

June 13, 2002

Michael Collins
NEPA Document Manager
U.S. Department of Energy Richland Operations Office
P.O. Box 550 (A6-38)
Richland, WA 99352

Dear Mr. Collins:

1 | While the proposed plan specifies an acceleration of Hanford nuclear waste cleanup, it does not do this in the normally accepted ways. It proposes to try something totally new; a low-tech solution that has never been tried before. This process probably will result in additional leakage into the groundwater and, thus, into the Columbia River and Richland's drinking water. It could also result in danger to workers. The idea of grout never worked well for shower stalls. Every few years patching is needed. It is unlikely to work well for nuclear storage tanks which are known to leak very hazardous materials.

I believe the U.S. Department of Energy and the U.S. Environmental Protection Agency must use the best available practices in treating and storing nuclear wastes. This appears to be the "worst available practice." I do not know if the federal government has developed best available practices in treating complex nuclear wastes which usually are combined with other hazardous chemicals. Question: does this proposed practice meet the criteria for the treatment of other hazardous chemicals? I've never heard of pouring concrete in wastes to "treat" them.

The floating layer of salts could be a huge problem in these tanks. What is the strategy? To pour wet concrete on top of these layers (which are very hard in some cases)? Or to pour dry concrete on top in hopes some of the liquid sifts over the top and solidifies on top of the salt layer. There just are so many inane scenarios to contemplate! Will liquid wastes pour and bubble out the top of the tanks?

What is the chemical reaction of concrete with nuclear and other toxic wastes? Will we end up with more contaminated wastes than before? Could the vats explode? I am opposed to going ahead full force with this plan. It has not employed proven technology!

2 | Second, I urge the agencies to not bring any new high-, mid-, or low-level nuclear or other hazardous
3 | wastes to the Hanford site. Placement of these wastes in unlined storage trenches is a huge mistake!
4 | Washington state has more than its share of nuclear wastes to care for in perpetuity. Transport of these
wastes endangers residents all along the way. And, all along the roads, drivers of vehicles with nuclear
materials and people coming into nearby contact with them will be affected by the wastes. Each state
should have its own waste storage.

5 | I remain concerned about all the nuclear waste stored above ground at Hanford. Terrorists likely are
6 | looking at them as targets with which to harm as many people as possible. Vitrification will begin the
process of making the wastes safer. Do not abandon the Tri-Party Agreement!

Sincerely,

Nancy N. Kroening (Mrs.)

Nancy N. Kroening
6536 Parkpoint Lane N.E.
Seattle, WA 98115

7 |

*P.S. The Hanford Reach National
Monument must be protected
from additional nuclear waste
leakage!*

Letter: L001

June 28, 2002

To: Michael Collins-DOE
Fax: 509-372-1926

From: Jim Hauck, P.E.
Hauck Consultants
281-353-4150
Fax: 281-288-0972

Re: comments on Draft EIS for Radioactive and Hazardous Wastes

Michael-

In the late 80's and early 90's I worked for Kaiser Eng. Hanford as a Principal Environmental Engineer..

I would like to make the following comments about the EIS:

- 1 | 1.) T Plant Wastes-INEL developed an extractive process to recover radionuclides for the healthcare industry (Ga154). This program should be investigated to recover radionuclides from T wastes
- 2 | 2.) on p.2.24 DOE suggests grouting MLLW . In 1988 we tried grouting and found that the grout cured too quickly and failed to meet the concrete slump test.
- 3 | 3.) The original grout vaults lost integrity to hold leachate and water from the grout curing process. We used reinforced hypalon and found that sheets greater than 16' in height were distended and stretched. This caused them to fail to hold liquids in the grout vault. Be careful to overlap the sheets by 2' and support the liner on vertical walls.

Regards,

Jim Hauck, P.E.

Letter: L002

Michael Collins
HSW EIS Manager
Richland Operations Office

August 13, 2002

Dear Mr. Secretary.

1 I am writing to express
my unhappiness with the
Hanford Solid Waste EIS.
It does not protect public
and environmental health.

2 The EIS should disclose
impacts to groundwater and
human health. We certainly
3 don't need 70,000 truckloads
of additional radioactive waste

Letter: L003

before the existing waste
load is under control.

4 I am worried about the
Columbia and don't like
unlined burial trenches.

Please withdraw the EIS
and revise and reissue it.

Thank you.

Sincerely,

Jane H. Stevens

9804 SW Bunker Trail
Vashon WA 98070
Monday Aug. 12, 2002

Michael Collins
US DoE
PO Box 550, A6-38
Richland WA 99352

Dear Michael Collins:

I was not able to attend any of the EIS hearings on the plan to bring 70,000 more truck-loads of radioactive waste to Hanford. The Heart of America and Physicians for Social Responsibility people suggest we write to you insisting on:

- 1 ① a full analysis of the environmental & public health effects of importing MORE radioactive waste to Hanford
- 2 ② halting importing radioactive OR chemical waste to Hanford until we have a nation wide, publicly vetted plan to deal with the existing waste, with funding in place.
- 3 ③ a full analysis of serious public health risks involved in transporting those 70,000 truck loads of waste to Hanford, and
- 4 ④ provision of an alternative to storing radioactive & toxic waste in unlined trenches.

Beyond their suggestions, I just want to say that to a normally intelligent person, THE WHOLE IDEA IS CRAZY!! NO MORE OF ANY RADIOACTIVE OR TOXIC CHEMICAL

Letter: L004

5
(cont)

WASTE SHOULD BE ² MOVED TO HANFORD,
MOVING IT AROUND WON'T MAKE IT
GO AWAY.

6

We need to stop generating radioactive
waste - just STOP. DoE needs to focus
on alternative sources of clean energy
+ on reducing the demand.

Please - use your common sense!

Joy A. Goldstein

Letter: L004a

August 14, 2002

To Michael Collins
U S Dept of Energy
P O Box 550, A6-38
Richland, WA 99352

We are writing to express our concern over the storage of nuclear waste at Richland. As pointed out in Beth Call's recent letter to the Union-Bulletin:

- 1 | 1 There appears to be a lack of expressed concern over "the immediate risks of terrorism or accident in" the shipment of nuclear waste to the spot;
- 2 | 2 "How can Hanford take on more waste when the present deadly waste in the tanks has yet to be glassed";
- 3 | 3 The Bush administration, while paying lip service to matters of the environment, has once again ignored concern for the problem "propos[ing rather] to cut funds for Hanford cleanup"; and, most important
- 4 | 4 The storage of nuclear waste in unlined trenches has far-reaching implications for the contamination of groundwater and all the disastrous effects it can have not only in the immediate future but "for thousands of years."

The magnitude of the problem requires immediate action against such a plan. We would appreciate a response by you to our concerns which would include a reply to our letter.



Kathleen and Michael McClintick

Kathleen and Michael McClintick
1104 Isaacs
Walla Walla, WA 99362

Letter: L005

8/15/02
Seattle

Michael Collins

Dear Sir:

1

I think everything possible
should be done to promote the
Hanford nuclear waste cleanup
and prevent trucking in
additional waste.

2

yours truly
Ruth Boyle

Letter: L006

B.135

Revised Draft HSW EIS March 2003

2209 Willow Drive
Newberg, OR 97132
14 August 2002

Michael Collins, NEPA Document Manager
Department of Energy
P O Box 550, Mailstop A6-38
Richland, WA 99352

Dear Mr. Collins:

1 | I recently returned from vacation to learn that the Department of Energy plans to ship truckloads
of radioactive waste from all around the country through the state of Oregon to Hanford as part
of a "national solution to the nuclear problem."

2 | This proposal is obviously no solution; it simply increases a terrible contamination problem
already existing at Hanford. This proposal just further endangers the health and lives of
Oregonians.

3 | Please insist that the health and safety of Oregonians not be endangered by this plan. Please
insist that the Department of Energy solve the nuclear problem wherever it currently exists
instead to foisting it upon others to deal with. Please insist that Oregon is NOT the nation's
4 | nuclear dumping ground! Please insist that the Department of Energy learn how to dispose of
5 | nuclear waste safely before producing more of it! We're already trying to clean up Hanford. Let
each American city clean up their own front porch and not dump their trash on their neighbors!

Sincerely,



Betty L. Martin

Letter: L007

3/16/02

Michael Collins,

1 I protest the continuing practice of storing nuclear waste in unlined trenches. It is also insane to transport more waste to Hanford.

2 Since we have already produced this nuclear waste (which just demonstrates our complete ignorance and greed for doing what we want without responsible thought to the affect on the world around us) we must, to the best of our ability dispose of it with the greatest care and thought for the earth and all life forms (no matter what the cost).

Thank you
Chris Clem Russell

Letter: L008

August 8, 2002

Attention - Official Public Comment,

Mike Collins:

1 I am writing to you in regards to the proposed shipping of low level radioactive waste to Hanford. It seems we have been fighting this same battle for years now. The majority of citizens in both Oregon and Washington are against having more wastes shipped and stored at Hanford.

2 What of the safety factor in shipping the waste cross-country? There is always the possibility of accidents exposing people along the travel route to radiation. And of course we have to consider the terrorist threat. Why go to all the trouble of making a "dirty bomb" when all you have to do is blow up a train or truck carrying low level radioactive waste?

Letter: L009

(2)

3 The waste stored at Hanford now
is already leaking into ground water
and making its way to the Columbia
River. We've been told this new waste
would be stored in unlined trenches.
4 How long do you think it would
be, before it too was in the ground
water and moving to the Columbia
River? You would be putting at
5 risk people who get their drinking
water from the river, people who eat
fish from the river, people who use
the river for recreational purposes, and
the workers themselves at Hanford.

6 There is sound scientific data that
shows Hanford should not be used as
the nation's repository for low level
(or any) radioactive waste. The Depart-
ment of Energy has received this
data. Why aren't you paying attention
to it? Isn't the welfare of our
citizens worth government concern any-
more?

Sincerely,
Janice E. Zeffler
Seattle, Washington

Letter: L009a



Mary D. O'Kane
1152 N 76th St
Seattle, WA 98105

8 August 2002

Dear Mr. Collins:

1 I attended the DOE Public Hearing in Seattle where you spoke lastnight about plans to transfer 12 million cubic feet of radioactive waste to Hanford for storage. I appreciated your effort to inform concerned citizens such as myself about proposed Environmental Impact Statement of this undertaking in its draft form. I am grateful to live in a democracy that is based on the ideal of taking into account the will of the people and I hope that your taking comment on this issue is a means to actualize the democratic process.

2 I want to let you know that I am troubled by what appears to many as an insubstantive and woefully inadequate EIS. In researching the circumstances, it is evident that a situation involving so many risk factors demands a more comprehensive plan. I am concerned the cumulative impacts have simply not been addressed in the E.I.S. as it stands. I see great harm resulting from the short sightedness that operates on the principle of "out of sight, out of mind" that leads to even entertaining the idea of using unlined trenches to bury such hazardous waste. I consider myself to be, "in league with the future" (in the words of Joanna Macy) and urge you to broaden your vision to encompass the generations to come who will inherit what is left behind at Hanford. We have the opportunity, now, to make decisions that will determine how well guarded these invisibly dangerous substances are and I urge you consider responsible alternatives to what has been suggested.

6 Progress is slowly being made to clean up the vast amount of perilous waste already at Hanford, and I see this additional burden of insufficiently thought through dumping as a huge step backwards. There are a range of factors to consider, from groundwater contamination eventually leaking into the Columbia river, which is already suffering devastating pollution, to the health of workers (i.e : the carbon tetrachloride 167 times the federal worker safety standard set by OSHA) . I don't feel a need to go into the specifics here because they have been skillfully covered by the EPA evaluation of the EIS. I strongly support their recommendations and insist on these being taken into account in this process.

Thank you,

Mary D. O'Kane

Letter: L010

August 8, 2002

Mr. Michael S. Collins
HSW EIS Document Manager
U.S. Department of Energy, A6-38
P.O. Box 550
Richland, Washington 99352-0550

Dear Mr. Collins:

Response to the Draft Hanford Solid (Radioactive and Hazardous) Waste Program
Environmental Impact Statement

Issues:

- 1 • The HSW-EIS should integrate all waste site analyses to determine the full cumulative impacts. It must show how much waste in all forms Hanford is scheduled to keep. It should state how much will be exported and how much new waste will be accepted.
- 2 • Groundwater remediation has been a foremost concern for me for many years. There is a failure to disclose impacts to groundwater and human health at the point of compliance for waste management units. This is imperative. There should be no further degradation to groundwater beyond the edge of the waste management unit. In apparent violation of applicable standards, and without justification, the HSW-EIS provides only a partial description of groundwater impacts for a single well, one kilometer away from the burial grounds. This is totally insufficient. This has been a major concern for me for many years.
- 3 • Also, drinking water standards are not addressed when evaluating radionuclides in groundwater and the scientific characterization of their impacts. There should be no further importation of waste to the Hanford site until a comprehensive, site-wide groundwater remediation program is in place, funded and the scope of the remediation bounded. There must be adequate documentation that there will be no impact of importation of waste to the remediation of Groundwater at Hanford.
- 4 • I expect this document to become the blueprint for evaluation of cleanup activities which will be implemented, but there must be further documentation on TRU waste. I need to see an estimate of pre- 1970 TRU. It could potentially elevate the amount of waste geometrically - we have no clue. The term "suspect TRU" is referred to on page S.6, but its not clear if this waste is included in the analysis. If not, why not? What are the volumes? This could drastically elevate the number of trenches needed, causing a funding nightmare which could potentially impact cleanup.
- 5 • Current Hanford documents which have analysis on cleanup of sites should be folded into this EIS. It is past time for us to have to roam from document to document to get the "whole picture". For example, the Hanford Site 200East and West Areas 2001 EA, and the Waste Management Programmatic EIS ROD.
- 6 • There is an inadequacy of NEPA assessment for endangered species.
- 7 • Modeling and inventory assumptions are not explained and appear inconsistent with

Letter: L011

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known data on the movement of radioactive and hazardous waste at Hanford.

- Failure to include a true "No Action" alternative that does not import and bury offsite-generated Low Level Waste and Mixed Low Level Waste from DOE sites and other generators. It's the law!
- There is a failure to include an alternative to end the use of unlined soil trenches for disposal. Include it.
- There is a failure to integrate and consider the cumulative impact of all Hanford waste decisions. This must be done.
- Long term stewardship considerations are not evident.
- Full cost of imported waste must be recovered if waste comes to the Hanford site.
- Acceptance of waste should not impact the already agreed upon cleanup milestones at Hanford, nor should it impact potential sites needing remediation which have yet to be negotiated into TPA milestones.
- Currently disposed waste at Hanford needs detailed analysis. DOE should stop disposing offsite wastes in the low level burial grounds until they are fully investigated.
- It is vital that groundwater monitoring around the burial grounds be substantially upgraded. Many wells are dry, or soon will be, and the burial grounds lack any leachate monitoring and collection system.
- What are the proposed number of shipments Oregon would see on our freeways?
- This EIS does not even give a nod to the issue of transport of waste. It is not enough to add the already published transport analysis in the Programmatic EIS to the HSW-EIS. It is a generic transport model which fails to capture, in the slightest, the risks associated with transportation of waste through the State of Oregon. I want to see a model based on the actual freeway miles between Ontario, Oregon and HWY 395, where the trucks would turn north to head to Hanford. The risks of accident are too great in Ladd Canyon to the east of La Grande, Oregon, and the Blue Mountains, to the west. I want to also see included a risk analysis for transport up Interstate 5, in the Willamette Valley, and through the Columbia Gorge, another terribly dangerous stretch of HWY, especially in the winter. Indeed, there should be models for transport through every state. This truly is a shell game that does not adequately address the programmatic issue of the cumulative and route specific effects of transporting waste from multiple sites to Hanford.
- The Draft document should be withdrawn and reissued once appropriate analysis and disclosure are included. I expect another round of public hearings, and I expect that there will be adequate consultation with USEPA, Washington State Department of Ecology, the State of Oregon, and the Tribal governments.

Thank you.



Shelley Simon
1208 First Street
La Grande, Oregon 97850
(541) 963-0853
scimon@oregontrail.net

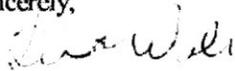
Letter: L011a

Michael Collins
U.S. Department of Energy
P.O. Box 550, A6-38
Richland, WA 99352

Dear Mr. Collins –

- 1** | My name is Liisa and I live in Portland, Oregon. I am writing to you as a very, very concerned citizen
2 | who is concerned about the cleanup of Hanford. This place is one of the most contaminated places in the
3 | world. If we are not careful all this could blow up in our faces. The U.S. Department of Energy is
4 | proposing to double the amount of radioactive waste buried in unlined soil trenches at Hanford, which
5 | double the risk of more soil and groundwater contamination. The Department of Energy has failed to
6 | adequately address the human health and environmental impacts of adding this radioactive waste to
7 | Hanford in your Solid Waste Environmental Impact Statement. I beg of you to please redo your analysis
8 | and stop importing more waste until you have cleaned up the huge radioactive mess already contaminating
9 | the Columbia River at Hanford.
10 |
- 5** | The SWEIS is failing in several ways. Currently, Hanford receives waste from other Nuclear Weapons
6 | Plants, Labs and even private companies. This waste is dumped in unlined soil trenches with limited
7 | groundwater monitoring. Even our kitchen garbage cannot be buried like this! The SW EIS offers no
8 | alternative to line and monitor these trenches. Dumping more radioactive waste will contaminate
9 | groundwater flowing towards the Columbia River for thousands of years. It will effect the water people
10 | drink, the health of the ecology on the stream, and the health of many throughout the NW. By increasing
11 | the waste coming to Hanford also brings with it extreme risk. The transportation risk of importing over
12 | 70,000 truckloads of radioactive waste, including dangerous plutonium-laden transuranic water is not even
considered in the SW EIS.
- 11** | We are spending billions of dollars cleaning up the radioactive mess at Hanford. Why would we risk
adding more waste to the already contaminated soil and groundwater? I ask again that you reconsider all
12 | the impacts to our region before making a decision based on faulty analysis. The Solid Waste
Environmental Impact Statement is utterly deficient.

Sincerely,



Liisa Wale
4205 SE Madison
Portland, OR 97215

Letter: L012

Aug. 7, '02

Michael Collins
US. DOE, P.O. Box 550, A6-38
Richland, WA 99352

Dear Mr. Collins

1 Do you feel safe & comfortable
with the latest plans for Stanford storage
2 of nuclear waste? Would you care
to live where the waste is leaking
3 into the soil & possibly the river? How
safe do you feel with transport of this
material over our highways?

4 And now it is planned to add more
waste to thousands in buried trenches.
5 I can't believe you'd expose the people
of this so-called world superpower
to this kind of despicable danger.

Please rethink what you're planning.

320 High St. #4
Cohland, OR
97520

Respectfully,
Margaret Robert
c/o Lyden, Walden, Smith

Letter: L013

August 7, 2002

U.S. Department of Energy
P.O. Box 550, A6-38
Richland, WA 99352

Gentlemen:

- 1 | I am strongly against the importation of radioactive waste to Hanford.
- 2 | It is unsafe to transport and we need to safely contain the waste that is already here through the glassification process - no shortcuts.
- 3 | Too much time has already been wasted in arguing what to do. Get busy with the safest way to contain this waste. The Columbia River is in danger.

Yours truly,
Claire Jones
350 N. 190th St. #203-B
Spokane, WA 99133-3856

Letter: L014

August 16, 2002 *J*

To: Michael Collins
NETA Document Manager
U.S. Department of Energy
P.O. Box 550, MSIN 1A6-38
Richland, WA, 99352

1 The following remarks are offered in response to the Department of Energy's solicitation of public comments of Document DOE/EIS-0286-D, "Draft Hanford Site Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement", dated April 2002.

The document could better explain some aspects of the logic and bases that were used for developing current strategies for dealing with transuranic wastes at the Hanford site. Toward this objective, the following matters should be clearly addressed in the report.

- 2
1. A description of the total amount of plutonium (stated in kilograms) that will be shipped from Hanford to the Waste Isolation Pilot Plant in New Mexico would be helpful; followed by a display showing the amount destined for Yucca Mountain, and the amount that will be left permanently at the Hanford site broken down by (1) pre-1970 burials, (2) cubs, ponds, ditches, (3) tank farms, and (4) other, such as reverse wells. Include brief mention of the implications of the published Hanford plutonium "Material Unaccounted For" numbers.
 2. Briefly relate the 10^4 year EIS analysis limit to the 2.5×10^5 year WIPP concept basis. Include an argument showing why the 10 half-life WIPP concept is not applicable to the plutonium that will permanently remain at Hanford.

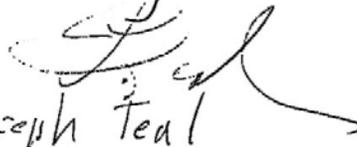
Letter: L015

August 16, 2002 

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(cont)

3. The original 10 nano-curie / gram TRU threshold had a clear consensus scientific basis. DOE has now chosen to increase that limit by a factor of ten because it is inconvenient to measure at the lower level. This EIS should present a technical argument demonstrating that the limit change is justifiable.
4. The EIS should display a cost-risk model which shows that shipping a portion of Hanford's TRU material to WIPP, considering the amount of plutonium and other hazardous materials that DOE plans to leave at Hanford, represents the best use for available clean-up effort and funds.

Sincerely,


Joseph Teal
Benton County, Washington

Letter: L015a

11057 - 40th NE
Seattle, WA 98125
Aug 5, 2002

Mike Collins
US Dept of Energy
Richland, WA 99352

Dear Sir:

1 I am writing to urge you not
to dump countless tons of hazardous
waste into unlined trenches, which
will seep into the ground water
and find its way to the Columbia
2 River. If that happens I fear we
will all live to regret it.

Sincerely,
Clifford L. Burkay

Letter: L016

PETER VAN DER VEN, DMD
2429 NW 61 ST
SEATTLE, WA 98107

Mr. Mike Collins
U.S. Dept. of Energy
P.O. Box 550, 6A-38
Richland, WA 99352

August 4, 2002

Re. Hanford waste proposal

Dear Mr. Collins,

1 I am writing regarding the U.S.D.E.'s preliminary proposal to
truck upwards of 70,000 truckloads of low-level radioactive waste
to Hanford to be dumped into unlined pits, as a means of
storage/disposal. This idea is patently unacceptable, and whoever
dreamed it up was either motivated solely by politics and job
pressure or else is totally incompetent. Household waste is
dumped under more stringent requirements than what is proposed
at Hanford. The very real danger of radioactive waste leaching
2 into the Columbia River at any time in the future is terrifying. The
implications for health, recreation, and the state's economy (and
Oregon's) are all profoundly and unarguably negative. The
3 bureacrats responsible for making this proposal must not be
planning to raise their families out here.

4 Furthermore, the thought of 70,000 trucks driving on the
highways across our country to Washington, loaded with
radioactive waste, is bizarre. Do you want to be out on the roads
with that kind of unnecessary risk? Again, the health and moral
implications of the accident risks are staggering. If your
department is going to argue that the "low-level waste" poses only
a low-level risks, then let the waste stay where it is. If it's not
safe enough to stay in Maine or Tennessee or Texas, then it's a
poor risk to ship to Washington.

P. van der Ven - Hanford waste proposal - pg. 1 - 8/4/02

Letter: L017

5 | A far better long term solution for the nation's radioactive
6 | waste needs to be arrived at before half-baked ideas like the
7 | current Hanford proposal are floated. Otherwise, we shouldn't be
8 | generating so much of the stuff.

6 | How much effort is being put into finding alternative, clean
7 | sources of energy (solar, wind, tidal, fuel cell, etc.) and how much
8 | effort is being put into conserving energy, instead of consuming it
9 | and wasting it like there's no tomorrow? Energy companies should
10 | be forced to invest 20% of revenue in alternative energy and
11 | energy conservation research. Both could be hugely profitable and
12 | would benefit our society and the world in many ways while still
13 | protecting corporate earnings.

Respectfully,



Peter van der Ven, DMD

Cc: Heart of America Northwest

P. van der Ven - Hanford waste proposal - pg. 2 - 8/4/02

Letter: L017a

Mr. Michael Collins
USDOE
P.O. Box 550, A6-38
Richland, WA 99352

Dear Mr. Collins:

Please forgive us if we seem terribly confused.

- 1 | It was only last year we wrote outgoing Secretary of Energy,
Bill Richardson, to thank him for cancelling plans for the
Fast Flux Test Facility, plans that had been taking time and
money away from the long-awaited, long-promised clean-up of
Hanford. It had taken 13 years, (!), but DOE had finally
2 | agreed to live up to its part of the Tri-Part Agreement of
1989, and get on with it.

Would you please tell us what the hell is going on now!?

- 3 | As if this little piece of the world was not already
polluted and dangerous enough, the papers say DOE is
planning to import more - seventy thousand truckloads more?
What do you say?

Has the staggering number of waste dumps, contaminated
buildings, leaking tanks, chemical spills, polluted ground-
water, decaying fuel rods and plutonium we haven't used yet
just overwhelmed you?

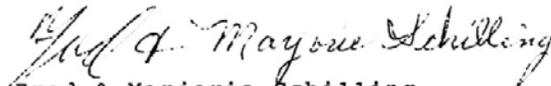
- 4 | Is the nightmare that by the time Yucca Mountain is filled
up you will have just as much nuclear garbage still on your
hands keeping you from sleeping at night?

- 5 | I'll tell you what makes us toss and turn - the thought of
doubling the amount of deadly junk already at Hanford by
adding "low-level" mixed waste.

- 6 | Oh, nice! As if radioactivity weren't enough! Is it the
plume of tritium oozing toward the river, the already
deformed and cancer-ridden fish obviously unfit to eat, the
shoreline still not properly monitored for leakage, the
arithmetical enormity of the problem of a deadly river the
size of the Columbia - is it this partial list of horrors
that makes it look like DOE has given up?

- 7 | Say it isn't so! Don't add more!

- 8 | DON'T GIVE UP ON THE CLEAN-UP.


Fred & Marjorie Schilling
8307 54th Ave. S.
Seattle, WA 98118

cc: Sec. of Energy, Spencer Abraham

Letter: L018

3206 NE 12th Avenue
Portland, Oregon 97212

August 1, 2002

Mr. Michael Collins
U.S. Department of Energy
P.O. Box 550, A6-38
Richland, WA 99352

Dear Mr. Collins,

1 | I am writing to ask that you take immediate steps to accelerate clean-up of the nuclear
2 | waste at Hanford. We have been told a number of times that the clean-up is moving
3 | ahead, but then for some reason or another nothing is done. Indeed, the most recent plan
4 | is to move even more hazardous and radioactive material into this site that is already
5 | burgeoning with contamination. The very idea is outrageous. How many times must we
6 | say "NO"? Please honor your commitments. Stop adding to the problem and start
7 | cleaning up the site.

1 | I have lived in Portland for nearly 40 years. In just the past ten I have seen an alarming
2 | number of friends and associates succumb to cancer. Not older people, but relatively
3 | young people who live normally healthy lives. Certainly some carcinogens occur
4 | naturally, but we are all aware that the nuclear industry has contributed to elevating the
5 | level of contaminants to unprecedented and intolerable levels that threaten the health of
6 | populations living downwind, or downriver in the case of Portland.

6 | Surely this isn't a condition of life you or I would want to bequeath to our grandchildren.
7 | We need, as a society, to find more effective ways of dealing with hazardous waste of all
8 | sorts. Burying it in anyone's backyard is not the answer; it's merely evading the issue.

Sincerely,


Denise B. Jacobson

Letter: L019

1703 SE Alder St. #3
Portland OR 97214

August 1, 2002

Michael Collins
U.S. Department of Energy
P.O. Box 550, A6-38
Richland, WA 99352

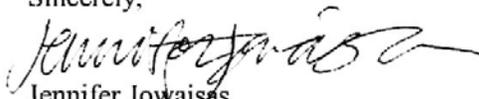
Dear Mr. Collins,

- 1 I am writing you as a citizen concerned with the cleanup of Hanford, one of the most contaminated places in the world. The U.S. Department of Energy is proposing to double the amount of radioactive waste buried in unlined soil trenches at Hanford, which doubles the risk of more soil and groundwater contamination. You have failed to adequately
- 2 address the human health and environmental impacts of adding this radioactive waste to Hanford in your Solid Waste Environmental Impact Statement (SW EIS). I urge you to redo your analysis and stop importing more waste until you have cleaned up the huge
- 3 radioactive mess already contaminating the Columbia River at Hanford.

- 4 The analysis of human health and environmental impacts in the SW EIS is lacking in several ways. Currently, Hanford receives waste from other nuclear weapons plants, labs and even private companies. This waste is dumped in unlined soil trenches with limited groundwater monitoring. Even our kitchen garbage cannot be buried like this! The SW EIS offers no alternative to line and monitor these trenches. Dumping more radioactive waste will contaminate groundwater flowing towards the Columbia River for thousands of years. Also, the U.S. Department of Energy's proposal to greatly increase the waste coming to Hanford from these offsite locations increases the risk of accidents. The transportation risk of importing over 70,000 truckloads of radioactive waste, including dangerous plutonium-laden transuranic waste, is not even considered in the SW EIS.

We are spending billions of dollars to cleanup up the radioactive mess at Hanford. Why would we risk adding more waste to the already contaminated soil and groundwater? I ask again that you reconsider all the impacts to our region before making a decision based on a faulty analysis. The Solid Waste Environmental Impact Statement is utterly deficient. I encourage you to start over and provide me with complete information on all risks from importing and burying waste at Hanford. Until then, please stop burying radioactive waste in unlined soil trenches.

Sincerely,



Jennifer Jowaisas

Letter: L020

2509 Alvarado Dr
Bellingham WA 98229
Aug. 1, 2002

Dear Mr. Collins,

1 | I support the clean-up of
2 | nuclear waste and am opposed
3 | to plans to bring more radioactive
4 | waste to the Hanford site.

3 | Burying more waste near our
4 | precious resource, the Columbia
River, is a prescription for
disaster, and I am concerned
that the present storage system
at Hanford is inadequate.

Sincerely yours

Alicia Litton

Letter: L021

Aug 2, 02

Michael Collins
US Dept of Energy:

- 1 | This is a comment on the proposal to bring to and store more nuclear waste at Hanford -
- 2 | I am strongly opposed to this. We have not cleaned up the waste that is already there. Hauling nuclear waste is always hazardous.
- 3 | Storing any level of nuclear waste in unsealed containment is not acceptable. Waste must be sealed or the for eternity.
- 4 | No more waste - clean up what is there.

Jan Gordon
16544 Colony Rd
Bow, WA 98232

Letter: L022

July 28, 2002

Mr. Michael Collins
U.S. Department of Energy
P. O. Box 550, A6-38
Richland, WA 99352

Dear Mr. Collins,

1 | I am writing you as a citizen concerned with the cleanup of Hanford, Washington, one of the most
2 | contaminated places in the world. The U.S. Department of Energy is proposing to double the amount of
3 | radioactive waste buried in unlined soil trenches at Hanford, which doubles the risk of more soil and
groundwater contamination. You have failed to adequately address the human health and environmental
impacts of adding this radioactive waste to Hanford in your Solid Waste Environmental Impact
Statement(SWEIS). I urge you to redo your analysis and stop importing more waste until you have cleaned
up the huge radioactive mess already contaminating the Columbia River at Hanford.

4&5 | The analysis of human health and environmental impacts in the SWEIS is lacking in several ways.
Currently, Hanford receives waste from other nuclear weapons plants, labs and even private companies.
This waste is dumped in unlined soil trenches with limited groundwater monitoring. Even our kitchen
garbage cannot be buried like this!

6 | The SWEIS offers no alternative to line and monitor these trenches. Dumping more radioactive waste will
7 | contaminate groundwater flowing towards the Columbia River for "thousands of years." Also, the U.S.
8 | Department of Energy's proposal to greatly increase the waste coming to Hanford from these offsite
9 | locations increases the risk of accidents. The transportation risk of importing over 70,000 truckloads of
radioactive waste, including dangerous plutonium-laden "transuranic waste," is not even considered in the
SWEIS.

10 | We are spending billions of dollars to clean up the radioactive mess at Hanford. Why would we risk adding
11 | more waste to the already contaminated soil and groundwater? I ask again that you reconsider all the
impacts to our region before making a decision based on a faulty analysis. The Solid Waste Environmental
Impact Statement is utterly deficient. I encourage you to start over and provide me with complete
information on all risks from importing and burying waste at Hanford. Until then, please stop burying
radioactive waste in unlined soil trenches.

12 | Being a concerned United States citizen involves many responsibilities. This matter requires "wearing
13 | another hat"--that of a concerned citizen for the entire world. Contaminated groundwater flows into the
Columbia River, then to the Pacific Ocean, to eventually spread worldwide. Our planet needs wiser actions
to survive. The United States lawmakers need to be concerned about and take actions that impact beyond
her own borders.

Thank you in advance for responding, in detail, to my concerns.

Sincerely,

Mary Lou Gould
17340 Maple Lane
LaConner, WA 98257

Letter: L023

Aug 5, 2002

Mr. Michael Collins
US DOE
PO Box 550, 86-38
Richland, WA 99352

1 | Please don't bury anymore nuclear
waste at Hanford! We have enough
inadequate burial sites there already
that are ~~looking at~~ and we
sure don't need anymore, now or in
the future.

2 | Let's clean up the place as
we have been promised for the last
25 years and not store anymore
3 | grief for generations to come.

Annabel Bitterman
3025 NE 137th #404
Seattle, WA 98125-3577

Letter: L024

B.157

Revised Draft HSW EIS March 2003

Lois Garlick
3014 Lynn St.
Bellingham, WA 98225
August 7, 2002

Aug. 7, 2002

Michael Collins
U.S. Department of Energy
P.O. box 550, A6-38
Richland, WA 99352

Dear Mr. Collins,

1 | I am writing you as a citizen concerned with the cleanup of Hanford. The U.S.
2 | Dept. of energy is proposing to double the amount of radioactive waste buried in
unlined soil trenches at Hanford, doubling the risk of more soil and groundwater
contamination. I urge you to redo your Solid Waste Environmental Impact Statement
and stop importing more waste until you have cleaned up the huge radioactive mess
already contaminating the Colombia river at Hanford.

3&4 | Currently, Hanford receives waste from other Nuclear Weapons Plants, Labs
and even private companies which is dumped in unlined soil trenches with limited
groundwater monitoring. The U.S. Department of Energy's proposal to greatly increase
5 | the waste coming to Hanford from these offsite locations will only increase the risk of
accidents. The waste, including dangerous plutonium,-laden "transuranic waste" is not
6 | even considered in the SW EIS.

We are spending billions of dollars to cleanup the radioactive mess at Hanford. I
ask again that you reconsider all the impacts to our region before making a decision
based on a faulty analysis.

Sincerely,


Lois Garlick

Letter: L025

August 8, 2002

Michael Collins
U.S. Department of Energy
P.O. Box 550, A6-38
Richland, WA 99352

Dear Mr. Collins,

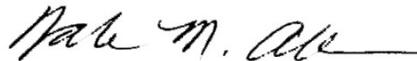
I am writing you as a citizen of Portland, Oregon concerned with the cleanup of Hanford, one of the most contaminated places in the world. The U.S. Department of Energy is proposing to double the amount of radioactive waste buried in unlined soil trenches at Hanford, which doubles the risk of more soil and groundwater contamination. Your team has failed to adequately address the human health and environmental impacts of adding this radioactive waste to Hanford in your Solid Waste Environmental Impact Statement (SWEIS). I urge you to redo your analysis and stop importing more waste until you have cleaned up the huge radioactive mess already contaminating the Columbia River at Hanford.

The analysis of human health and environmental impacts in the SW EIS is lacking in several ways. Currently, Hanford receives waste from other Nuclear Weapons Plants, Labs and even private companies. This waste is dumped in unlined soil trenches with limited groundwater monitoring. Even our kitchen garbage cannot be buried like this! The SW EIS offers no alternative to line and monitor these trenches. Dumping more radioactive waste will contaminate groundwater flowing towards the Columbia River for "thousands of years." Also, the U.S. Department of Energy's proposal to greatly increase the waste coming to Hanford from these offsite locations increases the risk of accidents. The transportation risk of importing over 70,000 truckloads of radioactive waste, including dangerous plutonium-laden "transuranic waste," is not even considered in the SW EIS.

We are spending billions of dollars to clean up the radioactive mess at Hanford. Why would we risk adding more waste to the already contaminated soil and groundwater? I ask again that you reconsider all the impacts to our region before making a decision based on a faulty analysis. The Solid Waste Environmental Impact Statement is utterly deficient. I encourage you to start over and provide me with complete information on all risks from importing and burying waste at Hanford. Until then, please stop burying radioactive waste in unlined soil trenches.

I would appreciate a complete response to my comments.

Sincerely,



Letter: L026

Shelby Rihala
18535 SW Edgewood Ct.
Lake Oswego, OR 97035

Michael Collins, NEPA Document Manager
US Department of Energy
Richland Operations Office
PO Box 550 (A6-38)
Richland, WA 99352

August 8, 2002

Dear Mr. Collins,

1 | I am writing to express my strong opposition to the shipment of 20 million cubic feet of nuclear waste to facilities at Hanford. This plan is irresponsible, creates more problems than it solves, and is of no benefit to the people of the Northwest.

2 | First there is the concern over transportation. Oregon's roadways are no place for 70,000 truckloads of radioactive waste. According to Oregon Department of Transportation statistics for 2001, there were 1,827 accidents involving trucks each year, or about 5 each day. The majority of these crashes occurred in Multnomah County, Oregon's most populated. Of these accidents, 2.08% or about 38 crashes, were trucks carrying hazardous waste. And these statistics do not even address the potential threat of terrorism. Looking at the whole picture, sending 70,000 truckloads of nuclear waste through the middle of downtown Portland is unjustifiable.

3 | Assuming all 70,000 trucks safely reach their destination, unlikely as it seems, it then becomes necessary to address the health and environmental impacts once the waste is deposited at Hanford. Still considered a relatively new area of research, there are many questions yet to be answered about the storage, treatment, and risks of nuclear waste. What we do know so far is that plutonium remains radioactive for 500,000 years. We know that it is one of the most potent carcinogens known to man that that one millionth of a gram, if inhaled, is a carcinogenic dose. We know that plutonium originally buried 20 feet underground at the Idaho National Engineering and Environmental Laboratory has now been found at depths of 240 feet. And we know that according to the National Academy of Sciences, two thirds of government sites involved in nuclear weapons production will never be decontaminated. Questions we still have are how will radioactive waste affect the people near the facility? How has it already affected them? What are the long-term affects to the environment resulting from storage? Until these questions are answered, we should be hesitant to act too quickly. There was a time when it was considered acceptable for waste to be buried in cardboard containers. It is imperative that we know the consequences of our actions before irreparable damage is done.

Letter: L027

- 4 | A final point of concern is that it appears Hanford cannot handle the waste currently on-site, let alone an additional 20 million cubic feet. According to news reports, a final pricetag has yet to be set for the glassification project. This project is already behind schedule and estimates are that it will now cost between four and five billion dollars. It is both irresponsible and poor planning to think of adding more waste to Hanford when current projects remain unfinished. If the hypothetical goal is to reduce, or someday eliminate nuclear contamination at Hanford, this is the complete opposite direction.
- 5 | I urge you to reconsider the proposition of relocating radioactive waste to Hanford. It is a danger to the people on Oregon's roadways, in Oregon's cities, and of Oregon's future. It
- 6 | is a proposal that lacks research, fails to address consequences, and has no clear benefits.

Thank you for your consideration,



Shelby Rihala

Letter: L027a

Debra Rihala
18535 SW Edgewood Ct.
Lake Oswego, OR 97035

Michael Collins, NEPA Document Manager
US Department of Energy
Richland Operations Office
PO Box 550 (A6-38)
Richland, WA 99352

August 8, 2002

Dear Mr. Collins,

- 1** | No! No more nuclear waste to Hanford. You're supposed to be fixing the mess that's
- 2** | been poisoning our Columbia River Basin, not adding to it.

- 3** | Radioactive material continues to insidiously enter our river endangering the delicate
- 4** | region as well as a million people downstream. This is not conjecture, it's fact. Dump
- 5** | more?!? No!

- 5** | This proposal deserves to be dumped in one of those pernicious unlined soil trenches the DOE favors.

Sincerely,



Debra Rihala

Letter: L028

Mike Collins
U.S. Department of Energy
P.O. Box 550 A6-38
Richland, WA 99352

August 15, 2002

Mr. Collins-

- 1 | It would be a serious breach of the public trust to continue to store radioactive waste at the
2 | Hanford facility. Although I cannot state conclusively the future dangers involved in such a plan
3 | the present circumstances clearly indicate that stored subterranean radioactivity has already spread
4 | from the Hanford facility. The Washington aquifer in the Hanford area may well be in jeopardy as
5 | well as the arable soil for food crops which is a major staple in that local and statewide. No need
to mention the jobs lost due to that type of contamination.
- 3 | Our representative government in Washington D.C. has begun efforts to clean up Hanford and to
4 | remove some of the radioactive waste currently on site. Because the Nevada site is remote and
5 | available I urge you to place your support behind storing Hanfords nuclear waste there. As we
continue to clean up the Hanford reservation and restore the public trust we will all benefit from a
cleaner environment, safer water supply, and stable food source in the future.

Sincerely,



P.O. Box 1534

Winston, Ok. 97496

Letter: L029

8-20-02

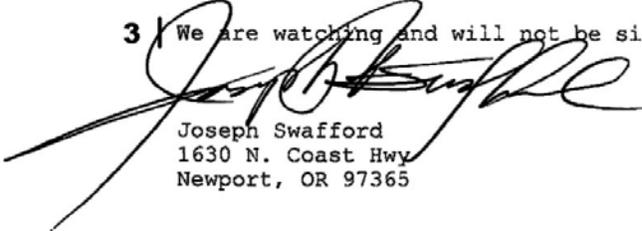
Dept. of Energy
Michael Collins
P.O. Box 550, A6-38,
Richland, WA 99352

Dear Michael Collins,

1 Register what I say here as Official Public Comment. I am concerned and fearful of the danger to man and environment if nuclear waste is transported across the American landscape and then inadequately dumped in the location at Hanford, which would further endanger man and environment as the waste seeps into ground water and the Columbia River.

2 This citizen urges careful consideration of all alternative options to keep the above from happening. Do NOT take a short-cut, cheap, risky way out of dealing with what to do with the hazardous nuclear waste by-product.

3 We are watching and will not be silent if the right thing is not done.



Joseph Swafford
1630 N. Coast Hwy
Newport, OR 97365

Letter: L030

To.

Aug 20, 02

Michael Collins,

I hope there is something you can do about transporting radioactive wastes across the country to Hanford. I understand the plan is to bring it here and put out any liners under it when it is brought here.

I am very much against this. It is ruining the ground water, and polluting the Columbia.

Please do what you can to stop this trek across the country. Protect Hanford but don't bring more waste here.

Sincerely,
Kathleen Nelson

Letter: L031

B.165

Revised Draft HSW EIS March 2003

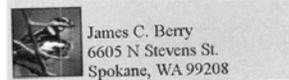
Dear Mr Collins, Aug 20, 2002

1 You all have made a serious mistake.
You have not had a hearing in Spokane
on Hanford clean up. This "sisses" me
off. Yes, it looks to me as if the Energy
Dept. is full of this kind of thing by
this illegal, greedy, corporate Bush Bunch.
Why Hood River, not Spokane. This Hanford
needs to be cleaned up not added to with
2 the most dangerous radioactive material
that humans have ever produced. You and
this Bush Bunch do not care about people,
especially "The Children" by hauling this
3 most dangerous stuff, dribbling it all across
our U.S.A. This is most stupid in the name of
\$. This is anti people and our environment.
4 This includes Yucca. This illegal Exec.
Branch is the very worst. Apparently, this

Letter: L032

includes you, because you are a puppet of the most awful, greedy for \$ and power Bungry, Exec. Branch in my life time. You, dictitorily over-ruled the people of Nevada, in a worst non-democratic way possible.

5 You, this worst Exec. Branch continue to get worst in every way. We the people must get rid of you, now thru 2004. You are going against most all people and countries of the world, how can this corporate Exec. Branch continue to be so uncaring for all of Earth is "mind boggling". But, I know why - all of this corporation outfit, and you puppets want power and \$ more than anything. You don't care.



Letter: L032a

B.167

Revised Draft HSW EIS March 2003

August 12, 2002
1293 Old Milton Hwy
Walla Walla, Wa. 99362

Michael Collins
U. S. Department of Energy
P.O. Box 550, A6-38
Richland, Wa. 99352

Dear Mr. Collins,

- 1 | I recently attended the hearing in Richland on the cleanup of Hanford, one of the most contaminated places in the world. I could not believe what I heard, that DOE would be putting their waste in open trenches. Even our garbage in each county in the state is required to be in lined trenches.
- 2 | I felt that night that you failed to adequately address the human health and environmental impacts of adding this radioactive waste to Hanford.
- 3 | I would hope before a decision is made that a more complete analysis is made and first
4 | Clean Up what is there before adding more.
- 5 | Is it possible to start over and provide me with more complete information on the risks from importing and burying more waste at Hanford.
- 6 | Our Columbia River is already contaminated and we certainly don't need more ground water contamination seeping into the river.

I would appreciate a complete response to my comments, and not some article which I have in possession from the meeting.

Sincerely,



Letter: L033

8/19/02

DANIEL L. HASSLER
JODI JAMERSON
5830 4TH AVENUE NORTHWEST
SEATTLE, WASHINGTON 98107-2117

Michael Collins
U.S. DOE.

Dear Sir,

1 My wife and I are opposed to the plans we have heard of bringing additional low level waste to the Hanford site.

2 The Department of Defense and the Department of Energy proved most capable at creating the mess that is the current state of the site. However, at curing the situation, they have been less than effective. The contaminated groundwater will reach the Columbia river and pollute it.

3
4 The Bush administration chooses to deal with these failures by redefining success to a much lower standard. This I do not accept.

Letter: L034

5 When the government agencies and
the contractors have demonstrated
their competence by successfully
cleaning up the Hanford Reservation
and containing the nuclear waste
in forms safe and long term in
the sense of the half-life process
of most geologic time frame, there
I would consider it reasonable to
request using facilities existing to
process what could be safely
transported there. I see no likely-
hood of this happening in my
lifetime and little in the
6 lifetime of those who are now
children.

Sincerely,
Daniel Hustler
Jodi Janssen

Letter: L034a

A note from...

Dr. T. R. Kurtz

Mr. Michael Collins
U.S. Dept. of Energy
PO Box 550-A-6-38
Richland, Wa. 99352

Dear Sir;

1 | Please do not put more
2 | nuclear waste into trenches
3 | at the Hanford Reservation,
First stop radioactive
elements contaminating
the Mighty Columbia River.
No more RADIOACTIVE
WASTE AT HANFORD

Sincerely,
T.R. Kurtz, DVM,
9634 15th NW
Seattle, Wa. 98117

Arctic National Wildlife Refuge
TOO WILD TO WASTE



Letter: L035

B.171

Revised Draft HSW EIS March 2003

August 11, 2002

Dear Mr. Collins

1 I am writing to you as a con-
-cerned citizen. On hearing of
the goings on at the Hanford site,
I am appalled !!

2 I am begging you to look
with clarity. Please stop more
waste coming to Hanford. The
whole thing has been such a bad
problem for such a long time.

3 Every thing should be checked
and re-checked, and no more
waste should be dumped. The
Area should be cleaned up, its
way over-due.

4 My friend Millie got Cancer
from Hanford, because she grew
up near the Hanford area.

5 The qualified people should
be working to improve our
Washington, to clean up the mess.

6 To dump more poisons means
the people receive the poisons
in different ways, and the fish
suffer too as well as other Animals.

7 Please do the responsible
thing and see that things must
change !! No more dumping !!

8
Marlene Kraser

Letter: L036

8-11-02

To: Michael Collins
USDOE

Dear Mr. Collins;

1 Just wanted to submit
our written comment, requesting
that the Dept. of Energy / Hanford
not accept any more waste until
we can deal with our existing
waste problems. until an independent,
2 comprehensive risk assessment is
completed for the entire Hanford Site,
we will not know what risks
the Northwest will be left with
after the clean-up is completed.

Thanks!!

Spue Hanford
Edith M Hanford
Julian H

Letter: L037

2213 Willow Drive
Newberg, OR 97132
August 12, 2002

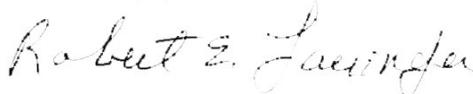
Michael Collins, NEPA Document Manager
Department of Energy
P. O. Box 550 (A6-38)
Richland, WA 99352

Dear Mr. Collins:

1 | This letter is being written to express our concern over the
2 | Department of Energy plan to take more radioactive waste to Hanford.
3 | The radioactive waste that is already there has had an adverse impact on
4 | the environment in many ways (through airborne releases and releases
5 | into the Columbia River).

6 | Hanford has been considered the most contaminated site in the
7 | Western Hemisphere. The nation's largest concentration of high-level
8 | nuclear waste is stored there. It doesn't make any sense to take any more
9 | waste to Hanford. We also object to the plan to ship approximately
10 | 70,000 truckloads of waste through Oregon to Hanford.

Sincerely yours,



Robert E. Lauinger



Chris Lauinger
(Mrs. Robert Lauinger)

Letter: L038

Michael Collins
215 Dept of Energy
PO Box 550 A6 38
Richland, Wa 99352

Dear Michael,

1 | Speaking as voters and citizens of Washington State,
My husband and I wish to express our concern about the
plan to bring more truck loads of radioactive waste
to Hanford. We support the Heart of America Northwest
in their attempt to Save the Columbia River from pollution
2 | and to protect the environment.

3 | Please do what you can reduce the risks we're doing
all we can to conserve energy (solar energy use, etc)
Plus we're teachers & trying to help the younger generation
understand.

Sincerely yours,
Lynda Good
Ronald Good
PO Box 131
Langley, Wa 98260

Letter: L039

August 21st, 2002

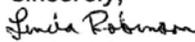
Michael Collins
US Dept. of Energy
PO Box 550 A6-38
Richland, WA 99352

Dear Mr. Collins:

1 | My understanding is that the US DOE has documents showing that there are high levels of
2 | cancer causing hazardous wastes escaping from unlined radioactive waste burial grounds.
3 | Washington's Model Toxics Control Act requires a fullscale investigation of burial grounds
4 | releasing hazardous wastes. Please consider the risks your agency is taking by deciding to
5 | transport nuclear waste from different sites across the country to Hanford, where more
6 | nuclear waste will be placed in open unlined trenches. The plan will more than double the amount
7 | of waste already disposed in Hanford's soil.

3 | If the government is truly concerned about homeland security, these decisions for protecting us
4 | from nuclear waste should be taken seriously. Why not keep the waste where it is around the
5 | country and concentrate our money and efforts on using the best means available to contain
6 | the waste there? It will be highly dangerous to cross the country with this radioactive material.
7 | The land around Hanford and the Columbia River would become extremely vulnerable to
8 | contamination if the extra waste from other sites is dumped here in Washington.

6 | I implore the DOE to not act hastily, but to use the best knowledge for containment we have,
7 | eliminating as much risk as possible to the present population and environment.

Sincerely,

Linda Robinson, Seattle, WA

cc: US Sen. Maria Cantwell
US Sen. Patty Murray
US Sen. Jim McDermott
Governor Gary Locke

- 1 -

Letter: L040

Dear Mr. Collins,

My name is Lydia McClaran. I am 10 years old and along with my friend Keeley Savatgy, age 13, we are trying to help save the world.

1 I heard about the radioactive waste that is (hopefully not) going to be dumped. I think that dumping the waste isn't going to help the earth but simply help it become ruined. I would also like to say that loads of people, animals, plants, and trees would become extraordinary sick if it is dumped. Some might even die.

2 Radioactive waste will hurt the earth; definitely not help it. So I suggest that it should not be dumped. No matter where it goes, to space, under water, buried, burned, it will hurt something or someone. The only thing to do would be to stop making products that produce radioactive waste. The world is our home. We must keep it clean by not filling it all up with garbage.

3 I was not able to come to the meeting in Seattle on August 7th, but I would have for sure have come if I could have.

I hope you will consider what I suggest.

-Lydia McClaran-

P.S. I would appreciate it if you would write back.

