, but SAIC has never apologized, nor shown that it will evaluate comments in an unbiased manner.

ENDNOTES

1. The no action alternative is not a meaningful alternative as presented (e.g., it would violate numerous laws and the terms of the Hanford Clean-Up Agreement and Consent Order), and it ignores that USDOE has existing decisions to use Hanford as a national radioactive and mixed waste dump. Therefore, under the no action alternative, Hanford would still be used for disposal of offsite waste.
2. Table U-2.
3. TCWMEIS Figure S-21. page S-100. Peak risk shown from inclusion of off-site waste disposed in 200 E IDF is $1E-4$ (one additional fatal cancer for every ten thousand adults exposed). WM Alt 3 has a peak fatal cancer risk greater than $1E-3$ (one in one thousand) at the Core Zone Boundary between the years 3000 and 4000. WM Alt 3 includes disposal of offsite waste in IDF West. Neither of these risk estimates include the additional risks from proposed disposal of River Protection Project Disposal Facility releases, which add between $1E-5$ and $1E-4$ of additional risk at peak periods. See Figure S-22, page S-101. Nor do these risk estimates include impacts from the disposal of GTCC wastes from other sites, which USDOE is improperly considering in a separate EIS, rather than disclosing and considering in this EIS.
4. Appendix U of TCWMEIS, Table U-2.
5. We urge USDOE to present waste quantities in units more easily understood and envisioned by the public, cubic feet, which are commonly used in USDOE's internal documents regarding waste disposal. Use of cubic meters is clearly designed by USDOE to downplay the volume to the public. The conversion to cubic feet is presented in parentheses in the Summary. However, it should be the primary unit of communication throughout the EIS and in materials provided to the public. Cubic feet are appropriate for presenting and analyzing the individual components of offsite waste proposed to be added to Hanford.
6. It is illegal to store the mixed wastes without treatment and disposal for the decade plus time period between 2010 and 2022. Therefore, the vast majority of Mixed Wastes generally described in Appendix D as being potential wastes for shipment and disposal at Hanford would have been treated and disposed of long before any waste would be sent to Hanford (unless USDOE does not honor its voluntary moratorium). Presumably, cleanup agreements and consent orders will also forbid prolonged storage of LLW at the USDOE sites as well. As noted, since USDOE sought to ship waste to Hanford following the 2004 RoD and court settlement imposed moratorium, the wastes which USDOE claimed had to be disposed at Hanford have been, instead, largely disposed in the regulated commercial facility run by Energy Solutions in Clive, UT. It is likely that all of the projected lower activity wastes forecasted for potential disposal at Hanford in Appendix D will be disposed at the Utah facility before 2022. This would greatly increase the concentrations of hard to treat chemical wastes and the proportion of highly radioactive wastes with Plutonium and other Transuranic elements, Uranium, Tc 99 and Iodine to be disposed at Hanford. This would greatly increase the impacts at Hanford compared to the already unacceptable impacts forecast in the draft TCWMEIS.
7. (TCWMEIS Figure S-18 and S-14. S-14 shows 99.9% retrieval (Alt. 4) contributes a lifetime fatal cancer risk in the year 3050 which is nearly $1E-4$ (1 in 10,000), or ten times the total cancer risk from all sources allowed under MTCA (which is $1E-5$). If 99% is retrieved, the fatal cancer risk never drops below $1E-5$ over the next ten thousand years. This is solely due to residuals and retrieval leaks – not including contamination from past deliberate discharges and other sources.
8. "Historical Vadose Zone Contamination from A, AX and C Tank Farms"; RPP 7494, Rev. 0; Aug. 8, 2001; Fluor Federal Services for USDOE. Report documents 3.8 billion gallons of deliberate discharges to the cribs, trenches and ditches associated with the A, AX and C Tank Farms as tank wastes were decanted.
9. DOE/RL-98-48, Vol. II; State of Knowledge Rev. 0; GW/VZ Integration Project Background Information and