Letter: L041

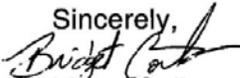
B.177

Revised Draft HSW EIS March 2003

Michael Collins
U.S. Department of Energy
P.O. Box 550, A6-38
Richland, WA 99352

Dear Mr. Collins,

- 1 | I am a concerned citizen writing today to address the cleanup of Hanford. Please
 - 2 | reconsider the U.S. Department of Energy's proposal to double the amount of radioactive
 - 3 | waste buried in unlined soil trenches at Hanford. We do not need more radioactive
 - 4 | waste contaminating the Columbia River (where groundwater from this area flows.)
- If you do plan to go forward with this proposal, please consider some way to monitor the groundwater impact and line the trenches so that the Columbia stays as beautiful as it is.

Sincerely,

Bridget Coila
14425 5th Ave S
Burien, WA 98168
ailuri@aol.com

Letter: L042

14410 SW 112th Ave. #6
Tigard, OR. 97224
Aug. 22, 2002

U.S. Dept. of Energy
Attn. Michael Collins
P.O. Box 550, A-6-38
Richland, WA 99352

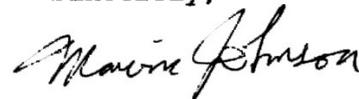
Dear Mr. Collins:

1 We have heard much about nuclear waste this year. Now the
administration has a plan of stealth. All the controversy about
2 Yucca Mtn. is a smokescreen diverting attention from what the
administration intends to do at Hanford. Hanford already has 177
aging underground storage tanks that hold 53 million gallons of
3 high-level radioactive waste. Over one million gallons have leaked
into the soil and some is in the groundwater. Now the
4 administration, with much ballyhooing about Yucca Mtn., wants to
ship more radioactive waste quietly to Hanford. The plan calls for
5 allowing it to be dumped in unlined trenches. The plan does not
consider the alternative of not shipping it to Hanford. Shrub's
6 people are withholding funds from the vitrification facility which
would store radioactive waste in glass logs or blocks, the best way
to keep it out of groundwater.

These plans are always couched in lies. When the DOE wanted to
restart the fast flux plant, they said it would produce needed
isotopes for cancer research. Opponents responded that the US
4 already had isotopes, and if more were needed, a Canadian
laboratory could supply more. Hundreds of people attended hearings,
testified and sent letters when the Clinton Adm. advanced the fast
flux plan. This defeated plan was dusted off and resubmitted by
5 Shrub's people and we went through the process again.

6 The people of the Northwest do not want more nuclear waste at
Hanford, and we don't want more radioactivity leaching into the
groundwater.

Sincerely,



Marvin M. Johnson

Letter: L043

To Whom it Should Concern.

1 I do not believe any additional radioactive waste should be stored at Hanford.

2 Some time ago a committee of three College Professors had a public hearing concerning additional radioactive waste storage at Hanford. I testified against the storage then as many others testified against the storage then. After considering the testimony the three college Professors ruled that additional storage should not be permitted!

3 The Pacific plate is sliding under the West Coast plate and that will cause an earthquake - the "big one" that earthquake people are expecting. Big rivers like the Columbia and Snake often flow on fault lines. If the "big" earthquake broke into Hanford and connected with the Columbia River it would cause it to be radioactive down to Astoria and up and down the coast beaches. That would cause all the cities on the Oregon and Washington sides to be evacuated for thousands of years and lots more. That contamination would affect Portland because the tides put Columbia River water back up the Willamette River. If the Columbia River became completely radioactive it could eliminate the cities of The Dalles, Hood River, Cascade Locks, Bonneville, Troutdale, Camas, Warrenton, Portland, Linton, St. Helens, Columbia City, Deer Island, Goble, Jewett, Malena, Longview, Rainier, Cathlamet, Skamokawa, Astoria, Warrenton, Clifton and Ilwaco.

4 Why should we take a chance on this calamity when there is a place at Yucca Mountain to safely store this surplus material?

Please seriously consider these options
Thank you.

Harvard Anderson

HARVARD ANDERSON
PO Box 9

Letter: L044

Michael Collins
U.S. Department of Energy P.O. Box 550,
A6-38 Richland, WA 99352

Dear Mr. Collins,

- 1 | I am writing you as a citizen concerned with the cleanup of Hanford, one of the most contaminated places
2 | in the world. The U.S. Department of Energy is proposing to double the amount of radioactive waste buried
3 | in unlined soil trenches at Hanford, which doubles the risk of more soil and groundwater contamination.
4 | You have failed to adequately address the human health and environmental impacts of adding this
5 | radioactive waste to Hanford in your Solid Waste Environmental Impact Statement(SWEIS). I urge you to
6 | redo your analysis and stop importing more waste until you have cleaned up the huge radioactive mess
7 | already contaminating the Columbia River at Hanford.

- 8 | The analysis of human health and environmental impacts in the SW EIS is lacking in several ways.
9 | Currently, Hanford receives waste from other Nuclear Weapons Plants, Labs and even private companies.
10 | This waste is dumped in unlined soil trenches with limited groundwater monitoring. Even our kitchen
11 | garbage cannot be buried like this! The SW EIS offers no alternative to line and monitor these trenches.
12 | Dumping more radioactive waste will contaminate groundwater flowing towards the Columbia River for
13 | "thousands of years." Also, the U.S. Department of Energy's proposal to greatly increase the waste coming
14 | to Hanford from these offsite locations increases the risk of accidents. The transportation risk of importing
15 | over 70,000 truckloads of radioactive waste, including dangerous plutonium-laden "transuranic waste," is
16 | not even considered in the SW EIS.

- 17 | We are spending billions of dollars cleanup up the radioactive mess at Hanford. Why would we risk adding
18 | more waste to the already contaminated soil and groundwater? I ask again that you reconsider all the
19 | impacts to our region before making a decision based on a faulty analysis. The Solid Waste Environmental
20 | Impact Statement is utterly deficient. I encourage you to start over and provide me with complete
21 | information on all risks from importing and burying waste at Hanford. Until then, please stop burying
22 | radioactive waste in unlined soil trenches. I would appreciate a complete response to my comments.

Sincerely,



Alexandra Lowell

534 SW 3rd Ave Suite 512
POX OR 97204

Letter: L045

B.181

Revised Draft HSW EIS March 2003

Aug-29-2002

Dear Mr. Collins,

1 I would like to express my opinion on the Hanford Solid Waste EIS. My
name is Keeley Savatgy; I'm 13 years old. The fact that 70,000 truckloads of
radioactive waste are being dumped this very moment into unlined trenches
2 scares me half to death. I can already imagine the invisible but deathly radiation
creeping silently from the waste, to the Columbia River to everywhere else.
3 Poisoning first the water, then every other creature in sight. The radioactive
waste could even be harmful when it hasn't even reached Hanford. Anything
could happen to a truck full of poisonous content, as simple as a car accident,
the possibilities are endless.

4 We can change this. No longer making items that produce radioactive
waste is a perfect alternative. I'm positive that America would benefit in many
other ways by doing this as well.

Please realize there is more than garbage in radioactive waste. Thank
you for reading and please consider my thoughts.

Sincerely, 
Keeley Savatgy

Letter: L046

August 27, 2002

Mr. Michael Collins
HSW EIS Document Manager
U. S. Department of Energy
P. O. 550
Richland, WA 99352-0550

Subject: Proposed Hanford Site Solid Waste Program DEIS

Dear Mr. Collins:

1 | I am very disappointed with the Proposed Hanford Site Solid Waste Program DEIS. It fails to respond to the issues presented by the project and is truly one of the worst NEPA documents I've ever read.

The following needs to be done to meet the intent and requirements of NEPA:

- 2** | ♦ An analysis of a full range of reasonable alternatives with additional mitigation measures for Environmental Restoration Disposal such as mega-trench, changing volumes of imported waste streams, packaging, capping, and limiting radionuclide concentrations. There are only two alternatives and the only difference between them is cost, not environmental protection. Since both actions would actually reduce environmental protection by raising radionuclide levels in groundwater above acceptable limits, neither can be considered for action. To be credible, the EIS needs to consider a range of alternative actions, that could be taken (in addition to those of the Waste Acceptance Criteria), to mitigate impacts.
- 3** | ♦ A "no action" alternative should also be evaluated to discuss the range of volumes (none or all) and types of waste Hanford could take, with Yucca Mountain taking any remainder.
- 4** | ♦ An in-depth analysis and description of significant impacts such as the estimates of pre-1970 transuranic wastes or emissions from remedial actions. The groundwater analysis needs to evaluate impacts in the entire aquifer, not just along the Columbia River. Furthermore, I understand that the wells used to evaluate groundwater impacts are not sufficiently deep to collect the full range of groundwater effects in all seasons. This is a major deficiency that needs to be addressed in discussing the alternatives and impacts.
- 5** | ♦ A better description showing the relationship between the WAC regulations and regulations of comparable disposal sites.
- 6** | ♦ A clear statement of the priorities involved in the proposed actions. That is, I presume the highest priority action is the disposal of Hanford's waste streams, while the disposal of certain off-site wastes seems to be a secondary goal. The formation of alternatives should then reflect this intent.

Letter: L047

Michael Collins
August 27, 2002
Page 2

7

Due to the significant inadequacies of the current document, the DOE should, at minimum, issue a supplemental draft of this DEIS, including the above-referenced analyses and information, for further public review and comment. In the alternative, this document is so badly done that DOE should re-engage this process from the beginning, incorporating proper analysis of the issues presented by the project. I look forward to reviewing your future work product.

Thank you for considering these comments.

Sincerely,



S.E. Stewart
4532 41st Ave. S.W.
Seattle, WA 98116

Letter: L047a

God
Bless
America



Michael Collins, USDOE
P.O. Box 550, A6-38
RICHLAND, WA. 99352

Dear Michael Collins,
I am writing to say
that I am very much
opposed to radiation
contaminated waste
being dumped in unlined
dirt trenches at the
Hanford Nuclear Reservation!

We know several people
who lived in that area,
who have had M.S., and
other neurological problems;
a couple have died already.
We firmly believe that
almost all of the people
that we knew in that
area got M.S. or some other
terrible neurological problem.
I'm sure it was from the
contaminated nuclear waste
that was dumped in
(over)

Letter: L048

3 | unlined dirt trenches,
and eventually worked
its way into the river.

4 | He would very much
like to see a stop
put to all the nuclear
waste brought to Hanford
Reservation and dumped
into unlined dirt
ditches!

Sincerely,
Bessie Harrison
6623 Highland Dr.
Everett, Wa. -
98203

Letter: L048a

2/21/02

Dear Mr. Collins,

I would like to go on record this evening by requesting you to address the following concerns.

- 1 | 1) Why isn't the Cleanup at Hanford being completed before allowing additional waste to be introduced?
- 2 | And; How can the clean up effectively continue if your intention is to more than double the amount of waste already stored there?

- 3 | 2) The Columbia River provides irrigation to much of our agricultural lands in Oregon + Washington.
There are also wells located on the river that are periodically utilized for drinking water by the city of Portland and other smaller communities further downstream.
Will the DOE be liable when this vital water source becomes contaminated?

Letter: L049

3) on the issues of accidents ~~and~~ spillage during transport;

4 Do you have some sort of planned emergency response, or is it just a case of "We'll worry about that when it happens"?

And while were on the topic of transporting dangerous waste;

5 In light of post 9/11 and all the billions of dollars this Administration is spending on its so-called plans to protect the public from terrorism, wouldn't you agree that mobilizing 20,000 UN escorted truckloads of Radioactive waste is just a dumb idea?

6 I could go on about the responsibility for the long term stewardship of all existing and added waste to the site.

OR, why are no other alternatives being offered up?

7 That the pentagon as well as the Defense Programs Portion of the D.O.E. should hear full

Letter: L049a

7
(cont)

liability for the waste generation attributed to future production of nuclear weapons or weapons-usable materials.

8

But the truth is Mr. Collins the thing that angers me the most is that you didn't even have the decency to present "we the People" with an honest and thorough Environmental Impact Study.

Instead you have insulted us by passing off an inadequate study that is for the most part, politically driven by deadlines and liabilities to your governmental Department.

9

This Study reflects the current administration's continued total disregard for both the people & the environment.

The government is not doing what it should be doing to safeguard the Rights & lives of the people.

Letter: L049b

10 | I strongly ^{URGE} you to provide the public with an adequate analysis of all the impacts to human and environmental health.

11 | Until then, no more waste should be imported to Hanford until the soil and ground water at Hanford is cleaned up.

Please provide me
A written Response.

Walt Heck
WALT Heck
1826 NE. Gertz Rd.
Portland, OR
97211

Letter: L049c

**Roz Glasser
5609 Greenwood Ave. N.
Seattle, WA 98103**

Mr. Michael Collins
HSW EIS Document Manager
U. S. Department of Energy
P. O. 550
Richland, WA 99352-0550

Subject: Proposed Hanford Site Solid waste Program DEIS

Dear Mr. Collins;

I am writing to express my deep disappointment with the Proposed Hanford Site Solid Waste Program DEIS. It displays very little care for the people of Washington State and those who will have to live with the effects of nuclear waste storage at Hanford in the future. For an administration that has spoken about the importance of environmental protection, this is among the least responsive documents written under the NEPA that I can recall. I hope it is not intended to provide a model for other nations to follow.

The following is a list of needs that the DOE needs to address for it to be minimally acceptable as an environmental impact analysis:

- 1 | ♦ An analysis of a full range of reasonable alternatives with additional mitigation measures for Environmental Restoration Disposal such as mega-trench, changing volumes of imported waste streams, packaging, capping, and limiting radionuclide concentrations. There are only two alternatives and the only difference between them is cost, not environmental protection. Since both actions would actually reduce environmental protection by raising radionuclide levels in groundwater above acceptable limits, neither can be considered for action. To be credible, the DEIS needs to consider a range of alternative actions, that could be taken (in addition to those of the Waste Acceptance Criteria), to mitigate impacts.
- 2 | ♦ A "no action" alternative should also be evaluated to discuss the range of volumes (none or all) and types of waste Hanford could take with Yucca Mountain taking any remainder.

Letter: L050

- 3 | ♦ An in-depth analysis and description of significant impacts such as the estimates of pre-1970 transuranic wastes or emissions from remedial actions. The groundwater analysis needs to evaluate impacts in the entire aquifer, not just along the Columbia River. Further, I understand that the wells used to evaluate groundwater impacts are not sufficiently deep to collect the full range of groundwater effects in all seasons. This is a major deficiency that needs to be addressed in discussing the alternatives and impacts.
- 4 | ♦ A better description showing the relationship between the WAC regulations and regulations of comparable disposal sites.
- 5 | ♦ A clear statement of the priorities involved in the proposed actions. That is, I presume the highest priority action is the disposal of Hanford's waste streams, while the disposal of certain off-site wastes seems to be a secondary goal. The formation of alternatives should then reflect this intent.

6 | Due to the significant inadequacies of the current document, the DOE should issue a supplemental draft of this DEIS to provide the needed analysis and information so that the public and affected agencies can provide informed comments and make better decisions on the critical issues involved. I look forward to reviewing that document.

Thank you for your consideration of these comments.

Regards,



Roz Glasser

Letter: L050a

David Thornbrugh
2353 North 64th St.
Seattle, WA 98103
(206)526-5756
davidandjoan@earthlink.net

September 9, 2002

Michael Collins
U.S. Department of Energy
P.O. Box 550, A6-38
Richland, WA, 99352
fax: 509-372-1926

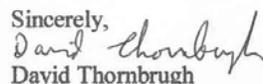
Dear Mr. Collins,

1 | I am writing to express my deep concern over reports that the U.S. Dept. of
2 | Energy (USDOE) plans to truck an estimated 70,000 loads of radioactive waste over a
3 | number of years to be stored in unlined soil trenches at Hanford. If this report is accurate,
4 | I am strongly opposed to this proposal. I thought the agreed-upon plans at Hanford called
5 | for reducing the amount of radioactive waste at the site, not increasing it.

I believe trucking radioactive waste from across the U.S. into Washington state is
a bad idea for the following reasons:

- 3 | • Dumping more radioactive waste will contaminate groundwater flowing towards
4 | the Columbia River for “thousands of years.”
- 5 | • The risk of nuclear waste transportation to Hanford is not even considered in the
6 | EIS. More radioactive waste on the roads means a greater risk of accidents.
- Dumping radioactive waste in unlined trenches provides no protection from soil
and eventual groundwater contamination. Even our kitchen garbage cannot be
buried in unlined soil trenches!
- The USDOE plan more than doubles the total amount of radioactive waste buried
in unlined soil trenches at Hanford, and also includes importing dangerous
“transuranic wastes” which contain deadly plutonium!

I understand that Washington State Attorney General Christine Gregoire is
opposed to this plan by the USDOE. I vigorously applaud Ms. Gregoire’s position and
am gratified to know that she is looking out for the best interests of Washington State
citizens. I support her in her opposition to any plan to reopen Hanford as a dumping
ground for the nation’s nuclear wastes.

Sincerely,

David Thornbrugh

Letter: L051

Dear Michael Callan

1 Please stop
the unlined soil
contamination in
Nanford. Clean it
up & don't allow
2 further dumping
of Radioactive Waste

Sincerely

Ann Reeves

9/17/02

Letter: L052

September 6, 2002

Mr. Michael Collins
PO Box 550, A6-38
Richland WA 99352

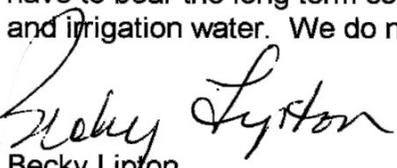
Re: Hanford Nuclear Waste Site - Official Public Comment

Mr. Collins;

I wish to express my deepest concern about the consideration of adding nuclear waste to the Hanford site in south central Washington. I urge you to veto such a dangerous plan.

1 | Tridium is already leaking from this site into the Columbia River drainage basin.
1 | It is not acceptable to further risk polluting this water with contaminants which in
2 | small amounts can cause long lasting and catastrophic damages. In addition, I
2 | cannot support the transport of some 70,000 truckloads of highly dangerous
nuclear waste past population centers which could be seriously impacted in the
event of accidents.

3 | Please do allow the Hanford site to be further degraded by the addition of toxic
or nuclear waste. Please do not allow the people of Washington and Oregon to
4 | have to bear the long term consequences of such toxic wastes in our drinking
and irrigation water. We do not want this in our region!!


Becky Lipton
3790 Longridge Dr.
Springfield OR 97478

Letter: L053

Rebecca Giszewski

Put in record

Songs for August 7, 2002 Hanford Hearing by Kay Thode, 7233 36th Ave. S.W., Suite #4, WA 98126

70,000 Truckloads of Waste
To: Mademoiselle from Armentiers

- 1 | Seventy thousand truckloads of waste
| On the road.
| Will endanger citizens
| Along the way,
| That's the DOE's plan for us
| We've all got to make a great big fuss,
2 | No more waste for us, you hear.

- 3 | Proposals to cut cleanup funds - aren't
| Acceptable,
| We won't **trade** cleanup funds for
| New, mixed wastes,
| What's proposed is dangerous,
| Illegal and felonious,
| And we'll fight it to the death.

- 4 | It seems that there's a plot - to keep from
| Cleaning up,
| Cleanup funds were spent to keep - FTF
| On line.
| Now you'll reduce them to make more mess.
| We think that you're crazy, we confess,
| Stop endangering us right now.

- 5 | We're sick and we're tired of waiting for
| **Real** cleanup.
- 6 | No more games or delays or new im-
| Ported waste,
| We will not wait another day, so
| Throw your grand import plan away,
| Listen up or we will sue.

Letter: L054

WE DON'T WANT YOUR TRANSURANICS

To: I Don't Want Your Millions, Mister

- 7 | We don't want seventy thousand truckloads
Endangering folks across the land,
- 8 | All we want is for you to honor,
The agreed on Triparty plan.
- 9 | We don't want your new mixed wastes dumped
Into an unlined trench,
- 10 | All we want is to protect the Columbia,
And our young salmon spawns.
- 11 | We don't want, your transuranics,
We don't want your low level waste,
All we want is Hanford cleanup,
Give us back clean land again.

Letter: L054a

FACSIMILE COVER PAGE

Date: 8/15/02
Time: 20:58:16
Page: 1

To: Michael Collins
Company: Hanford Nuclear Reservation
Fax #: 1010 811 1 509 372 1926

From: Philip Heft
Company: Home
Address: 13003 SE 248th
Kent, WA 98031
USA
Voice #: (253) 631 5789

Message:

August 15, 2002
Dear Mr. Collins,

1 | You need to know that I am apposed to the Hanford Reservation accepting any
| more nuclear waste. In my opinion, the operation should there should restricted to
| cleaning up the remaining nuclear waste.
Very sincerely,

Philip Heft
13003 S.E. 248th St.
Kent Washington 98031

Letter: L055

Aug. 23, 2002
631 Pioneer Dr.
Port Ludlow, WA
98365

Michael Cobline
U.S. Dept of Energy
P.O. Box 550, AG-38
Richland, WA 99352

Dear Mr. Cobline:

1 | We are very much opposed to the
2 | plan to make Hanford a nuclear waste
3 | dumping ground. Hauling the waste will
4 | create a great risk for Americans along
the route as well as the risk of contamina-
tion to the Columbia River. There has to
be a better alternative.

Sincerely,
C. Mavitz and Marian
Lindvall

Letter: L056

NORMAN L. WINN
1230 - 16th AVENUE E.
SEATTLE, WASHINGTON 98112

August 27, 2001

Mr. Michael Collins
US Department of Energy
P.O. Box 550,A-38
Richland, Washington 98352

Re: Bush Administration Vitrification Goal

Dear Mr. Collins:

1 | The Bush Administration has announced proposal for vitrification of weapons grade plutonium
2 | at the Hanford facility. This proposal violate numerous provisions of federal and state law and
3 | explicit agreements entered into by D.O.E. with the state of Washington. This proposal is a
4 | disgrace. The Hanford Solid Waste Environmental Impact Statement should be withdrawn, and
5 | the D.O.E. should begin again by analyzing all of the risks to human and environmental health.

6 | Since 1989 the D.O.E. has been party to a "Tri-Party Agreement" (TPA) between the D.O.E., the
7 | Washington Department of Ecology, and the US Environmental Protection Agency regarding a
8 | cleanup schedule for the Hanford site. That agreement provided for legally enforceable thirty
9 | (30) year \$50 billion for cleanup of this site. The D.O.E. egregiously failed to follow the cleanup
10 | schedule, and in 1998 the office of the Governor and Washington State Attorney General
11 | notified the D.O.E. of the state's intention to file suit for failure to meet cleanup deadlines.
12 | Following that letter the State and D.O.E. entered into yet another consent agreement with "court
13 | enforceable, technically sound schedules" for single shell holding tank stabilization. The D.O.E.
14 | has failed to meet those schedules.

15 | In spite the this legally binding agreement the D.O.E. proposes to eliminate vitrification of 75%
16 | of the nations high level nuclear waste. This proposal violates the requirement for 99%
17 | vitrification by 2028 as provided by the last consent decree.

18 | The current Bush Administration proposal is illegal and constitutes a grave danger to public
19 | health in many respects. The plan does not contain a "No Action Alternative" as explicitly
20 | required by NEPA. The plan proposes to store high level nuclear waste in single shell tanks
21 | which have already leaked more than a million gallons of waste which is moving towards the
22 | Columbia River. Recent studies have shown that the fall Chinook which spawn in the Hanford
23 |

Letter: L057

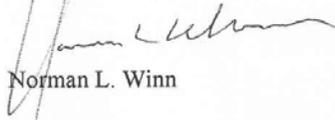
Mr. Michael Collins
Page Two

9 | Reach are showing genetic defects which are likely due to radiation. The Yakima Indian Tribe, which consumes large amounts of fish from the Columbia River, shows levels of cancer which are substantially higher than the general public. It is highly likely that there is a high level of radioactive waste which has already entered the Columbia River and will continue to do so until substantially different remediation efforts are completed.

10 | The EIS prepared by the Hanford regulators fails to disclose the cumulative impacts of
11 | radioactive waste already disposed of at Hanford. It fails to disclose the impacts of burying
12 | radioactive waste to ground water and human health. It fails to consider the danger of importing
13 | more radioactive waste to Hanford. Many news stories have indicated the possibility of terrorist attacks on transportation of nuclear waste to Hanford. The Hanford regulators have also failed to consult with the tribes and the state of Washington and the EPA as required by the TPA.

14 | For all of these reasons and for many others which are too numerous to mention the FWEIS should be withdrawn. The Hanford regulators should prepare a new EIS analyzing all of the risks of treatment, storage, and burial of nuclear active waste at Hanford as required by federal law.

Sincerely,



Norman L. Winn

NLW/kle

Letter: L057a

Mike Collins
U.S. Department of Energy
P.O. Box 550 A6-38
Richland, WA 99352

August 15, 2002

Mr. Collins-

1 | It would be a serious breach of the public trust to continue to store radioactive waste at the
| Hanford facility. Although I cannot state conclusively the future dangers involved in such a plan
2 | the present circumstances clearly indicate that stored subterranean radioactivity has already spread
| from the Hanford facility. The Washington aquifer in the Hanford area may well be in jeopardy as
| well as the arable soil for food crops which is a major staple in that local and statewide. No need
3 | to mention the jobs lost due to that type of contamination.

Our representative government in Washington D.C. has begun efforts to clean up Hanford and to
remove some of the radioactive waste currently on site. Because the Nevada site is remote and
available I urge you to place your support behind storing Hanfords nuclear waste there. As we
continue to clean up the Hanford reservation and restore the public trust we will all benefit from a
cleaner environment, safer water supply, and children that don't glow in the dark.

Sincerely,

Rhoda Jones
529 Saylor St.
Muytla Creek, Or. 97457

Letter: L058

Floyd and Shirley Daniel

720 Seneca St. #601

Seattle, WA 98101-2761

Phone: 206-215-1324 Fax: 206-215-1340

Floyd: floyddaniel@attbi.com Shirley: shirleycdaniel@attbi.com

August 21, 2002

Michael Collins
U S Department of Ecology
P O Box 550, 6-38
Richland WA 99352

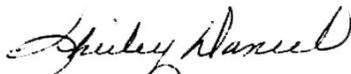
Dear Mr Collins,

1 | You certainly have a hard job with the potential of holding the future of thousands of
Washington citizens in your hand. I am not writing to tell you things you already know. But I
am concerned as a person born before the Great Depression and the nuclear age, that Hanford
should not become another nuclear disaster

2 | The cleanup of Hanford has been slow, still not finished, and has cost billions of dollars. We
have more than enough waste to contaminate soil and groundwater without adding more. You
3 | are being asked by the people of Washington to request (I don't know if your position makes it
possible for you to **demand**) another study of the environmental impact and refuse any more
waste until it is done.

If your employment depends on the present Administration, this will be a risky position. But
many believe it is the **only right position in the present situation.**

Sincerely yours,


Shirley Daniel

Letter: L059

B.203

Revised Draft HSW EIS March 2003

William C. Arbaugh
1209 SW Sixth Ave., 406
Portland, OR 97204-1089
503-221-7448

Mr. Michael Collins

August 19, 2002

US DOE

PO Box 550 A 638

Richland, WA 99352

Dear Mr. Collins:

1 I am perturbed to hear
2 that Hanford is to be a depository
3 for radioactive materials and further-
4 more that protective measures do
5 not appear adequate. It has been
6 reported that the burial places will
7 not be lined and that the monitoring
8 of ground water will be limited.

4 Having lived downriver in Astoria
and now in Portland, I am concerned
about the dangers involved. Some
decades ago, those who were pressing
hard for nuclear development should
have listened to moderates who
called for more research - at least to
control the garbage - sincerely.

W C Arbaugh

Letter: L060

1055 Edmonds Street
Edmonds, WA 98020

SUSIE SCHAEFER

August 21, 2002

Michael S. Collins
HSW EIS Manager
Richland Operations Office
US Dept. of Energy
PO Box 550
Richland, WA 99352-0550

Dear Mr. Collins,

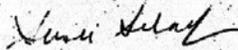
1 I am writing to you about the Hanford Solid Waste Environmental Impact
Statement. I do not believe this EIS is inadequate and I am requesting that it be
2 withdrawn, redone and issued again before any action is taken by your agency. I am
3 a long time Washington State resident and am very familiar with the Tri-Cities
4 Hanford area. I am also knowledgeable with necessary elements of an adequate EIS.

5 This EIS fails to address many important issues that must be included in a
6 meaningful study of the effect on the environment. For example, it does not include
7 an adequate assessment for endangered species. It fails to disclose impacts on
8 groundwater. The most serious flaw is the lack of attention to the long history of
9 dangerous waste burial and does not integrate all waste site analysis of the
10 cumulative effects on the area.

11 As stated, additional analysis and study is needed. The Department of Energy needs
12 a much more thorough EIS before proceeding. This EIS does not meet minimum
13 standards nor address issues of concern to Washington citizens. This EIS does not
14 protect public and environmental health.

15 In conclusion, I want to voice my opposition to the addition of anymore radioactive
16 waste at Hanford particularly without action on the already inadequate storage of
such waste. I am awaiting your response and trust that as the representative of the
Department of Energy you will act in behalf of the public and withdraw this
inadequate EIS immediately.

Sincerely,
Susie Schaefer



original email sent Aug 22, 2002

Letter: L061

B.205

Revised Draft HSW EIS March 2003

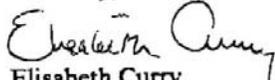
To: Michael Collins
US Department of Energy
PO Box 550, A6-38
Richland, WA 99352

August 21, 2002

Dear Mr. Collins:

1 I have to add my name to the thousands of people who STRENUOUSLY oppose
 2 the plan to transport and dump 70,000 truckloads of radioactive waste at Hanford. I
 3 cannot fathom how the DOE can believe that this would be remotely acceptable to the
 4 citizens of this beautiful area of the country, when the promises to "clean-up" Hanford
 5 have not yet been fulfilled; when waste is warehoused in open, un-lined trenches which
 already leach into groundwater. Add to that the inevitable risks of shipping these
 truckloads back and forth on our highways, through large and small communities---what
 an unconscionable prospect. I live in beautiful Hood River, on the incredible Columbia
 River: like the more than a million other people living downwind, downriver from
 Hanford, I live here for the pastoral beauty and smalltown life I find here. It is not that I
 wish on Yucca Mountain all the ravages of nuclear waste---but I will "go to the mat" to
 fight the transport of waste through my community, and the storage of it upriver. Among
 all the hundreds of assaults upon our environment, a person has to become somewhat
 numb to them to avoid despair so profound that we can't rise out of bed in the morning---
 but I will take a stand, will draw the line on this, if it means lying on the highway in front
 of trucks, if it means going to jail.

Sincerely, and adamantly,


 Elisabeth Curry
 1310 Wasco St.
 Hood River, OR
 97031

Letter: L062

Bob Aegerter
9230 41st Avenue NE
Seattle WA 98115-3802
Bobaegeter@attbi.com
<http://www.speakeasy.org/~boba>

July 27, 2002

Michael Collins
U.S. Department of Energy
P.O. Box 550, A6-38
Richland, WA 99352

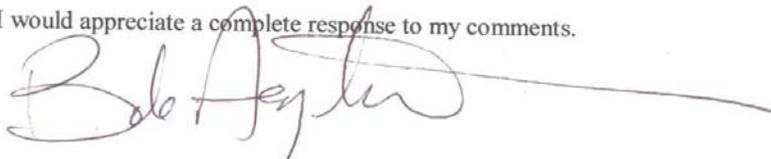
Dear Mr. Collins,

1 | I am writing you as a citizen concerned with the cleanup of Hanford, one of the most
2 | contaminated places in the world. The U.S. Department of Energy is proposing to double
3 | the amount of radioactive waste buried in unlined soil trenches at Hanford, which doubles
4 | the risk of more soil and groundwater contamination. You have failed to adequately
5 | address the human health and environmental impacts of adding this radioactive waste to
6 | Hanford in your Solid Waste Environmental Impact Statement(SWEIS). I urge you to
7 | redo your analysis and stop importing more waste until you have cleaned up the huge
8 | radioactive mess already contaminating the Columbia River at
9 | Hanford.

4 & 5 | The analysis of human health and environmental impacts in the SW EIS is lacking in
6 | several ways. Currently, Hanford receives waste from other Nuclear Weapons Plants,
7 | Labs and even private companies. This waste is dumped in unlined soil trenches with
8 | limited groundwater monitoring. Even our kitchen garbage cannot be
9 | buried like this! The SW EIS offers no alternative to line and monitor these trenches.
10 | Dumping more radioactive waste will contaminate groundwater flowing towards the
11 | Columbia River for "thousands of years." Also, the U.S. Department of Energy's
12 | proposal to greatly increase the waste coming to Hanford from these offsite locations
13 | increases the risk of accidents. The transportation risk of importing over 70,000
14 | truckloads of radioactive waste, including dangerous plutonium-laden "transuranic
15 | waste," is not even considered in the SW EIS.

16 | We are spending billions of dollars cleanup up the radioactive mess at Hanford. Why
17 | would we risk adding more waste to the already contaminated soil and groundwater? I
18 | ask again that you reconsider all the impacts to our region before making a decision
19 | based on a faulty analysis. The Solid Waste Environmental Impact Statement is utterly
20 | deficient. I encourage you to start over and provide me with complete information on all
21 | risks from importing and burying waste at Hanford. Until then, please stop burying
22 | radioactive waste in unlined soil trenches.

I would appreciate a complete response to my comments.



Letter: L063

July 26, 2002

Michael Collins
U.S. Department of Energy
P.O. Box 550, A6-38
Richland, WA 99352

Dear Mr. Collins:

I am writing you as a citizen with a long history of concern about the cleanup of Hanford, Washington. This site has long been one of the most contaminated sites in the world and also one of the most beautiful stretches of river in the world.

1 | The Department that you head is proposing to double the amount of radioactive waste buried in unlined soil
2 | trenches at Hanford. This will double the risk of soil and groundwater contamination--contamination which is
3 | totally unacceptable to the residents of the Northwest. You have failed to adequately address the human health and
4 | environmental impacts of adding this radioactive waste to Hanford in your Solid Waste Environmental Impact
5 | Statement (SW EIS). I urge you to redo your analysis and stop importing more waste until you have cleaned up the
6 | huge radioactive mess already contaminating the Columbia River at Hanford.

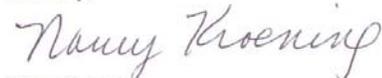
I received the SW EIS in the mail. The document is not written in plain language so that we citizens can easily know what is proposed. The document is like a riddle, a hall of mirrors! Please instruct your staff to rewrite it in plain language. People can understand well-written, forthright, and honest EISs!

4 & 5 | The analysis of human health and environmental impacts in the SW EIS is lacking in several ways. Currently,
6 | Hanford receives waste from other Nuclear Weapons Plants, Labs and even private companies. This waste is
7 | dumped in unlined soil trenches with limited groundwater monitoring. Even our kitchen garbage cannot be buried
8 | like this! The SW EIS offers no alternative to line and monitor these trenches. Dumping more radioactive waste
9 | will contaminate groundwater flowing towards the Columbia River for "thousands of years." Also, the U.S.
10 | Department of Energy's proposal to greatly increase the waste coming to Hanford from these offsite locations
11 | increases the risk of accidents. The transportation risk of importing over 70,000 truckloads of radioactive waste,
12 | including dangerous plutonium-laden "transuranic waste," is not even considered in the SW EIS. Please add it.

10 | The people of the United States are funding billions of dollars to clean up the radioactive mess at Hanford. We can
11 | no longer afford to store nuclear wastes in sloppy, short-term ways. Why would anyone risk adding more waste to
12 | the already contaminated soil and groundwater, especially when the nearby Hanford Reach National Monument
13 | will be open to human recreation soon? I ask again that you reconsider all the impacts to our region before making
14 | a decision based on a faulty analysis. The Solid Waste Environmental Impact Statement is utterly deficient and
15 | unintelligible. I encourage you to start over and provide me with complete information on all risks from importing
16 | and burying waste at Hanford. Until then, please stop burying radioactive waste in unlined soil trenches.

I would appreciate a complete response to my comments.

Sincerely,



Nancy Kroening
6536 Parkpoint Lane N.E.
Seattle, WA 98115

Letter: L064

7/30/02

1 & 2

I absolutely
oppose the transport of
nuclear garbage through
Oregon and its burial
at Hanford.

Vicki Abbott
2312 SE Brooklyn
Portland OR 97202

Letter: L065

B.209

Revised Draft HSW EIS March 2003

July 23, 2002

Michael Collins
U.S. Department of Energy
P.O. Box 550, A6-38
Richland, WA 99352

RE: NO MORE NUCLEAR WASTE AT HANFORD

Dear Mr. Collins,

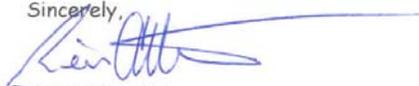
1 I am writing to you in regards to the Draft Solid Waste Environmental
Impact Statement (EIS) that was recently released by the U.S. Department of Energy. The
EIS which proposes the import of an estimated 70,000 truckloads of radioactive and
hazardous waste to be dumped at Hanford in
"mega-trenches" is uncalled for and is an enormous public health threat to all Washington
and Oregon residents, especially those living near or down stream of Hanford.

2 More dumping of radioactive waste will contaminate groundwater flowing into the Columbia
3 River for thousands of years. It is unfathomable that the risk of nuclear waste
transportation to Hanford is not even considered in the EIS. More radioactive waste on the
roads means a greater risk of accidents and terrorist attacks, thereby needs full analysis.

4 The radioactive dump will be in unlined trenches, which provides no protection from soil and
groundwater contamination. Even our kitchen garbage cannot be legally buried in unlined soil
trenches. Dumping radioactive waste in unlined trenches is unconceivable. especially when
the DOE's plan includes importing dangerous "transuranic wastes", which contain deadly
plutonium. These are some of the most dangerous materials on the planet.

5 As a resident of Eastern Washington, I urge you to drop the proposal to transport more
nuclear waste to Hanford. If we don't want to dispose of it then why are we making
radioactive waste to begin with?

Sincerely,



Rein Attemann
2211 W. Ohio
Spokane, WA 99201

Letter: L066

July 25, 2002

Michael Collins
U.S. Dep't of Energy
P.O. Box 550, A6-38
Richland, Wa 99352

Dear Mr. Collins,

For a long time I have been involved in helping Heart of America Northwest keep after the U.S. Government to clean up Hanford. I have written many letters to Washington's senators and the governor to be the force behind this effort. I contribute what I can afford toward this very serious project.

1 | To learn that the Bush Administration and USDOE want to make
2 | Hanford a National Radioactive Waste Dump is very disheartening.
3 | Why does this administration not care what will flow into the Columbia
4 | River? Why don't they care about the future generations, maybe my
5 | grandchildren and their children, dying or being sick for most of their lives?

4 | Why do they want to destroy a very viable river needed to irrigate
5 | surrounding farms and that will spread the terrible contaminants for
6 | thousands of years to come? And they even do not wait for the legally
7 | required analysis of the impacts to human health and the environment!
8 | Their plan to bury dangerous radioactive waste in unlined dirt trenches,
9 | suggests expediency is their only thought.

Please do your utmost to keep this from happening.

Sincerely,



Box 394
North Bend, Wa. 98045

Letter: L067

Mr. Michael Collins
U.S. Department of Energy
P.O. Box 550, A6-38
Richland, WA 99352

July 24, 2002

Re: Hanford Solid Waste EIS

Dear Mr. Collins

Your help is needed and appreciated for all efforts to ensure the clean-up of Hanford, and to prevent further irrevocable risks to the environment and therefore the public.

1 Since the radioactive wastes already stored in leaking waste tanks
and and unlined trenches at Hanford pose eventual disastrous
contamination of the ground water there and potentially the Columbia
River and beyond, the Bush Administration's plan to make Hanford a
2 National Raioactive Waste Dump is unthinkable.

4 The legal requirements of the Hanford Solid Waste EIS must be met,
AND, the possible risks inherent in the proposed transport of the nuclear
5 wastes to Hanford- both accidental or intended- should be included in the
EIS.

Thank you.

Sincerely,



Marilyn Garner
P.O. Box 207
Greenbank, WA 98253

Letter: L068

To: Michael Collins, U.S. Department of Energy, P.O. Box 550, A6-38
Richland, WA 99352

From: Marjorie Worthington, 1947 Clovercrest Street, Enumclaw, WA 98022

Date: July 26, 2002

Subject: Hanford CLEANUP

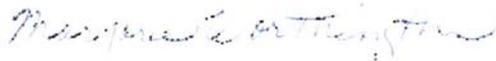
Dear Michael Collins:

1 | Once again I write to speak up on the subject of Hanford Cleanup, a project so long
2 | delayed by the Department of Energy, I am led to feel that I am addressing an entity
3 | that is either indifferent to the public welfare, or downright hostile to those citizens it
4 | was designed and created to serve.

5 | Now, instead of hastening to follow up on the steps necessary to arrest and reverse
6 | the unthinkable consequences of nuclear waste leaking into the Columbia River, DOE is
7 | planning to add more of this lethal poison to this timebomb site. (The potential for
8 | loss of life extends to transport of radioactive waste over interstate highways, past
9 | homes, schools, hospitals - a proposal that even without accidents, will expose us and
10 | our environment to "substantial doses of radiation".)

11 | It is time for DOE to do the right, life-affirming thing: focus on Cleanup, and find a
12 | safer site for handling storage of radioactive waste.

Sincerely,



cc: Governor Gary Locke
Senator Maria Cantwell
Senator Patty Murray
Representative Jennifer Dunn

Letter: L069

B.213

Revised Draft HSW EIS March 2003

7.22.02

Dear Mr. Collins,

1 I am writing to you to
Express my deep concern over some
of the "clean-up" methods that
are being used at Hanford
that are to be continued in the
future. It is very disturbing to
2 learn that "low-level" radioactive
waste is being buried in unlined
trenches, thereby leeching out
into the groundwater. It appears
to me that it should be mandatory
3 to line the trenches and install
monitoring systems to insure
that leeching into the ground-
water is not happening.

4 As a member of HEART of
AMERICA, I applaud their efforts
to clean up Hanford by keeping
track and advocating for long-
term safety measures. I will
be keeping watch on this issue
and hope that you will be a
part of insuring a safe future for
the next generation(s) to come.

Sincerely,

Joan Lita Miller

6001 28th Avenue NE, Seattle, WA 98115

Letter: L070

July 20 2002
Grapeview WA
98546

Michael Collins
U.S. Dept of Energy
P.O. Box 550 A6-38
Richland WA 99352

Dear Mr. Collins,

1 As a survivor of the evacuation
plan in 1941, to Red White Bluffs
of the human population ~~had~~ made way
for the Hanford plutonium plant, I'm
2 simply outraged to think the government
is planning to make Hanford a
permanent repository of more nuclear
waste. Contrary to published reports, it
is not basalt, but sandy loam the
waste is buried in. It has already
been leaking for more than fifty
years into the once glorious Columbia.
Turning that marvelous river into a
sewer was a wicked thing to do!

All the twaddle about the protection
Hanford Res. is a laugh that's all
above the contamination. Making a
monument of that is just window
dressing.

Of course, you never saw
the valley covered with orchards.

Letter: L071

2

It had apple, peach, pear and cherry orchards, fine homes, good schools and churches. One of the men brought in the survey called it "A god-forsaken place." Well, it is now!

3 | Tell me, Mr Collins, what worse thing could a foreign power do to us than make us a second Chernobyl (CP)? The medical profession has denied that it needs this. We are afflicting a second wound, and a never-healing one at that, on an area that was unique geologically. There is no better weather, no longer growing season in the state, yet we destroyed it all to bomb Hiroshima!

The exigencies of war are one matter. Preying on the ignorance of our own populace is quite another.

I write out of personal bitterness - my parents are long dead.

Helen H. Hasting

Letter: L071a

On our highways today in our river tomorrow

The Department of Energy plans to dump 70,000 truckloads of Radioactive Waste at Hanford.

Save our River. Protect our children.
Stop the Hanford Radioactive Waste Dump!

INSIDE

- USDOE'S PLAN TO MAKE HANFORD A NATIONAL RADIOACTIVE WASTE DUMP

- ALL RADIOACTIVE DUMPSITES ARE NOT EQUAL: A CROSS-SITE COMPARISON

- THE "FRISBEE FROM HELL"

- THE HANFORD SOLID WASTE ENVIRONMENTAL IMPACT STATEMENT FLAWS UNCOVERED

- IMPORTANT PUBLIC MEETING DATES, TIMES AND LOCATIONS



Heart of America Northwest
"Advancing our region's quality of life"
1305 4th Ave. Suite #208
Seattle, WA 98101

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1 We were promised a clean up of Hanford. This has not been completed. Now we are threatened with additional nuclear waste which no one knows what to do with safely. All our energy and resources needs to focus on solving this problem before some terrorist decide to blow up Hanford and the rest of the NW with it.

Betty Jane Marsh
2816 NE 12th Ave
PD X 97212

Letter: L072

B.217

Revised Draft HSW EIS March 2003

Spoke at 7/30 meeting

August 20, 2002

MEMORANDUM

FROM: Gary Miniszewski
8343 SW 57th Ave.
Portland, OR 97219

TO: U.S. Dept. of Energy
Richland Operations Office
Richland, WA

SUBJECT: Written Testimony regarding Hanford Solid Waste Environmental Impact Statement (HSW EIS)

At your public meeting July 30, 2002 at Portland Oregon I gave verbal testimony addressing the HSW EIS. I want to clarify my verbal comments in this memo for you and my Federal and State representatives and be sure you receive my name and address for the record. The HSW EIS entertains the idea of enhancing and increasing storage of current volumes of solid low-level wastes (LLW), mixed low level wastes (MLLW) and post -1970 transiramac (TRU) waste at Hanford Nuclear Reservation Site 200 East and West Areas within 7 miles of the Columbia River near Richland, WA.

1 | I have read the HSW EIS summary published published by DOE April of 2002 and find that it is very cursory and, if it reflects the complete EIS statement, does not address pertinent concerns listed as follows.

2 | In 1973 when I first moved to Oregon and became a land use planner, I became aware of how potentially toxic the Hanford site is by reading the Oregonian Newspaper articles describing how "high level" nuclear waste from the nuclear power plants at the site has been stored in metal underground cylinders that are known to be leaking. At the July 2002 meeting I heard a DOE representative say that it is not known at this time whether that high level waste will ever be processed and transported to another more safe site. It is inconceivable to me that the US Government has not yet taken the responsibility for cleaning up this highly dangerous condition. The Hanford site is presently one of the most toxic waste sites in the United States. This radioactive waste material is leaking into the ground water system that is traveling toward the actual river channel.

3 |

Letter: L073

4 | How can anyone representing the United States Government stand up at
5 | a meeting with a straight face and tell the citizens of the largest City in
Oregon located on the Columbia River that now the US Government
wants to increase the volume of nuclear waste for disposal at this
site!!!??? The fact that the material to be disposed of is low level
radioactive waste is irrelevant. No additional waste should be
transported to the site. Moreover, all the existing nuclear waste material
presently stored at the Hanford site should be removed now because of
the hazards it poses to human health and the environment.

6 | As I stated at the meeting, nuclear power plants were built along rivers to
access ample water for plant cooling. Just because the Federal
Government needed a site along the Columbia River to operate nuclear
plants for power and nuclear materials production 60 years ago, doesn't
make a power plant site like Hanford suitable for nuclear waste disposal
and storage. As a matter of fact, a river environment is one of the least
suitable locations for any kind of waste disposal, especially toxic nuclear
waste.

7 | I have been a land use planner for 27 years and I understand site
suitability analysis and the sensitivity of river environments. I worked
and lived in rural Benton County, Oregon where the choice of
"municipal garbage disposal" sites is more thoroughly considered than
how the Federal Government choose this site for nuclear waste disposal.

If the Hanford site were to be reviewed as a potential nuclear waste
disposal site without any knowledge of propriety or prior use (as a
nuclear power plant site), I am sure that geologists, fluvial
geomorphologists, soils scientists, and/or hydrologists would conclude
that the site would not be suitable for storage of any kind of waste,
especially low to high level radioactive wastes.

8 | There are two reasons for this. First, the flood plain for a river as large as
the Columbia can be miles wide with alluvial soils. Alluvial soils are
highly porous and allow fluids to percolate downward to shallow aquifers
where ground water travels laterally toward the river channel to join with
the surface river water. If trench seals somehow fail and nuclear material
leaks into the alluvial soils by way of rain water, that toxic water
percolating downward to lateral flowing aquifers could pollute the river.
This would be a disaster for all living flora and fauna in the river water,
along the river banks, and human populations adjoining the river from
Hanford downstream to the Pacific Ocean.

Letter: L073a

- 8**
(cont) | Secondly, there is no guarantee over the next few centuries that one or some of the Columbia River dams above the Hanford site will not fail. If there was a catastrophic flood (a "project flood" as the US Corps of Engineers likes to call it), the river could easily inundate and scour out the buried radioactive materials, carrying them downstream to unprotected and possibly sensitive locations.
- 9** | To summarize, just because the Federal Government found the Hanford site suitable as a nuclear plant site, doesn't make that site at all a suitable location for radioactive waste disposal. Also, there is the issue of risk assessment/reduction for transporting radioactive wastes. I would think that someone at DOE can figure out that a site at the northwest corner of the United States would not be as efficiently located for transport as a
- 10** | more central disposal point(s) (hopefully with more suitable physical conditions). If low level radioactive wastes are being transported from waste generating sites located at large population centers mainly east of the Rocky Mountains, delivery to a more centrally located disposal location(s) could reduce truck delivery mileage and therefore reduce the possible number of accidents and risk of radioactive exposure to human populations near major highways.

Thank you for this chance to comment on this most serious matter.

Cordially,



Gary Miniszewski, AICP
Land Use Planner

cc: US Senators Wyden & Smith; OR Governor Kitzhaber; OR DEQ; US EPA, Multnomah Co. Commissioners; Portland Mayor Katz; Gresham Mayor Becker; Columbia Riverkeepers; Ann Bremmer; Earl Mohlander

Letter: L073b

Sharon E. Streeter
4911 SE 43rd Avenue
Portland, Oregon 97206-5011
phone: 503 788 1872
diomo1@msn.com

July 31, 2002

Michael Collins
NEPA Document Manager
US Department of Energy
PO Box 550
Richland, WA 99352

Dear Mr. Collins:

1 | I attended the hearing in Portland last night regarding the recent EIS for Hanford and hazardous waste. It was my first such hearing, and what amazed me was the number of articulate citizens who have devoted years of their time saying one thing over and over again:

2 | **Clean up Hanford**

3 | Please attach this letter to my comments on the enclosed sheet. The money being spent on studies and scratching heads over what to do should be spent on digging trenches, lining them with the best lining materials available, and capping off the waste. Or on destroying by known methods that waste which can be destroyed.

4 | Forget moving waste from one site to the other. Take care of it on site. But take care of it and
5 | stop producing more until we know how to take care of it, too.

Yours truly,



Sharon E. Streeter
Citizen, Southeast Portland

Letter: L074

B.221

Revised Draft HSW EIS March 2003

Testimony in support of using safe alternative cleanup procedures for Hanford Nuclear Reservation.

August 21, 2002

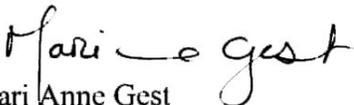
I am Mari Anne Gest and I'm here with my mother Pat Gest. We both wear the Hanford necklace which is the scar around our necks representing thyroid tumors and cancer that has been removed. My mother was raised around the Hanford area in the 40's and I was born there in the early 50's. They said radiation levels were acceptable at the time and then later found the statement to be untrue.

1 | I am not a scientist nor do I profess to understand all that this hearing is about tonight but
2 | I can say that if there is a safe and cost effective technology available to you to deal with
2 | the cleanup of the Hanford site I encourage you to pursue it. I have collected newspaper
2 | articles for years on this issue and am continually disappointed in the clean up effort.

3 | I am aware of an Oregon company (Entech) that specializes in environmental technology
3 | to clean up and eliminate radioactive and hazardous waste. As I understand it, Entech's
3 | revolutionary radioactive soil decontamination plants are cost effective and portable,
3 | which eliminates the danger in transporting waste. The process is completely disposable
3 | leaving nothing behind. And this has been tested and confirmed by many different
3 | professionals in the scientific field.