10. EIS at 6-109.
11. Figure 6–65. Alternative Combination 2 Spatial Distribution of Cumulative Groundwater Concentration for Uranium-238 During Calendar Year 2135
12. Alternative 2A. Page S-23. Note, we use 2095 end date because the Alternative starts up vitrification in the year 2018. WTP is not slated to begin operations until the end of 2019; and, this alternative assumed waste from nearly 20 tanks would never be vitrified, but classified as TRU and sent to WIPP. The reclassification has been removed from USDOE’s preferred alternatives per notice in the Federal Register.
13. Alternative 2B. Page S-23.
14. See RH-TRU and WMPEIS decisions for acknowledgement that these are legally Mixed Wastes. GTCC is presumed to be Mixed Waste because of the likelihood that the processes creating the wastes including hazardous or dangerous wastes, and because it is not possible to characterize them in existing USDOE facilities. Therefore, for legal purposes, these wastes must be considered Mixed Wastes.
15. The full 2004 report on the risks from trucking radioactive RH-TRU to Hanford, similar to GTCC and GTCC-like wastes, is available on our website for reference or available upon request.
16. Id.
17. Final Hanford Solid Waste Disposal EIS, USDOE, Feb. 2004, page S.35: “...9 to 10 LCFs were estimated for the Upper Bound waste volume.” LCFs = Latent Cancer Fatalities. USDOE calculated only for adult exposure. USDOE also used assumption that 10,000 person rem = 6 LCFs (Table 5.145, page 5.251), whereas 50% of people exposed to 200 rem will die of acute radiation exposure; and annual exposures of adults to 15 mrem are estimated by NRC and EPA to cause 3 fatal cancers per 10,000 exposed. That estimate of cancer risk was increased significantly by the National Academy of Sciences BEIR VII Report (Biological Effects of Ionizing Radiation, VII, 2005). The BEIR report is supposed to serve as the basis for risk-dose calculations, but USDOE has refused to utilize BEIR VII for this EIS or for Hanford Clean-Up decisions.
18. USDOE sites do not need to be on the National Priority List (NPL) to be under Superfund’s authority for cleanup.
19. 15 USC 1536
 - (a) Federal agency actions and consultations
 - (2) Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an “agency action”) is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with affected States, to be critical, unless such agency has been granted an exemption for such action by the Committee pursuant to subsection (h) of this section. In fulfilling the requirements of this paragraph each agency shall use the best scientific and commercial data available.
 - (3) Subject to such guidelines as the Secretary may establish, a Federal agency shall consult with the Secretary on any prospective agency action at the request of, and in cooperation with, the prospective permit or license applicant if the applicant has reason to believe that an endangered species or a threatened species may be present in the area affected by his project and that implementation of such action will likely affect such species.
 - (4) Each Federal agency shall confer with the Secretary on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under section 1533 of this title or result in the destruction or adverse modification of critical habitat proposed to be designated for such species. This paragraph does not require a limitation on the commitment of resources as described in subsection (d) of this section.
20. EPA limit for NESHAP release to air is 10 mrem/year. Based on EPA and NRC pre-BEIR VII radiation standards, 6.8 mrem per year would result in approximately 1 to 2 fatal cancers in every 10,000 adults exposed. EPA now acknowledges that the same dose from a carcinogen will result in 3 to 10 times more cancers in children than in adults (EPA draft guidelines for cancer risk assessment, released March 3, 2003. <http://epa.gov/ncea/raf/cancer2003.htm>). Under BEIR VII, the risk level should be reported as several times greater than the pre-BEIR VII estimates.
21. Selected Inventory Data from Appendix D, TC&WM EIS

Pu curies	66,900	590	72	594	68,156
Tc99 Ci	15,500	93	312	142	16,047
Total U Ci	875	9.9	19.7	6.21	910.8
U – Kg *	542,000	5,160	25,400	3,990	576,500
Ratio of U Ci to Kg	619:1	521:1	1,289:1	642:1	633:1

In comparison the following totals are from Appendix S:

Pu = 76,626 ci
 Tc99 = 691.8 ci
 Total U = 3,073 ci
 U (chem.) = 213,752 Kg

Appendix S ratio of U ci to Kg = 70:1

The EIS failed to indicate the specific type of uranium – it could be just soluble salt or a total including insoluble compounds as well? Perhaps this is explained somewhere in the text, but it should be clarified on the separate tables.

There are some numbers that just don't add up - such as the uranium chemical inventory compared to the curies. Why do we have a higher curie count in appendix S when the total uranium Kg numbers are lower compared to Appendix D?

22. Foreword Sec. III, page 3.

23. The official Explanatory Statement for MTCA, adopted by Ecology, is the binding legal interpretation of the State cleanup law. It explicitly interprets MTCA's carcinogen risk cleanup standards as governing cleanups of radionuclide releases to the environment. CERCLA, the federal Superfund law, includes radionuclide releases as releases of hazardous substances subject to the total cancer risk standard for determining cleanup levels at Superfund sites. SEE OSWER.



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