4 | On behalf of the numerous benefactors of the Hanford necklace I request that we not
4 | continue to pass this legacy on to our children. I urge funding for Entech's new
5 | environmental solution. We cannot continue to do what we've been doing and expect
5 | different results. It's time for a new approach that can solve the problem and support the
5 | safety of our citizens and our environment.

Thank You.


Mari Anne Gest
5882 Angle Dr. NE
Salem, OR 97301
503-581-0715

Letter: L075

I am one of thousands
of Oregonians who
OBJECT to transporting
radioactive wastes to Hanford
1 from ANYWHERE.

Hanford should not become
a destination resort for radioactive
further
wastes.

The EPA says ^{this} ~~it~~ is an
inadequate EIS. It is more
than that; it is an
2 unacceptable plan. DOE should
focus on CLEANING UP Hanford,
not adding to the mess.
I vote NO!

Vera Datoe

9449 SW 62nd Dr.

Portland OR 97219

Letter: L076

**Kathleen Juergens
3229 NE 7th Avenue
Portland, OR 97212
503-331-0326**

**Hearing on Draft HSW EIS
July 30, 2002
Portland, Oregon**

Good evening. My name is Kathleen Juergens, and I live here in Portland, Oregon. In fact, I work right here in the Metro building, a couple of floors down, which is what enables me to be speaking so early in the program. As a working person, usually I'm racing to get to these hearings after work, and I don't get to speak until 10 pm. Tonight maybe I'll actually get home for dinner!

Please accept this testimony as my comments on the Draft Hanford Site Solid Waste Program Environmental Impact Statement.

Tonight you're going to hear from some people with impeccable scientific credentials, people who've spent a good part of their lives studying the situation up at Hanford. These people are going to give testimony that is carefully thought-out, well researched, scientifically sound, and very politely presented. They are going to thank you for the opportunity to be heard, and then they're going to sit down. What they should be doing is thanking the DOE for the opportunity to be ignored, because that is what almost always happens at these DOE hearings.

I know because I've been coming to DOE hearings on Hanford for a long time. I lost track of the number of different hearings I went to just about the Fast Flux Test Facility reactor, but I know it was at least 4. Just about everybody in the whole Pacific Northwest told the DOE to shut down FFTF, and you folks kept coming back to us for years with new proposals for restarting it. That proposal finally died, but only after wasting a whole lot of our time!

I wish I could be as polite as some of the good people you're going to hear tonight, but I have to be honest. I'm not happy for the chance to be here. I have a whole lot of other things I need to be doing, and I really don't have the time for this hearing. I'm here because I have to be here, and I'm angry that I have to be here.

3 | I'm here because I live in NE Portland, not very far from the Columbia River. Like all Portlanders, some of my drinking water, some of the time, comes from wells near the Columbia. I went swimming in the Columbia just last weekend. That's the same Columbia River that runs right through Hanford, the same river that's already radioactive. So this is a life or death issue for me, and all my neighbors, and whatever children I may decide to have someday, and certainly for my sisters and brothers in Washington who live even closer to the most polluted site in the Western Hemisphere.

4 | And I'm angry because we—not just Portlanders, but citizens all over the Pacific Northwest—have told you over and over again that we only want one thing at Hanford, and that's cleanup, cleanup, cleanup. We don't want another nuclear reactor restarted. We don't want MOX fuel being burned. And we sure as hell do not want a whole bunch more nuclear waste being shipped in, when the DOE has yet to deal adequately with the waste that's already
5 | there.

6 | And I have to wonder, just what bureaucrat, in just what comfortable conference room in Washington DC, came up with the notion that this was a good idea. Whoever this person was, they may have a lot of impressive degrees after their name, but they obviously flunked kindergarten. In this society, we teach five-year-olds that you have to clean up your mess before
7 | you can go making another mess. Top decision-makers at the DOE clearly have yet to grasp this principle. Every year, we have to come to these hearings and fight for the cleanup budget. And

7
(cont)

every year the DOE has another cockamamie, half-baked, hare-brained scheme for what the money should be used for instead, like keeping the FFTF reactor on hot standby for years.

Now the DOE is saying, OK, we'll get on with cleanup at Hanford, but first we're going to make the mess a whole lot worse. We're going to ship in 70,000 more truckloads, and we're going to drive it down the freeway right through your communities, and we're going to include

8

transuranic wastes, and we're going to put a good part of it into unlined trenches, where it's pretty much guaranteed to end up in the river. I think it shows a lot of disrespect for the citizens and taxpayers of the Northwest that this proposal is even being put forth. It's not like we haven't

9

explained our position well enough. We want cleanup at Hanford, and that's all we want. I don't know how we could put in any plainer English than that.

You're going to hear from a lot of people tonight who will say what I just said, but with a lot more scientific detail. I'm a citizen activist, not a scientist, so I'm going to keep it really simple. I'm going to put it to you in terms that a kindergartener could understand, that even your boss George W. Bush could understand.

10 | DOE, DON'T DUMP ANYMORE!

11 | CLEAN UP THE MESS YOU MADE BEFORE!

Comments on Department of Energy
Solid Waste Environmental Statement
July 30, 2002

- 1 | As you can tell from the turnout tonight, there are many people in this community who feel very strongly about this issue.

- 2 | I want to first thank those elected officials who have come to the Hanford Information Network seeking information about this and other proposals. Senator Gordon Smith and Congressman Earl Blumenauer have both taken a real interest in Hanford over the past year or two. To them, and to the others who have also participated, we say thank you.

- 3 | We also need to remember that many good things are going well at Hanford. For instance, construction on the waste treatment plant for the tank waste began earlier this month. Several of the nuclear reactors at the site have recently been "cocooned," or safely decontaminated and put into safe storage. And some small efforts to proceed with treatment of carbon tetrachloride in the groundwater have been pursued.

- 4 | But this is not the time to add to Hanford's woes. And it is not the time to suggest adding additional sources of groundwater contamination when the Department has no overall plan on how to address the millions of gallons of contaminated groundwater under the site at this point in time.

- 5 | Therefore, we urge that the Department withdraw this document and instead demonstrate that the existing, serious problems at Hanford can be addressed.

Victoria Cortez
HIN

Letter: L078



The First Presbyterian Church

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PASTORS:
Douglas R. Acker
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August 20, 2002

Michael Collins
U.S. Department of Energy
P.O. Box 550, A6-38
Richland, WA 99352

Dear Mr. Collins:

Recently, newspaper articles revealed proposed plans to move nuclear waste from the Hanford site by truck along major thoroughfares such as Interstate 84.

1 I would like to register my opposition to such a plan. Interstate 84 intersects the city of Pendleton, Oregon, my home. It is dangerously close to where I live and work, not to mention homes, schools, and businesses of others. Should there be an accident it would be devastating. Of particular concern is the area of interstate south of Pendleton known as "Cabbage Hill." The accident rate there is high along this stretch. Fog and ice are common there, as are dust storms. These factors add to the danger of accidents.

Thank you for your receiving comments on this matter.

Sincerely,

Kate Bottorff
Pastor

Letter: L079

Valerie Shubert

Re: Comments on The DOE's Solid Waste EIS

Valerie Shubert
1420 Western, #409
Seattle, WA 98101

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Michael S Collins
HSW EIS Document Manager
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PO Box 550
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Re: Comments on The DOE's Solid Waste EIS

Main Comment

1

The comment period was *not long enough!* Despite several marathon sessions, I was not able to get past the end of Section 4, leaving the **very important** Sections 5 & 6 unplumbed, and I was unable to get to the whole volume of appendices **at all**.

General Comments

In addition to the general comments I made at the public meeting in Seattle on Aug 7, I would like to add the following:

2

- 'No Change' is not the same as 'No Action'—in many ways in this document they are treated as though they are—and often, indeed, there are **substantial** changes proposed under the heading of 'No Action'. Also, all alternatives include things that are not done.

3

- I've mentioned this before, but it bears repeating: **cancer is not the only undesirable outcome of radiation exposure, nor is death the only unpleasant outcome of cancer**

4

- 'Burial' is 'storage'. The only way this would not be so is if the waste vanished without a trace after burial.

5

- In many ways the 'alternatives' vary little—often whole paragraphs are repeated verbatim.

6

- Somewhere in this document there needs to be a map of the 200 Areas Industrial-Exclusive Area. Maybe there is—but **if there is**, there needs to be a cross-reference to it: so **'see map on p (whatever)'**. This cross-reference should be used **whenever this area is discussed**.

To: Michael S Collins

Letter: L080

General Comments

- 7 |
- 8 |
- 9 |
- 10 |
- 11 |
- 12 |
- Table Titles and numbers are not adequately separated from the text. Suggestion: both the numbers and the titles should be bumped up one font size.
 - It would help if line #s ran down both sides of the page.
 - I've mentioned this several times in my notes, but a general comment is necessary: Maps should have some kind of **coördinate** system. It doesn't have to be very elaborate—just something like 'A-F' across the top, and, say, '1-10' along the sides. References to maps in the text could then be more precise, as: 'see figure 4.19, A-3'
 - It seems to me that the effects of the *24 Command* fire are very imperfectly known. Given that it's **very** unlikely to be the only major range fire the area suffers, it's **essential** to get this information analyzed and integrated.
 - I've mentioned some problems with References, but the main problem I see is that the References are often to documents that are only problematically available to the public. Government documents that are available to the public should have **full** SuDocs #s: The ones given seem truncated somehow. Journal articles should have ISSN #s. Monographs should include ISBN #s, where available. What can be done about Conference publications, I **don't** know—**everybody** has trouble with them. Also, as I've mentioned several times in my notes, website addresses are useful only for people who have web access. Unless or until depository libraries offer **free, public** web terminals, website addresses are of avail almost solely to those who can afford to keep up with changes in home computer technology and to pay for an ISP.

Specific Comments, by Section, Page, & LineSummary

- 13 |
- 14 |
- p S.15, lines 26-33 & S.17, lines 1-36, section S.7: **Affected Environment**, : This section needs a cross-reference—something like 'see Section 4, pp 4.1-4.105'
 - p S.18, Section S8, Subsection S.8.2: **Transportation**, lines 27-28: This is tied into the whole question of whether Transportation was adequately dealt with in this EIS: here the bald statement is made that "Transportation of waste was determined to result into up to four fatalities". Unless there is further analysis in an appendix or somewhere (in which case there should be a cross-reference), this is utterly inadequate. **How** was this determined? **How** would the fatalities occur? **Who** would die? What are the uncertainties in this analysis?

To: Michael S Collins

Letter: L080a

Acronyms/Abbreviations List

- 15 • page xv, between lines 25-26—There is later (on p 2.3, lines 38-40) an explanation of why there is no 'Category 2'. In the list, there should be a cross reference, thus: '**Cat 2** Not used—see p 2.3, lines 38-40 for explanation'
- 16 • page xv, line 30—There should be a notation at the end of the entry for **CERCLA**: something like 'commonly called 'Superfund''; and later on in the Ss, there should be an entry: **Superfund** see: CERCLA
- 17 • p xv, line 44, & p xvi, line 5— '**D_r**' & '**D_t**' are too similar in appearance—if these are used in may documents already, it may be too late to change the notation—but it could be a source of confusion
- 18 • page xvii, line 23—**IDLH**: I mentioned this at the meeting, but it bears repeating: when something is 'Immediately Dangerous to Life and Health', I want to see that spelt out, every time
- 19 • page xix, line 2—**PUREX**: I'm sure this's been in use for some time; nevertheless, it amounts to a detoxifying euphemism

Glossary

- 20 • page xxii, lines 23-28—**disposal**: I mentioned this before, but I think this is a mistaken definition
- 21 • page xxv, lines 21-23—**transuranic (TRU) waste**: this needs a cross-reference to the more complete definition on p 2.8, lines 2-5
- 22 • page xxv, line 37—**vadose zone**: this term is widely used, and this is the 1st definition I've seen of it—it needs a more complete definition, including, for example, how the 'saturated zone' is defined

Units of Measure

- 23 • page xxxii, **Basic Units and Conversion Table**: Several of these 'English Units' are so disproportionate to the 'Metric Units' that no reasonable comparisons can be made—for example, Curies to Becquerels—perhaps some annotation could clarify this.
- 24 • page xxxiii, **Radionuclide Nomenclature**: I mentioned that this table should have cross-references to unstable decay products, and that it should also include the type of radiation released (adding 'α', 'β', and/or 'γ' would not significantly increase the size of the table); now I should add that it probably wouldn't go amiss to also include a copy of the Periodic Table

Section I: Introduction: Subsection 1.4

- 25 • page 1.4, line 1—**Scope of The Draft HSW EIS**: It seems rather odd to say that the draft EIS covers 'alternatives for managing *most...*' (my italics). Why not 'all'? What's excluded, and why?

To: Michael S Collins

Letter: L080b

Section 1: Introduction: Subsection 1.4

- 26 • page 1.6, line 15—**Management of *Post-1970* TRU Waste** (my italics): This classification occurs throughout. I'm glad to hear that 'post-1970' TRU waste will be dealt with—but there should be an indication somewhere of what will become of '**pre-1970**' TRU waste—which is not the less TRU waste because it wasn't then separated. I've seen a few hints, here and there, but there needs to be a comprehensive answer—and if it's not found in this document, there should be a reference to where the answer **is** to be found.
- 27 • page 1.6, subsection 1.4.2.1—**Low-Level Waste**: The definition herein of 'low-level waste' seems to be a definition by exclusion: what is **included**? And, come to that, in the sidebar, why is 'naturally-occurring radioactive material' excluded, and what becomes of that material?
- 28 • page 1.7, subsection 1.4.2.2—**Mixed Low-Level Waste**: The definition in this subsection needs to be cross-referenced to sections 2.6 & 2.7
- 29 • page 1.8, lines 17-23—**Waste Types Not Specifically Evaluated in The HSW EIS**: There needs to be a cross-reference to section 1.19, where it is explained **why** these wastes are excluded
- 30 • page 1.8, lines 38-42, & p 1.9, lines 1-3—**Waste Types Not Specifically Evaluated in The HSW EIS**: There needs to be a more complete explanation as to **why** 'decontamination activity has decreased, and substantial expansion beyond historical levels is not anticipated'. For that matter, what are 'historical levels'?
- 31 • page 1.10, line 15—'**From 1970-1988, drums and boxes of TRU waste were placed 'in storage'** (my quotes) **in the LLBG trenches**: Here, too, there needs to be a cross-reference to page 1.19
- 32 • page 1.10, line 24—'**Treatment is not required for most LLW**': Where and how is this justified? It seems an excessively bald statement, with no background or explanation given.
- 33 • page 1.10, lines 42-44—beginning '**Some types of waste...**', and ending '**...deep geologic disposal**': this is **far** too vague. There needs to be some sort of elaboration—something like ('eg X & Y type') at the end of each sentence—also there need to be cross-references to more thorough discussions of *why* a particular type of waste requires a particular type of storage.
- 34 • page 1.11, line 16—'**reasonable**': What criteria were used to define what is 'reasonable'?
- 35 • page 1.11, line 25—'**and other DOE sites**': what sites? Travelling how?—this is more of transportation issues, not adequately dealt with in the EIS.
- 36 • page 1.11, lines 36-37—'**Nonconforming wastes would be treated to comply with the HSSWAC**': There needs to be a definition of 'nonconforming wastes' and an explanation of what the standards are—if such explanations are in the EIS, there should be cross-references—otherwise, at the least, there needs to be a precise citation to where the information is to be found.

To: Michael S Collins

Letter: L080c

Section 1: Introduction: Subsection 1.4

- 37 • page 1.12, lines 5-6 '**Depending on the volume of waste received at Hanford, expansion of the LLBGs within the 200 Area Boundaries may be required**': What range of waste is to be expected? Where would the expansion take place? There need to be 'see' references to where these questions are answered—if they are.
- 38 • page 1.12, line 7—'**a cap to reduce infiltration**': This needs a cross-reference to the diagram of the cap on page 2.27 (if this is the type of cap that will be used). I'll comment on the cap in detail when I get to the diagram.
- 39 • page 1.12, Section 1.4.5.2—'**MLLW Alternatives**': There needs to be a cross-reference here to pp 2.6-2.7—lacking a knowledge of what the waste is, a reasonable assessment of the plans is not possible
- 40 • page 1.12, line 30—'**insufficient to dispose of all MLLW Hanford expects to receive in future**': **How** insufficient? What levels are we talking? Twice as much? 15 times as much? At least a ballpark upper and lower bound should be mentioned here, with a cross-reference to where more precise figures can be found—I know I've seen them, but as for flipping to the exact page...
- 41 • page 1.14: **The TRU alternatives**—Just generally, all these alternatives require moving a great deal of material—the transportation methods, routes, and risks **must** be addressed

Section 1, Subsection 1.5

- 42 • page 1.15, line 2—'**Vadose Zone Programs**': There should be a cross-reference to the definition of 'Vadose', page xxv, line 37
- 43 • page 1.15, line 20—'**The TPA is discussed further in Section 6.2**': A good example of the kind of cross-references that should exist throughout
- 44 • page 1.15, lines 32-33—'**CERCLA primarily regulates cleanup of inactive waste sites and facilities**' (my italics): So who or what regulates cleanup of *active* waste sites or facilities? Or are they left to their own devices until they're rendered inactive?
- 45 • page 1.15, lines 33-34—'**CERCLA requires mediation of sites where a release, or a threat of a release, of hazardous substances has occurred**' (my italics): This seems tolerably inclusive. What sites exactly have never experienced the **threat** of a release of a hazardous substance?
- 46 • page 1.16, lines 4-5—'**(ponds, cribs, French drains, and ditches)**': 'Ponds' and 'ditches' seem straightforward enough (unless they have a technical meaning here different from the vernacular one)—what are the other two? (This also comes up on page 4.38.) Most importantly, are these wastewater depositories **covered**, to prevent evaporation and animals drinking, and **lined**, to prevent the water seeping out?
- 47 • page 1.16, line 5—'**(inactive burial grounds)**': Meaning permanently closed? What happens to them now?

To: Michael S Collins

Letter: L080d

Section 1, Subsection 1.5

48

- page 1.16, line 17—‘**(ERDF) is not part of the solid waste program LLBGs**’: I’m sure there’s a description of ERDF somewhere—but why mention it here if you’re not going to describe it, or even refer to a description of it?

49

- page 1.16, lines 29-30—‘**additional information can be found at (website address)**’: This would be a good cross-reference, if everybody had access to the web. For those who don’t, how do they get this info?

50

- page 1.16, lines 2-5—‘**based on analyses in the EA, DOE determined that the proposed action was not a major federal action significantly affecting the quality of the human environment and issued a finding of no significant impact (FONSI)**’: This is repeated at the end of many other descriptions of EAs, and seems to attain the status of a ritual phrase. Unless the EAs in question are available for inspection, the assertion is without value. I might add, by the way, that ‘human environment’ and ‘environment’ are not coextensive

51

- page 1.16, lines 39-43—‘**(a description of a plan to widen trenches in the LLBGs)**’: It is highly debatable whether it would be a desirable thing to place ‘**more waste...per square foot of surface area**’—yes, less material would be needed to cover it; yes, there would be need for fewer trenches: but more hazardous materials in one place = more opportunities for the materials to interact—an R_x for trouble at the very least, and possibly disaster—after all, the containers that waste is in won’t last forever

52

- page 1.19, line 1—‘**Disposal of Decommissioned Defueled Naval Submarine Reactor Plants EIS**’: I’ve seen no other mention of this in this EIS,(except on p 1.20, to which there should be a cross reference)—where are they? How did they get to Hanford? Are they still coming? This doesn’t seem like a small problem—it should be addressed

53

- page 1.19, lines 10-1—‘**Disposal of Hanford Defense High-Level, Transuranic, and Tank Wastes, Hanford Site, Richland, Washington**’: This should be cross-referenced to pp 1.10 and especially 1.8

54

- page 1.19, lines 38-39—‘**Solid Waste Retrieval Complex, Enhanced Radioactive And Mixed Waste Storage Facility, Infrastructure Upgrades, And Central Waste Complex**’: This is a very important document to this EIS—how can it be obtained? The References don’t give any more info than the text, really.

56

- page 1.20, lines 29-30—‘**stabilize the stored fuel using a cold vacuum drying process**’: ¿How does this ‘stabilize’ it?

57

- pages 1.20, lines 40-44, and 1.21, lines 1-4—‘**Disposal of Decommissioned, Defueled Cruiser, Ohio Class, And Los Angeles Class Reactor Plants**’: This should be cross-referenced to p 1.19, line 1, above

58

- page 1.21, lines 12-13—‘**the low activity waste from the separation process would be retrievably stored onsite**’: Where? Why ‘retrievably’?

To: Michael S Collins

Letter: L080e

- 59 | • page 1.21, line 14—‘**a decision on disposition of Cesium and Strontium capsules was deferred**’: Until when?
Section 1, Subsection 1.5
- 60 | • page 1.21, line 19—‘**Waste Management Programmatic EIS**’: So much of the present EIS depends on this document that one really oughtn’t work on one without t’other to hand—so where is it?
- 61 | • page 1.22, lines 33-44—‘**Relocation And Storage of Isotopic Heat Sources**’: The summary of this is obscure to the point of obfuscation. What was planned, and why was it abandoned?
- 62 | • page 1.23, lines 1-12—‘**Waste Isolation Pilot Plant Disposal Phase Final Supplemental EIS**’: Because so much of Hanford’s waste would be sent here, this is also essential to understanding the Solid Waste EIS—but it’s likely not in an appendix somewhere—so where is it?
- 63 | • page 1.23, lines 14-24—‘**Final Hanford Comprehensive Land-Use Plan EIS**’: This seems to have sprung fully-formed and armored from the brow of Zeus—it’s certainly not consistent with what I heard at meetings. ☺ How shall I credit the others, if this is so removed from what I experienced?
- 64 | • page 1.23, lines 26-38—‘**Environmental Assessment—Disposition of Surplus Hanford Site Uranium...**’ (italics mine): Surplus to what? What uses are proposed for non-surplus Uranium? A metric ton, just for future reference, is spelled ‘tonne’ to distinguish it from an ‘English Unit’ ton. How many tonnes are not ‘surplus’? Are there really plans to send **900 tonnes** of Uranium to **Ohio**? That’s a long way—a lot could go wrong. I might add that $1900 - 900 = 1000$, and $1000 - 140 = 865$. If I’d done arithmetic like what’s done in this paragraph, I’d never even have got out of grade school. Nor, if I were asked, would I recommend putting Uranium in the LLBGs—is that the type of ‘low-level’ waste that’s going in there?
- 65 | • pages 1.23, lines 40-44, & 1.24, lines 1-5—‘**Environmental Assessment—Use of Existing Borrow Areas, Hanford Site...**’: Do these borrow pits fill with water? Are they a water source for local fauna? Are they contaminated in any way(not excluding petroleum contamination from earth-moving machinery)? How are they monitored?
- Section 2, Subsection 2.1
- 66 | • page 2.1, lines 23-30—‘**Description of ‘historical’ contents of the LLBGs**’: My reading of these lines is that not only is there pre-1970 TRU in the LLBGs, but also pre-1987 MLLW—how much? Is it even known? Where can information on this be found?
- 67 | • page 2.2, figure 2.1: This figure needs cross-references in each box to where each type of waste is more thoroughly discussed
- 68 | • page 2.2, lines 6-8—‘**CH waste...can usually be handled without shielding**’ (my italics): *Usually?* When can’t it? There are surely guidelines for this sort of thing: what are they? Or, failing that, where are they?

To: Michael S Collins

Letter: L080f

Section 2. Subsection 2.1

- 69 • page 2.2 , line 18—**‘At Hanford solid LLW includes...(followed by a list, to the end of the page and on to the 1st line of the next page)’**: ‘Includes’ pretty much implies this is not a comprehensive list. If this is a comprehensive list, the correct term would be something like ‘consists of’ or ‘comprises’—if it’s **not** comprehensive, there should be some indication that there’s other stuff, such as ‘plus small amounts of (whatever else there is)’
- 70 • page 2.3, lines 1-3—**‘In the foreseeable future (various activities, elaborated in the original text) would likely continue to generate LLW’**: There needs to be some rough indication of proportion: will the amount generated be more than, less than, or about the same amount as in the past? Rough percentages would be useful, too—it needn’t be exact as long as it’s marked as inexact (eg ‘about 37% of past levels’)
- 71 • page 2.3, line 7—**‘fiber-reinforced plastic boxes’**: This needs to be defined—what kind of ‘fibers’? Reinforced how?
- 72 • page 2.3, lines 25-28—**‘The US Nuclear Regulatory Commission...defines four classes of LLW (A, B, C, and greater than Class C). However, the radionuclide concentrations specified for each NRC class are not necessarily the same as those defined in the HSSWAC for LLW categories’**: What’s the point of saying this if the categories are not defined and contrasted? Either a table should be here, or this paragraph should be deleted. I’d go for a table, since there isn’t one on the categories of LLW used herein.
- 73 • page 2.3, lines 38-40—**(an explanation of why Category 2 is no longer used)**: Rather late in the game to explain this, isn’t it?
- 74 • page 2.3, lines 40-41—**‘Cat 3 LLW is defined as having radionuclide concentrations greater than limits specified in the HSSWAC for Cat 1 LLW, but lower than maximum concentration limits defined for Cat 3 LLW’**: This is a non-definition. What’s said here, essentially, is: ‘Cat1<Cat3<Greater than Cat3’—which is tautological. Lacking actual definitions with numbers, the distinctions, and the reasons for them, are not comprehensible.
- 75 • page 2.6, lines 8 & 10-11— **‘sludges, paints, and dried inorganic chemicals’ & ‘metal, ceramic, and concrete items’**: This is a tolerably comprehensive list, with very little specificity. It could include so many things, of so great a variety of reactivity, size, shape, porosity, etc, that it’s really no definition at all.
- 76 • page 2.6, lines 14-15—**‘stabilization, immobilization, or macroencapsulation’**: There is a definition of ‘macroencapsulation’ in the glossary, though it’s not very clear: there is none for ‘stabilization’ and ‘immobilization’. ‘Stabilize’ how? ‘Immobilize’ how?
- 77 • page 2.7, lines 4-5—**‘Organic solid waste may include substances such as resins, organic absorbents, and activated carbon’**: Again, ‘include’ implies

To: Michael S Collins

Letter: L080g

77
(cont)

the possibility of other 'substances'—but even the listed 'substances' are poorly defined.

Section 2, Subsection 2.1

78

- page 2.7, lines 1-7 (sidebar)—'Thermal Treatments': What does it mean to 'destroy organic constituents'? Are they broken down into their basic elements? If so, then what? What kinds of wastes are produced by the various processes, and how will they be dealt with?

79

- page 2.7, lines 20-21—'Lead waste must be treated...or other approved technology' (my italics): 'Other approved technology' is a meaningless phrase. Are there now other approved technologies, or is this in anticipation of some future development?

80

- page 2.7, line 23—'Elemental Mercury': Elemental mercury is **not** a solid at room temperature—once treated, it may be solid, but it will no longer be 'elemental'.

81

- page 2.7, lines 23-27 (sidebar)—'Thermal Desorption': What wastes will this produce? What is the potential for breakdown?

82

- page 2.7, lines 30-33 (sidebar)—'Amalgamation': How stable is the amalgam? What is its melting point? How will it be stored?

83

- page 2.7, section 2.1.2.7—'Mixed Waste Trench Leachate': How efficient are the traps? How much escapes? Of what's trapped, how often is it emptied? Is there a minimum frequency for emptying the trapped leachate? How is it stored before treatment? How long does it wait, at maximum, for treatment? 'Solid waste resulting from the treatment' must by definition be MLLW—how is it sorted and characterized?

84

- page 2.8, lines 1-2—(definition of TRU waste): This should be in the glossary, or there should at least be a cross-reference—something like 'TRU—see p2.8, lines 1-2'

85

- page 2.8, lines 7-8—'In 1970, the AEC determined that waste containing transuranics *might* be associated with increased hazards...' (italics mine): *Might?* Like the sky 'might' be up? If I understand this correctly, it looks to me like the vast majority of transuranics are still in the LLBGs, since the likelihood is that most transuranics were produced before then—or were they? Is there even a 'back of the envelope' estimate of percentages?

86

- page 2.8, lines 13-14 & 16-17—'Initially the AEC set a minimum concentration of TRU at 10 nanocuries per gram of waste...The definition of TRU waste was changed to 100 nanocuries/gram in 1984': What was the basis for the original standard? Why was it later increased by an order of magnitude? A major standard change like this is not lightly made, but no explanation is given for the change.

87

- page 2.8, lines 17-18—'some of the suspect TRU waste...can be managed as LLW': Can, perhaps. Should? That's another question.

88

- page 2.8, lines 19-20—'An evaluation of the CH waste placed into retrievable storage estimated that 50 percent of the drums currently managed as TRU waste would be reclassified as LLW: This is valid only

To: Michael S Collins

Letter: L080h

88
(cont)

if the sample is representative, and if the new standard is valid—the decision can't be made ^{w/o} seeing the study cited.

Section 2, Subsection 2.1

89

- pages 2.8, lines 30-42, and 2.9, lines 1-5—**(discussion of current transport of TRU to WIPP, and plans for future transport)**: This is simply not adequate. It's not enough to say they evaluated it in **their** EIS. **If** they did, citations must be made by line and page #—and future plans cannot be mooted without more studies—if such studies were done in the WIPP EIS (eg, of the risks of shipping TRU by rail, given the frequency of derailments), these must also be cited by page & line #—**and the WIPP EIS must be made available for reference**. Also, there is a website address for a description of the **TRUPACT-II** transport casks and special trucks—but this is only of use to someone who has regular access to the Web—and speaking as someone whose computer regularly locks up when I try to access the Web, not everybody has such access.

90

- page 2.9, lines 12-15—**'Corrosion of the packaging has continued since they were buried, and preliminary inspection of some older containers has confirmed deterioration in their condition. However, observations and monitoring of the area around the drums within the trenches has not detected the release of any alpha emitters, such as plutonium'**: Reassuring, but not very—'has not' is not the same as 'will not'. Besides, how will this complicate plans for 'retrieval' and 'repackaging'?

91

- page 2.9, line 18—**'Because it was previously evaluated, retrieval of the waste is not evaluated in this EIS'**: Then where? At the very least, there should be a citation to where it **was** evaluated—and a summary would be a courtesy, particularly if the earlier discussion should prove as hard to access as some other sources are.

92

- page 2.9, lines 19-21—**'However, neither the Hanford site, other DOE sites, nor commercial facilities have the capability to process, certify, and ship oversized boxes or RH wastes to WIPP. Processing of these wastes would require development of new capabilities'**: If we had magic wands, we wouldn't be discussing this, now would we? ☺ What you're saying is that we don't **know** what to do with the stuff, and may **never** know. Why not just say so?

93

- page 2.9, subsection 2.1.3.2: The cross-references in this section are excellent—a model for the rest of the EIS—for discussion of the **'caissons'**, see notes on page 2.13

94

- pages 2.9 & 2.10, subsection 2.1.3.3—**'TRU Waste—Commingled PCB Waste'**: 'Small amount' is not a quantity, and 'higher' is meaningless ^{w/o} a baseline value. Since you (surely) are **not** planning to incinerate TRU Waste, no 'approved alternative treatment' is specified, and WIPP's permit to store this waste is still jam tomorrow, what is in fact being discussed here is indefinite storage at Hanford

To: Michael S Collins

Letter: L080i

- 93 • page 2.10, lines 12-15—(a definition of a ‘Type A shipping container for use in the TRUPACT-II shipping container’): This would be an excellent definition if it specified what type of metal was to be used.

Section 2, Subsection 2.2

- 94 • page 2.10, subsection 2.1.3.5—This subsection ends with the admission that nothing can presently be done—speculation is all very well, but it's not very useful in an EIS.
- 95 • page 2.10, line 29—‘including’: I've mentioned before the perils of the word ‘including’—what **else** is a likely source?
- 96 • page 2.10, lines 33-34—‘For analysis in this EIS, it is assumed that RH TRU would ultimately be accepted at WIPP’: That's counting your chickens before the eggs are laid, surely? What if they aren't? Is there **some** contingency plan for that?
- 97 • page 2.10, line 43—‘until a facility is available to treat the waste and prepare it for shipment to WIPP’ (italics mine): An awful lot is riding on that ‘until’.
- 98 • page 2.11, lines 15-16—‘The T Plant complex, described in section 2.2.2.4...’: This is a good cross-reference.
- 99 • page 2.11, lines 26-28—‘...absorption and solidification of free liquids, neutralization of corrosive materials, and stabilization and encapsulation in solid waste *matrixes*’ (italics mine): First off, the preferred plural of ‘matrix’ is ‘matrices’. More importantly, all these processes sound like good things to do: **how** are they done? There should be at least a reference to where one can find a description of methods of, for example, ‘neutralization of corrosive materials’, if not an actual description of the process(es) in the text or an appendix.

Section 2, Subsection 2.2

- 100 • page 2.11, lines 30-33—‘The Solid Waste Inventory Tracking System lists CWC inventory at the end of 2001 as a total of about 9200 m³...*comprised...of...Its capacity is estimated to be 16,700 m³...(FH2002)*’ (italics mine): Things ‘comprise’ or ‘are composed of’ they are **not** ‘comprised of’. More centrally, volumes on Earth are rarely defined in terms of cubic meters, because if stacks get too tall, they tend to be unstable. Which raises the question of how high the stacks **are**—is there one layer? 2? More? Also, by my reckoning, what you're saying is that the CWC is already more than half-full—so unless some waste is removed, or very little is received in future, it could become overfull—this requires information about how quickly (and how) waste could be removed, and how much is coming that would need to be stored at CWC. Also, ‘FH2002’ is referred to often—where is it available?
- 101 • page 2.11, line 35—‘The CWC could be expanded as needed...’: Could it really? Where? How much? With what risks? For that matter, if it matters to you, at what cost?

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Section 2, Subsection 2.2

- 104 • page 2.11, lines 38-39—**The CWC waste is segregated by content to assure compatibility of the contents with the containers (for example, acidic and basic materials are stored separately)**: Goodonyer! ☺ Seriously, I'm glad to hear that acids and bases are stored separately—I'd like to think that Sodium and water are being segregated, too—but that brings up another point. Some materials need special storage—some need lower temperatures, some higher, variances in humidity have impact, etc. I'd like a more thorough explanation of how this is dealt with.
- 105 • page 2.11, line 41—**Some RH waste is stored at CWC by shielding it to CH levels**: 'Shielding it' how? How stable are these 'shields'?
- 106 • page 2.11, line 42—**other package sizes can also be stored**: How? How much of the stored waste is in 'other package sizes'? How do the storage modifications needed for the 'other package sizes' impact the CWC's capacity?
- 107 • page 2.12, Figure 2.3—This picture doesn't show a lot of detail, but one thing is clear—the roofs are too flat. Roofs at a <30° angle become airfoils in high wind—and while high winds may be rare at Hanford, 'rare' is not the same as 'nonexistent'. I've noticed this in many buildings at Hanford—so what precautions are there in the event of high winds?
- 108 • page 2.12, lines 5-6—**four drums are bundled on to one pallet to allow ease of handling by forklifts, and stacked up to three layers high. Aisles are provided to gain access to the drums for required routine visual inspections**: A diagram would be helpful here, or an interior picture. The four drums are on one level, right? And they're on a pallet to be handled by forklifts—so what if a forklift accidentally pierces a barrel (such things do happen)? And they're 'stacked up to three layers high—separated how? If the 'routine visual inspections' detect a problem with one of the barrels in the bottom layer, or the middle one, how can it be removed for further inspection or correction? Is it necessary to remove the upper layers first?
- 109 • page 2.12, lines 14-15 (text box)—**the new buildings**: Would be placed where?
- 110 • page 2.12, lines 15-17 (text box)—**The interior floors would be sloped with raised perimeter curving to contain and direct spilled liquids to collection sumps. The floors would be sealed with impervious epoxy resins to reduce the impacts of any liquid spills**: Are these resins at all slippery? Would they be scuffed by the abovementioned forklifts? What would happen if (when) they need to be renewed? When the liquids get to the sump, then what? And what about collecting gases that might form from liquid spills? are there overhead fans? Leading the fumes where? And what kind of fire suppression equipment would there be? This description is too sketchy.

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- 111 | • page 2.12, lines 27-28—‘**A layer of at least 1.2m (4 ft) of earth was placed over the tarp cover**’: Protected from erosion how?

Section 2, Subsection 2.2

- 112 | • page 2.13, lines 7-8—(definition of a caisson): This is the definition of the caissons that should be in the glossary—preferably with a diagram like figure 2.4
- 113 | • page 2.13, lines 10-11—‘**The caissons have an offset connecting chute between the caisson and the soil surface to reduce radiation dose to workers as the waste was deposited**’: In Figure 2.4, this chute looks like it’s at a pretty steep angle—what mechanisms exist to brake incoming containers so that they don’t land hard, damaging themselves and other containers?
- 114 | • page 2.13, line 13—‘**Gases from the caissons are passively filtered through high-efficiency particulate air (HEPA) filters**’: Then what? What happens to the filters? The gases that have been filtered?
- 115 | • page 2.13, lines 16-17—‘**Radiation levels in the caissons have been measured at 1,500 to 10,000 R/hr**’: Doesn’t sound very ‘retrievable’ to me.
- 116 | • page 2.14, line 20—‘**quality assurance purposes**’: ‘All your character references agree that you’re a character’? ☺ Seriously, though, what ‘qualities’ are they assuring themselves of?
- 117 | • page 2.15, Figure 2.5: Again, this is a very undetailed picture.
- 118 | • page 2.15, line 2—‘**automated guided vehicles**’: Details? ‘Automated guided’ is something of an oxymoron—does this mean remotely operated?
- 119 | • page 2.16, Figure 2.7—This diagram doesn’t show a lot of obvious ways to seal off one part of the building in the event of an accident—I don’t even see fire doors. Maybe they were left out for clarity—but there should be **some** hint of them.
- 120 | • page 2.16, figure 2.8: Is **this** the TRUPACT-II? If it is, why are there no cross-references from pp 2.8 & 2.10? The picture is far from clear, but at least there is a picture
- 121 | • page 2.17, lines 11-12—‘**physical extraction, neutralization, chemical oxidation, chemical reduction, microencapsulation, and deactivation.**’: None of these terms is defined in the glossary. Where there are terms that are only used in one section, it might be a good idea to have a separate glossary for each section. This EIS contains technical terms from several different fields, and experts in one field are rarely familiar with the technical terms of another—or they may have different meanings in different fields.
- 122 | • page 2.17, line 13—‘**The stabilization process can be either cement or polymer based**’: This is not clear. Does it mean that wastes will be ‘stabilized’ by encasing them in cement or polymers? What good would that do, besides preventing them moving about, and keeping them from coming in direct contact with other wastes? And how long would the cement or polymers last?

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Section 2, Subsection 2.2

- 123 • page 2.17, lines 17-19—**‘ATG plans to use a high-temperature process to convert most organic contaminants to Carbon Dioxide and Water...The solid residuals from this process would be returned to Hanford for disposal.’**: What process? What would be done with the CO₂ and H₂O (both greenhouse gases)? What would be done with the ‘solid residuals’? What would they be?
- 124 • page 2.19, Figure 2.9: There should be a cross-reference to this from the definition of ‘macroencapsulation’ in the Glossary. From the picture, it looks like the boxes will be filled with polymers, to keep the materials inside from rattling about. Is this a fair analysis? And why should I have to work that out for myself?
- 125 • page 2.18, line 12—**‘The collection system retains rain and snowmelt’**: What is the likelihood that it will be overwhelmed in a ‘gullywasher’? Or if a substantial amount of snow melts all at once? Because a type of weather is rare, doesn’t mean you don’t have to allow for it.
- 126 • page 2.18, lines 16-17—**‘pH adjustment, filtration, ultraviolet light, and (sic) peroxide destruction of organic, reverse osmosis, and ion exchange’**: Again, mostly undefined.
- 127 • page 2.18, lines 20-21—**‘If the leachate does not meet these requirements, an alternative treatment is required’**: Like what?
- 128 • page 2.18, lines 23-30 (text box): I suppose the basic question here is **why** is The ETF scheduled to shut down at the end of 2025? The processes done there may be obscure, but the proposed alternatives are patently inadequate.
- 129 • page 2.18, line 37—**‘Dry decontamination, inspection, segregation, verification, and repacking of RH & large items...’**: More undefined terms, some more obscure than others.
- 130 • page 2.18, lines 39-40—**‘The Sludge is expected to remain in the T Plant canyon until a treatment facility is available’**: In other words, indefinitely.
- 131 • page 2.19, line 5—**‘reinforced concrete’**: How long does reinforced concrete last?
- 132 • page 2.19, line 9—**‘shielding that is 2.1 meters (7 feet) thick’**: Well, it was once. What kind of internal climate controls are there? How is expansion and contraction dealt with?
- 133 • page 2.19, line 13—**‘remodeled’**: How thoroughly?
- 133 • page 2.20, lines 4-5 (text box)—**‘modified to meet ...M91 milestone requirements’**: Meaning it doesn’t now. How extensive modifications?
- 134 • page 2.20, lines 9-10 (text box) **‘stabilization...NDA’**: More undefined terms.
- 135 • page 2.20, lines 20-21 (text box)—**‘The new facility would process/treat the same waste streams and have all the capabilities identified above for the**

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modified T Plant complex?: If it won't have **more**, why build a new facility?
Where would it be? **Would** it be better?

136

- page 2.20, line 27 (text box)—**'thermal desorption'**: Which is?

. Section 2, Subsection 2.2

137

- page 2.20, lines 16-34 (text box): There needs to be a cross reference in here somewhere to page 3.4

138

- page 2.21, lines 4-5—**'the LLBGs, which are described in this section'**: Not as thoroughly as they should be, they're not.

139

- page 2.21, Figure 2.11: This Figure is almost featureless, and might be a picture of anything.

140

- page 2.22, line 1—**'between 1962 and 1999'**: What happened to waste before that?

141

- page 2.22, line 7—**'deep'**: Deep is better than shallow, perhaps—but no matter how deep you bury something, that doesn't **necessarily** preclude its escape.

142

- page 2.22, lines 12-19—**(a description of the HICs)**: Cement may be long-lasting—it ain't noways permanent.

143

- page 2.23, lines 1-5—**(a definition of in-trench grouting)**: This is a critical definition, and should be in the glossary, or there should at least be a cross-reference. I should add that 'strength' and 'endurance' aren't necessarily . I once saw a man break his own arm arm-wrestling, because his muscles were too strong for his bones.

144

- page 2.23, line 9—**'retards migration of some radionuclides from the LLBGs'**: And within? Interactions within such monoliths might have long-term results—how is **that** prevented? I might add that 'some' is not very reassuring—it implies that others would **not** be retarded

145

- page 2.23, line 18—**'Typically, about 30 to 50 percent of the total trench volume is filled with waste'**: 2D or 3D? Are containers piled on top of other containers? With or without an intervening level of soil?

146

- page 2.25, line 18 (text box)—**'efficiency'**: Efficiency and cost savings must **not** be purchased at the price of safety.

147

- page 2.26, lines 30-31—**'Shipments of waste by rail may require constructing a spur from the existing rail lines.'**: 'Existing rail lines' are poorly maintained—only marginally safer than the roads.

150

- page 2.27, Figure 2.15—**'Cover'**: How are these grasses to be pollinated? What would eat them? Grasses are prone to fire—in fact, they require it for their continued health. How would this be managed?

151

- page 2.27, Figure 2.15—**'Layer 1'**: This would be where most burrowing animals, bacteria, fungi, etc would live. Some can be excluded: some is necessary for the health of the grasses.

152

- page 2.27, Figure 2.15—**'Layer 5'**: 'Drainage' to where?

153

- page 2.27, Figure 2.15—**'Layer 6' & 'Layer 7'**: Asphalt expands & contracts depending on temperature and humidity changes—what allowance is

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made for this? What about cracks? 2 layers are better than one, but there is still a risk of cracking through

Section 2, Subsection 2.2

154

- page 2.27, Figure 2.15—(Well, outside it, really): What about around the trenches? Below them? If the cap is tighter than the capsule, the waste will escape in other directions

Section 3, Subsection 3.0

155

- page 3.1, lines 8-9—‘Table 3.1 provides a summary of these alternatives. More detailed tables and flowcharts describing the alternatives are by waste stream are located in Appendix B’: This is a good cross-reference.

156

- page 3.1, lines 11-17—This paragraph is essentially a table of contents—why not make it one? The preceding cross-reference could be a footnote.

157

- page 3.1, line 19—‘The alternatives are organized by waste type: LLW, MLLW and TRU waste.’: There should be a summary, covering all the waste types, and especially to deal with overlap, which does exist.

158

- page 3.1, lines 24-26—‘The third alternative, No Action...however, it does require...additional storage facilities’: This is not ‘No Action’—but if it’s the definition of ‘No Action’ you’re going to use (however different from the vernacular definition), it should be in the Introduction.

Section 3, Subsection 3.1

159

- page 3.1, line 35—‘minimum treatment’: What constitutes ‘minimum treatment’?

160

- page 3.1, lines 38-39—‘Such offsite waste would need to meet the Hanford Site Solid Waste Acceptance Criteria’: How would this be verified?

161

- page 3.2, Table 3.1: I think the waste types should be labeled down the right side, instead of (or perhaps as well as) on the grey separating lines.

162

- page 3.2, Table 3.1—under ‘Disposal’ in ‘Alternative 1’, both for LLW & MLLW—‘enhanced’: This word is used twice, and not defined. From the text descriptions, ‘enhanced’ seems to just mean ‘bigger’—which is not the same as ‘enhanced’

163

- page 3.3, lines 9-10—‘lower bound and lower bound LLW volumes’: How were these figured? What if the figures are wrong?

164

- page 3.3, line 17—‘backfilled with soil consistent with current operations’: What are current operations? For example, what kind of soil is used?

Section 3, Subsection 3.2

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- 165 | • page 3.4, lines 20-21—‘**Capacity of the new trenches would correspond to the upper bound and lower bound MLLW volumes.**’: What does this mean? How could it be both?

Section 3, Subsection 3.2

- 166 | • page 3.4, lines 32-33—‘**DOE would construct a new M-91 facility in the 200 West Area near WRAP to augment existing treatment facilities**’: Too vague. Even assuming the new facility will not be built on top of or beneath WRAP, ‘near’ covers a lot of territory. And ‘augment’ how? More of the same facilities, or new technologies?
- 167 | • page 3.4, lines 37-38—‘**The other treatment technologies...are the same as those analyzed under MLLW Alternative 1**’: One paragraph does not constitute an ‘analysis’.
- 168 | • page 3.5, lines 3-4—‘**A separate trench would be constructed to dispose of the melters...**’: Different how?
- 169 | • page 3.5, line 7—‘**Leachate...would be collected**’: With the best of will and skill, some would be missed—any estimates as to how much?
- 170 | • page 3.5, lines 22-23—‘**Solids from that treatment would be sent to the MLLW trenches for disposal, or to CWC for indefinite storage**’ (italics mine): On what basis would the distinction be made?

Section 3, Subsection 3.3

- 171 | • page 3.5, line 36—‘**practical or cost-effective**’: Choose one? ☺ ‘Practical’ and ‘cost-effective’ are scarcely the only values. And what does ‘practical’ mean in this case?
- 172 | • page 3.6, lines 5-6—‘**after closure of WRAP, individual Hanford Generators would be responsible for certifying and shipping their own waste**’: In what proportion to pre-2032 waste? Not a precise figure (obviously impossible)—just a ballpark figure.
- 173 | • page 3.6, line 6—‘**drum head space gas sampling**’: What does this mean?
- 174 | • page 3.6, line 10—‘**size reduction equipment**’: To reduce the size of what? How?
- 175 | • page 3.6, lines 12-13—‘**This would include the K Basin sludge and other wastes containing...(PCBs)**’: Which would be treated how?
- 176 | • page 3.6, line 25—‘**new M-91 facility**’: So far, I’ve seen no description of what this will be and what it’ll do. If such a description is somewhere within, there should be a cross-reference thereto.
- 177 | • page 3.6, lines 32-33—‘**Continue Current Mode of Operations with No New Facilities**’: This would be a more accurate description than ‘No Action’, except that there needs to be some recognition that some existing facilities would be expanded—see next note.

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- 178 | • page 3.6, lines 42-43—‘**The CWC would be expanded as needed**’: Like this, for example.
Section 3, Subsection 3.4
- 179 | • page 3.7, line 1—‘**Volumes of Waste Considered in Each Alternative**’: This should be widely cross-referenced.
Section 3, Subsection 3.4
- 180 | • page 3.7, line 4—‘**newly generated wastes from Hanford site generators**’: What generators? How much waste?
- 181 | • page 3.7, lines 5-6—‘**A variety of information sources have been used to develop estimates for the quantities and characteristics of the wastes to be managed. (Followed by a description of the references, but not where they are)**’: What audits are there on the accuracy of these sources? What uncertainties are involved?
- 182 | • page 3.7, lines 13-14—‘**A more detailed description of the waste volumes for each type of waste is included in Appendix C**’: Good cross-reference.
- 183 | • page 3.7, lines 15-16— ‘**The number of significant figures shown in the volume tables can exceed the accuracy of the forecasts, but are maintained in the document for consistency of calculations**’:
- 184 | ‘1cm ±1 meter’? ☺ Seriously, this is very bad practice—and shouldn’t the uncertainties be shown in the tables?
- 185 | • page 3.7, lines 21-23—‘**This lower bound volume represents the expected receipt of LLW based on forecasts provided by Hanford Site generators and offsite waste generators whose waste is currently approved for acceptance at Hanford**’: And how accurate have they proved in the past?
- 186 | • page 3.37, lines 25-26—‘**...could potentially send waste to Hanford as a result of the WM PEIS ROD for LLW**’: Perhaps it is explained in the WM PEIS ROD who exactly ‘could potentially send waste’ (an incredibly imprecise phrase in its own right). Lacking access to that document, I have to ask: who could?
- 187 | • page 3.7, Table 3.2—‘**Category 1**’: The ‘Upper Bound’ here is more than 2x as much as the ‘Lower Bound’. Some recognition of this needs to be shown.
- 188 | • page 3.7, Table 3.2—‘**Greater than Category 3**’: ‘<1’ is not enough—at least an order of magnitude needs to be shown, as in ‘>.1<1’.
- 189 | • page 3.7, Table 3.2—‘**Previously buried waste in the LLBGs**’: What’s the uncertainty in this figure?
- 190 | • page 3.7, Table 3.2—‘**Total**’: Here the ‘Upper Bound’ is nearly 1_ times the ‘Lower Bound’
- 191 | • page 3.8, Table 3.3—‘**Treated and Ready for Disposal**’: Here the ‘Upper Bound’ is more than 5x the ‘Lower Bound’.
- 192 | • page 3.8, Table 3.3—‘**Elemental Mercury**’: 20 m³ is a lot of mercury!
- 193 | • page 3.8, Table 3.3—‘**Total**’: Here the ‘Upper Bound’ is >4x the ‘Lower Bound’!

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- 194 | • page 3.8, Table 3.3, note (a)—‘**Leachate from MLLW trenches has not been included in this table because the volumes are dependent on the selected alternative**’: C’mon! There are only 3 alternatives. How hard would this be? And if it would be hard, why?
- 195 | • page 3.8, lines 20-21—‘**...maximum and baseline volumes were provided by generators.**’: Again, how accurate have they been in past? And what cross-checks are there?

Section 3, Subsection 3.4

- 196 | • page 3.8, lines 21-22—‘**The maximum volume was about 10 percent greater than the baseline volume. Because these volumes are relatively similar, only the maximum volume (was considered)**’: 10% is 10%—in this case (if the figures are accurate), nearly 4600 m³—a not inconsiderable difference.
- 197 | • page 3.8, line 23—‘**Only small quantities...**’: How much is ‘small’?
- 198 | • page 3.9, Table 3.4: There needs to be another table summarizing Tables 3.2, 3.3, & 3.4.
- 199 | • page 3.9, Table 3.4—‘**Waste from trenches**’: Does this include pre-1970 TRU?
- 200 | • page 3.9, Table 3.4: If there are ‘oversized’ and ‘standard’ containers, are any ‘undersized’? If so, what handling problems do **they** entail?
- 201 | • page 3.9, Table 3.4—‘**Total TRU waste**’: If accurate, this means that there’ll be almost 4 as much TRU waste as the ‘Upper Bound’ of MLLW, and almost ¹/₁₃ as much TRU as the ‘Upper Bound’ of LLW. That’s a lot to transport!

Section 3, Subsection 3.5

- 202 | • page 3.9, line 16—‘**economies of scale**’: Are the ‘economies of scale’ worth the increased risk? Surely the risk is increased by consolidation? If it isn’t, why not?
- 203 | • page 3.9, line 24—‘**The Volume of GTC3 LLW would be *relatively small***’ (italics mine): Relative to what?
- 204 | • page 3.9, line 24—‘**a cost saving**’: ‘Cost’ cannot be accurately reckoned in dollars & cents—the **true** cost is always much greater than the fiscal cost, for anything.
- 205 | • page 3.9, lines 25-26—‘**Because the amount of storage required...is so small compared to other wastes...**’: Is it really that much smaller, once the special precautions I **hope** are being taken are allowed for?
- 206 | • page 3.9, line 28—‘**significant storage capacity**’: The quantity involved has twice been described as ‘small’ in this paragraph—now it requires ‘significant storage capacity’ to deal with it? Don’t add up, somehow.
- 207 | • page 3.10, lines 6-7—‘**Privatization (what a word!) of the waste management operations would not appreciably alter the environmental impacts**’ This is a big pill to swallow in one gulp! How sure can you be

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about this? What if they run the facility longer? Or take more risks? What checks would there be upon such a 'privately owned entity'?

208

- page 3.10, lines 12-13—**'The operational impacts are considered to be similar to those from operating the new M-91 facility...'**: The location is different, and presumably the design—how 'similar' is similar enough?

209

- page 3.10, line 19—**'about the same'**: 'About the same' is a value judgement. What analyses were actually done?

Section 3, Subsection 3.5

210

- page 3.10, lines 28-29—**'Hanford may ship small volume waste streams to other DOE sites when specialized facilities are available'**: Example? What constitutes 'small volume'? How subjunctive is that 'when'?

211

- page 3.10, line 33-34—**'The technical and regulatory issues, however, remain unresolved.'**: If this were a contest to see how many ways one could say 'don't know', this document would win, hands down.

212

- page 3.10, line 36—**'(The mobile treatment facility) becomes a radioactive shipment after its first use.'**: Whether it's the waste or the treatment facilities that are moved, radioactive materials are being moved, and there are associated risks. The question is the relative amount of risk—which is not resolved in this paragraph.

213

- page 3.10, line 40—**(a partial definition of 'non-conforming' LLW)**: This needs to be in the glossary, since more than once before I'd encountered the term 'non-conforming' LLW, and had unavailingly wondered what it was.

214

- page 3.10, line 42—**'However, organic-based liquid wastes are not compatible with the aqueous-based ETF treatment systems'** Elaborate. How are they 'not compatible'? What alternatives are there?

215

- page 3.11, lines 8-9—**'none of the LLW or MLLW under evaluation in the HSW EIS would be generated by CERCLA actions.'** *None?* Then where is the waste generated by CERCLA actions dealt with? And where is the waste in this EIS coming from?

216

- page 3.11, Subsection 3.5.3.2—**'Use of Canyon facilities to deal with specific wastes'**: How much waste are we talking here? And what happens when, as it eventually must, the cement begins to decay? What checks would be maintained on this?

217

- page 3.11, line 26—**'The proposed commercial spent fuel and high-level waste repository'**: First I've heard of this 'proposed repository'. What is it? Where would it be?

218

- page 3.11, lines 26-27—**'Disposal of GTC3 waste at the HLW repository is not authorized'**: 'Not authorized' by whom? Why?

219

- page 3.11, lines 33-34—**'the impacts are expected to be similar to those determined for burial of waste in the LLBGs'**: Similar? The same burial methods, etc.? Same location ≠ same results, unless all other factors are equal.

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- 220
- page 3.11, lines 40-41—‘...DOE decided that all Hanford LLW and MLLW should be disposed at Hanford’ A bald enough statement, and with no citation.
- 221
- page 3.12, subsection 3.5.3.6: This whole paragraph unclear. Once again it refers to the WM PEIS, which I don't have, it doesn't really discuss what was studied, what was concluded, and why; and it uses the term ‘generators’: used throughout this document, and never defined—indeed, apparently meaning different things in different contexts.

Section 3, Subsection 3.6

- 223
- page 3.12, lines 39-40—‘**Supporting analyses for the entries in Table 3.5 are provided in section 5.0 & its *appendixes***’ (italics mine): Again, the preferred plural of ‘appendix’ is ‘appendices’. Otherwise, this is a good cross-reference—now if the analyses are just as good...
- 224
- Table 3.5, in general: The print in this table is too small. I'm sure the intention was to save space, but this is not worthwhile if the results are illegible. Also, the column headings should be on both pages, and the footnotes at the bottom of both pages—and ideally, the two pages should be opposite each other, not the recto & verso of one page. Capitalization is whimsical at best. Finally, if it's such a good idea to summarize all the types of waste for each alternative, why is there no table doing this earlier?
- 225
- page 3.13, Table 3.5—‘**Historically designated LLBG Area**’: ‘Historically designated’ by whom? When? Why?
- 226
- page 3.13, Table 3.5—‘**PM₁₀**’: This is defined later, (on page 4.20). It should have been defined in the Glossary.
- 227
- page 3.13, Table 3.5—‘**Maximums for borrow pit activities**’: ¿From exhaust fumes? And if there're figures for this, why not for transportation in general?
- 228
- page 3.13, Table 3.5—‘**Drinking Water Standards**’: Why are standards only given for Technetium-99 and Iodine-129?
- 229
- page 3.13, Table 3.5—‘**Average nuclide concentrations in Columbia River at time of maximum concentrations**’: What does this mean? How can something be ‘average’ and ‘maximum’ at the same time? Are these modes rather than means, or what? This needs to be rewritten so it's clearer.
- 230
- page 3.13, Table 3.5—‘**Temporary Shrub-Steppe Habitat Destruction**’: The footnote for this is too far away, and too optimistic.
- 231

Section 3, Subsection 3.6

- 232
- page 3.13, Table 3.5, 2 rows—‘**Low Potential for Cultural Resources, Aesthetics and Scenic Resources, or Noise Impacts for All Areas**’, & ‘**Low Potential for Impacts on Community Infrastructure and Environmental Justice for All Alternatives**’: Perhaps this is justified in the more detailed

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analyses, but I'll draw a bow at venture and presume that this is justified by the isolation of Hanford—but how long can this isolation be guaranteed?

233

- page 3.13, Table 3.5—'**Non-Renewable Resources**': Only 3 non-renewable resources are listed in this table, and they're all fossil fuels. These are far from the only non-renewable resources. Until or unless we start mining asteroids, there's only so much useable iron on the Earth, for example—and come to that, if water is contaminated to the point it's not usable, **it's** got to be removed from the water cycle, too—and so it **also** becomes 'non-renewable'.

Section 3, Subsection 3.6

234

- page 3.13, Table 3.5—'**Public Health and Safety**': These figures, particularly, need to be carefully scrutinized, and by someone who knows how to spot flaws. If I can get to them in time, I'll do my best—but I'm far from an expert. I have to hope they've been examined by people who **are** experts.

235

- page 3.14, Table 3.5—'**Incident-free transportation**': Oh, goody! I love fairy tales! ☺ When has transportation **ever** been 'incident-free'? And shouldn't exhaust fumes be figured here?

236

- page 3.14, Table 3.5—'**Highest risk facility accident**': Whatever gave you the idea that a 'beyond design basis earthquake at CWC' is the worst that could happen? (Just as a matter of curiosity, what is the 'design basis'?) What about an asteroid impact? It needn't even be a very **large** impact, if it hits just right. And what happens if (when) Mt Rainier erupts as violently as it has in the past? I should add that 'estimated frequency' is **very much** an estimate—just because a thing is likely to happen 33 times in 10,000 years doesn't mean it won't happen thrice in one year—it **probably** won't, but it **could**. And on an 'indefinite' time scale, **any** probability, no matter **how** small, approaches certainty. And even if the only risk **were** earthquakes, estimates have to be based on more than historical records—unknown faults have gone off with unanticipated force before. What does **geological** evidence suggest about the relative frequencies of earthquakes now and in the geological past? If the risk has changed once, it can change again.

237

- page 3.14, Table 3.5—'**scenario not credible for capped LLBGs**': 'Not credible?' **Ever**? Have you ever been down an old asphalt road that's no longer being maintained? I have—and it was <100 years old—and it was in clumps and islands already.

238

- page 3.14, Table 3.5—'**if fatality does not occur from acute effects**': **Which**, historically, has been known to happen—and what about effects of long-term mutations?

239

- page 3.14, Table 3.5, footnote (b)—'**...will likely re-establish itself on the LLBG closure caps**': Doesn't look like it, from the evidence in Section 4—but if it did, wouldn't this increase the risk? It might be better if the LLBGs remained distinct.

Section 3, Subsection 3.7

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- page 3.15, lines 14 & 21—'*is less expensive*' and '*is the lower-cost option*' (italics mine): Again, fiscal costs are rarely even within shouting distance of actual costs—and even if they were, fiscal forecasting is an oracular process, at best—those confident 'is'es are far from certainty.

Section 4, Subsection 4.0

241

- page 4.1, lines 6-8—'**Information used in this section was taken from the Hanford Site National Environmental Policy Act (NEPA) Characterization Report, unless otherwise noted** (italics from original): If it's almost all from that, where is this source? Is it thoroughly quoted, or is there other information not quoted? And where other sources are used, it might be a good idea to use a different font or something, though I know there are footnotes—it would give a sense of how much of the information really is from the primary source. Or you could just say how much, as in: 'Approximately 70% of the information in this section was taken from...other sources are as noted.'

Section 4, Subsection 4.1

242

- page 4.1, lines 30-31—'**Treatment, storage, and disposal of solid wastes are accomplished in the 200 Areas**': That's the intent, to be sure—but many natural processes take very little account of human-drawn boundaries—which is why the information in this section is of particular importance.

243

- page 4.1, line 38—'**provides a buffer...**': Buffers often suffer consequences from the buffeting they take—and in this case the buffer is also the home of living things.

244

- page 4.2, Figure 4.1—There should be cross-references from this map to those on 4.25 & 4.42, as this map shows very little contour. Nothing fancy, just a 'see also'.

245

- page 4.3, lines 8-9—'**The cities of Kennewick, Pasco, and Richland (Tri-Cities) constitute the nearest population centers...**': Population? Density? Growth? Unfortunately (it's an appalling trend, really,) the bulk of population growth in the US is now in desert and 'semi-arid' areas, like this. Also, there should be at least a rough map (like those on pp 4.79 & 4.82—which are both labeled '**figure 4.25**' though I think the one on page 4.79 is meant to be '**figure 4.24**') showing population densities in the area—even where there are no 'population centers', there's still often some human occupation.

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Section 4, Subsection 4.2

- 247 | • page 4.3, line 13—‘Hanford Comprehensive Land-Use Plan’: Where is this?
- 248 | • page 4.4, Figure 4.3—This map is almost unreadable—there is not enough contrast in the colors, and it needs to be larger (perhaps a foldout?). The islands, in particular, are unreadable. Also, in common with all the other maps in this document, it needs a coordinate grid for reference: it needn’t be elaborate—just A-E along the top, and 1-10 along the side, for example—but it is needed. Just as a matter of interest, btw, since when is mining
- 249 | ‘conservation’? What **kind** of mining? With what limits?
- 250 | • page 4.5, lines 4-5—‘**unique habitats and the presence of cultural resources**’: If these are defined later, say where.
- Section 4, Subsection 4.2
- 251 | • page 4.5, lines 10-11—‘**nine retired plutonium production reactors, associated facilities and structures**’ (italics mine): ‘Retired’ *how*? Obviously not with a handshake and pension ☺, but *how*? Where can one find out?
- 252 | • page 4.5, line 13—‘**183-H Solar Evaporation Basins**’: Evaporation of **what**? When? Are they still in use?, What was done with them?
- 253 | • page 4.5, line 32—‘**All Other Areas**’: This is too generic a term, particularly for nearly 700 km²
- 254 | • page 4.5, lines 37-38—‘**support future economic development**’: With what reassurances?
- 255 | • page 4.6, line 11—‘**...three nuclear power plants. Construction on two of the plants was halted.**’—And the third? Why was construction on the two halted? What had already been done? What’s been done since?
- 256 | • page 4.6, lines 11-12—‘**other industrial options**’ Not even a hint? Who’s responsible for the risks inevitably associated with **any** kind of ‘industrial options’?
- 257 | • page 4.6, line 17—‘**To date, this parcel has not been used for hazardous waste disposal**’: Why not?
- 258 | • page 4.6, line 24—‘**Volpentest**’: Is this a personal name? If not, what does it mean?
- 259 | • page 4.6, line 35—‘**...extremely sensitive to vibrations**’: So how is it protected from them?
- 260 | • page 4.6, lines 37-41—‘**Fitzner-Eberhardt Arid Lands Ecology Reserve Unit...is managed as a wildlife reserve and environmental research center.**’ (italics from original): There should be a parenthetic ‘(ALE)’ after the word ‘Ecology’, as this is how it is referred to throughout. Also, where are publications of the research to be found? Do they publish monographs? Journal articles? Conference publications? I note that there are some journal articles in the References, but the affiliation of the authors is not given. And while I’m on the subject, when referencing journal articles could you **please** include **ISSN #s**? It only adds 9 characters to the citation, but it’s **amazing** how much easier it makes it to access the articles.
- 261 |

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- 262 • page 4.7, lines 13-15—'**FWS is the lead agency in producing a Comprehensive Conservation Plan (CCP) for management of the Hanford Reach National Monument**': How does one find out about progress on this plan? What opportunities for assessment and comment are there? This plan is very important—one would like to see it done right.
- 263 • page 4.7, lines 25-26—'**For a description of the facilities, refer to section 2.0**': This cross-reference needs to be more specific.
- 264 • page 4.7, line 30—'**(WRAP) is in the 200 West Area**': This is one of the many places where a coordinate grid would come in handy. Just saying 'see figure 4.4—E-3' (say), would make it easier to figure out where facilities are relative to each other.

Section 4, Subsection 4.2

- 265 • page 4.8, Figure 4.3: This map also is nearly unusable—the lines aren't clear, the islands are shown too small, the colors aren't contrasting enough—perhaps there should be an inset map or a separate map showing the islands in more detail.
- 266 • page 4.9, line 8—'**tanks**': 'Tanks' should be defined as 'basins' are, below (lines 12-17)
- 267 • page 4.9, line 8—'**discharged**': 'Discharged' how?
- 268 • page 4.9, lines 11-12—'**242-A evaporator**': Define.
- 269 • page 4.9, line 14—'**soil/bentonite barrier**': My spell-checker doesn't even have a guess as to how to spell 'bentonite'. This is a good indication of a technical term. Again, define.
- 270 • page 4.10, line 5—'**non-RCRA-permitted waste streams**': Examples?
- 271 • page 4.10, line 7—'**...two 2-hectare...disposal ponds**': Again, the type-specimen for how these ponds **should** be defined is the definition of 'basins' on page 4.9, lines 12-17. Just giving a size and calling them 'disposal ponds' gives no idea what they **are**, and how they function. For example, are they covered to prevent evaporation and animals drinking from them? If not, why not?
- 272 • page 4.10, lines 14-15—'**As a result of biotic intrusion by deep-rooted plants & burrowing animals**': What plants? What animals? With what consequences to said plants and animals, and to other life in the area (for example, predators that eat the burrowers)? How are these 'biotic intrud(ers)' being dealt with? What would be the consequences to the ecosystem if they were removed? For example, what would replace them?
- 273 • page 4.10, lines 15-18—'**Surface contamination is present in (a description of where, and how much)**': So far. But what are the risks of it spreading?
- 274 • page 4.10, lines 18-19, and page 4.11, line 1—'**Areas of surface contamination...(examples)...are cleaned and stabilized as needed to prevent the further spread of surface contamination** (italics mine): 'Cleaned and stabilized' **how**? Who determines what's needed, and how?
- 275 • page 4.11, line 1—'**biological control programs**': This is the first mention of such 'programs'. What are they?

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- 276 | • page 4.11, lines 5-6—‘**established to protect onsite workers**’: And the creatures that live there? How are **they** protected, especially those that can’t read signs? How many migrate, or disseminate contamination by other means?
- Section 4, Subsection 4.3
- 277 | • page 4.11, lines 14-15—‘**Summers are warm and dry, while winters are cool with occasional precipitation**’: This is commonly referred to as a ‘Mediterranean’ climate—but I suppose there’s no need to add **yet more** technical jargon. ☺
- Section 4, Subsection 4.3
- 278 | • page 4.11, lines 16-20—(A description of the orographic effects of the Cascades, and their function as a source of cold air.): These processes depend in part on the elevation of the mountain range—so are the Cascades rising, falling, or stable? It should also be mentioned that there are **volcanoes** in the Cascades—what effects might they have, even if they don’t erupt (which, and some point, they will)?
- 279 | • page 4.11, lines 22-36—(beginning ‘**Climatological data...**’, and providing a description of how such data have been, and are currently, collected): No **weather balloons**? These are critical, if only because jet stream data (not provided herein), plays a big part in weather description and forecasting. What about satellite data? More essentially, because we’re talking about curating these wastes for a **very** long time, what about paleoclimatological data? 1912 was a very short time ago on a climatological scale—even though such scales are themselves short in geological terms. It was in large part a reliance on historical climate records that caused the Dust Bowl. What happens when the next Ice Age comes, as it will unless global warming tips the balance? What **about** global warming? On a significantly shorter scale, what effects does El Niño have?
- 280 | • page 4.12, figure 4.6: This is a good example of the advantages of some sort of coordinate system. When referring to the table on the next page (page 4.14, Table 4.13), and to the next map on the next page after, (page 4.14, Figure 4.7), and to the last wind map (page 4.16, Figure 4.8), the numbers provide a framework, and can be used for comparison between the maps, and between the maps and the Table. One minor point—the tables and figures should be gathered together more: Wind tables and maps continue on well into the discussion of other climatological factors such as fog, breaking up the text somewhat. Also, note the comment on page 4.17, Table 4.3.
- 281 | • page 4.15, lines 23-45—‘**Temperature and Humidity**’ and ‘**Precipitation**’: All the weather data are **heavily** dependent on climate—see above, under ‘**Climatological data**’ for comments on the importance of paleoclimatology. The temperature ranges seem oddly narrow, given that surrounding areas often have **average** temperature ranges of 100° (from 0 to 100° **every year**),

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with occasional variance well beyond—is there some mitigating influence in this area? If so, what? Also, the snowfall figures need to take drift into account—how much drifting snow is there in this area? Are there blizzards? How often (just a yearly average would be sufficient)?

282

- page 4.17, Table 4.3: This is a good table, but it deals with **averages**. What is the maximum wind gust ever measured? How often do larger gusts happen? Under what circumstances?

Section 4, Subsection 4.3

283

- page 4.17, lines 6-7—'**89 percent...are from November through February, with less than 3 percent from April through November**': Logically, then, the remaining 8% are in March and October—why not just say so, and give the distributions? And as a matter of interest, why the (inconsistent) prejudice against using signs like '%', '<' and hyphens? It'd save quite a bit of verbiage if these weren't spelled out everytime.

284

- page 4.17, line 12—'**dust, blowing dust, and smoke from field burning**': Just **field burning**? These are more than 'restrictions to visibility'—they carry particles, becoming a factor in both wind erosion and contaminant spread. Where do the particles come from? Where do they go? Also, though it's nice to be reassured below (on lines 12-13) that '**an average of 5 d/yr have dust or blowing dust, and <1 d/yr has reduced visibility from smoke**,' both dust and smoke can be in the air ^{w/o} being 'visible', or we wouldn't have to dust our houses as much—so how are **nonvisible** dust and smoke measured?

285

- page 4.17, lines 16-17—'**(A description of the NWS standard for severe thunderstorms)**: Not good enough. Hail and gusting winds are far from the only dangers of thunderstorms. What about lightning strikes? Rapid, intense rainfall? 'Gullywashers'? All have effects, some substantial, and must be taken into account.

286

- page 4.18, line 2—'**High-speed winds at Hanford**': How high?

287

- page 4.18, line 4—'**Estimates of the extreme winds...are found in Hoitink et al (2001)**.' (italics from original): Which I don't have. There should be at least a table here.

288

- page 4.18, lines 13-14—'**No deaths or substantial property damages were associated with these tornadoes**': Yet. But tornadoes are notoriously capricious things—and 'were' is not the same as 'will be'. See other comments on the value of relying on the 'expected' in matters of risk.

289

- page 4.19, lines 7-8—'**Most major pollutant incidents are associated with stable conditions when inversions can trap pollutants near the ground**': In the short run, perhaps. But if (when) pollutants rise above the troposphere, they disperse by osmosis, and may remain in the upper atmosphere for centuries, causing **long-term** effects—**what** effects?

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- 290 | • page 4.19, Table 4.4: This table shows the duration of the inversions, but not
the frequency, which should either be on this table or another.
- 291 | • page 4.20, line 4—**‘in the 200 areas at 10m...are found in Appendix F,
Table F.33’**: Good cross-reference: but the table should be here. And what
about **above** 10 meters?
- 292 | • page 4.20, line 15—**‘The Hanford Site is in attainment with all national air
quality standards’** This, even if true, is not sufficient. The standards are
given in table 4.5, and the emissions from Hanford are listed in tables 4.6 &
4.7, but the units of measurement are not proportional in the three tables,
including the time frames. The way to demonstrate your compliance with the
federal standards is to show Hanford's output in the **same** units as the
standards.

Section 4, Subsection 4.3

- 293 | • page 4.20, line 18—**‘public welfare’**: Does ‘public welfare’ include
protecting vital plants and animals, as essential parts of the quality of the
environment, and hence of human life? What about aesthetic values,
important to psychological health?
- 294 | • page 4.20, lines 20-21—**‘particulates with an aerodynamic diameter less
than or equal to a nominal diameter of 10 micrometers (PM₁₀) and 2.5
micrometers (PM_{2.5})’**: This **needs** to be in the glossary, but it's **not**. The
quantity name is used as early as page 3.13, Table 3.5. To wait this long to
define it is absurd.
- 295 | • page 4.20, lines 30-31—**‘The Hanford Site air emissions are below the
standard of 10 mrem/yr’**: Again, a simple bald statement. If there is
information of how this argument is justified, there should be a
cross-reference to it.
- 296 | • page 4.20, lines 33-34—**‘State and local governments have the authority to
impose standards...that are stricter’**: If one standard is more stringent,
does the stricter standard always apply? If not, how is the decision made?
- 297 | • page 4.20, lines 38-39—**‘Table 4.5 summarizes the relevant air standards
(federal and supplemental State standards)’**: This note should be moved to
the end of the **first** paragraph on this page.
- 298 | • page 4.21, Table 4.5: footnotes are not adequately delineated. Footnote
designations should at the very least be put in boldface type.
- 300 | • page 4.21, Table 4.5, footnote (e)—**‘Doses due to radon-220, radon-222,
and their respective decay products are excluded from these limits’**:
Why? Are there separate standards for these?
- 301 | • page 4.22, line 3—**‘mainly’**: ‘Mainly’ implies that there are other sources.
Are there? What are they?
- 302 | • page 4.22, lines 5-6—**‘The 100, 400 and 600 areas have no non-radioactive
emission sources of regulatory concern’**: **None**? This seems improbable
on the face of it.
- 303 | • page 4.22, Table 4.6—**‘Carbon monoxide’**: Carbon dioxide is a greenhouse
gas. Are there any standards for it?

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- 304 | • page 4.22, Table 4.6—‘**Other toxic air pollutants**’: As noted in the previous comment, pollutants need not be ‘toxic’ to have deleterious effects.
- 305 | • page 4.22, Table 4.6, footnote (a)—‘**does not include emissions from certain laboratory operations**’—Which? Why not?
- 306 | • page 4.22, Table 4.6: Footnotes (a) & (c) are related, and should refer to each other.
- 307 | • page 4.22, Table 4.6: Footnote (f) says what is **not** included. What is?
- 308 | • page 4.22, lines 17-18: ‘**Radioactive airborne emissions...originated from the 100, 200, 300, and 400 areas**’: And these escaped how?
- 309 | • page 4.22, lines 19-20—‘**the newly constructed Cold Vacuum Drying facility**’: How would radioactive emissions escape from this?

Section 4, Subsection 4.3

- 310 | • page 4.23, line 7—‘**represents 0.3 percent of the EPA standard**’: Is this a ‘per year’ standard? Does it take cumulative effects into account?
- 311 | • page 4.23, table 4.7: There is no ‘total’ row or column—there should be.
- 312 | • page 4.23, Table 4.7, footnote (a): ‘**NM**’ & ‘**ND**’ need their own footnotes, and the first occurrence of each should be marked with the footnote citation.
- 313 | • page 4.23, Table 4.7, footnote (b)—‘**HTO = tritiated water vapor; HT = elemental tritium**’: Hydrogen is highly reactive. Is tritium? Are any of the other Radionuclides listed in this table? I think this should be indicated.
- 314 | • page 4.23, Table 4.7, footnotes (c) and (e): Each of these should end with the line (**but see next note**), or if you prefer, you can indicate to note to see, as: (**but see note (d)**). The reason for this is that notes (d) and (f) are special cases of notes (c) and (e).
- 315 | • page 4.24, line 1—‘**Background radiation**’: Cumulative doses **must** include background radiation. Background radiation does harm, and so can’t be considered benign or neutral.
- 316 | • page 4.24, lines 7-9—‘**Background radiation from naturally occurring sources is about 55 mrem/yr...but it varies significantly with elevation and geological conditions**’ (italics mine): How ‘significantly’? A few percent? An order of magnitude? More? The later statement that the variation is ‘on the order of 5 mrem per year’ (page 4.24, line 10) is not sufficient: there is all the difference in the world between ‘on the order of’ and ‘on the close order of’. And how do exposures vary over time?
- 317 | • page 4.24, line 12—‘**excluding radon and radionuclides internal to the body**’: I’ve already asked why radon is excluded, now I ask why internal radionuclides are excluded, since in many cases they will be having a more intense, if localized, effect than external ones.
- 318 | • page 4.24, lines 15-16—‘**The radionuclides are present in varying amounts in nearly all media, soil, air, water, food and biota, including humans.**’: First, I think the punctuation mark after ‘media’ should be at least a semicolon, if not a colon, since what follows is (it seems to me) a **list** of media. Second, what this means is that ‘naturally occurring’ radionuclides are having continuous effects on our lives—the more reason that emission
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standards should take them into account in reckoning acceptable exposure to **manufactured** radionuclides.

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- page 4.24, lines 26-37—(a description of the geology of the **Central plateau**): This paragraph should be **much** earlier in the EIS—perhaps as early as page 1.2, but **certainly** before any description of the waste management areas. It is not possible to understand the layout of the site ^w%, at least a basic picture of the surrounding topography.

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- page 4.24, lines 39-40—‘**Surface topography at the Hanford site is the result of the uplift of anticlinal ridges, Pleistocene cataclysmic flooding, Holocene eolian activity, and landslides**’: There’s a lot of meat in these two lines, so let’s take it bit by bit. ‘**uplift of anticlinal ridges**’: is this ‘uplift’ still in progress? ‘**Pleistocene cataclysmic flooding**’: If (when) the next Ice Age comes, these ‘cataclysmic floods’ could (and probably would) return as well. ‘**Eolian**’: undefined here, this term is later (on page 4.26, line 42) defined as the activity of winds. In this case, it should be spelt ‘**æolian**’ (or, if you eschew diphthongs, ‘**aeolian**’): ‘**eolian**’ has too many possible meanings. It also should be defined the **first** time it occurs, at latest—it really should be in the glossary—or there should be a specific glossary for each section, as suggested above (in the note on p 2.17, line 11-12). ‘**Landslides**’: How frequently do landslides occur? How extreme are they? How extreme **have** they been?

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- page 4.25, figure 4.9: This map contains essential information about the contours of the area. It should be superimposed on several earlier maps (eg figures 4.3 & 4.4), or at least sketched in, as in figure 4.19.
- page 4.26, line 1—‘**basalt bedrock**’: Basalt is an igneous rock: if the bedrock is basalt, this implies volcanism, probably on a massive scale. Given the high degree of tectonic activity in the Pacific NW (part of the circum-Pacific Ring of Fire, after all), what’re the odds it won’t be repeated? At the very least, there needs to be a map of the tectonic plates in the surrounding area (so far as they’re known), especially indicating subduction zones.
- page 4.26, line 18, and page 4.27, figure 4.10—‘**The stratigraphy of the Hanford site consists of Miocene-age and younger rocks**’: Comparing this to the stratigraphic diagram on p 4.27, the argument is made for a **remarkably** young terrain. Either there are deeper levels not sampled, or (more likely) this area has undergone **massive** changes in what amounts to the geological ‘day before yesterday’ (<18 million years). Such recent, massive activity is unlikely to be finished.

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- 328 • page 4.28, Figure 4.11: This is a good diagram, except that porosity should be indicated in the legend. There should be a similar diagram for the aquifers in section 4.5.
- 329 • page 4.28, lines 11-12: '**The Ringold formation...has been eroded in a complex pattern in the north**': Erosion implies eroders: Water? Wind? What is the pace of erosion? What is its variance?
- 330 • page 4.28, lines 14-15:—'**Erosion by the ancestral Columbia River...**': When and how did the Columbia river change its course? How often does it do so, and where is it likely to go next? There should be a map of this. Also, though flooding is largely controlled by the dams, this means that any flooding that **does** occur will be well above normal levels—where will it go?

Section 4, Subsection 4.4

- 331 • page 4.28, line 17—'**ice-age flood deposits**': Roughly how many flood events are involved? On what time scale? As mentioned above (in the note on page 4.11, lines 22-36, and the note on page 4.24, lines 39-40), this is relevant because the current period is generally considered an 'interglacial',
- 332 and there is every reason to believe there **will** be another ice age, **probably in <10,000 years**, unless, as I also mentioned earlier, global warming tips the scales permanently away from ice ages—in which case we'll have other problems, of less familiar types.
- 333 • page 4.29, Figure 4.12: This map is generally good—the colors are well contrasted, and the legend, though small, is legible with difficulty. All it needs is a note in the caption: something like '**see table on pp 4.30-4.31 for description of soil types**'.
- 334 • pages 4.30-31, Table 4.8: This table is in incomprehensible order. Since the entries are not in alphabetical order, some explanation of the rationale behind the order is necessary, because locating a particular type of soil is difficult ^{w/o} this information. Also, the information in the short paragraph on page 4.31, lines 4-6, should be incorporated in the table—not in the 'description' paragraphs, where it could get lost in the mass of verbiage, but under the names, where there is an abundance of blank space. Notes should say something like: '**most (B) of 200W, parts of 200E**', which note would go under the name '**Rupert Sand**'.
- 335 • page 4.31, line 9—'**1850**'—In other words, local records of earthquakes are **very** recent. There is undoubtedly geological evidence of seismic history—enough, perhaps, to establish an historical frequency for, and location of, what amounts to **prehistoric** seismic activity. 1850-2000 is **simply not adequate** to establish a pattern. Also, because there **haven't** been major earthquakes, doesn't mean there **won't** be—remember the New Madrid earthquake in 1811—what if there had been a similar earthquake in this area earlier? There is no doubt whatever that the New Madrid fault will someday go off again; but its location (in far too close proximity to St Louis) is **known**. What if there are similar (or even greater) faults in the Hanford area, whose

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locations are **not** known? Come to that, what would the secondary impacts of a major earthquake **west** of the Cascades? For if there's doubt about whether there will be a major earthquake near Hanford, there's no doubt whatever that there **will** be a major earthquake in western Washington.

Section 4, Subsection 4.5

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- page 4.34, line 16 (or it should be): West Lake is indicated on the maps in this section, and is discussed in the text (notably on page 4.36, lines 12-22.) Why isn't it mentioned here?

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337

- page 4.34, lines 25-26—'**...abundant water provided by the Columbia River**': Somewhat less abundant now, I'd say, given the amount used by Hanford in its heyday. How much **was** used, by the way? Given how much is described later as having been 'discharged' into the ground, Hanford must have removed megatonnes of water and contaminated it. Was this loss of water equivalent to, less than, or greater than the effects of damming the river? What **was** the impact?

338

- page 4.34, lines 33-35—beginning '**The Columbia river is also used for...**': This describes **human** uses only. Later there is some discussion of **nonhuman** uses of the Columbia river (which is, after all, a primary source of water throughout much of its course.) At least **some** mention of nonhuman uses should be made here. (Eg, that salmon pass through on their way to spawning grounds).

339

- page 4.34, lines 39-44: This description delineates Rattlesnake Springs and Snively Springs only in their aboveground incarnations. Have they no **underground** courses? If so, where?

340

- page 4.35, lines 9-10—'**When it occurs, surface flow infiltrates rapidly and disappears into the surface sediments in the western part of the site**': There exist environments in which surface water which 'infiltrates rapidly' is equally rapidly leached back out by sunlight, bringing minerals with it and resulting in a form of natural cement. Does this ever occur in this area?

341

- page 4.36, lines 7-8—'**Groundwater contaminants attributed to Hanford reach the Columbia river through these seeps** (italics mine). That 'attributed to' is a nice touch. Where **else** might these 'contaminants' have come from? ☺ As for whether they reach the river through these seeps: primarily. Probably. But it's never wise to ignore the possibility of unknown outlets.

342

- page 4.36, lines 12-22—'**a description of West Lake**': What lives in the lake? What changes have resulted over the years? Specific concerns: mention is made of '**dissolved solids**' (on line 18). What solids? Later it's mentioned that the solids include salts, so the water is highly saline, right? '**Nitrates**' are

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also mentioned, which implies algæ blooms, unless algæ are precluded by other contaminants, such as the salts. Reference is also made to **'relatively high levels of uranium'** (lines 21-22): **how high?** 'Relative' to what?

343

- page 4.36, lines 24-32—**(A description of bodies designated 'vernal ponds')**: 'Vernal' is 'spring' (the season). The implication is that the main source is meltwater. Is it? What kinds of plants and animals rely on these ponds as sometime sources of water, and as a medium for reproduction?

344

- page 4.36, line 34—**'TEDF consists of two man-made disposal ponds'**: If these ponds are not covered (are they?), animals will drink from them, and some of the water will be lost through evaporation. What contaminants are in them?

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345

- page 4.36, lines 36-37—**'The wastewater percolates into the ground from the disposal ponds'**: But see previous note. Based on sampling, does percolation remove contaminants from the water? Even if it does, where do said contaminants go?

346

- page 4.36, line 42—**'double liners, a leak detection system, and floating covers'**: A start, at least.

347

- page 4.36, lines 43-44—**'Aqueous waste from the LERF is transferred to the ETF via pipelines'**: Do they have 'leak detectors'? How are they isolated? Are they buried? How deep? What about lightning strikes (a risk even in belowground pipes) Earthquakes? How well do they deal with expansion and contraction due to temperature changes?

348

- page 4.37, line 2—**'...containing drain fields where wastewater is authorized...'**: Not enough. Define 'drain fields'. How large are they? How porous? 'Authorized' by whom?

349

- page 4.37, line 6—**'No floodplains exist in the 200 area'**: Now hold on, here! Based on the geological description, **most** of the 200 area was once floodplain. If it changed once, what's to prevent it changing again? Why did it change? Uplift?

350

- page 4.37, lines 7-8—**'The flooding of Cold Creek and Dry Creek infiltrated into the permeable sediments before reaching the 200 areas'**: In the past. But as I've mentioned, past experience, while useful, is not necessarily a predictor of future experience. What happens if there's a flood of such proportions that it overwhelms the 'permeable sediments'? Or so fast-moving that it passes right over them ^{w/o} having time to 'infiltrat(e)'?

351

- page 4.37, lines 10-11—**'Natural runoff generated onsite or from offsite upgradient sources is not known to occur in the 200 areas'** (italics mine): And **artificial** runoff? 'Not known to occur' is not particularly reassuring, either. So what **does** happen to water in the 200 areas? Does it stand about until it evaporates or is absorbed into the ground? There are dangers in that, too: Mosquitoes, not least. Note also that this refers only to **surface** runoff. Clearly the **aquifers** are getting water from 'upgradient' sources.

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- 352 | • page 4.37, lines 10-20—**‘The vadose zone is that part of the subsurface between the ground surface and the top of the water table’**: There’s a more complete (but still inadequate) definition in the glossary (page xxv, line 37). This definition needs a cross-reference to the Glossary definition. For now, I note that the level of the water table varies in many areas, depending on factors like seasonal snowmelts ‘up-gradient’ as you put it earlier. Is it so here?
- 353 |
- 354 | • page 4.37, lines 22-24: These lines contain several undefined technical terms: ‘**glacio-**’ (clearly referring to glaciers), ‘**fluvial**’, & ‘**lacustrine**’. I worked out that the latter two to refer to rivers and lakes by cognates, and by checking my dictionary of word roots and combining forms. Other people, lacking this invaluable source, really **need** definitions.

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- 355 | • page 4.37, lines 29-30—**‘Contaminants may continue to move downward for long periods’**: So they may. They may also move **outward**, depending of the relative permeability of soils beneath and around them, and on the length of time it takes them to move downward (generally, the longer it takes them to move downward, the greater likelihood of outward spreading, though there are obviously exceptions.)
- 356 | • page 4.37, lines 33-34—**‘Except for (a fairly long list of sources), artificial recharge...into the vadose zone ended in the mid-1990s’**: And how much comes from those excepted sources?
- 357 | • page 4.37, line 37-38—**‘Usually, vegetation reduces the amount of infiltration through the biological process of evapotranspiration’**: Perhaps. But depending on the amount of foliage and roots, vegetation can slow falling precipitation, preventing it from running off, and allowing it to be absorbed into the ground, and eventually into aquifers. This is one way plants reduce erosion.
- 358 | • page 4.37, lines 42-44—**(A description of causes of lateral spreading)**: These are all large scale—but there is always osmotic spreading, too.
- 359 | • page 4.38, lines 1-4—**(a description of inhibitors to vertical & lateral spreading)**: These limitations should be thoroughly characterized; but they’re barely sketched here.
- 360 | • page 4.38, lines 6-8—**‘Subsurface source characterization, sediment sampling and characterization, and vadose zone monitoring are employed to describe the current and future configuration of contamination in the vadose zone’**: Where are the results published?
- 361 | • page 4.38, lines 13-14—**‘reverse (injection) wells, French drains, cribs, ponds, trenches and ditches.’**: I’ve mentioned before (see comment abt p 1.16, lines 4-5) that, at the very least, ‘French drains’ and ‘cribs’ need to be defined: now I add that ‘injection wells’ really need a definition, too.
- 362 | • page 4.38, lines 16-17—**‘...tritium and nitrate. The major source for both contaminants was discharge resulting from chemical processing’**: ‘Chemical processing’ of what?

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- 363 • page 4.38, lines 19-20—'**...technetium-99 and iodine-129, that...are mobile in groundwater**': This answers the question raised in the comment about page 3.13, table 3.5—so there should be a footnote from that table to this explanation.
- 364 • page 4.38, lines 21-22—'**Vadose zone sources for these contaminants almost certainly remain beneath many past-practice disposal facilities.**' (italics mine): 'Almost certainly'? What is known about what's there?
- 365 • page 4.38, lines 26-28—'**approximately 50 active and inactive septic tanks and drain fields and numerous radioactive and non-radioactive landfills and dumps have impacted the vadose zone.**'(italics mine): 'Numerous' is not a number. How many?

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- 366 • page 4.38, lines 28-29—'**...solid wastes, which, in most instances, are easier to locate, retrieve, and remediate than are liquid wastes.**': Perhaps. But until they are removed, they are still producing contaminants
- 367 • page 4.38, line 34—'**67 are assumed to have leaked.**' (italics mine): 'Assumed' based on what?
- 368 • page 4.38, line 37—'**The average tank leak**': How often did each tank leak? Are these figures for single leaks, or over time?
- 369 • page 4.38, line 40—'**The amount of contamination remaining in the vadose zone is uncertain**': I'll say!
- 370 • pages 4.38, lines 41-44 & 4.39, lines 1-4: At least 5 sources are listed here, the only comprehensive one being a website address. None of the citations in the reference list gives any hint of how to get these resources; and as I've mentioned before, website addresses are only available to everybody if every depository library has at least one **free, public** web terminal available.
- 371 • page 4.39, lines 4-6—'**...three most widespread contaminants... cesium-137, europium-154...and cobalt-60**': If these have been mentioned before, I've no memory of it.
- 372 • page 4.39, lines 8-10—'**The quantities of contaminants remaining in the vadose zone...depend on the amounts flushed through the vadose zone to groundwater, which is unknown.**': Not even a ballpark figure?
- 373 • page 4.39, line 10—'**significant quantities**': Again, this is not a number.
- 374 • page 4.39, lines 11-12—'**especially...these...sites...that received small amounts of liquid containing large amounts of contaminants.**': This would be concentrated, yes. But even where concentrations are low, if there was a lot of liquid spilled, a 'significant quantit(y)' of contamination could build up.
- 375 • page 4.39, lines 25-26—'**Soil-vapor extraction is being used to remove carbon tetrachloride from the vadose zone**': Assuming this is effective, then what is done with the carbon tetrachloride? If I recall correctly, carbon tetrachloride was considered as a potential rocket fuel, and was rejected because it's too dangerous, largely because it's highly corrosive.
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- 377
- page 4.39, lines 30-33—'**76,500 kg...of carbon tetrachloride had been removed...concentrations monitored...suggest that...remediation has removed much of the carbon tetrachloride...**': Could you make it a little more vague? ☺ It might be useful to have at least a **rough** percentage.
- 378
- page 4.39, lines 38-39—'**...levels of contamination high enough to effectively saturate the gamma-ray detectors. The areas were relogged...with more robust systems**': Ok. The contamination was large enough to overload standard γ -ray detectors—so they got '**more robust**' detectors? Granted, it's necessary to know how much concentration there is—but if it's enough to overwhelm standard detectors, doesn't that imply that something desperately needs to be done?

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- 379
- page 4.39, lines 42-43—'**Data acquired in () of the boreholes showed increases in concentration, suggesting possible continued contaminant movement...**': This is carrying caution to extremes. I'd say that this would be a pretty safe bet. But this doesn't tell much more than that movement occurs. How **much** movement? At what **volumes**? At what **speeds**?
- 380
- page 4.40, lines 2-5—'**(a definition of the concept of 'specific retention facilities')**': This definition is important, and should be in the glossary, at least with a 'see' reference to this definition. It worries me, however, that the word 'Ideally' is used in a definition. When have 'ideal' conditions ever prevailed, especially over long periods of time?
- 381
- page 4.40, lines 8-10—'**The volume of liquid...is thought to be insufficient to flush contaminants through the vadose zone into groundwater. Therefore, the discharged contaminants remain in the soil column, and...represent potential sources for future groundwater contamination.**' (italics mine): '**Thought to be**'? What kind of monitoring is there? Over what period of time is it likely that these contaminants will move up, down, and sideways? And don't think they won't move up, either. Remember erosion and capillary action, if nothing else. And where there are 'groundwater mounds', as discussed later (for example on pages 4.43 & 4.50), this could induce upward movement of contaminants, too.
- 382
- page 4.40, lines 12-14—'**...changes...had occurred since 1992...indicating continued movement of contaminants in the vadose zone years after the facilities ceased operation.**' No surprise. Again, how **much** movement?
- 383
- page 4.40, lines 27-29—'**(an explanation of why the confined and unconfined aquifers are treated as one system for the purposes of characterization)**': Fair enough, but the hindrances to intermovement do exist, and must be taken into account.
- 384
- page 4.40, lines 31-32—'**...more porous tops and bottoms of basalt flows**': More porous because of erosion or because of chemical reactions, or because of gas bubbles in the original formation?

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- 385 • page 4.40, lines 38-39—'**...enhanced vertical communication with the unconfined aquifer system**': Up, down, or both?
- 386 • pages 4.40, lines 42-43, and 4.41, lines 1-2: This really needs a diagram—like figure 4.11 on page 4.28, with the addition of arrows to show the direction of water flow.
- 387 • page 4.41, line 7—'**The Yakima River may also be a source of recharge**': Hadn't you better find out?
- 388 • page 4.41, line 21—'**facies**': This word, in particular, needs defining, as it has different meanings in different fields.
- 389 • page 4.41, line 24—'**impermeable**': **Nothing** is 'impermeable'. You might get away with using the term if you add some qualifier—say 'almost', or 'nearly'.

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- 390 • page 4.41, lines 26-27—'**a description of water flow in the unconfined aquifer**': Does this represent the current state of affairs? How was it changed by massive 'artificial recharges' in the past, and how has it changed now they're (partially) remitted? There are more complete answers further on (what's known of them, anyway—so shouldn't there be cross-references?)
- 391 • page 4.41, lines 33-34—'**As the river stage rises, a pressure wave is transmitted through the groundwater.**' With what results?
- 392 • page 4.41, lines 37-42—'**a comparison of 'natural' and 'artificial' aquifer recharge rates**': These rates are not expressed in the same units of measurement, making comparison impracticable. Also, there should be some indication of whether 'artificial recharge' rates were constant, and, when they varied, by how much.
- 393 • page 4.42, Figure 4.16: Again, this map **needs** a coordinate system. There are **far** too many broken lines, indicating inferred water table contours. The legend should emphasize that the contours are in meters. There's a section between what I presume is an extension of the Yakima Ridge (it's not labeled), and the Rattlesnake Hills where the contour lines are parallel, straight, and very close together—what **is** that? I'm not familiar with 'NAVD88': what is it, and **where** is it?
- 394 • page 4.43, Figure 4.17: Again, this needs a coordinate system—otherwise it's pretty clear.
- 395 • page 4.43, lines 6-7—'**a description of water table rises in certain areas**': 'After the beginning of Hanford operations' doesn't establish a timeframe. How long did these rises take to develop?
- 396 • page 4.43, lines 14-15—'**Water levels have declined over most of the Hanford Site since 1984 because of the decreased wastewater discharges**': So the water table is lower? Has **outward** flow decreased?
- 397 • page 4.43, lines 17-19—'**Small groundwater mounds also exist (in other places). The contour interval in Figure 4.16 is too large to show these**

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- 397 (cont) | groundwater mounds': This calls for an insert, at the very least, or another map.
- 400 | • page 4.44, lines 1-2—'**The saturated thickness and flow conditions in the unconfined aquifer are expected to return to pre-Hanford conditions with the decline and eventual cessation of artificial discharges at Hanford**': And those conditions were? 'Cessation' when?
- 401 | • page 4.44, line 5—'**...some areas of the aquifer may actually dry out**': Leaving behind contaminants to be picked up by future water flows in the area, of which there are bound to be some? And also concentrating the contaminants in the pockets of water that remain?
- 402 | • page 4.44, lines 10-14—'**(a prediction of how water flow will (likely) change in future)**': And if it does so change, how polluted will the new flow be?
- 403 | • page 4.44, line 19—'**transmissive unit**': 'Transmissive' from where? To where?
- Section 4, Subsection 4.5
- 404 | • page 4.44, lines 24-25—'**Groundwater beneath...Hanford...has been impacted by radiological and chemical contaminants**': This is abundantly obvious. What amounts?
- 405 | • page 4.44, lines 33-34—'**...the movement of other contaminants is slower because they react with or are sorbed on the surface of minerals within the aquifer or vadose zone.**': So they are dispersed, move slowly, and are dangerous longer, too: a triple whammy!
- 406 | • page 4.44, lines 34-35—'**Groundwater contamination is...being actively remediated in several areas...**': So how's it going? And is this all that's going to be done, or is it a pilot project?
- 407 | • page 4.44, line 39—'**(MCL) and...(DWS)**': How do these standards allow for synergistic effects? After all, it's not like you get cesium-137 one day, and Iodine-129 the next.
- 408 | • pages 4.44, line 43, and 4.45, line 1—'**State**': Why is the word 'State' written in a different font in these 2 lines?
- 409 | • page 4.45, Figure 4.18: The colors of the lines on this map are not adequate, as there is not enough contrast between them. Also, note that several types of contamination overlap in several areas—overlap that **must** increase with time.
- 410 | • page 4.46, Figure 4.19: A little better, but still not enough contrast—and there are too many broken lines, indicating uncertainty.
- 411 | • pages 4.47-4.48, Table 4.9: The second column is labeled: '**DWS or MCL [DCG]**': This doesn't make any sense. How does one tell which is DWS, and which MCL? One or 't'other should be marked off with punctuation as the DCG is.
- 412 | • pages 4.47-4.48, table 4.9: The footnotes should be on both pages, or the table should be placed on opposite pages, not on the recto & verso of one page.
- 413 | • page 4.48, Table 4.9—'**Note...blank spaces mean that a constituent is not of concern...**': Meaning not present, or not abundant?
- 414 |

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- 415 • page 4.48, Table 4.9: Footnotes (b) and (c) are unclear.
- 416 • page 4.49, line 1—'**strontium-90**': Note that strontium-90 is of concern not only for radiological reasons, but because it replaces the calcium in bones, and is not as strong or as flexible. Do any of these other radioisotopes have similar secondary effects?
- 417 • page 4.49, lines 5-7—'**a list of regulated nonradioactive chemicals**': Many of these chemical names need to be defined. Most of us know what 'cyanide' is—but what is 'cis-1'?
- 418 • page 4.49, line 12—'**The decrease is probably due to shrinkage of tritium plume...**': Shouldn't there be some article before 'tritium plume'? A tritium plume? **The** tritium plume? That aside, it's already been established that tritium moves faster and decays faster than many radionuclides—so the rate of decrease will not stay constant.

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- 419 • page 4.49, lines 24-25, the sentence beginning '**Levels of tritium...**' and ending '**unconfined aquifer**': This sentence is not clear: it's not clear whether the contamination or the decline is a result of the movement.
- 420 • page 4.49, line 37—'**...evidence appears of erosional channels...**': What evidence? What's been done to confirm or disprove it?
- 421 • page 4.49, line 41—'**approximately 70m**': Varying by how much?
- 422 • pages 4.49, line 44 and 4.50, line 1—'**Groundwater in the 200 West Area generally flows east toward the 200 East Area**': Thereby further complicating an already complex picture.
- 423 • page 4.50, line 4—'**...the remaining flow branching...toward the Columbia River**': Percentage?
- 424 • page 4.50, lines 6-14—'**(A description of variation in natural recharge rates)**: This could really use a map like the ones for soils and vegetation.
- 425 • page 4.50, lines 32-32—'**A downward gradient has formed in the B pond vicinity, due to groundwater mounding for discharges**': How steep?
- 426 • page 4.50, line 42—'**Groundwater is monitored (near) the LLBGs as a result of interim status requirements**': And afterward?
- 427 • page 4.51, lines 1-2—'**...groundwater has not been monitored within...the area of the 218-W-6 Burial Ground, as the site has never received waste.**': It should still be monitored, if for no other reason than as a control—and against future need, as a baseline, if needed.
- 428 • page 4.51, lines 13-14—'**bis (2-ethylhexyl) phthalate**': Aside from gathering that it's an organic compound (and probably a polymer), I've no clue what this is. How many people would?
- 429 • page 4.51, lines 18-20—'**The critical mean value for specific conductance was exceeded in an upgradient well, but it was due to increases in sulfate and nitrate from upgradient sources.**': What are the standards for 'specific conductance'? For that matter, what is 'specific conductance'? Where was the sulfate and nitrate coming from? And if there's contamination, there's

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contamination. It's good to know if it's not coming from you, and if it's not as bad as it might be, but it's still contamination.

430

- page 4.51, line 22—**'The WDOH and DOE annually negotiate installation of future monitoring wells...'**: Has anything come of these negotiations?
- page 4.51, lines 30-31—**'The groundwater removed during pump-and-treat operations does not require treatment based on its radionuclide content.'**: From the phrasing, not because it has none, but because the content is too small to exceed standards. How much harder would it be to treat it while you've got it handy?

431

Section 4, Subsection 4.6

432

- page 4.51, line 33—**'Biological and Ecological Resources'** (italics mine): I let you get away with 'Geologic Resources' (page 4.24, line 18) because rocks aren't (provably) alive. But the habit of calling living things 'resources' is a destructive one, and shouldn't be followed.

433

- page 4.51, lines 41-42—**'Remnants of past agricultural practices are still evident.'**: So what are they? Introduced plants and animals? Disturbed ground where there were fields? Less-quickly-growing plants losing ground to more rapidly recovering ones because of forage? That sort of thing? What else? Were the farmers using pesticides, for example, and are the ghosts of any of **those** still lingering in the ecosystem?

434

- page 4.52, line 3—**'anadromous'**: This needs a definition. In this case, since it's only mentioned a few times, you **might** get away with a footnote. My dictionary says it means 'travelling upstream to spawn'. Is this too long for a parenthetical addition?

435

- page 4.52, line 4—**'...numerous wildlife and vegetation'**: 'Plentiful' or 'abundant' might be better here, unless what you mean is numerous species, in which case say so.

436

- page 4.52, lines 6-12—**(A description of range fires and their effects)**: What were the fire management practices of the local tribes? Did they deliberately start fires, for game drives or to maintain their preferred ecology? Did they fight the fires? I ask because it'd have an impact on the state of the ecosystems before European settlement, and because different tribes had different practices in this regard. Also, range fires were hardly invented by humans, though they'd have gotten worse as the climate got dryer. How did non-fire resistant plants first become established? Are the fires worse now? Over what time period have they worsened, if they have?

437

- page 4.52, line 14—**'A Hanford Site Wildland Fire Management Plan has been prepared...'**: Excellent! Do we get even a **hint** of where it is? Better yet, can we see it?

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- 438 • page 4.52, lines 20-21—**‘Plants at the Hanford site are adapted to low annual precipitation, low water-holding capacity of the rooting substrate (sand), dry summers, and cold winters.’**: Might want to add ‘predominantly’ before ‘adapted’, as there are clearly exceptions (eg around permanent water sources). Generally, plants in such conditions tend to store water when they get it, against future need. Is this the case here?
- 439 • page 4.52, lines 25-27—**‘(a general description of the introduction and ‘proliferation’ of nonnative plants):** 20% hardly constitutes a ‘proliferation’, **unless** the introduced species have significantly larger #s of individuals/species than native species. **Do** they?
- 440 • page 4.52, line 26—**‘vascular plants’**: ‘Vascular plants’ implies ‘non-vascular plants’. Are there any? How many species? Where?
- 441 • pages 4.53 & 4.54, Figure 4.20 Again, the map and the legend should be on opposite pages, not on the recto and verso of the same page. In this case, particularly, it’s very hard to refer back and forth.
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- 442 • pages 4.55-4.58, Table 4.10: There should be a similar table of common animals, (and, if at all practicable, a map showing their ranges), and that table should have a column indicating burrowing animals. **This** table should have a 3rd column, probably labeled ‘notes’, where such features as deep roots, fire resistance, nonnative status, water retention, etc should be noted as relevant.
- 443 Also, what on **Earth** is a ‘forb’? These undefined technical terms from a wide spectrum of different fields are growing tiresome. And, as I’ve
- 444 mentioned before, the footnotes should be at the bottom of **each** page.
- 445 • page 4.59, lines 2-6—**‘(A discussion of Russian thistle and gray rabbitbrush as dispersers of contaminants.)**: It’s (reasonably) clear how they **get** the contaminants—it’s less clear how they **disperse** them. Seed dispersion is one way (are the seeds dispersed by wind, or by other vectors?); but how else? By being eaten? By being raided for nesting materials? What?
- 446 • page 4.59, lines 6-7—**‘Vegetation samples ...are collected annually...and analyzed for (a whole list of noxious stuff)’**: Find any? ☺ Seriously, where are the results of these analyses published?
- 447 • page 4.59, lines 11-13—**‘Most of the waste disposal and storage sites are covered by nonnative vegetation, or are kept in a vegetation free condition with the use of herbicides, because the plants could potentially accumulate waste constituents’**: So the ‘nonnative vegetation’ has shallower roots, or what? As for the use of herbicides, even if they were 100% effective (and they’re far from it,) they’re dangerous in themselves—and what about synergistic effects if they get mixed with the ‘waste constituents’? As they almost certainly would be, since the removal of vegetation leaves unprotected soil, particularly subject to erosion by wind and water.
- 448 • page 4.59, lines 20-21—**‘West Lake...a unique habitat...characterized by highly saline conditions.’**: ¿Unique? What, no other like it in all the cosmos? Or just ‘unique’ in that neck of the woods? This paragraph should

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- 448 (cont) | have a cross-reference to the earlier (sketchy) description on page 4.36, lines 3-22. And there needs to be more description of its inhabitants. For example, are there brine shrimp, as there are in other 'highly saline' bodies of water?
- 449 | • page 4.59, lines 21-22—**(A description of the predominant plants of West Lake)**: Here's one place where that 'comments' column suggested for Table 4.10 would come in handy. I know plantain is a nonnative species—are any others?
- 450 | • page 4.59, line 26—**'terrestrial vertebrates'**: The problem with the term 'terrestrial' is that it obscures creatures like bats. Speaking of which, what about the bats? It seems improbable that there are none, so what are they? Also, invertebrates are given short shrift, at best. Insects & arachnids are often burrowers, and while many have very narrow ranges, others travel further afield.

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- 451 | • page 4.49, lines 30-33—**(A very short list of mammals on the Hanford site)** Here's where a table of common animals would come in handy—notes would include comments like 'wide-ranging' (for the coyote) and 'known vector of Hantavirus' (for the deer mice)
- 452 | • page 4.59, lines 37-38—**'Elk...increased from approximately 8 animals in 1975 to 900 in 1999'**: If all 900 came from a founder population of 8, they must be **terribly** inbred. If other elk migrated into the area, it should be mentioned.
- 453 | • pages 4.60 & 4.61, Figures 4.21 & 4.22: These maps need to be earlier: they break up the text here. At the very least, there should be a note at the end of page 4.59 saying 'continued on page 4.62'. Otherwise the maps aren't bad—the color contrast is better, at least. Two things: The yellow squares in the legends should have borders around them, as they fade into the white page backgrounds; and, how are barren lands coded?
- 454 | • page 4.62, line 15—**'Ground-nesting species'**: Here's another place where a table would be handy. Ground-nesting species are obviously especially vulnerable nesting on contaminated soils—so **are** any?
- 455 | • page 4.62, line 29—**'raptor species'**: Here, again, a table would be useful. Raptorial birds are apex predators, and so more vulnerable to contaminants concentrated on their journey through the food web.
- 456 | • page 4.62, line 35—**'steel power line towers'**: What are the hazards of nesting on these towers?
- 457 | • pages 4.62, lines 37-43, and 4.63, lines 1-2—**(A very short description of insects in the Hanford area)**: Are arachnids counted as insects? What about annelid and polychaete worms? Approximately what percentage of insect species would be defined as 'burrowing'? Also, though it's stated that there're a large # of insect species, it's not stated whether there are large #s of individuals/species—are there? (If so, there's even more basis to argue for bats. ☺)

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- 458 | • page 4.63, line 7—'**Pacific tree frog**': ¿A tree frog ^{w/} trees? Must be an interesting story behind that.
- 459 | • page 4.63, lines 11-12—'**West Lake has shrunk and is presently a group of small isolated pools and mud flats**': All these fragments about West Lake either need to be consolidated, or cross-referenced. This fragment prompts me to ask: Is this a prime mosquito breeding area?
- 460 | • page 4.63, lines 21-22—'**The Columbia River...supports...plankton, benthic invertebrates, fish, and other communities**': 'And other communities'? Think you could be a little more general? Plankton, benthic invertebrates, bottom-feeding fish, and filter-feeders are major concentrators of contaminants, which they spread to creatures that eat them.
- 461 | • page 4.63, lines 27-29—'**Plankton populations...are influenced by...manipulation of water levels...upstream and downstream...**': And do they take this into account when they do these 'manipulation's'?
- 462 |

Section 4, Subsection 4.6

- 463 | • page 4.63, lines 32-33—'**There is generally insufficient time for characteristic endemic groups of phytoplankton and zooplankton to develop in the Hanford Reach**': ¿Because they move through it too fast? This isn't clear. So are they similar to populations elsewhere in the river, then? And do they tend to be in a particular stage of development when they pass through?
- 464 | • page 4.63, lines 34-35—'**irrigation water return canals that discharge into the Columbia River...**': How much water? How much has it been contaminated by pesticides, dissolved solids, etc.?
- 465 | • page 4.64, lines 4-5—'**Snively Springs, located further west and at a higher elevation than Rattlesnake Springs...**': This is the first time the higher elevation has been mentioned—there should be a cross reference to (and from) the earlier discussion of Snively Springs—page 4.34, lines 39-44.
- 466 | • page 4.64, lines 5-8—'**(A description of plants found in and around Snively Spring)**': Ok, you've got the plants covered. What about animals?
- 467 | • page 4.64, lines 12-16—'**(A definition of endangered, threatened, and candidate species)**': This is a critical definition. It needs to be in the Glossary, or at least to have a cross-reference from same.
- 468 | • page 4.64, lines 18-19—'**No (threatened or endangered) plants or mammals...are known to occur on the Hanford site.**'(italics mine): 'Known'? How often are surveys done? Are there any species endemic to the Hanford site, that might become threatened or endangered because of contamination?
- 469 | • page 4.64, lines 21-22—'**A survey of the 200 Areas observed no threatened of endangered species.**': One survey? Over what period of time? Some of the threatened and endangered species cover quite a bit of ground, you know.
- 470 | • page 4.64, lines 39-40—'**The common loon (Gavia immer) is the only Washington State sensitive animal found on the Hanford Site**': So why

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isn't it listed in Table 4.11? It'd hardly increase the size of the table, and it's relevant.

471

- page 4.65, Table 4.11—'Loeflingia'—This should probably be spelt with a diphthong, so: 'Lœflingia'. I know—it makes it harder to search—but not substantially so, at least with Word's search engine.

472

- page 4.66, line 8—'unresolved taxonomic problems': I know how gnarled and snarled those 'taxonomic problems' can be—but where a species may be threatened or endangered, isn't it worth the extra effort to resolve them?

473

- page 4.66, line 13—'...although their populations may be reduced.': Meaning that even if they recoup their population losses later, there is almost certainly an unrecoverable loss of genetic diversity.

474

- page 4.68, Figure 4.23—This figure should have different colors for endangered plants and animals—it's only one more color, after all. The colors should be such that if they overlap, it'll be clear there're both plants and animals endangered in that area.

Section 4, Subsection 4.6

475

- page 4.69, lines 1-20—(A description of a survey of the 200 areas for endangered and threatened species): Given the remote nature of the observations, it was probably not possible to assess the health of the creatures in question. Because a plant or animal is present and alive, that's no guarantee it's thriving.

Section 4, Subsection 4.7

476

- page 4.70, lines 4-5—'...many have knowledge of the ceremonies and life ways of their ancestral culture.': Which, unfortunately, is likely to have been fragmented by losses due to epidemics, etc.

477

- page 4.70, lines 7-22: This paragraph approaches poetry. Mind, I'm not complaining: where poetry is appropriate, poetry should be used. I'd just like to see a little poetry for the plant and animal life, and in the rather dry description of the landscapes.

478

- page 4.70, lines 9-10—'Smoholla, a prophet of Priest Rapids, who brought the Washani religion to the Wanapum and others during the late nineteenth century...': Where is a history of this available?

479

- page 4.70, line 19—'...hunting grounds, plant gathering areas...': Were there no agricultural or even horticultural practices? Perhaps not, in so arid an area—yet there were in some other arid areas.

480

- page 4.70, lines 24-26—(A description of the relevant treaties, and who did, and who didn't, sign them, and when.): Under what conditions were these treaties signed? What did the government promise in return? How have these promises been kept?

481

- page 4.70, line 29—'...prehistoric human activity in this largely arid environment': This is one of many places where paleoclimatological data would be helpful: Has this area always been arid? Or has it, as in many

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adjacent areas, become more arid after the melting of the glaciers and the uplift of the Cascades? The latter seems more likely. Also, there must have been a period, varying from about 100 to as much as 400 years, which should be called 'proto-historic'—when there were **some** sketchy historical records of these people, probably largely inaccurate, as gossip tends to be, but existent, and affecting people's decisions. Lewis & Clark may have been the first 'Euro-Americans' to traverse the area (at least they were the first who kept good records,) but others were in surrounding areas for some time before—trading, fishing, hunting, etc.—and they were having effects before the official dates of Euro-American arrival.

Section 4, Subsection 4.7

482

- page 4.71, lines 4-23—(A description of various archæological surveys.): Did any of these surveys include aerial photography? Will any, in future?

483

Often, archæological sites can **only** be seen on the surface in aerial photographs, where slight differences in coloration give hints to what's beneath. If such surveys were **not** made, many sites may have been missed. If they were, they should be mentioned. Another thing that should be mentioned is whether salvage archæology was carried out in places where buildings were built, or whether building sites were changed when archæological sites were found. Probably a combination of the two, because often sites are discovered only when digging (for foundations, etc) has already commenced, by which time the site has already been disturbed, and salvage archæology represents the only possible form of preservation. Still, it should be mentioned. On a lesser note, 'archæological' is misspelled in line 6. I'll not quibble over the diphthong (though it's traditional)—but 'archæological' has **never** been spelt with a 'y' ☺.

484

- page 4.71, lines 30-31—'Other visitors included fur trappers, military units, and miners...' Bringing with them, if they were at all typical, violence and disease, as well, probably, as forging bonds of friendship, partnership, and kinship along the way, and probably engendering children.

485

- pages 4.71-4.72, subsection 4.7.2: This section makes no mention of when African Americans came. What about 'buffalo soldiers'? Did any come here? Did African Americans work cowboys? Did they come in numbers to settle after emancipation? Do some of them have ties of kinship and culture with the tribes?

486

- page 4.71, lines 40-42—'The towns and nearly all other structures were razed...after the US government acquired the land': Where were the people moved? How were they compensated? Was any record made of the

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buildings before they were destroyed? What historical records remain of them?

487

- page 4.72, line 26—‘**...bomb that destroyed Nagasaki to end World War II...**’ (italics mine): This is a **very** contentious historical point, and shouldn’t be stated as a fact. Perhaps the italicized words should be modified to something like ‘near the end’, which would recognize the timing without making controversial statements about results.

488

- page 4.73, lines 22-24—‘**The remaining portions of the road...have been disturbed or destroyed...and are classified as non-contributing.**’: What does ‘non-contributing’ mean? Is this essentially a way of saying, ‘It was destroyed, so it doesn’t matter anymore?’

489

- page 4.73, line 38—‘**resources**’: Again, historical and archaeological sites are **not** ‘resources’. ‘Features’ is a better archaeological word, if you need a substitute, though it has a technical meaning, and shouldn’t be used loosely—but I believe it’d be appropriate in this context.

Section 4, Subsection 4.7

490

- page 4.74, lines 24-25—‘**Industrial artifacts in T Plant and other facilities in the T Plant complex were identified and tagged for future exhibit purposes.**’ How does this impact plans to use the T Plant for waste treatment and/or disposal?

Section 4, Subsection 4.8

491

- page 4.75, lines 14-16—‘**...almost 2200 employees of the former management and operations contractor were moved into six enterprise and were no longer counted as official Hanford employees**’: And what happened to their benefits through all this?

492

- page 4.75, line 17—‘**...total jobs in the local economy (89,500)**’: As much as to say that this is a sparsely populated area.

493

- page 4.75, line 23—‘**...non-farm wage and proprietor income...**’: What does this mean?

494

- page 4.75, lines 26—‘**(A partial description of employee residence patterns)**: Do any live in Mountain Time? This is relevant because people who live in one time zone and work in another often suffer a mild form of jet lag.

495

- page 4.75, lines 36-37—‘**...mothballed nuclear power plants (WNP-1 and WNP-4), which never were completed...**’: How nearly completed? This needs a cross-reference to the earlier reference (page 4.6, line 11)

496

- page 4.75, lines 39-41—‘**As part of an effort to reduce electricity production costs, Energy Northwest headquarters decreased the size of its workforce from over 1900 in 1994 to 1016 in 1999.**’: Unless there is some technology breakthrough that reduces the number of workers needed (and I’ve seen no glimmering of any such,) this is very false economy. Tired workers

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make mistakes—a Chernobyl-type accident would cost **much** more than the extra workers.

497

- page 4.75, lines 41-41—**‘As part of a refueling and maintenance project, employment had grown to 1117 in April 2001.’**: But this is temporary. How many will stay on?

498

- page 4.76, line 9—**‘interstate’**: What percentage are international?

499

- page 4.76, line 10—**‘average income’** (italics mine): Mean, median, or mode?

500

- page 4.76, lines 13-14—**‘Farm proprietors’ income...was estimated to be 18.5 million’**: Each, or *in toto*?

501

- page 4.76, lines 23-29—**‘Other Major Employers’**: What about non-Hanford professionals: Teachers, librarians, lawyers, doctors, etc.?

502

- page 4.76, line 40—**‘median income’**: The mode should be included, too.

503

- page 4.77, subsection 4.8.1.3—**‘Retirees’**: What percentage of these retirees are farmers and farm workers? What are **their** sources of income?

Section 4, Subsection 4.8

504

- page 4.77, lines 37-41—**(A definition of minority populations and of low-income persons)**: This is a central definition, and needs to be at least marked off some way.

505

- page 4.78, line 11—**‘Yakama Reservation’**: If this is on any of the maps, I don’t see it (another argument for a coordinate system on the maps, and coordinate reference in the text.) If it’s **not** on the maps, it **should** be.

506

- page 4.78, lines 20-21—**‘Detailed area income statistics will not be available from the 2000 Census of Population until the summer of 2002’**: Meaning now? So, will they be incorporated into the final EIS?

507

- page 4.78, lines 26-30—**‘The 1998 values are Census-Bureau model-based estimates; therefore the differences between 1989 and 1998 reflect differences in methods, as well as actual changes in the incidence of poverty. Even so...’**: There is no ‘even so’. Unless or until the degree of difference caused by difference in methodology is quantified, no meaningful comparisons can be made.

508

- page 4.78, footnote (a): **‘Census model estimates are not available for low-income households. The data appearing in table 4.15 are for all persons in low-income status.’**: Not even an estimate of the average # of people/household?

509

- page 4.79, Figure 4.25 (?): As I’ve already mentioned, I think this is meant to be figure 4.24. This map, and the next, really needs to have counties marked on it, especially since the tables give information by county. In addition, as I’ve also mentioned before (see note on page 4.3, lines 8-9), there needs to be a map of population density. On the face of it, this map seems to present a pretty compelling case—but % data on population density, it’s not as clear as it might be.)

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- 510 | • page 4.80, Table 4.14: In general, numbers in a table should be opposite their titles: and in this table, they're not.
- 511 | • page 4.80, Table 4.14, footnote (b)—**'Hispanic origin is not a racial category'**: No more it is, because there is no such thing as a 'racial category' among humans, which is why anthropologists declared a moratorium on the term many years ago. The fact that nearly half a million people out of a population of less than 6 million designate themselves as 'Other' or of 'Two or More Races', is an indication that people are beginning to realize the folly of the concept that there exist 'racially pure' categories among humans, and that the main reason most people continue to describe themselves as being of one 'race' has more to do with tradition than with any biological reality.
- 512 | • page 4.81, Table 4.15: Listing the counties in alphabetical order, while logical, gives no hint of their locations. Also, placing 'Washington' above the line, and in bold type, and placing 'Oregon' below the line and in non-bold type, belittles Oregon; which is surely not your intent. Suggestion: draw a line through the table, and convert 'Oregon' to bold type.

Section 4, Subsection 4.8

- 513 | • page 4.81, line 6—**'quite similar'**: Why not just give a range of percentages, easily enough figured? Something like 'about 2-5% higher'? Or you could be more precise, if you prefer.
- 514 | • page 4.82, Figure 4.25: I'd say this really is Figure 4.25. As noted in the comments on page 4.79, Figure 4.25 (?), this map also needs to indicate counties, not just towns.
- 515 | • page 4.83, subsection 4.8.4—**'Housing'**: It's no good giving prices for different years, % allowing for inflation, etc. The numbers are not comparable, though they may be closer from year to year than from decade to decade, say. At least give the inflation rate.
- 516 | • page 4.83, lines 17-18—**'The Tri-Cities serves as a regional transportation and distribution center with major air, land, and river connections.'**: Therefore, the information on transportation of wastes is even **more** critical.
- 517 | • page 4.83, lines 20-21—**'Amtrak provides passenger rail service with a station in Pasco'**: Does it still? Will it for much longer? To where?
- 518 | • page 4.83, lines 24-26—**'These facilities are located on the 525-km....long commercial waterway that includes the Snake and Columbia Rivers and extends from the ports of Lewiston-Clarkston in Idaho to the deep-water ports of Portland, Oregon and Vancouver, Washington.'**: This is unclear. A map would be really helpful, here.
- 519 | • page 4.83, lines 30-39—**(A description of air travel in the area)**: How have things changed since 9/11?
- 520 | • page 4.83, line 43—**'54 buses'**: How many routes? And do the buses run 24 hours a day?
- 521 | • page 4.84, line 2—**'Intercity bus transportation is available.'**: Greyhound, or what?

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- 522 | • page 4.84, lines 4-16—(A description of the ‘regional transportation network’): This also is almost incomprehensible ^{w/o} a map.
- 523 | • page 4.48, lines 18-19—‘asphalt-paved roads’: Are there no unpaved or gravel-paved roads, or are they simply not discussed?
- 524 | • page 4.48, lines 33-34—‘Approximately 87 percent of the workers commuting to the 200 areas are from the Tri-Cities, West Richland, Benton City, and Prosser’: And the rest? And, this being so, it would seem easy enough to set up some sort of park-and-ride transit system, and get a lot of those single-occupancy vehicles off the roads.
- 525 | • page 4.84, line 39—(A definition of ‘AADT’): This is a frequently-used acronym (in this section, at least), and should be in the acronym list. Also, I don’t quite see what use this measure is. Road traffic varies heavily based on season and time of day—so what value has an annual average?
- 526 | • page 4.85, Figure 4.26: Road endings should terminate in an arrow showing where they’re headed, eg ‘_ to Richland’. Also, the locations of the barricades need to be shown on the map.
- 527 |

Section 4, Subsection 4.8

- 528 | • page 4.86, lines 4-7—(A description of the concept of ‘LOS’, and a scale for grading LOS): Having established the scale, why not use it? Give the ratings of the various roadways experiencing LOS deficiencies. Also, it might be useful to mark the definition off, at least—in a text box, for example.
- 529 | • page 4.86, lines 16-19—‘Private vehicles account for 91 percent of the person trips to the Hanford site...Of the...private vehicles only 3 percent are by carpool...with the remain(der) being single occupancy vehicles.’: This is preposterous. Are the emissions from all these vehicles counted in the environmental impacts? Don’t forget to include ‘non-renewable resources’ as well.
- 530 | • page 4.86, line 23—‘The Hanford Site rail system originally consisted of approximately 210km...of track.’: How much of this track is still in usable condition, or could be restored ^{w/o} essentially laying new track? How is it maintained?
- 531 | • page 4.86, line 27—‘Prior to 1990...’: And since 1990? Has rail transport been completely stopped on these lines for nearly 12 years? If so, my previous question about the condition of the tracks pretty much answers itself, eh?
- 532 | • pages 4.86 & 4.87, subsection 4.8.6—‘Educational Services’: Libraries should be included in this subsection, rather than not being included at all: Libraries count as ‘educational facilities’ if anything does. No doubt the included schools have libraries; but what about public libraries? How many branches? How many volumes? How many professional librarians? What other facilities (such as public web terminals)?
- 533 |
- 534 |

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- 535 | • page 4.86, lines 34-40—(A description of the public primary and secondary schools in the 'Tri-Cities area'): # of teachers and other staff? Average class size? Condition of physical plants? Facilities?
- 536 | • page 4.87, lines 8-15—(A rather discouraging description of tertiary education available in the Tri-Cities area.): My take on this is that if you want a post-secondary education, you'd be well advised to go elsewhere, as there are next to no facilities. Are there any traditional ties with other universities further afield? The main campus of WSU, for example?
- 537 | • page 4.87, lines 19-21—(A very short description of medical center in the Tri-Cities area): Is there a Trauma Center? If not, where is the nearest one? What is the combined # of beds? And if there are only nine medical centers, why not name them?
- 538 | • page 4.87, line 23—'...a broad range of social services...': I dunno—seems pretty basic to me. What about homeless shelters, soup kitchens, and Travelers' Aid, to name three that spring immediately to mind? Or do these fall under the heading of services provided by the unspecified 'private agencies and voluntary human service organizations' in the paragraph below?
- 539 |

Section 4, Subsection 4.8

- 540 | • page 4.87, line 41—'The Hanford Site Fire Department has fire stations onsite,...': Do we even get a hint as to how many stations? With what staff? Where do they get water, and how much is available? What other fire-retardant chemicals are there? Given the havoc wrought by the *24 Command Fire*, what plans have Hanford and area firefighters to deal with future wildfires, which are sure to come?
- 541 | • page 4.88, lines 7-8—'...a well field in North Richland (which is recharged from the river)...': How rapidly?
- 542 | • page 4.88, lines 8—'...groundwater wells': On aquifers? Even so, I can speak from personal experience concerning how slowly these can recharge—it's not unknown for such wells to go an entire winter without recharging, until the ground thaws.
- 543 | • page 4.88, line 11—'These wells serve as the sole source of water between November and March...': Do we get even a hint as to why?
- 544 | • page 4.88, lines 17—'All the power these utilities provide in the local area is purchased from...(BPA): No renewable sources? No wind farms? No fuel cells? Solar? Nothing?
- 545 | • pages 4.88 and 4.89, subsection 4.8.10—'Aesthetic and Scenic Resources': Except for the objectionable use of the word 'resources', this is a good description of the area, making picturing the area easier. It should be moved closer to the beginning—maybe as early as the Introduction.

Section 4, Subsection 4.9

To: Michael S Collins

Letter: L080z-23

- 546 | • page 4.89, lines 18-19—**(A formal definition of ‘noise’)**: This definition should be in the glossary.
- 547 | • page 4.89, line 21—**‘Humans have a hearing range...’**: Unless this is the outermost range ever heard by a human, it might be better to add ‘most’ in front of the word ‘humans’. Speaking as a person who can often hear sounds other humans cannot, and as member of a family some of whom can hear sounds others cannot, the exceptions can be important—some of those sounds outside the normal range of human hearing can be quite distressing.
- 548 | • page 4.89, lines 20-22—**(A definition of ‘decibel’)**. This definition is simply incomprehensible.
- 549 | • page 4.89, line 22—**‘The threshold of audibility ranges...’**: Again, you might want to add ‘For most humans,’ before this.
- 550 | • page 4.89, lines 25-27—**‘Sound pressure levels outside the range of human hearing are not considered noise in a regulatory sense, even though wildlife may be able to hear them.’**: They should be. For example, if bats can’t hear to echolocate, they won’t be very effective at controlling insects.

Section 4, Subsection 4.9

- 551 | • page 4.89, lines 29-32—**(A definition of how ‘noise’ is reckoned)**: Not all sounds are created equal, from the point of view of ‘noise’. For example, rhythmic noise is tolerated better than arrhythmic, familiar noises better than unfamiliar, etc. Above a certain loudness, of course, all sounds become painful and/or disabling—but that level varies from person to person—and the other factors need to be taken into account for sounds that are less loud, but still could be ‘noise’.

Section 4, Subsection 4.10

- 552 | • page 4.90, lines 33-37—**(Definitions of TRCs, LWCs, and LWDs)**: How sensitive are these measures to late-developing, chronic conditions, such as Carpal Tunnel Syndrome? Also, what does ‘recordable’ mean in this case? Not all workplace-related injuries, after all, leave physical scars, or result (immediately, at least) in ‘lost workdays’. Examples include such advanced exhaustion that the worker has no energy left for family and community activities after work; and the continuing erosional fatigue to the worker’s values & integrity from the grinding wheels of procrustean bureaucracy—but try graphing those! ☺
- 553 |

Section 5

Or it would have been, if I’d had time. This is as far as I got.

To: Michael S Collins

Letter: L080z-24

**STATEMENT BY REPRESENTATIVE DAVID WU
DRAFT HANFORD SITE SOLID WASTE
ENVIRONMENTAL IMPACT STATEMENT PUBLIC MEETING
PORTLAND, OR - JULY 30, 2002**

I appreciate the opportunity to comment on the Department of Energy's draft Environmental Impact Statement, and I regret that I could not be here in person this evening.

1 | As all of you are aware, the Hanford Site is perhaps the most radioactively contaminated facility in the United States. Based on DOE estimates, 67 of 177 underground storage tanks containing the most lethal radioactive waste have leaked within miles of the Columbia River. The remaining tanks have all come close to reaching, or exceeded, their design life. DOE estimates that 450 billion gallons of contaminated liquid were discharged into the soil during Hanford's fifty years of operation.

2 | Despite the huge challenges the Northwest faces at Hanford, there is some room for optimism. DOE is looking for ways to accelerate the cleanup and to use the somewhat scarce federal dollars more efficiently and effectively. We may yet see a stable Hanford Site within our lifetimes.

The second reason for optimism is the work of concerned citizens like you who know that the decisions we make today affect the kind of world we leave to our children tomorrow. I applaud you for taking the time to be at this meeting tonight to discuss what is perhaps the most serious public health and environmental issue facing our region.

3 | Tonight's topic, the draft EIS relating to the transport and storage of defense related nuclear waste at Hanford, is critical to the region. I have grave concerns about moving new waste to Hanford, especially when we have not even contained and treated the existing waste.

4 | As we sit here tonight, there are still millions of gallons of high-level nuclear waste sitting in aging and unreliable storage tanks. Our first priority must be to remove that waste and treat it, before we even consider increasing the amount of new waste shipped to Hanford.

5 | The EIS does not demonstrate that Hanford is capable of accepting the proposed level of new waste, nor that Hanford is capable of safely treating it over the long term. For instance, the EIS proposes storing massive amounts of this new waste in soil trenches for an unspecified period of time. Before we in the Northwest
6 | consider proposals to allow an increase in the amount of waste shipped to
7 | Hanford, DOE has an obligation to demonstrate that its treatment and disposal proposals are safe beyond a doubt. Further there must be no lingering questions

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about whether the cost for waste treatment and disposal takes money away from cleaning up the existing waste that currently threatens our health.

8

The risks associated with dramatically increasing the amount of nuclear waste moving across our highways must not be forgotten. The estimates of the number of shipments that have been made are staggering. Under the proposal before us, we, the residents of Oregon, would shoulder a disproportionate share of the risk of catastrophic accident. This risk is exacerbated by continued warnings about terrorists trying to acquire nuclear material. The onus must be on the Department of Energy to demonstrate that its proposal is safe, that its methods of transportation are tested, and that every contingency has been planned for. The document before us does not meet that test.

In closing, I respectfully request that, in revising its Environmental Impact Statement, the Department of Energy takes into account the concerns that I, and those of us here tonight, have voiced. I thank you for listening and I look forward to working with you on this important challenge.

Letter: L081a

Congress of the United States
House of Representatives
Washington, DC 20515

Statement of U.S. Representative Jim McDermott
On U.S. Department of Energy's
Hanford Site Solid Waste Environmental Impact Statement
(HSSWEIS)
And Plan to Designate Hanford a National Radioactive Waste Dump

August 7, 2002

1 **In pursuit of nuclear weapons production our federal government made Hanford the most contaminated land area in the hemisphere. The legacy of nuclear weapons production includes increasing contamination entering the Columbia River, risks from explosive and flammable radioactive wastes stored or buried, and 54 million gallons of High-Level Nuclear Waste stored in tanks. Much of that contamination occurred in recent decades as the U.S. Department of Energy (USDOE) claimed exemption from independent external environmental regulation.**

2 **Under the Hanford Clean-Up Agreement, our nation is now spending more than one and a half billion dollars a year to cleanup Hanford. But instead of honoring that commitment, the Bush Administration released plans earlier this year to leave radioactive waste in many of the High-Level Nuclear Waste tanks that already have leaked more than one million gallons of waste – waste which is moving through the soil and groundwater to the Columbia River. One of the new national "goals" adopted by the Bush Administration in its "Review" of the cleanup program on February 4th, and in the Hanford implementation plan released on May 1st, is to make**
3 **Hanford a national radioactive waste dump for radioactive low-level waste, radioactive wastes mixed with hazardous chemical wastes ("Mixed Wastes") and Trans-uranic wastes (often containing Plutonium, some of which is also mixed with toxic hazardous wastes).**

4 **The Bush Administration improperly adopted these goals without considering the impacts of the plans on our health, on the health of future generations using the Columbia River and Hanford**

Letter: L082

4 (cont) | Reach National Monument and on the environment. The Hanford Site Solid Waste EIS is supposed to fully disclose the impacts of these plans, show the cumulative impacts from related disposal and storage decisions, and compare reasonable alternatives. In addition, public, state and tribal comments are to be considered before a decision is taken.

5 | Every day, the USDOE dumps radioactive waste in unlined soil trenches at Hanford. USDOE continues to claim that its practices of dumping low-level radioactive waste, some of it as radioactive as High-Level Nuclear Waste, in unlined trenches is exempt from our national and state hazardous waste disposal laws. It is time to make it clear that USDOE's disposal of its radioactive wastes is subject to the same environmental standards that govern commercial radioactive and hazardous waste disposal practices. But instead of calling for an end to DOE's current practice, this EIS presents a preferred alternative to use unlined soil trenches to dump an additional 12 million cubic feet of radioactive waste directly into the soil. The EIS has no alternative to use of unlined soil trenches
6 | with no leachate collection. The EIS includes no discussion of the lack of a legally compliant groundwater monitoring system around
7 | these low-level waste burial grounds.

8 | There have been several commitments to Congress by USDOE to begin to subject USDOE's radioactive waste practices to regulation. For several years, the Hanford Advisory Board has advised that USDOE consider the benefits of independent regulation as a reasonable alternative in the pending HSSWEIS. To meet the requirements of the National Environmental Policy Act (NEPA),
9 | USDOE must fully consider this alternative, including whether it will require congressional action.

10 | The Bush Administration's plan would ship 70,000 truckloads of radioactive waste to Hanford through Washington and Oregon – through the Portland area, the Columbia Gorge or the treacherous Blue Mountain passes. The USDOE has failed to consider the impacts of shipping those wastes along these routes, and it has not disclosed in the EIS the specific waste streams that would be sent to Hanford or the specific risks and hazards from different chemical and radioactive waste mixtures on trucks along these routes. The EIS needs to be withdrawn and redone from scratch to disclose the
11 | specific wastes proposed for shipment to Hanford and to justify why there are no better environmental alternatives for each waste stream, including alternatives of waste reduction, increased

11 (cont) | **treatment, and availability of a regulated, lined disposal facility with leachate collection in Utah.**

12 | **Under Washington State’s hazardous waste laws, it is illegal to create a hazardous waste landfill for waste from anything other than the cleanup of Hanford. I do not intend to allow USDOE to ignore our state’s environmental laws. Instead, I urge an immediate investigation under those laws of the contamination spreading from hazardous wastes improperly disposed in the unlined burial grounds.**

13 | **The fact that the Bush Administration had adopted plans to ship waste with deadly Plutonium to Hanford, along with specific schedules to begin those shipments was revealed only through a Freedom of Information Act request from a watchdog group. There is no justification to send Remote Handled and Mixed Hazardous Trans-uranic wastes to Hanford. There are no safe and permitted facilities at Hanford to treat the most radioactive Transuranic wastes that are spreading contamination through the soil now. Yet, as reported by the P-I, internal documents reveal that USDOE makes receipt of offsite Transuranic waste a “ higher priority” than the Hanford Cleanup Agreement workscope. This plan threatens all of the Northwest and we must work together as a region to stop it.**

14 | **I am opposed to the Bush Administration’s scheme to abandon vitrification of the wastes in Hanford’s High-level Nuclear Waste Tanks. The goals adopted by the Bush Administration include not vitrifying 75% of these wastes. Yet, the EIS fails to disclose the very significant impacts to groundwater and to the ability of future generations to use the hundreds of square miles of the Hanford site, including the Hanford Reach National Monument, if these wastes are simply mixed with cement and left in tanks or disposed in the burial grounds.**

15 | **The Bush Administration Plan would put 70,000 potential traveling terrorist targets on our region’s roads. Every truck carrying radioactive waste through our communities is a potential terrorist target. USDOE contractors shipping wastes have mislabeled wastes, and wastes have arrived with surface contamination. We need to cleanup Hanford, not send 70,000 truckloads to contaminate Hanford. USDOE needs to withdraw this EIS and reissue it for public comment after refocusing it on cleaning up Hanford’s contaminated wastes, not adding more. I urge citizens and Members of Congress from across our region to unite to stop these dangerous plans to make Hanford a national radioactive waste dump.**

HANFORD ADVISORY BOARD

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

Advising:

Dept of Energy

July 11, 2002

Environmental
Protection Agency
Washington State Dept
of Ecology

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Re: Hanford Solid Waste Environmental Impact Statement

Dear Messrs. Klein, Schepens, Fitzsimmons, and Iani

The Hanford Advisory Board (Board) has long and anxiously awaited the issuance of the draft Hanford Hazardous and Solid Waste Environmental Impact Statement (HSW-EIS). We are pleased that it has finally been released, however we are very disappointed with the draft. The Board believes the draft is incomplete and inadequate to support proposed decisions. In addition, it was not prepared in compliance with National Environmental Protection Act (NEPA) processes. Therefore, the Board urges the current draft be withdrawn and reissued in draft form for public comment to produce an adequate EIS, based on appropriate consultation and including the scope discussed below.

The draft HSW-EIS assumes the 2000 Record of Decision (ROD) selecting Hanford as a specific site for disposal of Department of Energy (DOE) complex low level waste (LLW) and mixed low level waste (MLLW) was fully supported by the Waste Management Programmatic Environmental Impact Statement (PEIS) analysis. As shown by public comment on the PEIS, the states, Tribes, and other stakeholders did not find the PEIS analysis sufficient to support selection of Hanford as a disposal site

HAB Consensus Advice #133
Subject: Hanford Solid Waste EIS
Adopted: July 11, 02

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Letter: L083

B.285

Revised Draft HSW EIS March 2003

2
(cont.)

for DOE complex-wide waste. As an example, a comprehensive, integrated, publicly vetted strategy for all nuclear materials disposition for the complex is needed to support the PEIS. The PEIS ROD was issued before preparation and public review of the Hanford draft HSW-EIS, which should evaluate the site-specific impacts of such disposal.

3

What was expected from this HSW-EIS was: 1) an understanding of impacts of past and continued waste disposal at Hanford; 2) comparison of LLW/MLLW disposal at

4

different sites; 3) comparison of Hanford-only versus off-site waste; 4) the scope of all previously buried and newly-generated solid waste; 5) discussion on long-term

5

management; 6) a range of treatment alternatives for radioactive and hazardous

6

constituents and disposal options; 7) short and long-term impact assessments to

7

ecology; and 8) significant differences between low and high volumes impact

8

assessments.

The HSW-EIS should integrate all waste site analyses to determine the full cumulative impacts.

9

The cumulative impacts of related major actions, on site and complex-wide, are not adequately addressed in the draft HSW-EIS. The draft frequently incorporates other documents by reference only. In addition, the Board questions the consistency of the draft HSW-EIS with the PEIS. In order for the HSW-EIS to be a credible, bounding document, it must show how much waste in all forms Hanford is slated to keep. It should also state how much will be exported and how much new waste will be accepted.

Additional analysis is needed.

10

The Board believes the draft HSW-EIS lacks sufficient analyses to support related DOE-proposed decisions. These include the import and burial of low level and mixed low level waste, proposed expansion of unlined soil disposal trenches for low level waste, import of transuranic wastes (TRU), and the lack of plans to retrieve or mitigate the impacts from TRU waste buried before 1970. DOE intends to make final decisions on each of these issues within six months, following the adoption of the ROD based on the HSW-EIS. The inadequacy of the draft understandably concerns the Board.

11-33

Board finds the necessary changes to the draft document are significant.

The following numbered items (in no specific order of priority) identify examples of where the draft HSW-EIS is incomplete, inadequate, or excludes items that need to be addressed:

11

1. Failure to include impacts and alternatives identified by the Board (provided to DOE in advice #103 and 98) during the EIS scoping process.

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Subject: Hanford Solid Waste EIS
Adopted: July 11, 02

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- 12 | 2. Inclusion of off-site waste volumes in the draft HSW-EIS much greater than those identified during the EIS scoping period.
- 13 | 3. Lack of consultation with Tribes or other federal and state agencies, as required under NEPA and SEPA.
- 14 | 4. Failure to disclose impacts to groundwater and human health at the point of compliance for waste management units. The Board encourages the agencies to consider the recent advice from the Board reflecting input from the Exposure Scenarios Task Force (consensus advice #132). The point of compliance should ensure no further degradation to ground water beyond the edge of the waste management unit. Non-degradation is required under both state and federal regulations. Without explanation, and in apparent violation of applicable standards, the EIS provides only a partial description of groundwater impacts for a single well one kilometer away from the burial grounds.
- 15 | 5. The draft HSW-EIS improperly asserts a claim for irretrievable and irreversible impact to an unidentified area of ground water (which may encompass the entire Hanford site) forever, with no analysis or disclosure of how large an area this may be, how bad the conditions may become, or how long this may persist.
- 16 | 6. Inadequacy of NEPA assessment for endangered species.
- 17 | 7. Modeling and inventory assumptions are not explained and appear inconsistent with known data on the movement of radioactive and hazardous waste at Hanford, and are also inconsistent with other site actions.
- 18 | 8. Failure to include a true "No Action" alternative that does not import and bury offsite-generated LLW and MLLW from DOE sites and other generators. The current "No Action" alternative (as noted on page S-3, line 27-30) does not comply with legal or regulatory requirements.
- 19 | 9. Failure to include reasonable alternatives to the proposed actions, especially the failure to include an alternative to end the use of unlined soil trenches for disposal.
- 20 | 10. Failure to integrate and consider the cumulative impact of all Hanford waste decisions, the impact of these decisions on this EIS, and the conclusions from this EIS in those decisions. The estimated risks proposed by this action are only a small portion of the total risks posed by all site actions and should be communicated. This is exemplified by the failure to disclose and consider the cumulative impacts of wastes already disposed to the soil and proposed Performance Management Plan (PMP) actions to dispose of additional wastes to the soil (e.g. proposed actions to dispose of some wastes from Hanford's high-level waste tanks in the soil). Additionally, the Board urges DOE to end the use of unlined soil trenches without leachate collection systems for disposal of wastes.
- 21 |

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- 22 | 11. Accident analysis must include malevolent events.
- 23 | 12. The Board is concerned the programmatic issue of the cumulative and route-specific effects of transporting wastes from multiple sites to Hanford has not been addressed.
- 24 | 13. The Board is concerned the facilities required for treating remote handled TRU waste as required in the Tri Party Agreement (TPA) Milestone 91 have been delayed, and the impacts from delayed or lesser TRU waste retrieval, as well as the impacts of importing TRU have not been considered in this draft HSW-EIS.
- 25 | 14. Waste from high level tanks that may be disposed in soil and disposition of K-Basin sludge should be included.
- 26 | 15. Cumulative impacts of reactor components disposal, including naval reactor compartments, should be included.
- 27 | 16. Pre-1970 TRU waste in the burial grounds should be addressed.
- 28 | 17. The impacts of not retrieving or shipping to WIPP the post-1970 TRU waste should be analyzed.
- 29 | 18. There is inadequate analysis of cap performance. The draft HSW-EIS considers only one cap, and assumes it meets RCRA requirements.
- 30 | 19. There is no analysis to support the draft document cover letter assertion that use of deep lined "megatrenches" is bounded by the analysis performed for shallow trenches in the draft HSW-EIS.
- 31 | 20. Long term stewardship considerations are not evident.
- 32 | 21. The draft HSW-EIS lacks inclusion of Environmental Restoration waste, which was excluded from analysis in the PEIS.
- 33 | 22. The impacts of hazardous waste buried with various forms of radioactive waste (e.g. lead shielding) should be analyzed.

Currently disposed waste needs detailed analysis.

34 | The Board has previously urged that DOE stop disposing of offsite wastes in the low level waste burial grounds (LLBG) until they are fully investigated for disposal of hazardous or dangerous wastes (including liquids, flammables, solvents, etc.) and for releases of hazardous substances (consensus advice # 98 and #103). It is vital that
 35 | the groundwater monitoring around the burial grounds be substantially upgraded and vadose zone monitoring be instituted as part of this investigation. Many of the wells are dry, or soon will be, and the burial grounds lack any leachate monitoring and collection system.

36 | The Board urges the State of Washington to exercise its authority over the burial grounds as dangerous waste management units to meet leachate collection standards, and to prevent the addition of several hundred thousand cubic meters of offsite waste to unlined soil trenches, as proposed in the draft HSW-EIS and the PMP. The Board has previously provided advice that the LLBGs should be independently regulated,

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36 (cont) | and that the draft HSW-EIS should consider the benefits of independent external regulation of the LLBGs as a reasonable alternative (consensus advice #98).

37 | **Full cost of imported waste must be recovered.**
The Board repeats its advice that the HSW-EIS considers the impacts on Hanford Cleanup from the costs of offsite waste (see consensus advice #79, #84, and #94). Charging generators the long-term, fully burdened costs of disposal (and treatment or storage), as the Board has advised (see consensus advice # 98), would encourage treatment and reduction in waste volumes. It would also reduce the impact of offsite waste on the ability of the Hanford site to meet TPA milestones and other compliance requirements. This costing method must be considered in the HSW-EIS.

38 | **Analysis should be limited to receipt of offsite MLLW for short-term storage and treatment only.**
The Board has issued advice (#13 and #103) that the import of mixed waste to Hanford be limited to short term storage for purposes of using available treatment capacity. (If disposal of mixed waste were limited to onsite stored forecasts to be generated, the quantity for disposal would be 14,000 cubic meters. Instead, the draft HSW-EIS considers disposal of 210,000 cubic meters.) Thus, the analysis in the HSW-EIS should be limited to receipt of offsite MLLW for short-term storage and treatment. DOE wrongly states in the PMP the MLLW burial ground is permitted for offsite waste, and proposes to issue a decision in six months to start import and disposal of offsite mixed waste. The Board urges the State of Washington to limit the MLLW burial ground permit to the quantity and types of wastes forecast from Hanford Cleanup (as has been done with the Environmental Restoration Disposal Facility landfill).

39 | **Permitting decisions should not be made based on this draft HSW-EIS.**
The Board is concerned that permitting decisions for the Waste Receiving and Processing facility, the low level burial grounds, and the Central Waste Complex may be made without knowledge of the quantities and nature of wastes proposed to be stored, disposed, or treated. The Board urges permitting agencies not to grant any permit based solely upon the draft or the final HSW-EIS unless this issue is resolved.

40 | **Board advises draft HSW-EIS be withdrawn and reissued.**
The Board advises the regulatory agencies find the document inadequate to meet NEPA and the Washington State Environmental Policy Act (SEPA) requirements. The Board also strongly advises DOE to withdraw and reissue the HSW-EIS following appropriate analysis and disclosure. This revision would allow the most recent budget and cost comparison data to be factored into the document.

HAB Consensus Advice #133
Subject: Hanford Solid Waste EIS
Adopted: July 11, 02

Letter: L083d

Sincerely,



Todd Martin, Chair
Hanford Advisory Board

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

cc: Wade Ballard, Deputy Designated Federal Official, U.S. Department of Energy
Michael Gearheard, Environmental Protection Agency
Michael Wilson, Washington State Department of Ecology
Martha Crosland, U.S. Department of Energy Headquarters
The Oregon and Washington Congressional Delegations

U.S. Senators (OR)

Gordon H Smith
Ron Wyden

U.S. Senators (WA)

Maria Cantwell
Patty Murray

U.S. Representatives (OR)

Earl Blumenauer
Peter DeFazio
Darlene Hooley
Greg Walden

U.S. Representatives (WA)

Norm Dicks
Jennifer Dunn
Richard Hastings
George Nethercutt

State Senators (WA)

Pat Hale
Mike Hewitt

HAB Consensus Advice #133
Subject: Hanford Solid Waste EIS
Adopted: July 11, 02

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State Representatives (WA)
Jerome Delvin
Shirley Hankins

HAB Consensus Advice #133
Subject: Hanford Solid Waste EIS
Adopted: July 11, 02

Letter: L083f

B.291

Revised Draft HSW EIS March 2003



**Submitted Testimony
Hanford Information Network
Department of Energy's Solid Waste EIS
July 30, 2002**

We want to thank the Department of Energy for agreeing to hold this public hearing tonight to hear comments from citizens on the proposal to bring additional solid waste to Hanford for treatment and storage.

1 | We want to start out by acknowledging that the Department has undergone a significant turnaround over the past several years. We no longer come to these meetings with a complete sense of hopelessness. Increasingly, progress on cleanup at the Hanford site is becoming evident. For example:

2 |

- o Progress on the river protection project is moving ahead. Less than two years ago, the project had once again come off the tracks, as BNFL had submitted a cost estimate of \$15.2 billion. But thanks to the leadership of the Office of River Protection, a new contract was awarded in record time, and the actual construction of the vitrification plant has now begun. Concrete and other foundation work has now begun, and there is hope that a plant might be completed in 2006 - - a year earlier than originally estimated. On top of that, the plant might be significantly more capable than earlier estimated

3 |

- o Ongoing cleanup efforts in the "100" area and "300" areas continue to move ahead. In particular, cocooning of reactors and cleanup efforts along the river have moved ahead rapidly over the past several years. In fact, more than 3 million cubic yards of contaminated soil has been moved away from the river and safely stored in a permitted and lined facility near the center of the site.

4 |

- o Dangerous materials at the Plutonium Finishing Plant are being safely processed and prepared for long term storage. New muffle furnaces and techniques have sped the process of cleaning out the PFP, leading to hope that the entire facility will soon be removed from the landscape.

5 | But there are several issues that would have to be resolved before the DOE could even suggest the issue of additional waste at Hanford. These issues, which are years from resolution, include:

1) DOE would have to prove that the promise of a waste treatment plant is more than simply a promise. The DOE must demonstrate that it can build and operate a plant that will begin to actually turn Hanford's 53 million gallons of underground nuclear waste to glass.

6 | **2)** DOE must demonstrate that other sites are actually prepared to accept Hanford's high-level wastes, that from K-Basins as well as from the tank farms. To date, DOE has not demonstrated either that Yucca Mountain will be opened, or that it has the capacity to accept and store Hanford's high-level wastes.

7 | **3)** DOE must prove that it will devote the resources necessary to fully pay for treatment and storage of all wastes it is proposing to import to the site. There is nothing in this draft EIS that purports to address this critical issue.

Letter: L084

In addition, there are other significant problems with this EIS.

8 | First is the problem that I referred to above: DOE needs to address its waste streams in a comprehensive manner. But this very document fails to meet that test. Common sense would dictate that an analysis of the impact of additional solid waste or other waste streams coming to Hanford would build upon the analysis of the impact of current waste streams. In other words, how could the Department analyze the impact to the groundwater of only one or two of the several waste streams on the site? But that's exactly what this document does. It specifically excludes pre-1970 TRU wastes already buried at Hanford. It specifically excludes some of the sources being addressed by the rivershore cleanup efforts. It specifically excludes high-level wastes at Hanford. The result is an incomplete document that fails to give citizens a complete picture of the impact that additional waste will have on the already overtaxed ecosystem

9 | Second, the document fails to utilize effective risk analysis. How are citizens to make an informed decision on the importation of perhaps as many as 70,000 truckloads of additional waste without being able to review a credible, scientific risk analysis of the impact that these additional waste streams will have on the long term impact of the site.

10 | Third, the document must be taken in context with the recently released "Accelerated Cleanup" plan submitted by the document. Although the Hanford Information Network was supportive of several of the elements contained in that proposal, we also had several concerns. Primary among those was the failure of the plan to propose any real, fundamental effort to actually clean up the groundwater contamination that has already taken place. Instead, the report suggested monitoring. That's simply not good enough. More than 440 billion gallons of discharges - - much of it radioactive or hazardous - - were made to the soil columns at Hanford between 1944 and 1995. And more than 1 million gallons of high-level waste from the underground tanks leaked from at least 67 of the 177 tanks. The Accelerated Cleanup plan failed to address this contamination, and this EIS proposes to add more potential point sources for future contamination.

11 | Fourth, there is little in the way of assurance that these wastes will be properly stored. Current agreements in many cases do not require lined trenches, and it is unclear from the EIS whether or not the Department is proposing liners in its "enhanced design" LLW and MLLW trenches (Summary, p. S9).

12 | On top of that, the EIS (Summary, p. S10) suggests that Hanford does not currently have the capacity for treating and storing the volumes of waste it is seeking to import, and has not yet determined exactly what that capacity is. Yet, in spite of the fact that they don't yet know what capacity is needed, how much it will cost, or who will be paying for it, they are advancing this proposal that we have here today. That's unacceptable, in my mind.

13 | Finally, there is the basic, and in our mind, most important point. We believe that the Department is staffed with well meaning federal employees who are genuinely committed to cleaning up the Hanford site. But in spite of the tremendous progress made over the past several years, the Department doesn't exactly have a stellar track record. And recent events and proposals - - such as the suggestion that the Department might be able to eliminate vitrification for up to 75% of the DOE's high-level waste - - has caused even greater concerns.

14 | As a result, we believe that this is simply not the time to be rolling out this proposal. Instead, we suggest withdrawing the EIS, addressing the issues raised during these public meetings, and put-

Letter: L084a

14
(cont) | ting it on hold until a later time once the DOE has given the public some level of confidence that it can live up to its promises, by processing waste into glass, by completing the cleanup and removal of the spent nuclear fuel stored at the K-Basins, by moving ahead with aggressive efforts to develop a plan to actually clean up the groundwater, and by continuing to work closely with local citizens and state regulatory issues.

15 | These are issues upon which we all agree, and which should be universally accepted. Only then will the Department have the credibility - - and the trust of the region to even be able to suggest that Hanford play a role in the national debate on waste management issues that has yet to occur.

Thank you again for the opportunity to be here today.

Letter: L084b

Comments from Paige Knight, President of Hanford Watch, Oregon on Department of Energy's Solid Waste Environmental Impact Statement

July 30, 2002: Portland, Oregon

Some of the questions that I feel need to be fully addressed in a straightforward manner that this EIS fails to address are:

- 1 • Pinpointing the projected volumes of waste (and numbers of shipments) that the DOE plans to bring to Hanford over the long-term. Is your vision that Hanford becomes a perpetual nuclear sacrifice zone?
- 2 • Disclosure of cumulative impacts of imported waste and waste already sitting at or in the Hanford site to all life systems for the next several generations.
- 3 • Spelling out the logic and impacts of trucking more waste onto the Hanford site for treatment and burial while trying to move forward with the promised cleanup of the Hanford site. (How do these two disparate plans impact each other?)
- 4 • Explain in quantifiable ways the impacts of further groundwater contamination on the already existing, unmonitored, and uncharacterized contaminated groundwater at the Hanford site as well as the effects of all current and future resulting contamination to the Columbia River.
- 5 • The long-term, really long-term stewardship of all existing and added waste to the site.
- 6 • The rationale behind DOE thinking that you, with a history of mismanagement, can treat and manage imported waste, when we are presently unable to treat and manage our own waste.

We need a real answer to the question of how the DOE can implement a piecemeal plan for faster, cheaper, accelerated cleanup at our site and across the nation, without considering all worst case scenario impacts (to groundwater, transportation, inadequate or non-existent treatment facilities and FUNDING) on the long-standing promised mission of CLEANUP at Hanford? *It's combined effects with bringing in additional waste?*

From the addition of more waste to the HANFORD BURDEN

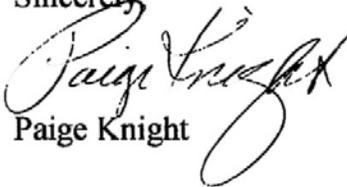
In case you want to write off these and other comments as being nay-says, let me refer you to two documents that spell out some solutions to the nuclear waste problems we have created for ourselves that have some suggestions that go beyond the recent Top-to-Bottom Review and Program Management Plan from DOE Headquarters:

Letter: L085

1. Makhijani, Arjun; Short-and Medium-Term Management of Highly Radioactive Wastes in the United States: http://www.ieer.org/sdfiles/vol_7/7-3/s&mterm.html
2. Makhijani, Arjun; Considering the Alternatives: ***Creating a framework for sound long-term management of highly radioactive wastes in the United State***

Even though these two articles deal with high level waste, there are some solid ideas that could lead to some new thinking about low level and mixed low level wastes.

Sincerely,



Paige Knight

Letter: L085a



STEVE MARCH
STATE REPRESENTATIVE
 DISTRICT 15
HOUSE OF REPRESENTATIVES

July 30, 2002

Department of Energy
 Portland Hearing



CHRIS CHAPMAN
 LEGISLATIVE ASSISTANT
 REPRESENTATIVE STEVE MARCH
 DISTRICT 15



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- 1 | I and many of my constituents are highly concerned about increasing the amount of radioactive nuclear waste at the Hanford Reservation.
- 2 | Many aspects of this endeavor, including the possible contamination of the Columbia River and the millions of users downstream from Pendleton to Astoria, are troubling. The transportation of waste through Oregon and other states increases the risk to the populace. Lastly, I'm particularly
- 3 | concerned about the burying of this nuclear waste in unlined trenches.
- 4 |
- 5 | There is much concern about the three categories of waste and their quantities being considered for "disposal" at the Hanford site: low level; mixed chemical and nuclear waste; and the transuranic waste. Not knowing the amounts, the travel mode and schedule, and the mode of "disposal" are all very important aspects of this that the people of Oregon and Washington deserve to understand. The fact that this highly contaminated waste is right at Oregon's back door and directly upstream from over a million people gives me great pause.
- 6 | There have been no adequate studies of the Hanford area and it's suitability for this additional nuclear waste, let alone that already existing at the site. At the minimum, additional study is needed. My constituents would prefer that the existing waste a Hanford be cleaned-up or removed, or in lieu of that, at least properly stored.
- 7 | I would urge the DOE to study this issue carefully. Please look at the existing storage of waste and the radioactive plume that is already progressing towards the Columbia River and find ways of solving the existing problems rather than adding to it.

Sincerely,

 Steve March

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Letter: L086



US DEPARTMENT OF ENERGY HEARING ON HAZARDOUS AND SOLID WASTES EIS
PORTLAND, OREGON
July 30, 2002

STATEMENT FROM BILL BRADBURY:
TRANSPORTING NUCLEAR WASTE TO AND FROM OREGON IS A
DISASTER TRAVELING AT 55MPH

1

I am sorry that I am unable to personally attend this hearing, but I do want to formally register my strong opposition to this new proposal to transport an additional 20 million cubic feet of waste to the Hanford Nuclear site. I also want to commend my colleagues Senator Wyden and Congressman Blumenauer on their efforts in working pro-actively to raise public awareness on this issue that threatens so many Oregonians. Make no mistake that moving forward with this proposal would make Oregon "ground zero" for the extraordinary risks posed by nuclear transport, and that is simply a proposition unacceptable to me and I believe most Oregonians.

2

Moreover, consideration of this proposal cannot be divorced from the plan narrowly approved by Congress earlier this month to ship high level radioactive waste from Hanford to Yucca Mountain, Nevada. I, like Senator Wyden, strongly opposed that proposal on similar grounds. Specifically, the risks associated with transporting this incredibly toxic waste have not been adequately considered and the threats to Oregonians are too great. Unfortunately, with the aid of Senator Gordon Smith the Yucca Mountain proposal passed and Oregonians will now be forced to share Oregon's roads with scores of trucks loaded with the most dangerous kinds of radioactive and nuclear waste. To put this concern into context, over 700,000 Oregonians live and 294 Oregon schools are located within one mile of a nuclear waste route.

3

These figures are frighteningly daunting so I hope you appreciate my grave concerns about the notion of adding new shipments of "mid-level" wastes through Oregon to Hanford. With this proposal, Oregonians face a deadly double-whammy that threatens communities from the Dalles to Portland and all the way down the I-5 corridor. As I have continually said, transporting nuclear waste either by road or rail, poses inherent dangers, particularly in the event of an accident or crash. In addition, in most Oregon communities first-responder services - the fire, police, and emergency medical services - are already overburdened and facing budget shortages and are ill equipped to manage incidences of catastrophic nuclear contamination. And in the post 9/11 world, we are irresponsible to our citizens if we do not fully consider the threat of terrorism and the potential targets these relatively unprotected trucks present. These are serious concerns and merit more thorough consideration before Oregon schools, neighborhoods and communities are subjected to the threats posed by additional radioactive and deadly waste.

In conclusion, I believe that we must demand a commitment from our elected officials to make sure that the American public is safe. I commend my colleagues Senator Wyden and Congressman Blumenauer for their efforts on this issue and those of Washington Senators Cantwell and Murray. However, I am frustrated by Senator Smith's lack of leadership on this issue that is so important to Oregonians. In his vote to support the transport of nuclear waste from Hanford to Yucca Mountain and his virtual silence on this issue, Senator Smith seems disturbingly content with ignoring the wishes of Oregonians. The very real threats posed by dangerously congesting our roads with 70,000 truck loads of radioactive waste cannot be ignored and must be opposed.

To be clear, I strongly believe the Hanford proposal is not an acceptable solution for Oregon or its citizens who cherish their natural heritage and unique quality of life. I respectfully and formally ask that this proposal to transport new radioactive waste be denied. Thank you.

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Letter: L087

EARL BLUMENAUER
THIRD DISTRICT, OREGON

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STATEMENT OF U.S. CONGRESSMAN EARL BLUMENAUER
US Department of Energy Hearing on
HAZARDOUS AND SOLID WASTE EIS
Portland, Oregon
July 30, 2002

1 Since my election to the United States Congress, I have twice visited the Hanford Nuclear Reservation and Hanford Reach National Monument, participated in hearings concerning clean-up, and sponsored a stakeholder forum to discuss the future of Hanford. In that time we have seen both stops and starts in the clean-up process, but we were pleased to see that plans for building a vitrification plant and dealing with the most serious threat at Hanford—tank waste—seemed to be moving forward. I found the efforts of the Office of River Protection and their primary contractors, Bechtel, to meet with my staff and I, and to get the project back on track following the cost overruns of 1999, particularly commendable. The fact that the project organizers are already pouring concrete and moving ahead with full scale construction is greatly encouraging.

2 Disposal of off-site waste at Hanford is, however, another issue altogether. While I appreciate the work the Department of Energy has done to develop its most recent Environmental Impact Statement on Hazardous and Solid Waste, I am greatly concerned that the proposals in this document will undermine the progress of Hanford clean up. The call to import half a million cubic yards of new waste to Hanford, without having developed and implemented a solution for treating and storing what is already there, is an irresponsible measure that could increase the threat of an economic and environmental disaster at Hanford.

3 Hanford currently contains two-thirds of the nation's high-level nuclear waste and contaminated soils, with the largest amount of tainted groundwater in the country. Its proximity to the Columbia River make the DOE's proposal to expand unlined soil disposal trenches for low level waste disposal seem more of a hazard than a solution.

4 Also lacking in this EIS, and of very serious concern to me, is a comprehensive analysis and plan for recovering the cost of importing and treating offsite waste at Hanford. In FY03, we will spend nearly 2 billion dollars to clean up and ensure safety and security at the Hanford site. To move forward with a plan for bringing new waste to Hanford, before we have an opportunity to implement and assess waste treatment plans for what is already on site, is not what I would consider fiscally or morally responsible.

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Letter: L088

B.299

Revised Draft HSW EIS March 2003

5

In addition, I am dismayed that NEPA regulations that require consultation with the Tribes and various federal and state agencies were not followed. Nor does this EIS analyze the impacts of transporting radioactive waste from outside sites to Hanford. This is of great concern for my colleagues and I who represent areas where waste could be likely to travel.

I recognize that the nation's nuclear and hazardous waste presents one challenge after another, and I commend the work of the individuals at the DOE who are committed to solving these problems so that our children will not be left to do so. It is critical, however, to remember that even the small steps moving us forward at Hanford remain overshadowed by a record of milestones not met, personnel changes, funding shortfalls, and aborted starts. Pacific Northwest citizens still fear being forced to "start over" before a single bit of the existing, on-site waste in the most contaminated site in the Western Hemisphere is treated and stored. Importing new waste to Hanford at this time could be a major setback in our efforts to achieve a timely, cost-effective, environmentally sound clean up.



GEORGE D. WARD, PE

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Letter: L088a

Statement of
Mary Anne Wuennecke
Washington Department of Ecology
Nuclear Waste Program

Draft Hanford Site Solid (Radioactive and Hazardous) Waste Program
Environmental Impact Statement

August 14, 2002

1 | Everyone here is concerned about how the Draft EIS fits into the overall picture of Hanford cleanup, and the long-term effects on the Columbia Basin and the region. The Department of Ecology wants to be confident that Hanford's own legacy of waste and contamination is and will be managed safely. Only then can we consider adding to the burden. We need the same confidence that any additional wastes brought to Hanford will also be managed safely, both day-to-day and for the long term. Unfortunately, this EIS falls short on all counts.

On several fronts, we have increasing confidence in how Hanford's existing wastes and contamination are being managed:

- USDOE has started Construction on a large plant to treat Hanford's tank wastes, after a decade of false starts;
- Cleanup of contaminated soils and buildings all along the Columbia River corridor is progressing well, including spent nuclear fuel being removed from water basins near the river;
- Recent discussions between USDOE and its regulators have led to support in Washington, D.C., for increased funding to accelerate retrieval of tank wastes and buried transuranic wastes, and for increased focus on groundwater protection.

2 | Washington State recognizes that the legacy of nuclear weapons production is a national, indeed an international, problem. We expect to send high-level and transuranic wastes *from Hanford to* other states for disposal. We have borne, and will continue to bear, the responsibility to dispose of wastes *at* Hanford. But we need to understand the consequences of all of these actions in a comprehensive way.

Letter: L089

B.301

Revised Draft HSW EIS March 2003

3 | We had hoped that the Hanford Solid Waste EIS would contribute to our confidence both in how Hanford's waste is managed and in the safety and importance of Hanford's role in the overall cleanup of nuclear sites in the country. We are very disappointed, therefore, that the Draft EIS falls far short of the mark. It does not provide adequate information, clearly presented, to help us or the public address major issues. For example:

- 4 | • What is the net benefit or harm of importing additional wastes for storage, treatment or disposal at Hanford?
- 5 | • Are there much better alternatives to burying minimally-treated waste in shallow, unlined trenches?
- 6 | • What are the long-term costs and requirements for monitoring, maintaining, and preventing failures at, and radioactive releases from, waste sites, and how can we be confident that these activities will be effectively and accountably managed?
- 7 | • What is the rationale for continuing self-regulation by USDOE when the issue is not national defense but environmental protection?

Here are some areas where we find the Draft EIS so deficient as to warrant a major revision, followed by another round of public review.

Scope is too narrow

The Draft EIS essentially evaluates a limited range of near-term, alternative means to add some treatment capability and to dig waste-disposal trenches.

- 8 | • The Draft EIS assumes that the 1997 Waste Management Programmatic EIS adequately compared the effects of treatment and disposal facilities at various sites, but it did not. The Programmatic EIS relied on data now several years old and did not have available even the limited information about Hanford contained in the Draft Hanford Solid Waste EIS.
- 9 | • The Draft EIS assumes continued or increased off-site low-level waste and mixed low-level waste disposal at Hanford. It does not separately assess needs for disposing Hanford waste, in spite of widespread requests for such analysis during the scoping comment period.
- 10 | • The Draft EIS evaluates only the management of wastes owned by or coming to the existing Waste Management Program, touching only lightly on previously buried wastes, environmental restoration wastes, naval reactors, and other wastes disposed near the surface at Hanford.
- 11 | • The Draft EIS does not evaluate other options currently under active discussion, such as the lined, RCRA-compliant mega-trench for disposing of low-level waste, expanded use of the Environmental Restoration Disposal Facility (ERDF), or storing and treating transuranic wastes from other sites.

Letter: L089a

Impact analysis is too limited

12 | The Draft EIS reaches conclusions without adequate data and analysis. It often fails to disclose what information is not known in arriving at conclusions.

- 13 | • The Draft EIS does not include sufficient data about groundwater contamination and movement at Hanford.
- 14 | • The Draft EIS does not include sufficient data about the extent and characteristics of wastes and contamination already in the ground at Hanford.
- 15 | • The analysis of cumulative impacts from the proposed treatment and disposal activities, in conjunction with other reasonably foreseeable actions at Hanford, is extremely limited and not credible based on the material presented.
- 16 | • The Draft EIS does not include data about the effects on the full range of plant and animal species, nor does it recognize USDOE's obligation to protect and restore priority habitat, even if it has been degraded by fire or pesticides.

Regulatory analysis is insufficient

17 | The Draft EIS tends to ignore a number of regulatory issues.

- 18 | • The Draft EIS does not adequately address the challenges USDOE presently faces in complying with RCRA and state dangerous-waste regulations. The Tri-Party Agreement is designed to bring USDOE into compliance, but there is still a long way to go. The Department of Ecology does not support compounding compliance problems that already exist at Hanford.
- 19 | • The Draft EIS assumes a point-of-compliance/impact assessment that has no basis in regulations (1 km down gradient from burial ground).
- 20 | • The Draft EIS does not adequately address the requirement under Washington and federal laws that mixed waste be treated to the maximum reasonable extent.
- 21 | • The Draft EIS assumes continuation of USDOE's self-regulation for radioactive wastes without any discussion of alternatives or implications.
- 22 | • The Draft EIS reflects insufficient attention to consultation requirements under the Endangered Species Act.

Consideration of closure, long-term care and costs is very limited

23 | The Draft EIS does not deal with such long-term activities as site closure, corrective action, monitoring, maintenance, and post-closure institutional controls. It also does not assess nor compare disposal alternatives or low and high volumes according to the long-term care requirements imposed by each, and the costs of meeting the requirements.

Letter: L089b



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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Seattle, WA 98101

Reply To
Attn Of: ECO-088

JUL 25 2002

97-062-DOE

Mr. Michael S. Collins
HSW EIS Document Manager
U.S. Department of Energy, A6-38
P.O. Box 550
Richland, WA 99352-0550

Dear Mr. Collins:

The U.S. Environmental Protection Agency (EPA) has reviewed the draft Environmental Impact Statement (EIS) for the proposed *Hanford Site Solid (Radioactive and Hazardous) Waste Program* (CEQ# 020200). This draft EIS provides environmental and technical information and examines two action alternatives for managing wastes at the Hanford Site near Richland, Washington. The Hanford Solid Waste (HSW) EIS tiers from the final Programmatic EIS for *Managing, Treatment, Storage, and Disposal of Radioactive and Hazardous Waste* issued by the Department of Energy (DOE) in 1997. The HSW EIS also updates previous environmental reviews prepared for waste management operations at the Hanford Site.

EPA has provided comments, on this and other EISs pertaining to activities affecting the Hanford Site, in accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. Generally, EPA's comments on Hanford EISs focus on maintaining the accelerated clean-up schedule agreed to in the Tri-Party Agreement (TPA) and the March 6, 2002 letter of intent by: 1) not creating additional problematic wastes that will require future remediation; and 2) ensuring that proposed activities would not divert resources or capacity from clean-up activities.

We have rated the HSW draft EIS, EO-2 (Environmental Objection – Insufficient Information) because: 1) all action alternatives are predicted to exceed Maximum Contaminant Levels (MCLs) of iodine-129 and that other radionuclides (e.g., technetium-99) would contribute additionally to the exceedance of radionuclide MCLs thereby contaminating or worsening contamination problems in the vadose zone and groundwater, and thus potentially create more required clean-up; and 2) insufficient information exists to fully describe existing and predicted environmental impacts, and if proposed activities would divert resources or capacity from the clean-up scheduled at Hanford. It also appears that predicted contamination from action alternatives could be avoided with mitigation measures and adoption of other alternatives.

EPA believes the following changes to the EIS (with similar commitments in the Record of Decision) are necessary to make the document and proposed project environmentally acceptable:

- Present and analyze a full range of reasonable alternatives with additional mitigation measures [e.g., Environmental Restoration Disposal Facility (ERDF)-like mega-trench, altering volume or WAC of imported waste streams] which would be in compliance with environmental standards, reflect real differences in environmental impacts, and that address scoping comments and comments on the draft EIS;



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- Provide more extensive analyses and description in the EIS disclosing existing impacts [e.g., estimating pre-1970 transuranic waste (TRU) or emissions from remedial actions], elements of action alternatives (e.g., the types of treatment proposed in the T-plant or the M-91 facility), and greater detail about the cumulative impacts as well as a breakdown of impacts from disposing wastes originating at Hanford versus other sites;
- Ensure consistency between the WAC and regulations of comparable disposal sites or provide a reasonable and scientifically valid explanation of the difference in the EIS; and
- Provide a clear purpose and need statement preferably identifying disposal of Hanford waste streams as the primary need and treatment and disposal of certain off-site wastes as the secondary need.

Enclosed are a description of our rating system and EPA's detailed comments which discuss the basis of our environmental objections with the proposed project and the EIS as well as methods of addressing our environmental objections. EPA is eager to work with DOE, and when appropriate, the Washington Department of Ecology, in the resolution of these issues. Please contact Mr. Chris Gebhardt, of my staff, at (206) 553-0253 or Mr. David Einan, in EPA's Hanford Operation Office, at (509) 376-3883 to discuss these issues further. Thank you for the opportunity to comment and for providing Mr. Gebhardt the opportunity to visit the Hanford Site.

Sincerely,



Elbert Moore, Director
Office of Ecosystems and Communities

Enclosures

- cc: Mike Wilson, Ecology
Richard Gay, CTUIR
Pat Sobotta, Nez Perce Tribe
Russell Jim, Yakama Tribe
Todd Martin, HAB
Ken Niles, OOE

Letter: L090a

**EPA's Detailed Comments on the Draft Environmental Impact Statement (EIS)
for the Hanford Solid Waste Program**

General Comments

Further Contamination of the Vadose Zone and Groundwater

7 For both Alternatives 1 and 2, the Mixed Low Level Waste (MLLW) estimates for groundwater impacts from iodine-129 show Maximum Contaminant Levels (MCLs) exceeded for both lower and upper bound waste volumes. Other radionuclides (e.g., technetium-99) contribute additionally to the exceedence of radionuclide MCLs. MCL exceedences in groundwater are generally not acceptable as design elements for proposed actions. These results would appear to effectively disqualify both these alternatives. Variations of these alternatives or new alternatives, which restrict radionuclide quantities so as to prevent MCL exceedences, need to be considered.

Alternatives

8 EISs should rigorously explore and objectively evaluate all reasonable alternatives [40 CFR 1502.14(a)] to help ensure that decisionmakers take actions that protect, restore, and enhance the environment [40 CFR 1500.1 (c)]. The range of alternatives in the Hanford Solid Waste (HSW) EIS is essentially limited to existing and enhanced trench options. Wastes are assumed to be disposed consistent with the Waste Acceptance Criteria (WAC). There is no consideration in the range of alternatives of actions that could be taken (in addition to those of the WAC) to mitigate impacts.

9 It appears that alternatives were formulated based on cost concerns rather than environmental ones. The common significant theme found among the elements of Alternative 1 (i.e., modify the T-Plant, treat wastes commercially, and dispose of waste in larger trenches), when compared to the elements of Alternative 2 (i.e., build the new M-91 Plant, treat wastes at Hanford, and dispose of waste in smaller trenches), is reduced cost. This contrasts with the National Environmental Policy Act (NEPA) at 40 CFR 1502.14, which directs lead agencies to present the *environmental impacts* [italics added for emphasis] of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice.

10 At the same time, both action alternatives are environmentally objectionable because they result in predicted impacts that cause or contribute to exceedences of radionuclide MCLs in groundwater. The EIS should be revised to include a fuller range of alternatives with additional mitigation measures, if necessary [40 CFR 1502.14(f) and 1502.16(h)]. Alternatives which EPA believes merit further examination include Environmental Restoration Disposal Facility (ERDF)-like mega trench, varying WAC, volumes imported from offsite, packaging, and capping, and limiting radionuclide concentrations. The Department of Energy (DOE) should issue a supplemental draft Programmatic EIS if adding additional alternatives makes substantial changes relevant to environmental concerns [40 CFR 1502.9(c)].

11 Finally, the EIS should contain a fuller discussion of the no action alternative. The EIS describes how the final Programmatic EIS for *Managing, Treatment, Storage, and Disposal of Radioactive and Hazardous Waste* and subsequent Record of Decision (ROD) have selected the Hanford Site and the Nevada Test Site to be the DOE facilities responsible for the treatment, storage, and disposal of Low Level Waste (LLW) and MLLW originating from DOE facilities that lack these capabilities. The Hanford Site and Nevada Test Site could each receive all to none of these offsite wastes with the other receiving the remainder. The EIS should describe the range of possible scenarios involving the distribution of off-site wastes between the Hanford Site and the Nevada Test Site and the environmental consequences when describing the No Action Alternative.

12 Disparity between WAC and 10 CFR 61

Note that the radionuclide concentrations permitted by the WAC exceed those permitted under 10 CFR 61 for the commercially-licensed low level radioactive waste disposal site on the Hanford Reservation. The EIS should address the inconsistency between these two disposal circumstances. What specific technical provisions make such waste [e.g., Transuranic waste (TRU) exceeding 100 nCi/g] unacceptable at the commercial site, yet acceptable at the neighboring DOE site?

13 The EIS should incorporate a section specifically comparing future alternatives to existing disposals, their requirements (including waste acceptance criteria), and risks. Alternatives should be considered which provide additional isolation for wastes exceeding 10 CFR 61 criteria for shallow disposal. For example, the "greater confinement disposal" approach at the Nevada Test Site for similar wastes should be considered.

14 Consistent analyses: Intruder risks

Intruder risks are evaluated at Section 5.11.4, but only out to 500 years. Commercial sites complying with 10 CFR 61 can limit evaluation of intruder risks to 500 years because of the limits placed on concentration by 10 CFR 61 (i.e., greater than "Class C" waste is not permitted for disposal). Since the DOE WAC allows for disposal of greater than "Class C" waste, and since some of this waste (e.g., TRU waste) has long half-lives, the EIS should evaluate intruder risks beyond 500 years. Specifically, the EIS should evaluate intruder risks for a period of time consistent with other pathway evaluations in the EIS (e.g., the 10,000 year period evaluated for groundwater).

15 Groundwater analyses: Technical comments

For groundwater impacts, the location of concern is not the location selected "1-km along the Columbia." Groundwater impacts apply anywhere in the aquifer, and in that context the well 1-km from the waste site provides a more appropriate evaluation of impacts.

16 The evaluations of radionuclide in groundwater do not properly characterize their impacts in the context of drinking water standards. Radionuclide MCLs are additive. The criteria apply using a "sum of fractions" approach so that if one radionuclide is at 0.6 of its MCL and another is at 0.5,

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(cont)

the sum of fractions is 1.1 and the radionuclide MCL requirements have been exceeded. When this is taken into account, the predicted MCL exceedences at the location 1-km from the waste site (counting all radionuclides) are even greater than indicated. In evaluating alternatives with regard to groundwater impacts from radionuclides, the MCL sum of fractions for the radionuclide contaminants should be the primary basis for comparison.

Purpose and need statement

17

The purpose and need statement should be stated more clearly. The scope of the purpose and need statement appears to be limited to the treatment, storage, and disposal of current and anticipated volumes of wastes solely of Hanford origin and to not include similar activities for imported, off-site wastes. This should be clarified. In addition, the use of the word "enhance" or "enhanced" in the context of the purpose and need statement, as well as when describing the wider trenches, seems subjective and pre-determined, and thus inappropriate. The EIS should use less subjective words in the EIS and let the reader and the decision-maker decide the appropriate mechanism (including the no action alternative) to enhance or improve solid waste disposal at Hanford.

The purpose and need statement should be rewritten to clearly articulate the primary need for this EIS in relation to Hanford's current waste inventory, its impact on Hanford cleanup, and the secondary need as the treatment and disposal of certain off-site wastes.

Public participation

18

As a general observation, it is not clear that the comments received during scoping were not considered in the draft EIS. For example, page A.4 contains a scoping comment received by DOE that managing wastes using primarily cost considerations has been largely responsible for the magnitude of DOE's existing complex-wide clean-up problem. EPA believes that this comment was not adequately addressed in the draft EIS. The EIS should demonstrate more clearly that scoping comments (and subsequently comments made on the draft EIS) were used to identify significant issues [40 CFR 1500.4(g)].

In addition, the EIS states that the public meetings held during the scoping period extended through January 30, 1998. The EIS should state how DOE ensured that significant issues did not arise in the 4 year interim between the last scoping meeting and the issuance of this draft EIS.

Other general comments

19

The body of the EIS tends to repeat information in many places. EPA suggests that the document be reviewed for redundancies and that vital information from each appendix be summarized in the body of the EIS to allow the reader to understand what is being analyzed and the impacts are.

20

We commend DOE for using side-bar definitions which assist the non-technical reader of the EIS.

21

The HSW EIS needs to be updated to ensure consistency with the Hanford Management Plan.

22 | Referencing the "Hanford Site Solid Waste Acceptance Criteria" (WAC) so extensively will
make those criteria harder to change, from a performance assessment, impact assessment, and
NEPA standpoint. Instead, the EIS should state what the WAC criteria are.

23 | The EIS lacks sufficient detail to understand what types of treatment would occur in either the
T-plant or the proposed M-91 facility under Alternatives 1 and 2, respectively.

Specific Comments

- 24 | 1) Summary – EPA is pleased that DOE views the Hanford Solid Waste EIS as a vehicle to
update previous documents and to provide evaluations for activities that may be
implemented as a result of DOE decisions on the Waste Management Programmatic EIS.
EPA believes that additional documentation to complement the brief analysis and
description of Hanford included in the *Waste Management Programmatic* EIS is needed.
The EIS should include this brief analysis in its entirety, as well as the Record of Decision
from the *Waste Management Programmatic* EIS, since this documentation is seen as
providing the need for this project.
- 25 | 2) Page S.4, Waste Types Analyzed, page S.5, sidebar – The definition of TRU differentiates
it from high-level radioactive waste, and identifies the lower radionuclide and half-life
limits. EPA recommends that this definition be expanded to explain how TRU differs from
high-level wastes and identify upper radionuclide and half-life limits, if these limits exist.
- 26 | 3) Page S.4, Waste Types Analyzed, page S.5 states that beginning in 1987, treatment of
MLLW (generally immobilization, removal, or destruction of the hazardous component)
was required before it could be sent to a Resource Conservation and Recovery Act (RCRA)
permitted land disposal facility. MLLW is defined as waste that contains both
radionuclides and hazardous components. The EIS should describe how, if the hazardous
component is dealt with, RCRA-permitted land disposal facilities address the remaining
radionuclide component subject to the Atomic Energy Act.
- 27 | 4) Section S.04, Waste Types, page S.6 – Since this EIS is supposed to bound conditions, it is
not clear why an estimate of pre-1970 TRU was not provided. The EIS should provide this
explanation. In addition, the explanation of "suspect" TRU waste is confusing and the
statement that DOE has not determined whether to retrieve and process "suspect" TRU
waste as TRU waste or leave it buried in Low Level Burial Grounds (LLBGs) is
concerning. Do future references to TRU in the document allude only to TRU or do they
28 | also include "suspect" TRU wastes? Why was the decision concerning how to best deal
with "suspect" TRU not made prior to, or as part of, this EIS? It appears that the outcome
of this decision will have a bearing on the program design, either the quantity of waste
treated as TRU would increase or LLBGs would need design parameters sufficient to
contain unknown quantities of TRU in an environmentally sound manner. The EIS should
discuss "suspect" TRU, the environmental risks it poses, and how it influences the design
of action alternatives.

- 29 | 5) Sections S.6.1.1, S.6.1.2, S.6.2.1, and S.6.2.2 begin with the conditioning statement, "when needed." The EIS should state when waste needs to be inspected and verified.
- 30 | 6) Table S.1, Summary Comparison of Alternatives, page S.11 states that under Alternative 1, non-conforming wastes would be treated commercially. Are such facilities available? If not, when would they be made available?
- 31 | 7) Section S.8.5, Cumulative Impacts, page S.20 states that impacts for all resources considered in the HSW EIS are relatively small and would not be expected to contribute substantially to impacts of other activities at Hanford or in the surrounding region. EPA strongly believes environmental impacts from proposed action alternatives which exceed or contribute to exceedences of MCLs in the groundwater and vadose zone should not be trivialized by comparing them to the nationally significant impacts which have occurred at the Hanford Site over the last 56 years. Instead, impacts which exceed MCLs be viewed as adding to an already environmentally unsatisfactory situation requiring clean-up with the impacts from these actions.
- 32 | 8) Section S.8.6, Mitigation, page S.20 – Trust organizations should be added as a group that needs to agree on the appropriate mitigation measures and this section should include mitigation measures for groundwater and the vadose zone, since they would result in exceedences of MCLs.
- 33 | 9) Section 1.4.1, Scoping Process, page 1.5 – The EIS states that decommissioning, surveillance, and maintenance activities that occur after closure of the waste management facilities, are not included within the scope of the HSW EIS. The EIS should state why this is the case and when and how they will be considered.
- 34 | 10) Section 1.4.1, Waste Volumes, page 1.6 – The EIS states that within the alternatives for LLW and MLLW, a range of waste volumes was evaluated to reflect the uncertainties in future waste receipts at the Hanford Site. The EIS should include statistical analyses and tools to describe the level of uncertainty and then explain it in language understandable to the general public. Statistical tools that could be employed are the expected mean, confidence intervals, and standard error.
- 35 | 11) Section 1.5.12, Tri-Party Agreement, page 1.15 – The EIS should describe how successful Hanford has been at meeting past milestones established in the Tri-Party Agreement (TPA).
- 36 | 12) Section 1.5.1.2, RCRA Requirements, page 1.16 – This section states that DOE is currently characterizing sites in the 200 area. The EIS should state when this characterization is scheduled to be completed and if draft information from this incomplete characterization is, or should be, included in the EIS.

- 37 | 13) Section 1.5.2, EA for Trench Construction, page 1.18 – The EIS should explain why DOE analyzed the construction and operation of four LLW disposal trenches in the Hanford Site 200 East and West Areas in the 2001 Environmental Assessment rather than analyzing these activities in this EIS.
- 38 | 14) Section 1.5.3, Related NEPA Documents, page 1.18 – The EIS should identify related NEPA documents or other environmental processes which analyze methods to avoid and minimize the production of wastes which subsequently needs to be stored, treated and disposed.
- 39 | 15) Section 1.5.3, Tank Waste Remediation, page 1.21 – The EIS states that the tank waste remediation program is expected to be a major generator of LLW and MLLW sent to the solid waste program for disposal in the Hanford LLBGs. The EIS should explain this process in greater detail, estimate the significant waste volume potentially generated by the tank waste remediation program, state whether this waste stream is included in the waste volume estimates in the EIS, and if not, explain why not.
- 40 | 16) Section 1.5.3, Waste PEIS, page 1.22 states that DOE decided in its February 25, 2000 ROD for LLW and MLLW states that DOE sites that have existing capacity to treat or dispose of LLW and MLLW would do so and that Hanford and Nevada Test Site would receive these wastes from DOE sites that lack this capacity. The EIS should give readers and the decision-makers additional information about the amount of off-site waste Hanford would receive. For example, the EIS could describe how DOE would divide between the Hanford Site and Nevada Test Site, wastes that other DOE facilities lack the capacity to treat or dispose. In addition, the EIS could use historical information to describe how much waste Hanford has received in past years from these facilities.
- 41 | 17) Section 1.5.3, EA for disposition of surplus U, page 1.23 – The EIS should state whether the remaining uranium is included in the estimates of wastes bounded in the EIS. The 3rd paragraph of this section should clearly state that ERDF is constructed to meet all the requirements of a hazardous waste landfill.
- 42 | 18) Section 2.1.1, LLW Streams, page 2.3 – This section describes verification that on-and off-site waste meet WAC. The EIS should describe this in greater detail. For example, how often is a random sampling taken of wastes? How often do tested wastes fail to meet the WAC? Are verifiers at generators and Hanford independent of site operators?
- 43 | 19) Section 2.1.2, MLLW Streams, page 2.5 – The EIS should describe the success of contracts intended to serve as a technical demonstration for future commercial treatment of the majority of Hanford's MLLW. This information is relevant to evaluating action alternatives included in the draft EIS.
- 44 | 20) Section 2.1.3.6, TRU Waste-Newly Generated, page 2.10 – The EIS should state when the Waste Isolation Pilot Plant (WIPP) waste criteria or shipping system are expected to be in place and if draft guidance for the waste criteria or shipping system currently exist.

- 45 | 21) Section 2.1.3.7, TRU Waste-K Basin Sludge page 2.10 – The EIS should clearly state that the K-Basin sludge does not require treatment for PCBs.
- 46 | 22) Section 2.2.2.4, T-Plant Complex, page 2.18 – The EIS states that current plans are to use the water-filled basins for the K Basin sludge until a treatment facility for the sludge is available. The EIS should estimate when such a facility would be available. The EIS should state whether using the T-Plant for this activity would restrict proposed uses of this facility.
- 47 | 23) Sidebar New M-91 Facility, page 2.20 – The EIS only identifies potential treatment capabilities. The EIS should analyze appropriate technological capabilities to include in this plant or defer to another NEPA process.
- 48 | 24) Section 2.2.3.1, Existing LLW Trenches, page 2.24 – The EIS states that soil is placed over the waste so that surface is near the original grade. The EIS should state why soil is not mounded over the trenches to shed water and avoid precipitation from infiltrating into the wastes.
- 49 | 25) Sections 2.2.3.1 and 2.2.3.2, Sidebars of Current and Enhanced LLW, MLLW Trenches, pages 2.24 and 2.25 – The EIS should compare the two alternatives from an environmental as well as a cost/capacity basis.
- 50 | 26) Section 2.2.3.2, Existing MLLW Trenches, page 2.26 – The EIS should state to what extent evapotranspiration rate will prevent infiltration through the layers of the Modified RCRA Subtitle C Barrier. “HWS” should be “HSW.”
- 51 |
- 52 | 27) Section 3.2.2, MLLW Alt. 2, page 3.4 – The EIS states that the new M-91 facility would use non-thermal technology to treat organic solids and debris. The EIS should state why thermal treatments are excluded.
- 53 | 28) Section 3.3.1, Post 1970 TRU Alt. 1, page 3.6 – The EIS states that for the purpose of analysis, this EIS assumes that WIPP would have the necessary administrative and permitting authority to accept these wastes. The EIS should state when DOE expects WIPP would have the necessary authorities to accept wastes and if significant obstacles to obtain those authorities appear to exist.
- 54 | 29) Section 3.5, Other Alternatives Considered, pages 3.9-3.12 – EPA assumes that this section describes alternatives eliminated from detailed study, although this is not explicitly stated. NEPA regulations at 40 CFR 1502.14 (a) states that the Alternatives chapter should briefly discuss the reasons for alternatives having been eliminated. In many cases, the brief discussion does not convincingly state why alternatives were eliminated from consideration. For example, the EIS eliminates many treatment options based on the premise that environmental impacts would be similar. We do not find this rationale to be

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(cont)

sufficient to withhold them from consideration by the decision-maker, especially because formulation of action alternatives appear to be driven primarily by cost concerns. EPA disagrees with eliminating alternatives because these options are being addressed under Superfund. NEPA and Superfund actions are not necessarily mutually exclusive and, when possible, should complement each other. Finally, EPA has identified several reasonable alternatives that the EIS should have examined but did not, including ERDF-like mega trench, varying WAC, volumes imported from offsite, packaging, and capping, and limiting radionuclide concentrations.

55

30) Section 3.5.2.5, Mobile Treatment, page 3.10 – Mobile treatment facilities may be practical for treating certain waste streams. The EIS should state whether not including this option in the EIS precludes its use later on.

56

31) Section 3.5.3.1, ERDF, page 3.11 – The section states that ERDF was rejected as an option because none of the waste is generated by Superfund actions. As discussed at the C3T meeting in June, that may not be the case. The Tri-Party Agencies have the ability to use the Superfund process when appropriate for many waste streams at Hanford. EPA suggests that you include this option in the EIS.

57

32) Table 3.5, Comparison of Impacts, page 3.13 – The EIS should explain why maximum nuclide concentrations for iodine-129 and technetium-99 are greatest in the No Action Alternative when less waste would be buried. Table 3.5 should also identify the time period after action alternatives are adopted that these maximum concentrations are predicted.

58

33) Section 3.7, Costs of Alternatives, page 3.15 – Costs should include total life cycle costs such as cap replacements, institutional control requirements, etc. The EIS should not rely on net present value estimates. The EIS should also state how costs were predicted for the No Action Alternative. Were costs discounted based on when DOE predicts treatment and disposal of the majority of MLLW and difficult to treat TRU? Did the EIS employ consistent methodology for estimating the costs of all the alternatives?

59

34) Section 3.8, DOE Preferred Alternative, page 3.16 states that Alternative 1 is the most cost effective and environmental preferable approach to waste management at Hanford. This section should provide more supporting detail. For example, it should state the overall cost savings as well as show how Alternative 1 was and was not environmental preferable to Alternative 2 and the No Action Alternative.

60

35) Section 4.2.2, 200 Areas, page 4.7 states that the T-Plant Complex is storing 27 metric tons (30 tons) of spent reactor fuel (from Shippingport, Pennsylvania) and that this fuel will be dried out and moved out of the T-Plant canyon. The EIS should state how this waste is classified (e.g., TRU or Hi-Level Waste), when it will be moved, and its final destination.

61

36) Section 4.2.2, 200 Areas, page 4.10 describes 11 miles of underground pipeline used for non-RCRA-permitted waste streams. The EIS should state if this pipeline exists to

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(cont)

facilitate movement of the waste within the 90 day period allowed by RCRA. Paragraph three of the same page states that surface contamination is present in three of the older LLBGs. The EIS should state the source, type, and level of the contamination.

62

37) Table 4.3, page 4.18 expresses probability in scientific notation. We believe the general readership would find probability expressed as fractions easier to understand. Likewise, we believe the general readership would more readily identify with English units rather than metric ones. It is recommended that English units are expressed first with metric equivalents being placed in parenthesis.

63

38) Table 4.6 and 4.7 – These tables should include emissions from remedial actions to be complete. Also, the table should label the two columns under the labels, 200 Area and 300 Area.

64

39) Section 4.4.1, Topography and Geomorphology, page 4.24 refers to sea level and mean sea level. The EIS should state what is the difference between the two. The EIS also describes Holocene eolian activity. We recommend that the EIS define eolian in the text or the glossary.

65

40) Section 4.4.4, Seismicity, page 4.31 states that other earthquakes with Richter magnitudes ≥ 5 and or MMI of VI occurred around Lake Chelan. The EIS should date these earthquakes to make them consistent with the surrounding sentences.

66

41) Section 4.5.14, Onsite Ponds, page 4.36 states that evaporation has also led to relatively high levels of uranium due to concentration of natural sources. The EIS should describe in greater detail natural sources of uranium found at the Hanford Site and the extent that naturally occurring uranium contributes to radionuclide effects.

67

42) Page 4.37 – Chapter 4 appears to lack a section on surface water quality. The EIS should include such a section or explain why such a section is unnecessary.

68

43) Page 4.51, Section Biological and Ecological Resources, pages 4.51 and 4.52 appear to contain contradictory statements. Page 4.51 states that nonnative vegetation species currently dominate the landscape and page 4.52 states that native perennial shrubs and bunchgrasses generally dominate plant communities on the site. The EIS should clarify these statements.

69

44) Section 4.6.1, 200 Area Plants, page 4.59 – This section states that Russian thistle and gray rabbitbrush are deep rooted and have the potential to accumulate radionuclides and other buried contaminants, functioning as a pathway to other parts of the ecosystem. The EIS should identify these pathways including wildlife that consume these species and describe the impacts to these receptors.

- 70 | 45) Section 4.6.2, Wildlife, page 4.63 states that West Lake has shrunk and the remnant small isolated pools and mud flats do not support coots and other nesting waterfowl. The EIS should also discuss impacts on amphibians and other water-reliant wildlife, if applicable.
- 71 | 46) Section 4.7.1, Native American Cultural Resources, page 4.70 – The EIS should state whether tribes who signed treaties reserving their ability to hunt, fish, collect berries, etc., on the Hanford Reservation can do so. If not, the EIS should state how the Federal government has resolved this conflict with agreed upon treaty rights. The third paragraph states that well-watered areas inland from the river also show evidence of concentrated human activity. The EIS should define concentrated human activity (e.g., gatherings, communal living, agriculture).
- 72 | 47) Section 4.8.5, Local and Regional Transportation, page 4.86 describes Level of Service (LOS) without identifying the LOS for roads on the Hanford Reservation.
- 73 | 48) Section 4.8.9, Utilities, page 4.8.8 describes how water systems in the Tri-City area rely on groundwater. The EIS should state if groundwater contamination described earlier in the EIS affects these water supplies as well as their status under the Safe Drinking Water Act.
- 74 | 49) Section 5.2, Air Quality, page 5.6 – EPA supports the use of environmentally conservative modeling to compensate for errors inherent in modeling and to ensure that the full extent of impacts is understood and mitigated for.
- 75 | 50) Tables 5.15 - 5.28 – The incremental impacts of future offsite wastes should be separately tabulated based on the upper and lower bound cases presented.
- 76 | 51) Section 5.14 – Cumulative risks presented should include risks from transuranic disposals (not included in Table 5.61) and should show comparative risks over time (not just at the end of 2046 – see Table 5.61).
- 77 | 52) Section 5.18, Potential Mitigation Measures, page 5.112-114 – The EIS should identify potential mitigation measures for groundwater.
- 78 | 53) Section 5.3.2, Methods for Assessment of Long-term Impacts, page 5.13 – EPA recommends that the assessment include wastes streams resulting from clean-up actions.
- 79 | 54) Section 5.3.2, Methods for Assessment of Long-term Impacts, page 5.14 states that inventories of retrievably stored TRU waste in trenches and caissons located in the LLBGs were not considered because they will eventually be retrieved and sent to the WIPP for disposal. The EIS should estimate when these wastes will be sent to WIPP and if releases are likely to occur in the interim.

- 80 55) Section 5.3.3 – This section does not address the important technical consideration of plutonium mobile fractions. Recent evidence is that small but highly mobile fractions of plutonium wastes can have significant impacts over the short term as well as the 10,000 year groundwater timeframe considered in the EIS. In addition, plutonium is known to exist in a number of oxidation states each of which has unique mobility characteristics. Transuranic wastes should not be screened out of future groundwater evaluations without consideration of the complex nature of plutonium chemistry, facilitated transport, and mobility. The EIS should include a section discussing the potential for mobile plutonium fractions, possible impacts on risk estimates, and actions that could be taken to mitigate impacts.
- 81 56) Section 5.3.3, Long-term Impacts on Water Quality, pages 5.18-5.20 does not differentiate the long-term impacts between alternatives on water quality. The EIS should do so to make meaningful information available to the decisionmaker for comparing alternatives.
- 82 57) Section 5.5.1, LLBGs, page 5.22 states that any mitigation for plant and animal species of concern within the 200 Areas would follow DOE policy. The EIS should identify specific mitigation measures for plant and animal species of concerns and commitments to implement these mitigation measures made in the ROD. The EIS should also state or summarize the referenced DOE policy.
- 83 58) Section 5.5.1, LLBGs, page 5.22 describes how the LLBGs and Area C were denuded by the 2000 range fire. The EIS should state if the fire disturbed the area to the extent that native shrub steppe vegetation is unable to recover, if action alternatives would further undermine the reestablishment of native vegetation, and if additional mitigation measures are necessary.
- 84 59) Section 5.7.1, Alternative 1, page 5.33 states that there is a reasonable probability that archeological sites are located within Area C, that these sites are likely to be buried, and any discovery is likely to result in new knowledge. The EIS should, to the extent possible, identify specific methods to ensure protection of buried deposits and the ROD should commit to use these methods.
- 85 60) Section 5.8, Traffic and Transportation, page 5.34 – This section should provide a summary of impacts from shipping off-site wastes to Hanford.
- 86 61) Table 5.16, Hazardous Chemical Concentrations, page 5.37 – The four chemicals exceeding TEEL-2 guidelines should be bolded in the table.
- 87 62) Table 6.1, TPA Milestones, page 6.3 – The EIS should clearly state what the date of December 2049 for M-91-00 signifies.

88 | 63) Section G.2.1.3, MLLW, page G.49 – This section states that “No uranium or carbon-14 was estimated to reach the water table from MLLW in the 200 West Area within the period of analysis.” The same section also states that these contaminants “were found to be at their maximum level at the 1-km well just before and at 10,000 years.” These two statements appear to be inconsistent since for maximum to be reached at 10,000 years, some quantity must be present in the water table prior to that. The analysis period is 10,000 years and both carbon-14 and uranium can be relatively mobile. Additional explanation is needed to justify the concentration estimate for these radionuclides.

89 | Editorial Comments (No Response Needed)

89 | Section 1.5.2, Trench 33 and Widening Trench 36, page 1.17 – It appears that the word “Impact” is missing from the wording Environmental Statement (ERDA 1975). There was not a citation in the reference section to confirm or deny whether a word was missing.

90 | Section 1.5.3, WIPP, page 1.23 should replace the word “supplement” with “supplemental EIS.”

91 | Section 2.1.1.2, LLW-Category 3, page 2.3 and 2.4 – The EIS should replace “greater confinement” and “monolithic waste form” with easier to understand terms if available.

92 | Section 4.7.1, Native American Cultural Resources, page 4.71 should read “Reconnaissance of selected locations conducted through the mid-1980s, as well as systematic archeological surveys conducted from the middle 1980s through 1996 added to the recorded site inventories.”

93 | Section 4.8.1, Local Economy, page 4.74 – A space should be placed between “and” and “payrolls.”

94 | Section 5.5.1, LLBGs, page 5.22 should read, “Both of these species are relatively common on the 200 Area Plateau.”

**U.S. Environmental Protection Agency Rating System for
Draft Environmental Impact Statements
Definitions and Follow-Up Action***

Environmental Impact of the Action

LO – Lack of Objections

The Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC – Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO – Environmental Objections

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU – Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1 – Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 – Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

Category 3 – Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. February, 1987.

Letter: L090n



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August 22, 2002

Mr. Michael S. Collins
HSW EIS Document Manager
U.S. Department of Energy, MSIN A6-38
P.O. Box 550
Richland, WA 99352

Dear Mr. Collins,

I have received a copy of the Draft Hanford Site Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement (EIS). I would like to thank the Department of Energy (DOE) for its continuing work on resolving this difficult problem and for the opportunity to comment on the EIS.

1 | Because I believe the draft EIS is inadequate to support the proposed decisions, I urge that it should be withdrawn and reissued again in draft form or at least supplemented, allowing further public comment before the final EIS is issued. I offer the following comments in support of my belief of inadequacy.

Purpose and Need Statement

2 | The purpose and need statement should be clarified so that it identifies Hanford's current waste inventory and the cleanup and disposal of wastes of Hanford origin as the primary need and the treatment and disposal of off-site wastes as the secondary need.

Public Participation

3 | The EIS should demonstrate clearly that comments made during the scoping process were used to identify significant issues. (40 CFR 1500.4(g)). The EIS should also account for the lack of any significant issues during the 4-year period between the scoping process and the issuance of the draft EIS. (I.e., has DOE verified that no significant issues arose during that time?)

Alternatives

4 | The EIS essentially limits the range of alternatives to existing and enhanced trench options. No consideration is given to actions (beyond the Waste Acceptance Criteria (WAC)) that could be taken to mitigate impacts. (For instance, EPA has suggested the Environmental Restoration Disposal Facility (ERDF)-like megatrench as an alternative meriting further examination.)
5 | Therefore, all reasonable alternatives have not been explored and evaluated. (40 CFR 1502.14). In conflict with the direction of the National Environmental Policy Act (NEPA), alternatives appear to be based on economic concerns rather than environmental considerations. Because of this, the EIS provides no clear basis for choice among the alternatives. Furthermore, both action
6 | alternatives result in predicted exceedences of radionuclide Maximum Contaminant Levels (MCLs) in the vadose zone and groundwater. This should lead to the disqualification of both these alternatives.

7 | Finally, the no action alternative should have been discussed more fully, taking into consideration the full range of distribution between the Hanford and Nevada sites (with each site receiving all to none of the off-site wastes to be disposed of), and describing the environmental consequences along that range of distribution. A true no action alternative, one that imports no off-site waste should be discussed in the EIS.

1

Letter: L091

B.319

Revised Draft HSW EIS March 2003

Cumulative Impacts

8 | All waste site analyses should be integrated to determine the cumulative impacts of major actions on a complex-wide basis. Rather, the EIS dismisses the impacts in the actions covered by this EIS as relatively small compared to the significant impacts that have occurred at Hanford over the last 56 years. Instead, these impacts that result in exceedences of MCLs should be considered as aggravating an already unacceptable situation.

Intruder Risks

9 | Intruder risks have been evaluated out to 500 years in compliance with 10 CFR 61. But 10 CFR 61 applies only to wastes of level "Class C" and lower. DOE WAC allow for disposal of greater than "Class C" wastes, some of which has very long half-lives. Therefore, intruder risks should be evaluated for a period of time consistent with these half-lives. (For instance, the 10,000-year period evaluated for groundwater.)

Other Concerns

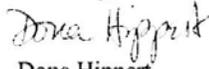
- 10** | • Why do the WAC allow for radionuclide concentrations which exceed those permitted under 10 CFR 61 for the commercially-licensed low-level disposal site on the Hanford Reservation? This inconsistency should be fully addressed. Alternatives should be considered which provide additional isolation for the wastes that exceed 10 CFR 61 criteria.
- 11** | • The NEPA assessment for Endangered Species is inadequate.
- 12** | • Disclosure of the impacts to groundwater and human health at the point of compliance is missing. Non-degradation, required under both state and federal regulations, should be ensured.
- 13** | • The definition of transuranic waste (TRU) should be expanded to explain how it differs from high-level wastes in numerical terms. (Identify the upper radionuclide and half-life limits, if known.) An estimate of pre-1970 TRU or an explanation for the lack of an estimate should be provided. The explanation of "suspect" TRU should be clarified, and a decision made
- 14** | whether it should be retrieved and processed or left buried in the Low Level Burial Grounds (LLBGs).
- 15** | • The EIS should describe how the remaining radionuclide component in Mixed Low-Level Waste (MLLW) is dealt with once the hazardous component is removed in order to send it to a RCRA-permitted land disposal facility.
- 16** | • The EIS should state unequivocally the circumstances in which waste needs to be inspected and verified.
- 17** | • Why are decommissioning, surveillance, and maintenance activities which occur after the closure of the waste management facilities not within the scope of the EIS? When will they be considered? These questions should be answered in the EIS.
- 18** | • Statistical analyses of the level of uncertainty should be provided and explained at level of general public understanding.
- 19** | • How successful has Hanford been at meeting past milestones in the Tri-Party Agreement (TPA)? An assessment should be included in the EIS.
- 20** | • The EIS should state when RCRA-required characterization of sites in the 200 area will be completed. It should also state whether any information from this ongoing characterization is included in the EIS.
- 21** | • The construction and operation of the four Low-Level Waste (LLW) disposal trenches in the 200 East and West Areas should be analyzed.

- 22 | • NEPA documents that analyze methods to minimize waste production should be identified.
- 23 | • The tank waste remediation program and its relation to this EIS needs to be more fully explained.
- 24 | • The disposal of surplus uranium should be addressed and it should be clear whether this surplus uranium is included in waste estimates in the EIS.
- 25 | • It should be explained why soil is placed over the existing LLW trenches to bring it to grade rather than mounding it to shed water.
- 26 | • The reasons why other alternatives were eliminated from consideration should be explained more fully, in a manner that makes withholding them from the decision-maker's consideration understandable. Additionally, other reasonable alternatives (e.g., ERDF, capping) should have been evaluated.
- 27 | • It should be stated whether mobile treatment facilities permanently precluded.
- 28 | • Cost analyses should include total life cycle costs.
- 29 | • The classification of spent reactor fuel in the T-Plant Complex, and when and where will it be moved should be explained.
- 30 | • Do the 11 miles of underground pipeline used for non-RCRA permitted waste streams facilitate movement of waste within the 90-day period allowed by RCRA? This question needs to be answered.
- 31 | • Surface contamination in three of the older LLBGs should be more fully explained.
- 32 | • Natural sources of uranium occurring at the site and their contribution to radionuclide effects should be more fully discussed.
- 33 | • A section on surface water quality should be added to Chapter 4 or its lack explained.
- 34 | • It should be clarified whether native or nonnative plant species dominate the site.
- 35 | • The radionuclide pathways through the ecosystem via deep-rooted plants and wildlife that consume them should be clearly identified and analyzed for impacts.
- 36 | • Impacts on amphibians and other wildlife remaining in the small pool remnants of West Lake should be discussed.
- 37 | • Are the treaties granting tribal hunting and gathering rights on the Hanford Reservation still to be honored? If not, how has the conflict been resolved? Also, 'concentrated human activity' (Native American Cultural Resources section) should be defined.
- 38 | • The effect of groundwater contamination on Tri-City area water supplies should be discussed.
- 39 | • Environmentally conservative modeling should be used in determining the effects on air quality to ensure consideration of the full extent of impacts.
- 40 | • Cumulative risks should include risks from TRU disposal and should show comparative risks over time, not just in 2046.
- 41 | • Potential mitigation measures for groundwater should be identified.
- 42 | • Wastes not included in the Long-term Impact assessment because of eventual export from the site should have dates of export identified and the interim risk of releases assessed.

- 43 | • There should be an assessment of the impacts from highly mobile plutonium fractions.
- 44 | • Long-term impacts on Water Quality should be differentiated between the alternatives.
- 45 | • There should be a summary of impacts from shipping off-site wastes to Hanford in the Transportation and Traffic section.

Thank you again for the opportunity to comment on these issues.

Sincerely,



Dona Hippert
Air and Toxics Project Coordinator



August 12, 2002

Michael Collins
U.S. Department of Energy
P.O. Box 550, A6-38
Richland, WA, 99352



*Founded in 1906
to Explore, Study,
Preserve, and Enjoy
the Natural Beauty
of the Outdoors*

RE: USDOE plan to implement the Bush Administration vitrification Goal.

Dear Sir;

Since 1906, The Mountaineers has been concerned with issues that challenge the health of our environment across Washington State. Our membership, about 15,000, is made up of branches in Olympia, Tacoma, Seattle, Everett, Bellingham, and Wenatchee. Our members explore the entire state's landscape to hike, climb, photograph, backpack, snowshoe, kayak, and simply enjoy Washington. It is with this perspective that we respond, as we have before, to the state of the Hanford facility.

As you know, production of weapons-grade plutonium has made the 560 square mile Hanford facility in Eastern Washington one of the most contaminated sites in the world. The Hanford facility sits on the banks of the Columbia River, one of our region's most valuable natural resources. In 1986, the United States Department of Energy (DOE) made public thousands of documents showing there had been off-site releases of radiation as well as considerable contamination of the site.

The DOE's current mission at Hanford is cleanup. In 1989, the DOE agreed to a 30 year, \$50 billion schedule for clean up. The resulting "Hanford Federal Facility Agreement and Consent Order," also called the "Tri-Party Agreement" (TPA), between the DOE, the Washington Department of Ecology, and the US Environmental Protection Agency, established a legally enforceable cleanup schedule by which the DOE was to bring the Hanford site into compliance with state and federal environmental laws.

By mid 1997, it was clear that the existing TPA schedule for completing interim stabilization of the single-shell waste holding tanks would not be met. On June 8, 1998, the Office of the Governor and Washington State Attorney General Christine Gregoire notified the DOE of Washington State's intention to file suit against them for failure to meet cleanup milestones. Subsequent to this, Washington State and the DOE entered into yet another consent decree agreement with "court enforceable, technically sound schedules" for single shell holding tank stabilization.

The current consent decree agreement states that 10 percent of the liquid waste by volume and 25 percent of the liquid waste by radiation count from the single shell holding tanks is to be vitrified by 2018; and that 99 percent is to be vitrified by 2028 – this being enforceable by law.

In spite of this, the DOE has developed a plan to implement a Bush administration goal, announced last November, to eliminate vitrification of 75% of the nation's High-Level Nuclear Wastes from nuclear weapons production. Unfortunately, many of the elements of this plan are either illegal, or promote illegal practices:

- 1 * Abandonment of High-Level Nuclear Wastes in the Single Shell Tanks, which have already leaked over one million gallons of waste that is moving towards the Columbia River. The plan involves pouring cement (grout) into tanks - even before the DOE prepares a legally required Environmental Impact Statement (EIS). Contaminated soil and groundwater would not be cleaned before the DOE declares the tanks "closed" after the concrete has been poured into them. Federal and state hazardous waste laws forbid "closing" tanks without emptying all hazardous wastes and cleaning up leaked contamination.
- 2
- 3
- 4
- 5
- 6 * Illegitimate "reclassification" of wastes at Hanford, per Bush Administration "Review" released February 4, 2002: The last page in Appendix B of the Hanford Plan shows a DOE Headquarters

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Letter: L092



6 (CPH) "commitment"... "to determine certain wastes do not require permanent isolation" as High-Level Waste. Figure 7 of the Plan shows High-Level Waste "reclassified as mixed Low-Level or TRU." Pages A-10, 11 seek classification of waste left in bottom of tanks as "incidental" to avoid retrieval and treatment. The DOE's efforts to leave wastes in tanks and reclassify them is the subject of a federal lawsuit brought by the NRDC, the Snake River Alliance and the Yakama Indian Nation.

7 * Bypassing of congressional, regulatory, and public oversight by allowing Hanford managers to shift funds appropriated by Congress for specific efforts (i.e., for legally required soil or groundwater cleanup, or tank waste safety work) to any other project without Congressional approval or notice. Current law allows Hanford managers to shift only up to \$5 million once per year between budget control points (broad projects) without notifying Congress.

8 * Forcing the pending Hanford Site Solid Waste EIS to deceptively "justify" the DOE's proposal to import and bury 340,000 cubic meters of Low-Level Waste (LLW) - a figure that is several times higher than any prior proposal - without even considering the results of the Environmental Impact Statement process.

9 * Importation of massive amounts of radioactive waste from out of state into the Hanford facility for burial in unlined soil trenches. This violates Washington State law.

10 As a reminder, the National Environmental Policy Act (NEPA) requires a comprehensive look at all the impacts in bringing waste to Hanford, including risk of accident, impact to the soil and groundwater at Hanford, etc. Included in the 70,000 truckloads of waste, the plan is to bring mixed low-level waste to Hanford (that is radioactive waste mixed with chemical wastes). Supposedly, the State of Washington has jurisdiction over this type of waste under Ecology's Model Toxics Control Act (MTCA).

11 The proposed plan also promotes illegal practices by increasing contractor "self assessment" and reducing federal oversight for safety and health. It has been recently documented that Hanford contractors have violated numerous provisions of the federal rules designed to prevent workers from being exposed to toxic beryllium; and deliberately used a detection limit to survey buildings for surface contamination that was 2.5 times above the standard set to protect workers from exposure to beryllium. The DOE's rules and informal safety and health "orders" are not currently enforceable.

12 We concur with the view expressed by Senator Maria Cantwell, that the federal government needs to develop a rational national policy to deal with nuclear waste, rather than forcing states to shuffle it around.

13 We oppose DOE's proposed plan, and we request that further offense of our state and federal environmental laws discontinue.

Sincerely,

THE MOUNTAINEERS

Glenn Eades
President

cc: Attorney General Christine Gregoire
Department of Energy Secretary Spencer Abraham
Environmental Protection Agency Administrator Christi Todd Whitman

(206) 284-6310
300 THIRD AVE. WEST
SEATTLE, WA 98119
FAX (206) 284-4977

Letter: L092a



Kettle Range CONSERVATION GROUP

George Wooten, 23 Aspen Lane, Winthrop, WA 99696-3835 (gwooten@ketterange.org)

Date: August 11, 2002
To: Michael Collins
U.S. Department of Energy
P.O. Box 550, A6-38
Richland, WA 99352
Subject: "Performance Management Plan for the Accelerated Cleanup of the Hanford Site,"
Draft Solid Waste Environmental Impact Statement (EIS)

Dear Sirs, Mmes:

We are against this proposal for the following reasons.

- 1 | The proposal involves too much area to allow for effective controls on safety and contamination of the adjacent environment.
- 2 | U.S. DOE's plan could more than double the total amount of radioactive waste buried in unlined soil trenches at Hanford. The current levels of radioactivity are unacceptably high. Funding to provide monitoring and protection of the west coast people and marine resources from contamination at Hanford is unlikely to be feasible.
- 3 |
- 4 | Citizens of Washington and throughout much of the U.S. are uniformly against proliferation of radioactive waste dumps. If enacted, the proposed action would violate a twelve-year old agreement with the State of Washington and the U.S. EPA, numerous environmental laws, and the Nuclear Waste Policy Act.
- 5 | The import of an estimated 70,000 truckloads of radioactive and hazardous waste to be dumped at Hanford is not favored by Washington state citizens, 300,000 of whom are already documented to have suffered gravely or died early due to past releases of toxic materials at Hanford. The U.S. has not yet provided compensation to these injured northwest citizens.
- 6 | Dumping more radioactive waste will contaminate groundwater flowing into the Columbia River for thousands of years, and make a healthy environment impossible for humans and native species alike.
- 7 | Columbia River fish are already highly contaminated with chemicals and contaminants that are likely to cause cancer, immunological and neurological illnesses, yet the EIS did not include measurements of radiological contamination in the fish. The risks reported in the EIS underestimate the true risk, especially for tribal peoples who consume larger quantities of fish than non-tribal peoples.
- 8 | This risk to native peoples who have treaties guaranteeing them access to 50% of the Columbia River's fish is unacceptable. EPA reports that the likelihood of getting cancer for a tribal member from eating Hanford Reach fish represents a lifetime risk of 1 in 50 - a much higher level of risk than EPA's standard action level of 1 in a million to 1 in 10,000 risk of cancer. For tribal children, the risk of contracting an immunological or neurological disease from Hanford Reach fish is 100 times higher than for non-tribal children. The study raises serious implications for the health and safety of tribal peoples in particular. The risks are highest for sturgeon and whitefish, the latter of which are a favorite food of some tribes.

Main Office - 600 S. Clark Street, P.O. Box 150, Republic, WA 99166 (509) 775-2667

Letter: L093

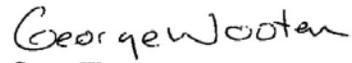
B.325

Revised Draft HSW EIS March 2003

The proposal to knowingly raise the risk to native people more than to others amounts to racism, regardless of the content of the rest of the EIS.

The risk of nuclear waste transportation to Hanford is not even considered in the EIS. This would increase the risk of accidents and terrorist attacks.

Sincerely yours,

A handwritten signature in cursive script that reads "George Wooten".

George Wooten
Field Representative

Letter: L093a

GORDON H. SMITH
OREGON

COMMITTEE
BUDGET
COMMERCE
ENERGY AND NATURAL RESOURCES
FOREIGN RELATIONS

United States Senate

WASHINGTON, DC 20510-3704
July 29, 2002

The Honorable Spencer Abraham
Secretary of Energy
1000 Independence Ave., S.W.
Washington, D.C. 20585

Dear Secretary Abraham:

I am writing to express my strong concerns about the Department's Draft Hanford Site Solid Radioactive and Hazardous Waste Program Environmental Impact Statement.

1 | As you know, the Hanford Nuclear Reservation, currently storing sixty percent of the nation's high-level radioactive waste, is the most seriously polluted site in the nation. I have noted before that this waste threatens the health of the Columbia River and the people and wildlife that live in the Pacific Northwest.

2 | First, let me make clear that I remain opposed to any proposal that would essentially perpetuate the use of the Hanford Nuclear Reservation as a federal dump site for radioactive waste. Cleaning up – not adding to – this environmental catastrophe should be priority one for the Department of Energy and the focus of this Environmental Impact Statement. For this reason, I was disappointed to learn that under the current Draft EIS, the Department is actually considering increasing shipments of off-site nuclear waste to Hanford. This
3 | proposal should not even be considered, particularly since the Department has yet to process a single ounce of the liquid waste already stored at Hanford.

4 | In addition, I am concerned that the Draft EIS fails to provide a comprehensive analysis of the cumulative effect of all of Hanford's current and proposed waste storage and treatment activities on the ecosystem. For instance, the document fails to incorporate analysis or recommendations on transuranic (TRU) wastes disposed at Hanford prior to 1970.

5 | Unfortunately, I must also point out that I have heard from a number of constituents that the summary document was written in a manner that was difficult for laypeople to understand and gives citizens little information that would help them analyze the proposal. In addition, there have been complaints that copies of the Draft EIS were not sent even after they were requested. With a matter as serious as the future of Hanford,
6 | I believe the federal government should make every effort to ensure that interested stakeholders are fully informed of the actions being considered by the Department.

Thank you for considering my views and the views of those attending public hearings on this matter. I look forward to hearing from you soon.

Sincerely,



Gordon H. Smith
United States Senator

cc: Mr. Michael S. Collins, EIS Document Manager

www.gsmith.senate.gov
oregon@gsmith.senate.gov

PRINTED ON RECYCLED PAPER

Letter: L094

B.327

Revised Draft HSW EIS March 2003



STATE OF WASHINGTON
 DEPARTMENT OF ECOLOGY
 P.O. Box 47600 • Olympia, Washington 98504-7600
 (360) 407-6000 • TDD Only (Hearing Impaired) (360) 407-6006

August 21, 2002

Mr. Michael S. Collins
 U.S. Department of Energy
 Richland Operations Office
 P.O. Box 550 – A6-38
 Richland, WA 99352-0550

Dear Mr. Collins:

Re: Draft Hanford Site Solid (Radioactive and Hazardous)Waste Program
 Environmental Impact Statement (DOE/EIS-0286D), April 2002

197 | This letter transmits the Washington State Department of Ecology (Ecology) comments on the
 Draft Hanford Site Solid Waste Program Environmental Impact Statement (HSW-EIS) from the
 United States Department of Energy (USDOE). Our thorough review of the HSW-EIS has
 identified several omissions and inadequacies which we comment on through this letter and the
 enclosed *General Summary*. In addition, we have enclosed a very detailed *Table of Specific
 Comment* in an effort to provide specific ideas and language that would improve the HSW-EIS.

198 | We had hoped that the HSW-EIS would contribute to our confidence both in how Hanford's
 waste is managed and in the safety and importance of Hanford's role in the overall cleanup of
 nuclear sites in the country. We are disappointed, therefore, that the Draft HSW-EIS fails to
 meet this expectation. In short, the Draft HSW-EIS does not provide adequate and much-needed
 information to help us or the public address major issues. For example:

- 199 | • What is the net benefit or harm of importing additional wastes for storage, treatment or
- 200 | • disposal at Hanford?
- 201 | • Are there alternatives to burying minimally-treated waste in shallow, unlined trenches?
- 201 | • What are the long-term costs and requirements for monitoring, maintaining, and
 preventing failures at, and radioactive releases from, waste sites, and how can we be
 confident that these activities will be effectively and accountably managed?

More specifically, we find the Draft HSW- EIS deficient in the following areas:

Scope is too narrow.

- 202 | • The Draft HSW-EIS assumes that the 1997 Waste Management Programmatic
 Environmental Impact Statement (PEIS) adequately compared the effects of treatment
 and disposal facilities at various sites, but it did not. The PEIS relied on data now several

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Letter: L095

- 202** | years old and did not have available even the limited information about Hanford
(cont) | contained in the Draft HSW-EIS.
- 203** |
- The Draft HSW-EIS assumes continued or increased off-site low-level waste and mixed low-level waste disposal at Hanford. It does not separately assess needs for disposing Hanford waste, in spite of widespread requests for such analysis during the scoping comment period.
- 204** |
- The Draft HSW-EIS does not evaluate other options currently under active discussion, such as the lined, RCRA-compliant mega-trench for disposing of low-level waste, expanded use of the Environmental Restoration Disposal Facility (ERDF), permanent disposal of low activity wastes from Hanford tanks in a form other than glass, or storing and treating transuranic wastes from other sites.

Impact analysis is too limited.

- 205** | The Draft HSW-EIS reaches conclusions without apparent adequate data and analysis. It fails to disclose what information was not available for use in arriving at conclusions.
- 206** |
- The Draft HSW-EIS does not include sufficient data about groundwater contamination and movement at Hanford.
- 207** |
- The Draft HSW-EIS does not include sufficient data about the extent and characteristics of wastes and contamination already in the ground at Hanford.
- 208** |
- The analysis of cumulative impacts from the proposed treatment and disposal activities, in conjunction with other reasonably foreseeable actions at Hanford, is extremely limited and not credible based on the material presented.
- 209** |
- The Draft HSW-EIS does not include data about the effects on the full range of plant and animal species, nor does it recognize USDOE's obligation to protect and restore priority habitat, even if it has been degraded by fire or pesticides.

Regulatory analysis is insufficient.

- 210** |
- The Draft HSW-EIS does not adequately address the challenges USDOE presently faces in complying with RCRA and state dangerous-waste regulations.

Consideration of closure, long-term care and costs is very limited.

- 211** | The Draft HSW-EIS does not deal with such long-term activities as site closure, corrective action, monitoring, maintenance, and post-closure institutional controls. It also does not assess nor compare disposal alternatives or low and high volumes according to the long-term care requirements imposed by each, and the costs of meeting the requirements.

Transportation concerns are not addressed.

- 212** | The Draft HSW-EIS addresses only on-site transportation of wastes, relying upon the generic and very dated PEIS to cover how waste is transported to Hanford. Anyone who has driven

Letter: L095a

Mr. Michael S. Collins
August 21, 2002
Page 3

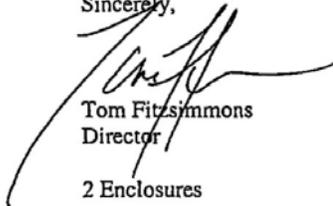
212 | along I-182 or SR-240 in the Tri-Cities area knows that land use along those routes has changed
(cont) | dramatically since the 1990 census used in the generic assessment of the PEIS. The Draft HSW-
EIS also does not analyze rail transport on or off-site, even though rail transport is under active
consideration.

Summary

213 | We believe the Draft HSW-EIS represents a missed opportunity for moving the discussion of
Hanford and nationwide nuclear cleanup to a more productive level. Ecology encourages
USDOE to consider reissuing a second EIS which would provide a comprehensive vision that
assures the safe treatment, storage and disposal of Hanford's waste, and evaluates alternatives
and options for Hanford's role in supporting cleanup nationally. Based on this draft, neither the
public nor the state of Washington can address these issues with any confidence. We are hoping
that through a revised and more comprehensive Draft HSW-EIS we would be able to evaluate
and if appropriate support decisions regarding import of additional wastes to Hanford, hazardous
waste permitting activities related to burial grounds and treatment facilities, and several
initiatives arising from the Cleanup Constraints and Challenges Team's work.

Thank you for the opportunity to comment on this important document

Sincerely,



Tom Fitzsimmons
Director

2 Enclosures

cc: Keith Klein, USDOE/RL
Mike Gearheard, USEPA
The Honorable Robert Wahpat, Chairman, Yakama Indian Nation
The Honorable Gary Burke, Chair, Board of Trustees, Confederated
Tribes of the Umatilla Indian Reservation
The Honorable Samuel N. Penney, Chairman, Nez Perce Tribal Executive
Committee
Stuart Harris, Confederated Tribes of the Umatilla Indian Reservation
Russell Jim, Yakama Indian Nation
Patrick Sobotta, Nez Perce Tribe
Michael Graine, Oregon Office of Energy
Todd Martin, Hanford Advisory Board

Letter: L095b

**Draft Hanford Site Solid Waste Program
Environmental Impact Statement (DOE/EIS-0286D)
August 21, 2002**

**General Comments
Washington State Department of Ecology**

Summary of the Draft HSW-EIS

The Draft HSW-EIS addresses the management of low-level waste (LLW), mixed low-level waste (MLLW), and post-1970 transuranic (TRU) waste at the Hanford Site. Management of these wastes would involve treatment, storage, and disposal. Treatment, if it occurs, would be at either the Hanford Site, or an off-site commercial facility. Storage would occur at the Hanford Site, and disposal would occur at the Hanford Site for LLW and MLLW, and at the Waste Isolation Pilot Plant (WIPP) for post-1970 TRU.

Three alternatives, for each waste type, are evaluated in the HSW-EIS.

The first alternative, the preferred alternative, generally consists of utilizing existing facilities for storage, commercially treating and/or modifying existing facilities for waste treatment, and filling existing trenches and constructing deeper, wider, trenches and capping them at closure. Post-1970 TRU would be sent to WIPP for disposal.

The second alternative proposes using current capabilities for storage and constructing new treatment facilities. Waste would be disposed in existing trenches and new trenches would be constructed using the current design. All trenches would be capped and closed. Post-1970 TRU would be sent to WIPP for disposal.

The third alternative, the no action alternative, would utilize existing treatment and storage capabilities. No new trenches would be constructed. Once the existing trenches are filled the remaining waste would be placed into indefinite storage. Existing storage facilities would be expanded to manage increased volumes of waste. Commercial facilities would be utilized on a limited basis. MLLW trenches would be capped at closure. Most post-TRU would be sent to WIPP, however, some would remain untreated.

Each alternative was evaluated for a range of waste volumes:

Letter: L095c

**Draft Hanford Site Solid Waste Program
Environmental Impact Statement (DOE/EIS-0286D)
August 21, 2002**

**General Comments
Washington State Department of Ecology**

Summary of the Draft HSW-EIS

The Draft HSW-EIS addresses the management of low-level waste (LLW), mixed low-level waste (MLLW), and post-1970 transuranic (TRU) waste at the Hanford Site. Management of these wastes would involve treatment, storage, and disposal. Treatment, if it occurs, would be at either the Hanford Site, or an off-site commercial facility. Storage would occur at the Hanford Site, and disposal would occur at the Hanford Site for LLW and MLLW, and at the Waste Isolation Pilot Plant (WIPP) for post-1970 TRU.

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Each alternative was evaluated for a range of waste volumes:

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- LLW ranges from 432,582m³ to 631,427m³ and includes LLW generated at the Hanford Site and waste imported from other United States Department of Energy (USDOE) Facilities.
- This also includes 283,067m³ of waste which is already disposed in the Low Level Burial Grounds (LLBG) and
- MLLW ranges from 65,334m³ to 205,678m³, which includes waste that is generated at the Hanford Site and imported from other USDOE and commercial facilities.
- Only one volume is used for post-1970 TRU Waste: 45,806m³ the maximum Hanford Site forecast.

The Draft HSW-EIS assumes implementation of the February 25, 2000, Record of Decision (ROD) for MLLW and LLW from the Waste Management Programmatic Environmental Impact Statement (WM-PEIS) (DOE/EIS-0200, May, 1997). That ROD determined that Hanford would continue to dispose of LLW and MLLW generated on-site. The ROD also identified Hanford and the Nevada Test Site as "regional" disposal facilities for LLW and MLLW from other USDOE sites.

Issues Concerning Scope and Analysis

- 155** | The Draft HSW-EIS essentially evaluates a limited range of near-term alternative means to install treatment capability and to dig waste disposal trenches. It evaluates the effects of doing so for a limited range of waste volumes.
- 156** | ➤ The Draft HSW-EIS assumes that the WM PEIS adequately compared the impacts of treatment and disposal facilities at various sites, but it did not. At a minimum, the WM PEIS did not have available even the limited information contained in the Draft HSW-EIS. The information used to compare Hanford to other disposal sites in the WM PEIS was never widely available for public review and is not available for comparison with the Draft HSW-EIS.
- 157** | ➤ The Draft HSW-EIS evaluates only the management of wastes owned by, or coming to, the existing Waste Management Program, touching only lightly on previously buried wastes, environmental restoration wastes, naval reactors, and other wastes disposed near surface at Hanford.
- 158** | ➤ The Draft HSW-EIS does not evaluate other options currently under active discussion, such as the lined mega-trench or expanded use of the Environmental Restoration Disposal Facility (ERDF).
- 159** | ➤ The Draft HSW-EIS does not fully evaluate the potential for additional required management of pre-1970 TRU wastes, or corrective action for releases of chemically hazardous wastes from burial grounds filled before 1988.
- 160** | ➤ The Draft HSW-EIS does not evaluate treatment and storage of significant quantities of TRU waste from other sites.
- 161** | ➤ The Draft HSW-EIS does not evaluate the impact of permanent disposal of incidental low activity tank wastes in shallow land burial as proposed in the Supplemental Tank Waste Remediation System EIS.
- 162** | According to NEPA requirements, 40 CFR Part 1500.2(e) the NEPA process should be used to identify and assess reasonable alternatives for the proposed action "that will avoid or minimize adverse effects of these actions." The state of Washington requests that the range of alternatives analyzed be broadened to include "no import or out of state waste" and the "worst case" import scenario based on the WM-PEIS. In addition,

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163 | 40 CFR Part 1506.2(d) requires Federal agencies to integrate environmental impact
statements with the State and local planning process. When there are "inconsistencies
164 | of a proposed action with any approved State or local plan and laws (whether or not
federally sanctioned)" it should be discussed in the EIS. The Draft HSW-EIS does not
acknowledge or discuss the state of Washington's policies about accepting out of state
waste, nor have any reconciliation or mitigationmitigative measures been presented.

165 | The Draft HSW-EIS states that the environmental analysis in the document was
conducted through the year 2046, which represents the end of most waste management
operations at the site. This resulted in the following scope and bounding concerns:

- 166 | > The post-closure requirements for waste disposal facilities may extend beyond the
end of active waste management, which is not indicated by the 2046 date.
- > Long term impacts to groundwater and the Columbia River were evaluated for
10,000 years. There is no examination of impacts in the intervening period nor any
indication of the extent to which the 10,000 year results are a function of
radionuclide decay.

Conclusions Not Supported

167 | The Draft HSW-EIS reaches conclusions without adequate data and analysis. It often
fails to disclose what information is *not* known in arriving at conclusions.

- 168 | > The Draft HSW-EIS does not include sufficient data about either characteristics of
disposed waste, or groundwater movement at Hanford.
- 169 | > The Draft HSW-EIS does not include data about impacts to certain ecological
receptors, or about potential harm to restoration of priority habitat that may have
been degraded by fire or pesticides.
- 170 | > The impact assessments underlying the Draft HSW-EIS are not accompanied by
uncertainty analyses that would provide some indication of the reliability of estimates
and predictions.
- 171 | > The treatment of cumulative impacts from the proposed treatment and disposal
activities, in conjunction with other reasonably foreseeable actions at Hanford, is
extremely limited and not credible based on the material presented.

172 | According to the requirements of Title 40 of the Code of Federal Regulations (CFR) Part
1502.22 the foreseeable significant adverse effect on the human environment should be
evaluated. Reasonably foreseeable impacts include "catastrophic consequences, even
if their probability of occurrence is low." Based on the USDOEs continued difficulties
implementing and maintaining thorough waste characterization, groundwater monitoring
at waste disposal sites, and corrective actions, it would not be unreasonable to consider
groundwater contamination reaching the Columbia River. Therefore, this environmental
impact should be considered. If information is incomplete or unavailable the Draft HSW-
EIS is supposed to acknowledge the lack of information. Mitigative measures should be
proposed and described as appropriate.

Inadequacies of the Regulatory Analysis

Based on 10 CFR Part 1021.103, in which the USDOE adopts the regulations for
implementation of the National Environmental Policy Act (NEPA), 40 CFR Parts 1500

Letter: L095f

173

through 1508, the Washington State Department of Ecology has identified several regulatory inadequacies/omissions in the Draft HSW-EIS. The Draft HSW-EIS does not adequately consider the current regulatory challenges already facing Hanford with regard to dangerous and mixed waste management. The Hanford Federal Facility Agreement and Consent Order (HFFACO) is a compliance agreement for bringing USDOE into conformity with the Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Restoration, Compensation and Liability Act (CERCLA), and the Hazardous Waste Management Act (HWMA) requirements for the waste at Hanford. In addition, the Hanford RCRA Permit details requirements for managing dangerous and mixed waste in accordance with state and federal regulations, including corrective action at solid waste management units, and integration of RCRA and CERCLA activities. USDOE continues to struggle to achieve and maintain overall compliance with mixed waste management at Hanford, particularly with regard to characterization, storage, and treatment of mixed waste. Prior to accepting more waste from across the nation, the state of Washington must be assured that current waste management activities at Hanford are protective of human health and the environment and compliant with state and federal regulations, and the Tri-Party Agreement (TPA).

174

Throughout the Draft HSW-EIS the text is incomplete or silent on RCRA regulatory authorities for waste management facilities, in particular with regard to the LLBG, but also to other facilities such as T-Plant, CWC, WRAP, LERF, ETF, etc. Waste management, permitting, closure, and post-closure requirements for RCRA treatment, storage, and disposal (TSDs) and waste management units are not identified. Corrective action authority to address releases from regulated facilities is unclear. Extensive revision of a number of sections within the document is needed to accurately reflect the regulatory environment. Without clarity on RCRA applicability and extent, bounding conditions can not be properly established and thus alternatives can not be adequately evaluated. Here are specific examples of such omissions:

- The Draft HSW-EIS does not adequately address the limitations imposed by the present Part A designation for the LLBG, and by the requirements that will accompany inclusion of Hanford LLBG in the Hanford Sitewide Permit.
- The Draft HSW-EIS does not adequately address the regulatory requirements for modification of the Part B permits for the Central Waste Complex (CWC), 200 Area Effluent Treatment Facility (ETF), Liquid Effluent Retention Facility (LERF), LLBG, T Plant Complex (T Plant), and the Waste Receiving and Processing (WRAP) Facility.
- The Draft HSW-EIS does not adequately address the regulatory requirements associated with mixed waste and mixed transuranic waste storage and treatment at CWC, WRAP and T Plant.
- The Draft HSW-EIS does not address the treatment requirements associated with mixed waste under Washington law. (RCW 70.105.050)
- The Draft HSW-EIS reflects insufficient attention to consultation requirements under the Endangered Species Act.
- The Draft HSW-EIS does not recognize and adhere to the state of Washington's water antidegradation policies (WAC 173-201A-070) and the state of Washington's maintenance and protected waters designated as outstanding resource waters (WAC 173-201A-080).

Letter: L095g

- The Draft HSW-EIS does not adequately and/or accurately reflect corrective action regulatory requirements applicable to an evaluation of reasonable alternatives or mitigation measures.

175

Several regulatory requirements specified in 40 CFR Part 1502 have not been adequately addressed. The purpose and need statement does not adequately specify the underlying purpose and need for the proposed action. The alternatives should include a rigorous exploration and evaluation of "all reasonable alternatives" or an explanation of why they were eliminated. Alternatives not within the jurisdiction of the lead Agency should also be included. The Draft HSW-EIS does not include an adequate description of the affected environment, or the environmental impact. The impacts to the long-term productivity and the irreversible commitment of resources have not been presented to decision makers. The indirect effects of the alternatives and their significance to the Columbia Basin environment have been overlooked. In addition, conflicts between the proposed actions and the objectives of State and local government have not been addressed. The Draft HSW-EIS does not meet the requirements of 40 CFR Part 1508.25(2), addressing the cumulative actions of the recently-approved Hanford Site Accelerated Cleanup with the proposed alternatives, which when viewed together have cumulatively significant impacts and should therefore be discussed in the same impact statement.

Groundwater Impacts and Range of Alternatives to Protect Groundwater

176

The groundwater quality impact analysis (Appendix G of the Draft HSW-EIS) represents the basis for evaluating reasonable alternatives or mitigation measures. The LLBG groundwater quality impact analysis methodology is deficient in several significant ways:

- 1) the omission of analysis of impacts occurring during operation of the LLBG;
- 2) releases are not assumed to begin until 2046;
- 3) the source term and enabling assumptions are incomplete and lacking in sufficient basis;
- 4) the Point of Compliance for a RCRA TSD facility is the waste site boundary, NOT an arbitrarily chosen point(s);
- 5) characterization data is inadequate, and
- 6) assumptions of no release to groundwater from LLBG are based on inadequate data.

177

Deficiencies in the current groundwater monitoring networks to accommodate changes in groundwater flow direction, dropping groundwater levels, and "dry" monitoring well, should be addressed, including an estimation of the number and cost of needed wells, or acceptable alternative monitoring. Without this information, the cost analysis contained in the Draft HSW-EIS is also incomplete. These omissions render the impact and cost evaluations 1) non-bounding and incomplete, and 2) do not allow the reader to understand that the groundwater quality impact analysis is not supported by adequate LLBG-specific data.

Ecological Assessment/Impacts

Letter: L095h

178 The purpose of Appendix I is to give additional justification to statements made in the sections on ecological impacts found in volume one. Drawing upon various studies, Appendix I identifies most of the ecological systems at risk, but conspicuously omits several species and guilds such as the microbiotic crust, water fowl, and bald eagles that are identified in the *Biodiversity Inventory and Analysis of the Hanford Site* (The Nature Conservancy, 2000).

178 Not only does this assessment fail to identify all potentially impacted species, it fails to adequately address potential impacts to species and habitats identified. Risk from chemical contaminants, such as carbon tetrachloride and PCB, associated with MLLW and TRU waste processing respectively, are not evaluated. The impact of increased land use on flora and fauna is dismissed, citing effects of fire and herbicide use. All impacts that prevent recovery of a "priority habitat" must be assessed in addition to effects on currently present habitats and species. There is no quantification or qualification of uncertainties associated with the assessment of potential ecological impact on the site actions. An uncertainties analysis needs to be part of the assessment.

179 There are conspicuous data gaps that prevent a proper assessment of the potential impacts of the proposed actions on species and habitats. This document does not provide sufficient information on protection of state and federally listed species. Therefore, it is Ecology's opinion that a formal Endangered Species Act Section 7 consultation would be required to ensure protection of Threatened and Endangered Species.

180 The Draft HSW-EIS tends to ignore a number of ecological assessment/impact issues.

- The Draft HSW-EIS does not provide sufficient information to allow competent decisions to be made.
- The Draft HSW-EIS does not provide a comprehensive list of impacted species and habitats.
- The Draft HSW-EIS does not assess the risk from chemical contaminants.
- The Draft HSW-EIS does not quantify the impacts of proposed actions on all present and future potential habitats.

Health Impacts

181 It was difficult to follow the details of the health assessments, even for a person with training in radiological dose assessment. It was not always clear as to which exposure scenarios and assumptions were used for a given dose result. The information necessary to understand the details was often found scattered throughout the main document, the appendices, and outside documents. In accordance with 40 CFR 1502.21 material should be incorporated into the EIS by reference, to reduce bulk, but "without impeding agency and public review of the action." The content of the cited material should be briefly described in enough detail to allow for adequate review of the document and proposed alternatives.

As an example, Table 5.23, in section 5.11.1.3, presents health impacts to a resident gardener at the one (1) kilometer well (one [1] kilometer down gradient from the 200 Area) from radionuclides in groundwater. The first point of confusion is that the resident gardener, as specified in Appendix F, is located 20.6 kilometers from the 200 Area, but

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should be used to determine the usefulness of spending additional effort to reduce uncertainty. It should also be recognized that the uncertainty and dominance principles are coupled. Quantification, therefore, is required to determine the individual component's significance in impacts to the receptors. The assessment must not leave out any factors that dominate the results.

Consideration Of Closure, Long-Term Care And Costs Is Very Limited

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One of the requirements of 40 CFR Parts 1501.2(b) and (c) include the adequate development of alternatives to enable the decision maker to compare economic and technical analysis. The Draft HSW-EIS does not deal in detail, if at all, with such long-term activities as site closure, corrective action, monitoring, maintenance, and post-closure institutional controls. Nor does it assess, or compare, either disposal alternatives or low and high volumes, according to the requirements imposed by each, and the costs of meeting those requirements. A cost-benefit analysis of the proposed alternatives, including factors not related to environmental quality, should be developed in compliance with 40 CFR Part 1508.23. These issues have not been adequately developed to evaluate the impact to the Hanford National Monument, Columbia River, or local populations. The economic impact of compliant closure, corrective action, monitoring, maintenance, and post-closure institutional controls have not been adequately addressed for an informed decision making process.

Transportation Concerns Are Not Addressed

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The draft EIS addresses only on-site transportation of wastes, relying upon the generic and very dated Waste Management Programmatic EIS to cover how waste is transported to Hanford. Anyone who has driven along I-182 or SR-240 in the Tri-Cities area knows that land use along those routes has changed dramatically since the 1990 census used in the generic assessment of the proposed EIS. The Draft Solid Waste EIS also does not analyze rail transport on or off-site, even though rail transport is under active consideration.

NEPA Intent Not Adequately Met

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Although NEPA calls for brevity and directs documents to "concentrate on issues that are truly significant," sufficient evidence needs to be presented to support the conclusions made in this document. NEPA goes on to say that the purpose of the NEPA process is "to help public officials make decisions that are based on the environmental consequences." The Draft HSW-EIS fails to meet NEPA requirements by:

- Not identifying significant issues of concern to the public raised both in final comments on the WM PEIS and in scoping of the HSW-EIS
- Not integrating NEPA and TPA requirements for the Hanford Site
- Failing to include an alternative not to import off-site waste to Hanford
- Not including a cost-benefit analysis to support alternatives considered
- Failing to fully describe cumulative actions and impacts
- Does not reference support documentation not available to the reviewer – thorough reviews are impossible when cross references are made without available

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documentation that is not in the public domain, or available as technical literature or guidance

- Relying on reference to historical Hanford technical documentation, policy statements, or historical Hanford environmental impact statements to imply sufficient sufficient technical support for the development of exposure scenarios and the conduct of health and environmental evaluations in this Draft HSW- EIS.
- Not addressing its importance as precedent.

Principal Recommended Corrections to the Draft HSW-EIS:

- 188** ➤ The Draft HSW-EIS should use the same enabling assumptions and modeling input parameters used in Wood (1995), the authorization basis for the LLBG.
- 189** ➤ The source term should include the retrievable TRU waste until there is a firm commitment and budget for its removal, or there should be separate analyses that include the retrievable TRU waste.
- 190** ➤ Releases should be modeled during operations, and should NOT begin in 2046.
- 191** ➤ The Points of Compliance for each waste site should be at the fenceline of the waste management area.
- 192** ➤ The possible need for corrective actions under RCRA should be addressed.
- 193** ➤ The chosen presumption for remedial action at closure should be evaluated against other alternatives.
- 194** ➤ Post-closure monitoring and long-term stewardship issues should be addressed.
- 195** ➤ Alternatives put forward through the Performance Management Plan and other vehicles should be clearly addressed.

- 196** The purpose of the NEPA process is to provide decision makers with the background data to emphasize real environmental issues and alternatives. This information is to be provided in a full and fair discussion of significant environmental impacts. The environmental issues and alternatives re to be supported with evidence verifying the proposing agency has made the necessary environmental analysis. The Draft HSW-EIS does not identify and evaluate all reasonable alternatives which consider Washington State preferences and plans, the Draft HSW-EIS does not provide mitigative measure to restore the quality of the human environment or to avoid or minimize possible adverse effects of the proposed actions. Therefore, the Washington State Department of Ecology has determined that HSW-EIS is so inadequate that it precludes meaningful analysis; the Washington State Department of Ecology is requesting the USDOE provide responses to the general and specific comments, use comments to revise the Draft HSW-EIS, and prepare and circulate a revised Draft HSW-EIS.

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FC#	Section/Page Ref.	Category	Comment
1	Section 1.0, Page 1.1, Lines 4-7 Section 1.3, Page 1.3, Lines 18-20 Section S.2, Page S.1, Lines 23-25	Scope and Analysis	The Purpose and Need statement appears to support USDOE's complex-wide programmatic need to "enhance and expand management of its existing and anticipated volumes of . . ." While the Purpose and Need statement may reflect USDOE's need, it does not reflect the Washington State Department of Ecology's need. So that the Purpose and Need statement may reflect USDOE's and Ecology's needs, the following Purpose and Need statement is recommended: "USDOE needs to provide safe, protective, and RCRA-compliant waste management capabilities for existing and anticipated volumes of solid LLW, MLLW, post-1970 TRU, pre-1970 containing TRU, commingled-TSCA waste at the Hanford Site." (§ 1502.13)
2	Section S.3, Page S.2	Scope and Analysis	40 CFR Part 1502.12 requires the summary "to stress . . . areas of controversy (including issues raised by agencies and the public), and the issues to be resolved (including the choice among alternatives)." The section describes the scoping process followed for development of this environmental impact statement. The section indicates that USDOE "considered all of the comments received in its development of this Draft HSW-EIS." Ecology has commented on other associated NEPA documents such as the draft environmental assessment (EA) for trench construction and operation in the 218-E-12B and 218-W-5 Low- Level Burial Grounds (LLBG) (DOE/EA-1373) and the EA for the transuranic (TRU) waste retrieval in the 218-W-4B and 218-W-4C LLBG (DOE/EA-1405). Either in this section or somewhere else in the Draft HSW-EIS, it should be indicated whether USDOE considered Ecology's previous comments on related issues of environmental impact analysis. (§ 1502.12)
3	Section S.3, Page S.3, Lines 9-14 Section S.3, Page S.3, Lines 10-11 Section S.8.1, Page S.18, Line 13 S.3, Page S.3	Scope and Analysis	The Draft HSW-EIS states that the environmental analysis in the document was conducted through the year 2046, which represented the end of most waste management operations at the site. This resulted in a number of scope and boundary concerns including: <ul style="list-style-type: none"> > The post-closure requirements for waste disposal facilities may extend beyond the end of active waste management (2046). > Long-term impacts to groundwater and the Columbia River were evaluated for 10,000 years. How do these ranges compare to the half-lives of the radiological contaminants in question? How long before decay renders these contaminants non-radioactive?
4	Section S.3, Page S.3, Lines 10-11 Section 2.2.3.2, Page 2.26, Lines 13-20 Figure 2.15, Page 2.27	Scope and Analysis	It appears that closure actions and impacts have only been partially included and analyzed in the Draft HSW-EIS. While the Draft HSW-EIS evaluates and bounds consideration of managing wastes in the LLBG, the evaluation is not complete as it does not include a bounding evaluation/analysis of impacts and/or costs of closure (i.e., disposal). The LLBG are permitted as disposal units. As such, disposal is a function of waste management. Similarly, closure is a function of waste management at the LLBG. Therefore, to omit an impact analysis of closure actions and/or costs renders the analysis incomplete and does not provide decision-makers the needed information to make decisions regarding the Draft HSW-EIS at Hanford. Specifically,

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			the Hanford Barrier (an aboveground, multi-component barrier that prevents the entry of rainfall, plant roots, or burrowing animals into the area covered by the barrier) design was assumed a bounding design for analysis purposes. Likewise, the use of the Hanford Barrier was assumed a bounding action (i.e., in-place closure) for analysis purposes. To even partially omit closure action impact and/or cost analysis in the Draft HSW-EIS for disposal units for which protective barriers are regulatory requirements renders the analysis deficient, incomplete, and non-bounding. (§ 1502.14, 1502.15, and 1502.16)
5	Section S.3, Page S.3, Lines 39-41	Scope and Analysis	Clarify if the maximum forecast receipts represents existing Hanford (i.e., on-site) TRU wastes or if the forecast includes receipt of off-site TRU wastes. If the forecast includes receipt of off-site TRU wastes, it is recommended that either the reader be referred to the location in the Draft HSW-EIS where a description/explanation of "maximum forecast receipts" may be found or that the text be clarified. (§ 1502.7)
6	Section S.4, Pages S.4 -S.6 Section S.4, Page S.4 Figure S.2 Table S.1, Page S.11 Section 1.0, Page 1.1, Lines 18-20 Section 1.2, Page 1.3, Lines 5-6	Scope and Analysis (TSCA)	The <i>Hanford Site Solid Waste Management Environmental Impact Statement Technical Information Document (HNF-4755)</i> indicates that waste types covered in the Draft HSW-EIS include TSCA regulated waste (i.e., waste containing polychlorinated biphenyls [PCB], asbestos, or other such regulated components). A number of sections of the Draft HSW-EIS do not appear to identify this waste type. The Draft HSW-EIS and the supporting basis (technical information document) must agree on scope. The text should explain this difference between the Draft HSW-EIS and the supporting information document and explain how the difference was addressed in the Draft HSW-EIS. Due to the use of waste streams for which definitions are not included, the reader cannot discern what waste types are included in the Draft HSW-EIS. (§ 1502.7, 1502.14)
7	Section S.5.2, Page S.9, Lines 3-12	Scope and Analysis	It is indicated that USDOE does not currently have facilities for treating several significant waste streams. It is also indicated that "proposed new facilities are included in the Draft HSW-EIS to provide capabilities for waste treatment and processing." From the indications, it is unclear whether the Draft HSW-EIS EIS bounding analysis includes potential impacts and costs associated with the proposed new facilities. If the reader is not provided information regarding conceptual plans, design phases, funding profiles, etc. associated with the proposed new facilities, the reader cannot ascertain whether the analysis is bounding. In other words, it is difficult for the reader to determine if the "proposed new facilities" are included in the scope of the Draft HSW-EIS. Clarify, by identification, if the analysis is bounding by the inclusion of impacts and costs associated with the "proposed new facilities". Clarification may be provided by referring the reader to the appropriate location in the document where the information may be reviewed. (§ 1502.7)
8	Section S.6.1, Page S.10	Scope and Analysis	It is indicated that USDOE "needs to determine which . . . disposal activities are required for properly managing on-site and off-site solid LLW that currently exists, or that may be received at Hanford in the future." It is also indicated that USDOE "needs to evaluate options for permanent disposal of LLW at Hanford, including expansion and possible reconfiguration of disposal facilities to accommodate anticipated waste receipts." With so many decisions yet to be made, the wording

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			does not instill confidence that the impact analysis and/or cost estimates included in the Draft HSW-EIS are either comprehensive or bounding. To clarify, include wording identifying/describing how the impact analysis associated with the LLW waste type is bounding. Also, for clarification, include a description of how the decisions will be made in the future (i.e., applicable authorities). (§ 1502.7)
9	Section S.6.1.2, Page S.10 Table S.1, Page S.11	Scope and Analysis	The <i>Hanford Site Solid Waste Management Environmental Impact Statement Technical Information Document</i> (HNF-4755) indicates that "DOE would treat Hanford's non-conforming LLW using off-site commercial facilities and dispose of this treated waste in the LLBG. The Draft HSW-EIS states: "Non-conforming waste would be treated to comply with the HSSWAC using existing on-site capabilities, or if on-site treatment capacity does not exist, it would be treated at an off-site commercial facility." Ecology acknowledges the financial status of the intended off-site commercial treatment facility. Due to the supporting technical information document's described alternative 1 off-site treatment, the Draft HSW-EIS should identify where the analysis of "enhancement" of on-site treatment facilities or construction of new on-site treatment facilities is included in the Draft HSW-EIS. The analysis should include environmental and cost impacts. (§ 1502.14, 1502.15, and 1502.16)
10	Section 1.4.5.1, Pages 1.11 – 1.12 Section S.6.1.3, Page S.12	Scope and Analysis	Section 1.4.5.1, Pages 1.11 – 1.12. The section describes the three alternatives analyzed for LLW management at Hanford. The No Action alternative appears to contain "action" as indicated by the following: "DOE would construct new disposal capacity using a trench design similar to that previously employed for disposal of LLW at Hanford. Disposal would take place within the boundaries of currently defined LLBG." Similarly, the receipt of the disposal volumes identified and the construction of new trenches could be argued to constitute "action." The reader can neither determine if an environmental impact analysis has been performed for the "currently defined LLBG" nor discern why a No Action alternative would appear to contain "action." Therefore, provide an explanation and the basis for inclusion of additional waste receipt and trench construction in the No Action alternative. (§ 1502.7, 1502.14)
11	Section 5.1, Pages 5.3 – 5.5 General Comment	Scope and Analysis	The land use section does not include sufficient explanation to allow the reader/decision-maker to understand the supporting technical basis/analysis associated with the various scenarios/alternatives. To explain, Table 5.1 lists upper and lower bounds for alternatives 1 and 2. If the land use areas are compared between "area designated for LLBG," "area currently occupied," and upper and lower waste volume bounds there is no explanation for why the numbers are significantly different. For example, for 218-W-3A, the number of 20.4 is the same for all alternatives which may indicate that the entire LLBG which is currently being used in full capacity will be capped as a disposal site. However, for 218-W-3AE, the number of design area (20) is different from current occupation area (12) which is different from upper and lower bound numbers (12.2). The section lacks explanation for the reader/decision-maker to understand what the land use numbers mean under the various scenarios and alternatives. (§1502.7)
12	Appendix D	Scope and Analysis	LLBG unit 218-W-5 contingency expansion has been omitted from the appendix.

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	General Comment		Similarly, the analysis of borrow pit resources does not include the resources needed in relation to LLBG unit 218-W-5. Similarly, the <i>Hanford Site Solid Waste Management Environmental Impact Statement Technical Information Document</i> (HNF-4755) appears to have omitted analysis for LLBG unit 218-W-5. Therefore, the analysis is incomplete and non-bounding. The analysis should either be included in the Draft HSW-EIS or the Draft HSW-EIS should clearly identify that it is not included and should the contingency expansion be necessary in the future, an additional NEPA evaluation will be performed. (§1502.7, 1502.14, 1502.15, 1502.16)
13	General	Scope and Analysis	CWC and WRAP have large amounts of data stored in SWITS, etc. Where LLBG and T-plant have large data gaps. These data groups, as TSDs, should be described separately and their impacts calculated separately due to the available data.
14		Scope and Analysis	In Section 5.3 and Appendix E, compliance with the ambient air quality standards was shown through the following method: The pollution generated by each project was calculated, then based on the timeline of the projects, the year of maximum pollution generated was determined and the pollution generated calculated. The concern with this approach is the assumption that the projects will occur in the year stated; the possibility that projects may be delayed or start early is not addressed in this calculation. This same method was used to compare the alternatives to each other. The total pollution generation over the life of the alternative should be calculated and these total values should be used to compare the alternatives to each other, not the pollution generated in one year, the assumed maximum year.
15	Sec 1.4, Page. 1-5 Section S.3, Page S.3, Lines 37-39	Scope and Analysis	On February 16, 1996, Ecology provided comments to USDOE on the WM PEIS. A major conclusion was that the Draft PEIS failed to provide the whole picture and, as a result, Ecology requested an analysis of cumulative impacts on a site-by-site basis. On January 30, 1998, Ecology provided comments on the scope of the Draft HSW-EIS that identified the need to establish a baseline for solid waste at Hanford. The Draft HSW-EIS, Sec 1.4, alternatives, states that public comments received on the Draft HSW-EIS NOI also encouraged USDOE to focus on Hanford wastes and to understand the impacts from management of those wastes separately from the impacts of accepting additional off-site waste. However, USDOE states that, "The structure of the alternatives . . . did not lend itself to conducting such an analysis. Ultimately, USDOE considered alternatives by waste type." Ecology requests that USDOE analyze cumulative impacts on a site-by-site basis and assess the impact of waste already at Hanford separately from the impacts of waste being received. (Cumulative impacts)
16	S.1 Table S.1, Page S.11 Section S.3, Page S.3, Lines 18-24 Section S.4, Page S.6, Lines 11-33 Section S.4, Page S.6 Section S.5, Page S.6 Section S.5.3, Page S.9, Lines 33-35 Section S.6, Page S.6 Section S.6, Page S.10 Section 1.0, Page 1.1, Lines 18-20	Scope and Analysis	The exclusion of pre-1970 TRU waste from this analysis is inappropriate. USDOE has less certainty of the characterization and ultimate environmental impacts of the wastes that were directly buried in the LLBG unlined trenches decades ago. The uncertainties with regard to characterization of these older waste streams should be predominantly considered in the overall analysis of the proposed action. (Scope, uncertainty, cumulative impacts, long-term stewardship)

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	Section 1.2, Page 1.3, Lines 5-6 S.4, Figure S-2	Scope and Analysis	Was TRUM (transuranic-mixed waste) considered and analyzed in the scope of this Draft HSW-EIS? If so, Ecology requests that USDOE indicate under which category those waste streams were considered. If not, USDOE needs to reconsider given the management and impact of TRUM wastes. (Scope)
18	S.4, Figure S.2	Scope and Analysis	Under the Low-Level Waste box is a category entitled "Previously Buried Waste in the LLBG." From the perspective of applying a regulatory definition, the designation of this waste as "low-level" is correct. However, as the Draft HSW-EIS states on page S.5, "Until 1987, MLLW was managed in the same manner as LLW." In other words, even though dangerous waste constituents were likely to have been present to some unknown extent in this waste stream, USDOE was not obligated to manage the waste as dangerous waste because RCRA was not yet applicable to mixed waste. The importance of this distinction from an environmental perspective is that the waste defined as "low-level waste previously buried in the LLBG" should be significantly considered with regard to the existence and impact of dangerous waste constituents in the LLBG. (Scope, cumulative impacts)
19	S.8, Page S.17	Scope and Analysis	Ecology disagrees with the statement that "For most resources, little or no impact would occur as a result of implementing any of the alternatives." Given the fact that the current situation at Hanford is ill-defined with regard to what has been placed in the ground (i.e., lack of characterization for tank waste, burial grounds, cribs/ponds/ditches) and the current behavior of the waste (i.e., leaking, leaching, moving), it is irresponsible to assume that the addition of more than 30 million cubic feet of waste at Hanford will have little or no impact on the environment. (Ecological analysis, uncertainty analysis, groundwater analysis)
20	S.8.2, Page S.18	Scope and Analysis	Transportation considerations were not made for shipment of low-level waste or TRU waste to Hanford. However, USDOE stated that in the WM PEIS, they considered that, "Under MLLW Alternative 1, some MLLW would be shipped from Hanford to an off-site treatment facility and returned to Hanford for disposal. As a bounding case, a treatment facility in Oak Ridge, Tennessee, was assumed for purposes of this transportation analysis. Transportation of waste was determined to result in up to four fatalities." Why would USDOE choose an alternative that was determined to result in up to four fatalities? (Ecological analysis)
21	S.8.3, Page S.18	Scope and Analysis	USDOE states that health impacts were estimated from radionuclides and chemicals that could eventually leach from waste disposed at Hanford and reach groundwater and ultimately the Columbia River. However, uncertainties exist as to the characteristics and volumes of waste that have already been placed (or released) into the ground at Hanford, particularly in the early years to unlined trenches, cribs, ditches, and then via leaky underground storage tanks. Again, there is a need to understand the existing impacts of Hanford's situation separate from the impacts of additional waste from throughout the USDOE complex. (Scope, long-term stewardship)
22	Sec. 5.3.2, pp. 5.13 ff	Scope and Analysis	Please explain: (1) The exclusion of pre-1962 buried wastes from the calculation of long-term impacts; and (2) The means/sources by which 1962-1988 wastes were characterized, particularly with regard to hazardous chemical constituents.
23	Appendix A pp. A.4-A.5	Scope and Analysis	The first comment under A.1.2 is barely acknowledged, and certainly not "disposed" by the response on p. A.5. The WM-PEIS did not compare

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			environmental impacts of disposal of specific volumes and streams of LLW and MLLW at specific sites. Yet the Draft HSW-EIS assumes that the decision has been made and, therefore, provides no basis to compare impacts of disposal at Hanford with disposal at other specific sites.
24	p. A.8	Scope and Analysis	There is an apparent contradiction in lines 6-12. Please explain why "[s]ome waste that may be generated at Hanford and other USDOE facilities would not be suitable for disposal at commercial facilities under existing permits and regulations," but "regulations governing disposal of USDOE waste have historically been similar to those for commercial facilities."
25	p. A.8	Scope and Analysis	Please clarify the parenthetical statement in lines 9-10 to acknowledge that pre-1970 wastes disposed within designated Solid Waste Management Units pursuant to _____ will be subject to closure and corrective action provisions of _____. Further, please acknowledge that retrieval actions that include transuranic wastes will result in additional wastes to be stored, treated, characterized, packaged and shipped to WIPP for disposal.
26	p. A.9	Scope and Analysis	Please explain the claim that impacts of disposal of wastes in canyon facilities would be bounded by assessment of impacts of disposal in burial grounds. Are packaging, migration pathways, interaction with adjacent wastes and contamination, emissions during construction and operation, etc., all the same as or less than burial ground disposal?
27	pp. A.12-A.13	Scope and Analysis	The lower bound estimates based on the SWIFT forecast are not responsive to the commenters' requests for a Hanford baseline, because they assume continued disposal of off-site waste.
28	pp. B.19-B.23	Scope and Analysis	All options for contact-handled TRU waste (CH-TRU) assume that retrievable waste will be characterized in-trench and that 50% will be determined to be LLW and left in the trenches. Please explain (a) how in-trench non-destructive characterization will meet regulatory requirements for waste analysis and acceptance; and (b) the basis for the 50 % estimate.
29	Table C.1, pp. C.3-C.4-C.5-C.6	Scope and Analysis	<ol style="list-style-type: none"> 1. It appears that the Hanford volume includes wastes already disposed from off-site and on-site generators. Please clarify that this is the case. 2. Please explain the selection of smaller volume (78,883 m³) of waste for Oak Ridge as the upper bound for the USDOE comparison, as the potential volume appears much larger in Table C.1. Please explain the origin of the estimates, as Oak Ridge was apparently not consulted (not listed as off-site forecasted waste generator or potential off-site generator, per p. C.5-C.6.) 3. Please explain the basis for estimating isotopic and chemical content of speculative volumes included in upper bound estimates in Table C.1.
30	Sec. C.4, p. C.8	Scope and Analysis	<p>The discussion of TRU waste volumes should be expanded to deal with the following:</p> <ul style="list-style-type: none"> • Distinguish between CH and RH TRU. The management, storage, packaging, transport and disposal requirements for the two categories are different, and the analysis requires distinguishing the two inventories. • Relationship of these volume estimates to (a) WIPP capacity, given that the National TRU Waste Management Plan (Rev. 2) anticipates less than 15,000 m³ combined of TRU from Hanford, and (b) the Hanford TRU Disposition Map (IPABS-IS (8/28/01) which projects a WIPP disposal volume of 24,731 m³.

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31	Table C.2, p. C.4	Scope and Analysis	Please explain the discrepancy between the "previously disposed" figure for LLW (283,067 m ³) and the estimate contained on p.13 of the Information Package on Pending Low-Level Waste and Mixed Low-Level Waste Disposal Decisions under the PEIS and derived from the 1996 Integrated Database (640,000m ³).
32	Appendix H	Scope and Analysis	As USDOE is actively considering use of rail transport for inter-site shipments, please include an analysis of the potential impacts of rail shipment and/or inter-modal transfer of TRU, MLLW and LLW on-site.
33	Section 1.5.3., Page 1.23, Lines 26-38	Scope and Analysis	Reference is made to the June 2000 Environmental Assessment for Disposition of Surplus Hanford Site Uranium. The draft refers to 825 MTU which is to be stored in the 200 area pending final decision about its disposition. Assuming it is USDOE's intent to dispose of the material in the LLBG, is this material included in the inventory of wastes to be disposed? Is it included in the source term for assessment of long-term impacts? If so, how does it affect the finding in the WM-PEIS that for larger volumes of disposal of LLW at Hanford, groundwater standards for U-238 would be exceeded (WM-PEIS, p. 11-34)?
34			On page 1.5, under Operational Period , in line 12, LLBG closure is to take place after 2046. Will any type of interim cover be placed on top of the LLBG? Why can't USDOE use a close-as-you-go approach for the LLW trenches that apparently will be used for the MLLW trenches? This close-as-you-go approach may be performed on individual trenches or on a group of trenches.
35	Chapter 4; Section 4.4.	Scope and Analysis	Some mention should be made of the depth distribution of earthquakes. Most in and around the Hanford Site are shallow (i.e., < 15 km--including the swarm events), but there are a few deeper events in the Horse Heaven Hills (and elsewhere).
36	Chapter 4; Page. 4.34, Paragraph 1.	Scope and Analysis	Additional information would be helpful, such as the date of installation of the strong motion accelerometers, the trigger levels, and whether any of these facility accelerometers have ever triggered because of an earthquake.
37	Page. S.20	Scope and Analysis	Reference should be made as to the basis of these costs and how and where they are presented in detail.
38		Scope and Analysis	Reference is made to a Design Basis Earthquake. Section 4.5 does not contain any recurrence curves or indicate the manner in which the Design Basis Earthquake was selected and the free-field ground motion likely to occur at the LLBG sites as a result of this earthquake. Please correct.
39	Chapter 4; Page. 4.37, Sect. 4.5.2, Paragraph 3	Scope and Analysis	Leaking raw water lines have provided significant artificial recharge to the ground in the 200 Areas. Some of these unneeded raw water lines are being cut and capped and others are being pressure tested to assure integrity. However, until this process is accomplished throughout the 200 Areas, these old raw water lines that have exceeded their design life will continue to provide artificial recharge to the soil, and this can be a problem in the vicinity of waste management facilities. Please address.
40		Scope and Analysis	On page 1.8, line 19, "other solid waste" is mentioned. Please give examples of solid wastes that are outside the scope of this Draft HSW-EIS.
41		Scope and Analysis	On page 1.11, line 36, the Draft HSW-EIS mentions "other suitable locations," but does not provide any criteria for such a location.
42	Section 1.4.4.1, Page 1.9 Section 1.4.4.2, Page 1.10, Lines 24-25 Section 1.4.4.2, Page 1.10, Line 34 Section 1.5.1.2, Page 1.15	Inadequate Regulation	Throughout the Draft HSW-EIS, the text is incomplete or silent on RCRA regulatory authorities for waste management facilities in particular with regard to the LLBG, but also to other facilities such as T-Plant, CWC, WRAP, LERF, ETF, etc. Waste management, permitting, closure and post-closure requirements for RCRA TSDs

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	Section S.4, Page S.6, Lines 25-26 Section S.5.2, Page S.8, Lines 21-22 Section S.5.2, Page S.8, Lines 31-32 Section S.6.1, Page S.10 Section S.6.1.1, Page S.10, Lines 29-31 Section S.6.1.2, Page S.10, Lines 41-42 Table S.1, Page S.11		and waste management units are not identified. Corrective action authority to address releases from regulated facilities is unclear. Extensive revision of a number of sections within the document are needed to accurately reflect the regulatory environment. Without clarity on RCRA applicability and extent, bounding conditions cannot be properly established and thus alternatives cannot be adequately evaluated.
43	Section S.6.1.3, Page S.12 Section S.6.2.3, Page S.13 Section S.6.3.3, Page S.15	Inadequate Regulation	The section does not identify that the No Action Alternative would not enable USDOE to comply with the waste management and land disposal restrictions of the State Dangerous Waste Regulations including RCRA requirements. Similarly, the section does not identify that the No Action Alternative may not enable USDOE to comply with their own policy for disposal of LLW wastes. Either in this summary section or in another summary section, the affects of non-compliance should be disclosed. Note: the <i>Final Environmental Impact Statement for the Tank Waste Remediation System Summary</i> (DOE/EIS-0189F) includes such a disclosure for the No Action Alternative (see page S-38). (§ 1502.7)
44	Section 1.5.1.1, Page 1.15, Lines 14-16 Section 1.5.1.2, Page 1.15 Section 1.5.1.2, Page 1.16, Lines 1-12 Section 6.3, Page 6.2	Inadequate Regulation	The Draft HSW-EIS describes coordination between RCRA and CERCLA regarding cleanup of past Hanford disposal sites giving a generic description of the HFFACO. While such coordination is desirable, it is not always achieved. To explain, the LLBG units are RCRA TSDs. As such, ongoing waste management, closure, post-closure, and corrective action will be decided upon via RCRA decision processes. In addition, the CERCLA cleanup schedule for the CERCLA-designated source operable units in which LLBG units reside, is scheduled to occur in or around 2024. However, LLBG units are currently planned to continue to be managed as active TSD units for at least two decades after 2024. The text should identify that the LLBG units are RCRA TSDs via which waste management, closure, post-closure, and corrective action will be permitted by the Washington State Department of Ecology via the state's RCRA authorization basis. (§ 1502.14(c))
45	Section 6.2, Page 6.2, Lines 7-8	Inadequate Regulation	Page 6.2, Section 6.2, Lines 7-8. Include an identification of other relevant HFFACO milestones. For example, identify that HFFACO Milestone M-20 includes a milestone for the submittal of LLBG unit final status permit applications. Similarly, identify that Milestone M-24 constitutes the HFFACO schedule for installation of RCRA groundwater monitoring wells. (§1502.7)
46	S.5.2.	Inadequate Regulation	The Draft HSW-EIS does not provide enough information regarding the evaluation of commercial treatment facilities. The Draft HSW-EIS also does not provide enough information as to the alternative of shipping wastes directly from their current location to the commercial treatment facilities, rather than routing the complex-wide wastes to Hanford for storage then again off-site for treatment. (Regulatory analysis)
47	S.5.3, Page S.9	Inadequate Regulation	Throughout the Draft HSW-EIS, USDOE builds on the assumption that the LLBG would "ultimately be closed by applying a cap consisting of soil, sand, gravel, and asphalt to reduce water infiltration and the potential for intrusion." Although capping the LLBG may be one viable alternative for consideration, it is certainly not the only one. Closure and post-closure decisions will be made, in part, based on the events

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			that occur during operation of the unit, including any releases. Also, depending on releases or threats to human health and the environment during operation, corrective action may dictate closure and post-closure scenarios. Further, the final RCRA closure plan for the LLBG dangerous waste permit has not yet been completed, and final closure decisions have not yet been defined. Also, post-closure alternatives and their impacts were not presented in the Draft HSW-EIS. (Regulatory analysis)
48	S.6, Page S.10	Inadequate Regulation	On February 16, 1996, Ecology provided comments to USDOE on the WM PEIS. A major conclusion was that the Draft PEIS was not adequate to select sites within a conceptual alternative. Likewise, on January 30, 1998, Ecology provided comments on the scope of the Draft HSW-EIS that included the need to perform a systematic comparison of candidate sites. However, the Draft HSW-EIS, Sec S.6, Description of Alternatives, describes a very limited focus of alternatives, all of which consider only management of USDOE complex waste at Hanford. USDOE is encouraged to perform the comparisons as requested by Ecology, and then present the results and rationale to the public for review and consideration. (Regulatory analysis)
49	S.6, Page S.10	Inadequate Regulation	The LLBG is a RCRA TSD unit, with various problems associated with it, including characterization (or the lack thereof) of existing wastes that are buried and/or stored in the unit, the current and/or potential impact to the vadose zone and groundwater, and the associated ability (or lack thereof) to monitor these impacts. Compliance with RCRA requirements is required for management of wastes within this TSD. The proposed alternatives, limited as they are (see comment #10 above), need to consider the impacts on the LLBG from a RCRA TSD perspective, since the proposed addition of waste is within the boundary of a TSD unit with questionable integrity, e.g., USDOE needs to consider the alternative of creating a new space(s) for treatment, storage, and disposal of complex-wide waste so that the integrity and management of the waste stream(s) can be properly managed from the start, thus enhancing the ability and confidence for safe and compliant management. Ecology is not interested in compounding the problems for the LLBG, e.g., alternatives other than expanding an already questionable TSD should be considered. (Regulatory analysis)
50	Section S.6.3, Page S.14	Inadequate Regulation	USDOE states that "additional processing and certification capabilities must be developed and implemented at the Hanford Site" for meeting WIPP acceptance criteria. Please specifically identify what additional processing and certification capabilities need to be developed and implemented for wastes considered by this Draft HSW-EIS and identified for eventual disposal at WIPP. (Regulatory analysis)
51	Section S.6.3.1, Page S.14	Inadequate Regulation	Like LLBG, the T Plant Complex is a RCRA TSD unit. Compliance with RCRA requirements is required for management of mixed waste within this unit. Specifically, what modifications to the T Plant Complex are anticipated? How does this work fit in with the priorities already established and funded for processing Hanford wastes?
52	3.3.1, Page 3.6	Inadequate Regulation	USDOE states, "For purposes of analysis, this Draft HSW-EIS assumes that WIPP would have the necessary administrative and permitting authority to accept these wastes." This is an unfounded assumption given the fact that the current waste acceptance criteria for WIPP does not allow PCB's. Should the state of New Mexico decide at some point to modify the WIPP Permit and allow for the disposal of PCB waste, then that decision could be factored in at that time. However, for the

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			purposes of this Draft HSW-EIS, analysis should be revisited with respect to and reflection of the current permitting requirements for WIPP.
53	p. A.12	Inadequate Regulation	Pre-1970 buried transuranic wastes that may be retrieved from burial grounds under CERCLA are outside the scope. Yet they may directly impact the need for facilities described in Sec. 3.3, and CERCLA decision schedules may not match schedules assumed in this Draft HSW-EIS.
54		Inadequate Regulation	On page 2.5, line 23, "cover and caps" are used. Are these equivalent terms? Caps are mentioned in the glossary, but covers are not.
55		Inadequate Regulation	The Nuclear Regulatory Commission (NRC) requires solidification/encapsulation media to be supported by a Topical Report (TR) approved by a governmental body. These TRs provide the technical information and testing necessary to ensure solidification media (e.g., certain types of concrete) and encapsulation techniques will be effective in the disposal environment. In the text box on page 2.6, cement and thermoplastics are mentioned, but not footnoted to show a TR (or equivalent document) documenting the materials' adequacy in the Hanford LLBG. Is there such a document showing the adequacy of cement and thermoplastics in the Hanford climate?
56		Inadequate Regulation	On page 2.23, the Draft HSW-EIS discusses the use of in-trench grouting and encapsulating the waste in concrete. Commercially, most of the nuclides that make up the Class A and B/C waste tables have limits based upon volume (and alpha emitters are based upon specific activity). The in-trench grouting volume is rather large by commercial standards. Does USDOE have an outside peer-reviewed performance assessment that indicates that radionuclide migration from the grouted structure will not exceed a regulatory dose limit (e.g., 25 mrem) over the next 10,000 years?
57		Inadequate Regulation	On page 6.11, line 12, the Draft HSW-EIS implies that USDOE will not always comply with USDOT regulations (i.e., Title 49 CFR) on roads to which the public does not have access. Is this correct? In the early 1990s at the annual LLRW convention in Las Vegas, a USDOE contractor representative committed to adhering to USDOT regulations for all shipments both on and off the Hanford Reservation. For shipments of radioactive (only) waste off-site, will the NRC's Uniform Manifest (e.g., NRC Form 540, 540A, 541, 541A, 542, and 542A) be utilized?
58	Section S.6.1, Page S.10	Inadequate Regulation	It is indicated that USDOE "needs to determine which . . . activities are required for properly managing on-site and off-site solid LLW that currently exists, or that may be received at Hanford in the future." It is also indicated that USDOE "needs to evaluate options for permanent disposal of LLW at Hanford, including expansion and possible reconfiguration of disposal facilities to accommodate anticipated waste receipts." The LLBG are solid waste management units (SWMUs). The Washington State Department of Ecology is authorized to implement RCRA corrective action for releases from SWMUs. To date, there are inadequate means for detecting releases from the LLBG (more detailed comments on this issue will follow) and there has been little to no characterization for potential releases from the LLBG. The Draft HSW-EIS does not reflect that RCRA corrective action decisions, if necessary, will be made by Ecology. Due to the lack of detection capabilities and contaminant release characterization information, for the Draft HSW-EIS to omit an acknowledgment of the uncertainties as well as the potential shared authorities

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			associated with determining which activities are required for properly managing wastes renders the document incomplete. (§ 1502.14, 1502.15, and 1502.16)
59	Section 4.5.1.4, Page 4.36, Paragraph 4	Inadequate Regulation	Groundwater monitoring for the LERF, a RCRA TSD unit, is currently not occurring. So, the construction of the facility may be compliant, but it is not a totally compliant facility, as your statement implies.
60	Section 4.5.1.4, Page 4.37 Paragraph 1	Inadequate Regulation	Suggest changing the second sentence to read, "It is a Washington State permitted facility containing drain fields where tritium-bearing wastewater discharge is authorized in the permit."
61	Chapter 4; Page. 4.37, Sect. 4.5.1.5, Sentence 2	Inadequate Regulation	Suggest inserting the word "historic" between "no" and "flood events." The 200 Areas Central Plateau is a flood bar deposited during Quaternary cataclysmic floods.
62		Inadequate Regulation	The text box on page 2.12 mentions that the floors will be sealed with impervious epoxy resins. Commercial industry experience indicates that this sealant is not permanent and requires repairs. Will the floors in these new buildings be inspected to find any "holes" in the sealant?
63	Specific	Ecological Assessment	Page 3.13, Table 3.5, Comparison of Impacts Among the Alternatives, in the Environmental Consequence Category under Ecological Resources, why was only the temporary Shrub-Steppe Habitat looked at? Besides vegetation/fauna there are biological aspects that need to be factored in. An encompassing vertebrate such as the Great Basin Pocket Mouse could be evaluated as well.
64	Specific	Ecological Assessment	Page 5.22, Lines 13-16, beginning with "To avoid impacts . . ." The planning in this scenario to avoid impacts is great. It benefits the reader of this Draft HSW-EIS to know that not everything is a detrimental effect to the complete ecosystem.
65	Section S.7, Page S.17, Lines 21-25	Ecological Assessment	Page S.17, Section S.7, Lines 21-25. Include an identification that shrub-steppe is considered a priority habitat by Washington State because of its importance to sensitive wildlife. (§ 1502.7)
66	Appendix I, Page I.1 Lines 15-18	Ecological Assessment	The document states that environmental impacts to the Columbia River would happen in the long term "up to 10,000 years post closure." The document does not provide a minimum time until impact would be seen on the river. Please provide the lower bound time frame for impacts of waste handling operation on the river.
67	Appendix I, Section I.2, Page I.2	Ecological Assessment	The argument is made that due to the application of herbicide or effects of fires no priority habitats would be affected by any of the alternatives. The fact that a potential priority habitat was destroyed by fire or herbicide application is not justification for excluding that habitat from consideration of potential damages caused by construction of LLBG facilities. Not only must the current occurrence or state designated priority habitats be protected, but historic occurrence of priority habitats must be allowed to reestablish. Expansion of the facilities would necessitate expansion of the areas where spraying occurs and result in increased destruction of habitat. This impact is not assessed in the Draft HSW-EIS. The impact of an enlarged spray area should be assessed.
68	Appendix I, Section I.2, Page I.2	Ecological Assessment	The impact of blasting of bedrock as part of surface cover mining operations in the 300 Area on wildlife in the 300 Area as well as in the ALE is not assessed. The impact of the use of high explosives to excavate cover materials needs to be assessed.

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69	Appendix 1, Section I.2, Page 1.2	Ecological Assessment	No mention is made of surface microbiotic crust including algae, fungi, lichens, and mosses. The 1999 Nature Conservancy report <i>Biodiversity Inventory and Analysis of the Hanford Site</i> states: "Although the ecological role of the macrobiotic crust within the shrub-steppe is not well understood, it clearly plays an important role in ecosystem functioning by reducing erosion, contributing nitrogen and organic carbon to the soil, and increasing infiltration of precipitation into the soil. Intact crusts can also enhance native seedling establishment in arid ecosystems (St. Clair et al. 1984), and may discourage invasion by non-native species such as cheatgrass." Therefore, the impact on this segment of the terrestrial ecosystem needs to be evaluated.
70	Appendix I, Section I.2 Page I.2, Line 22	Ecological Assessment	Several sections mention that due to fire or herbicide "priority habitats" would not be disturbed. The "priority habitat" moniker denotes the most important habitat to protect. Even if priority habitats are not affected, that does not mean that unmitigated destruction of habitats other than "priority habitats" can occur. The impact of actions to all habitats should be evaluated and documented.
71	Appendix I, Section I.2.1, Page 1.8, Line 37-39	Ecological Assessment	This section states that a more comprehensive ecological survey of Area C will be conducted in the spring of 2002. The progress of that study should be updated and the results should be incorporated in this document. Without this information it is impossible to make a determination on action proposed in this area.
72	Appendix I, Section I.3	Ecological Assessment	The criteria for selection of species used in the Ecological Contaminant (ECEM) model should be provided. The model allows for selection of many different food web components; the rationale for selection of these particular species should be provided.
73	Appendix I, Section I.3, Page I.9, Line 6	Ecological Assessment	The document references ECEM as the risk assessment model for ecological receptors. The model inputs and outputs should be provided so that the modeling process can be evaluated. Additionally the source and nature of the model should be provided. his model should be made available for evaluation by listing a contact or reference in the references. Upon consulting with USDOE-PNL it was determined that the information relating to the model parameters and algorithms is contained in the Columbia River Comprehensive Impact Assessment part 1 (DOE/RL-96-16, Rev 1, Final, U.S. Department of Energy, Richland, WA March 1998) this reference should be cited in the document.
74	Appendix I, Section I.3, Page I.11, Line 8-9	Ecological Assessment	Uranium is the only chemical evaluated for its non-radiological risk. The Groundwater Section 4 Table 4.9 lists chemical contaminants in groundwater including carbon tetrachloride, cyanide, chloroform, tetrachloroethene, and trichloroethene. These chemicals as well as other chemicals originating from the MLLW and TRU, such as PCBs, present a risk to terrestrial and aquatic receptors. The potential risk of toxic (non-rad) components of the MLLW/TRU needs to be evaluated.
75	Appendix I, Section I.3, Page 1.11, Line 15	Ecological Assessment	The statement is made that the risk assessment generally follows EPA ERAGS Guidance. Information should be provided on ways that it differs from EPA guidance.
76	I.3/I12/L,13	Ecological Assessment	This sentence states that "best" estimates were used to derive K_d values for soil and sediment. The scientific basis for the "best" estimates should be provided.
77	I.3/I.12/ L,2-5	Ecological Assessment	This sentence introduces a seep dilution term. There is some confusion about the dilution of groundwater by seeps. Seeps are defined as "Groundwater/Surface

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			Water connections caused by river or stream erosion into a near-surface aquifer" (The Facts on File Dictionary of Environmental Science, Stevenson and Wyman 1991). An additional dilution factor for seeps is not appropriate due to the fact that a seep is a connection point between groundwater and surface water. This dilution factor should be removed.
78	I.3/I12/L,7-8	Ecological Assessment	This sentence states that soil concentrations are derived by multiplying seep concentrations by K_d . The K_d values are not provided in table I.2. K_d values should be provided as well as the basis for their derivation.
79	I.3/I.3/ Table I.3	Ecological Assessment	This table presents the EHQ for various receptors at or around the Hanford Site. The derivation of this data is not presented other than stating that it was developed using the ECEM model. The inputs and modeling assumptions should be presented.
80	I.3/I.13/I, 23	Ecological Assessment	A modifying factor of 15 was selected to convert acute mortality to a Lowest Observed Effect level. What is the rationale for the selection of 15 as a modifying factor? A commonly accepted modifying factor for acute to chronic is 10, but another factor of 10 would be assessed to go from chronic mortality to a chronic response other than mortality. Additionally, another factor of 10 would be assessed to extrapolate from <i>Gambusia</i> to species that inhabit the Columbia River and another factor of 10 might be added to account for interspecific variability. This would result in a modifying/uncertainty factor of 1,000 to 10,000. While this might be overly conservative, the data to support a MF/UF of 15, a conservative value, is needed. Even if the MF/UF was 100 the risk of Hanford plus background would exceed acceptable risk levels. This information section needs to be reanalyzed and re-evaluated to account for the degree of uncertainty associated with the toxicological values. Additionally, data sources for toxicological data should be presented.
81	I.4/I.14	Ecological Assessment	The "consultations" presented here are not formal ESA consultations as defined in Section 7 of the Endangered Species Act. They are merely the first step in a ESA section 7 consultation. These letters simply ask for a list of species that may be affected. Due to the fact that endangered species are present on the Hanford Site and in the Hanford Reach of the Columbia River, a formal ESA Section 7 Consultation should be required by NMFS and FWS. The letter enclosed in Appendix I from the US FWS mentions the fact that a Section 7 Consultation is required, but no response to this requirement is included in the Draft HSW-EIS. The method for conducting this process for NMFS is detailed in "Procedures for Conducting Consultation and Conference Activities Under section 7 of the Endangered Species Act (March, 1998)." Additionally the USFWS produced a document http://endangered.fws.gov/consultations/s7hndbk/s7hndbk.htm that details their requirements for a Section 7 consultation. The listing of potentially affected species is only the first step in the consultation, if any threatened or endangered species are present and MAY be affected, then a formal consultation would be required. The evidence provided in the Draft HSW-EIS does not support a claim that there is not potential adverse affects to T&E species therefore a Formal Section 7 consultation should be required. Additionally there is no documentation of any efforts to contact the USFWS for a determination of state listed species of concern.
82	Specific	Health Impacts	Page 2.22, Lines 16-19, beginning with, "The concrete used . . ." Which certain radionuclides does this pertain to and can there be specific examples noted in other

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			parts of the Draft HSW-EIS? The following sentence goes on to state water affecting solubility of some waste elements. It would be nice to see these effects correlated in the risk assessment and know the outcomes of specific K_d coefficients for these "certain radionuclides."
83	General	Health Impacts	There are a variety of definitions used for cumulative risk across the USDOE complex. Ecology should use the definition as defined from EPA's (2002) Framework for Cumulative Risk Assessment. "Cumulative risk: The combined risks from aggregate exposures to multiple agents or stressors."
84	App F page 38 Line 27-28.	Health Impacts	Mercury can be present in the environment in many chemical forms (divalent, methylated, etc.) and with different transfer mechanisms. There needs to be an explanation on why the K_d value for lead is sufficient for mercury.
85	Section 4.8.2. Page 4.77 Appendix F, Section F.1.4.5, Page F.36	Health Impacts	Environmental Justice – This section briefly reviews some of the Executive Orders and census tract information associated with minority populations in the Hanford area. Relevant to this discussion would be citations that are associated with potential disproportionate risks assumed by minority populations, specifically Native American populations, because of cultural based behaviors. The Columbia River Inter-tribal Fish Commission (CRITFC) has numerous technical publications and surveys that should be recognized and used in the Draft HSW-EIS.
86	Appendix F, Section F.1.4, Page F.29 – F.36	Health Impacts	Two exposure scenarios are used by the Draft HSW-EIS for human health evaluations, the industrial scenario (F.1.4.1) and resident gardener scenario (F.1.4.2). Exposure parameters are provided in Tables F.35, F.36, F.37, and F.38. These two exposure scenarios are insufficient to account for the potential human exposure patterns that might occur. Neither of these exposure scenarios recognizes nor account for minority populations (Native Americans) that may be placed at a disproportionate risk. The Draft HSW-EIS dismisses the Model Toxics Control Act (MTCA, pp F.29) stating that the exposure parameters are not always used and by not attempting to identify relevant direct exposure patterns for children and to protect children. Major differences exist in the exposure parameters – note the 3 tables below that identify relevant risk information and direct exposure parameters for surface water, groundwater and soil in MTCA. Concurrent exposures, dermal + ingestion, are considered and evaluated in MTCA but are not considered or evaluated in this Draft HSW-EIS. Sauna or Sweat Lodge Air Inhalation. Imbedded within this exposure pathway is the implicit, not explicit, recognition of Native American cultural based habits (sweat lodge) that may account for environmental justice related concerns. As noted above, readily available documentation exists that more clearly documents cultural based behaviors with resulting exposure patterns that may place Native Americans at a disproportionate risk compared to the general population. This documentation should be recognized and used in the Draft HSW-EIS.
87		Health Impacts	Table of pollutant and ambient quality standard for short-term, workday and long-term exposures should be provided at the beginning of the discussion.
88	Sections 5-11 Appendix F	Health Impacts	Generally, it was difficult to follow the details of the health assessments, even for a person with training in radiological dose assessment. It was not always clear as to which exposure scenarios and assumptions were used for a given dose result. The information necessary to understand the details was often found scattered throughout the main document, the appendices, and outside documents. It was

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			difficult to follow section 5.11 without having to frequently consult Appendix F or the HSRAM document. Section 5.11 should be more self-contained.
89	Sections 5-11 Appendix F	Health Impacts	What is the basis for choosing a point of assessment for groundwater at a distance of 1 km down gradient from the 200 West and 200 East Area LLBG? A distance of 1 km appears to be arbitrary. Why were groundwater concentrations not also estimated at the point of maximum impact, which is directly underneath the LLBG, or at the LLBG boundary?
90	Sections 5-11 Appendix F	Health Impacts	Clarify whether or not a RCRA cover was assumed for any given set of groundwater concentration results.
91	Sections 5-11 Appendix F	Health Impacts	Clarify the values that were used for the infiltration rate parameter. Values of 0.5 and 0.05 cm/y were cited throughout the document, however it is confusing as to which value was used for any given groundwater concentration result.
92	Section 5.3.3, pp 5.19-20, Tables 5.9 and 5.10	Health Impacts	Tables 5.9 and 5.10 would be enhanced if the Tc-99 and I-129 concentration values were given in addition to their percentage of Drinking Water Standard values. Otherwise, there is the possibility that the Tc-99 and I-129 values in the table may be confused with concentration values, instead of percentage of DWS.
93	Section 5.3.3, pp 5.19-20, Tables 5.9 and 5.10	Health Impacts	An additional table, similar to Table 5.9 and 5.10, should present groundwater concentrations at the LLBG boundary (see comment 1 above). As an example, Table 5.23, in section 5.11.1.3, presents health impacts to a resident gardener at the 1-km well (1 km down gradient from the 200 Area) from radionuclides in groundwater. The first point of confusion is that the resident gardener, as specified in Appendix F, is located 20.6 km from the 200 Area, but the table indicates that the assessment point is evaluated at 1 km from the LLBG. The second point of confusion is that the text does not make clear which exposure pathways are used in the dose calculations. The table caption leads one to think it is only groundwater pathways, but Appendix F indicates that other pathways, such as external radiation exposure from soil, are evaluated. If the table is indeed only for groundwater pathways, then where are the results for the other pathways discussed in Appendix F? For each dose result, it should be clear which exposure scenarios in Tables F.35 and F.37 are being used. The third point of confusion is that the reader must go back and forth between the main document, the appendices, and outside documents to find the details of the results given in the tables, and even then, it is still not clear as to which exposure scenarios are used, and as to what model parameter values are assumed. Each dose result should be clear as to what pathways and parameter values were used.
94	Section 5.11, p 5.42, Line 42	Health Impacts	What is the basis for choosing a distance of 100 m from the release point to assess the industrial scenario? The value of 100 m appears to be arbitrary.
95	Section 5.11, p 5.42, Line 43	Health Impacts	Specify the location of the resident gardener in the resident gardener scenario. The location of a worker in the industrial scenario is specified here, so the location of the resident gardener should also be specified here, even though it is specified in Appendix F. Appendix F specifies that the resident gardener resides 20.6 km ESE of the 200 Area. Specify a familiar landmark near this location, for example LIGO.
96	Section 5.11.1.2.1, pp 5.45-47, Tables 5.18 and 5.19	Health Impacts	Footnote (b) in the tables should specify that the LCFs are calculated as described in Appendix section F.1.7.
97	Section 5.11.1.2.1, p 5.45, Lines 17-18	Health Impacts	Rather than simply stating that the dose estimates are small, summarize the results from Tables 5.18 and 5.19 by comparing the maximum lifetime dose from those

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			tables to any regulatory limits. For example, the maximum annual dose for the off-site MEI can be compared to the Washington State Air Emissions Regulations limit of 10 mrems/year.
988	Section 5.11.4.1.1, p 5.97, Table 5.58	Health Impacts	The text in section 5.11 and Appendix F states that the LCF estimates for the public are based on a conversion factor of 0.0005 LCFs per person-rem. The values for LCF in this table are not consistent with this value. For the 100 y and 500-y assessment time, the conversion factor appears to be 0.0004 - that for radiation workers, while for the 300 y assessment time, the factor appears to be 0.0007.
99	Section 5.11.4.1.2, p 5.97, Line 11	Health Impacts	Clarify what is meant by the dose being accumulated over a 50 year time period. Is this the 50-year period assumed for committed dose from inhalation and ingestion, or is it the lifetime exposure duration? If the latter, this is inconsistent with an assumed exposure duration period of 30 years used elsewhere in the health impact section.
100	Page. S.18, Sect. S.8.3, Paragraph 1	Health Impacts	Health effects appear to be limited to potential uptake of drinking water by citizens obtaining water from the Columbia River. One of the Hanford Site's remedial objectives is to restore groundwater to its "maximal beneficial use"; i.e., to make it potable. This analysis should also address impacts on groundwater within the Hanford Site before it discharges to the Columbia River.
101	Page. S.18, Lines 43 – 46	Health Impacts	Where is the analysis that supports the conclusion that 28 latent cancer fatalities could result from consequences arising from the occurrence of a design basis earthquake?
102	Table S.1, Page S.11	Groundwater	The disposal alternatives identified for Low-Level and Mixed Low Level Waste Alternatives 1 and 2 and No Action do not indicate that groundwater monitoring will occur for the low-level waste trenches via RCRA groundwater monitoring networks designed to detect releases from the LLBG TSD and solid waste management units. The <i>Hanford Site Solid Waste Management Environmental Impact Statement Technical Information Document</i> (HNF-4755) appears to have omitted analysis associated with the construction/installation of groundwater monitoring wells, as well as monitoring costs. Considering the significant deficiencies associated with the existing RCRA groundwater monitoring networks as well as the size of the LLBG, the capital expenditure associated with installation and operation of a groundwater monitoring network capable of detecting releases from the low-level waste trenches could be significant. The networks will be designed (with installation of additional wells) via the RCRA final status permit issuance process. Groundwater monitoring will occur during operations of the LLBG units. Therefore, the Low-Level Waste Alternatives 1 and 2 should include indications that additional groundwater monitoring wells will be installed and groundwater monitoring will be performed throughout operations of the LLBG. The lack of analysis to consider installation of additional groundwater monitoring wells and groundwater monitoring renders the Draft HSW-EIS analysis incomplete and non-bounding. (§ 1502.14, 1502.15, and 1502.16)
103	Section S.8.4 Page S.20	Groundwater	The section's total numbers/ranges omit added potential (and estimated) costs associated with groundwater monitoring, <i>which could be significant, based on the deficiencies of the system.</i>
104	Section S.8.5 Page S.20	Ground-water	The statement that "impacts for all resources considered in the Draft HSW-EIS are relatively small . . ." in relation to groundwater is included without a technical basis. For purposes of inclusion of a bounding RCRA groundwater monitoring needs

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			analysis. Ecology's analysis indicates that a significant number of additional RCRA groundwater monitoring wells could be required for the LLBG groundwater monitoring system to consist of a sufficient number of wells, installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that . . . represent the quality of groundwater passing the point of compliance"). Therefore, either the statement must be deleted or a disclosure must be inserted. If a disclosure is inserted, it must identify that the RCRA groundwater monitoring networks associated with the LLBG are significantly deficient. It must also be disclosed that the RCRA groundwater monitoring networks are so deficient that no technically based conclusion of current or future impact in relation to groundwater can be made for the units at this time. (§ 1502.7, 1502.14, 1502.15, and 1502.16)
105	Section 3.0 General Comment	Groundwater	Section 3.0. The section does not appear to include groundwater monitoring in any of the alternatives. Similarly, the section does not appear to include cost evaluations for groundwater monitoring well installation needs. It is recommended that a description of LLBG RCRA groundwater monitoring requirements be included in Sections 3.1, 3.2, and 3.3 and that cost estimates for these actions be included in Section 3.7 and in Table 3.6. It should be noted that groundwater monitoring requirements are applicable to all alternatives. Considering the logic applied to the No Action alternative whereby "currently defined LLBG" are analyzed to manage waste, then the No Action alternative should also include groundwater monitoring costs. (§ 1502.23)
106	Section 3.7 And Table 3.6	Groundwater	The section does not include groundwater monitoring in the comparison of costs of alternatives. Washington Administrative Code (WAC) 173-303-645 requires groundwater monitoring at RCRA land-based TSDs. WAC 173-303-645 requires groundwater monitoring at the point of compliance for detection of contaminants. Furthermore, the same regulation requires "the groundwater monitoring system must consist of a sufficient number of wells, installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that . . . represent the quality of groundwater passing the point of compliance." It is recommended that costs be estimated for data evaluation (including statistical analysis between up-gradient and down-gradient wells) and reporting over a 74 year groundwater monitoring period. (§1502.14, 1502.15, 1502.16 and 1502.23)
107	p. A.14	Groundwater	The response to comments concerning groundwater does not appear to address the commenters' issue of the adequacy of data about existing vadose zone contamination. Please explain how the SAC and related activities provide adequate data.
108	Table S.3, Page S.19	Groundwater	The Draft HSW-EIS groundwater quality impact analysis assumed an infiltration rate modeling input parameter that is an order of magnitude less conservative than the same infiltration rate modeling input parameter used to support USDOE's LLBG disposal authorization basis. The use of the less conservative modeling input parameter is not supported by a technical basis as no such technical basis exists. Of regulatory concern to Ecology, the Draft HSW-EIS groundwater quality impact

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			analysis selects "points of assessment" to describe groundwater quality impacts. None of the "points of assessment" selected meet RCRA regulatory requirements for monitoring groundwater quality at the LLBG "point of compliance." While RCRA defines the groundwater point of compliance to be at the unit boundary, the Draft HSW-EIS's nearest "point of assessment" is located 1 km away from the LLBG unit boundaries. The affect of selecting such a "point of assessment" away from the LLBG unit boundaries is to greatly reduce groundwater quality impacts. This methodology is inconsistent with RCRA regulatory requirements and could be considered to be misleading (i.e., the approach masks and/or reduces groundwater quality impacts). Detailed comments regarding the above issues are attached. In summary, the Draft HSW-EIS groundwater quality impact analysis is deficient and is neither conservative nor consistent.
109	Section S.8, Page S.17, Lines 43-44	Groundwater	The analysis provided in the Draft HSW-EIS is neither conservative nor consistent with similar analyses performed to support the USDOE's LLBG disposal authorization basis. Furthermore, the basis for the Draft HSW-EIS groundwater evaluations of groundwater quality is inadequate and does not support an assumption of no current impact from the LLBG.
110	Section 1.5.1.3, Page 1.16	Groundwater	The Draft HSW-EIS does not adequately and/or accurately reflect groundwater and/or corrective action regulatory requirements applicable to an evaluation of reasonable alternatives or mitigation measures. Deficiencies in the current groundwater monitoring networks should be addressed, including an estimation of the number and cost of needed wells, or acceptable alternative monitoring where wells cannot be constructed because of a declining water table. Without this information, the cost analysis is incomplete.
111		Groundwater	Ecology has concluded that the Draft HSW-EIS groundwater quality impact analysis does not provide an evaluation of reasonable alternatives or mitigation measures to reduce or minimize adverse impacts to groundwater. This conclusion is primarily based on the following: 1) the insufficiency of existing groundwater quality information, 2) a lack of groundwater impact modeling conservatism (in light of the lack of LLBG-specific data), 3) an inadequate consideration of applicable regulatory requirements, and 4) inconsistencies associated with the groundwater impact analysis methodology. Ecology has concluded that the groundwater quality impact analysis provides neither the basis for the alternatives evaluated nor the basis for the omission of mitigation measures.
112	Section S.6.1, Page S.10 Section S.6.2, Page S.12	Groundwater	The section is silent on RCRA groundwater monitoring requirements. The section should identify that RCRA groundwater monitoring requirements will be imposed via the RCRA final status permit. In addition, it should be identified that groundwater monitoring provisions will address the entire LLBG unit boundaries (as defined by RCRA Part A permit). (§ 1502.14, 1502.15, and 1502.16)
113	Table S.1, Page S.11	Groundwater	The disposal alternatives identified for Low-Level and Mixed Low Level Waste Alternatives 1 and 2 and No Action do not indicate that groundwater monitoring will occur for the low-level waste trenches via RCRA groundwater monitoring networks designed to detect releases from the LLBG TSD and solid waste management units. The <i>Hanford Site Solid Waste Management Environmental Impact Statement Technical Information Document (HNF-4755)</i> appears to have omitted analysis

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			associated with the construction/installation of groundwater monitoring wells as well as monitoring costs. Considering the significant deficiencies associated with the existing RCRA groundwater monitoring networks as well as the size of the LLBG, the capital expenditure associated with installation and operation of a groundwater monitoring network capable of detecting releases from the low-level waste trenches could be significant. The networks will be designed (with installation of additional wells) via the RCRA final status permit issuance process. Groundwater monitoring will occur during operations of the LLBG units. Therefore, the Low-Level Waste Alternatives 1 and 2 should include indications that additional groundwater monitoring wells will be installed and groundwater monitoring will be performed throughout operations of the LLBG. The lack of analysis to consider installation of additional groundwater monitoring wells and groundwater monitoring renders the EIS analysis incomplete and non-bounding. (§ 1502.14, 1502.15, and 1502.16)
114	Appendix G; Page. G.4, Line 27	Groundwater	What is "an appropriate release model?"
115	Chapter 4; Page. 4.38, Paragraph 1	Groundwater	Old, abandoned and/or poorly sealed vadose zone and groundwater wells are also potential preferential pathways and should be mentioned here.
116	Chapter 4; Page. 4.36, Sect. 4.5.1.4, Paragraph 1	Groundwater	Assuming that groundwater recharges West Lake and that groundwater is or has flowed from the 200 East Area toward West Lake, the salts deposited from evaporation could potentially contain some Hanford contaminants. Runoff could also carry contaminated material to West Lake. This possibility should at least be mentioned.
117	Chapter 4; Page. 4.42, Fig. 4.16	Groundwater	Water table contours north and east of the Columbia River indicate significant differences in the elevation of the water table. However, north and east of the Columbia, there are no well locations shown, so it is difficult to determine how these elevations were obtained. What is the source of these elevation/head data?
118	Chapter 4 Page. 4.43, Fig. 4.17	Groundwater	Two meter contours do not convey a clear picture of water table elevation. Supplemental contour lines at 0.5m intervals should be added to this map.
119	Chapter 4; Page. 4.47, Table 4.9	Groundwater	Is the value for Cr for total Cr, hexavalent Cr? Please clarify.
120	Chapter 4; Page. 4.49, Sect. 4.5.3.3, Paragraph 1, Lines 36 – 39	Groundwater	The communication between the unconfined and confined aquifers is grossly understated. With the Elephant Mountain member of Columbia River basalt absent in at least two boreholes north of the 200 East Area, the unconfined and confined aquifers (Rattlesnake Ridge member) are in direct contact in a window of unspecified dimensions. Correct this understatement.
121	Chapter 4; Page. 4.50, Paragraph 3	Groundwater	Artificial recharge to the unconfined aquifer continues in the form of discharge of sanitary waste liquids and water from leaking raw water distribution lines. These sources should be added.
122	Chapter 4; Page. 4.50, Paragraph 4	Groundwater	A supporting basis needs to be added for the following statement, "... no indication is shown of aquifer interconnection." How do the piezometric heads in the unconfined and confined aquifer systems compare across the site? It also needs to be made clear whether reference to deeper aquifers is to the basalt confined aquifer system or to the semi-confined aquifers beneath the Ringold Lower Mud.
123	Appendix G; Page. G.6, Line 25	Groundwater	The statement is made that there are more than 100 radioactive and non-radioactive constituents that could potential impact groundwater. Thereafter, the entire analysis is based on various categories of radionuclides which may simulate the behavior of

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			non-rad constituents in flow and transport, but which present different hazards to humans if they get to groundwater and are consumed. Only Pb and Hg are evaluated (pg. G.9) and dismissed. Justify these exclusions.
124	Appendix G Page. G.21, Lines 14 – 16, 19 – 20	Groundwater	Earlier, the statement was made that a one dimensional model was used because of insufficient characterization. Yet, here you state that one-dimensional models are inadequate to represent preferential pathways (unsealed boreholes, clastic dikes) and indicate that they are too small and discontinuous to be of any real significance as a preferential pathway. Without adequate characterization data, how can you make this assumption?
125	Appendix G; Page. G.24, Fig. G-2 and Lines 12 – 13	Groundwater	If this is purported to be a conservative analysis, justify the decision to determine a release date when 50% of unit mass has reached groundwater. This is even less conservative given that releases are assumed to begin in 2046.
126	Appendix G; Page. G.33	Groundwater	Has any consideration been given to showing the cumulative releases to the Columbia River from all isotopes/constituents for different projected dates (e.g., 1,000, 5,000, 10,000 yrs.)?
127	Table 5.1, Page 5.4	Conclusions Not Supported	Land use commitments are listed on Table 5.1. In an effort to confirm bounding scenarios, the referenced <i>Technical Information Document</i> (FH 2002) was reviewed for a cursory accuracy check. To explain, on page 5.3, lines 9-11, it is indicated that "except where otherwise specified, all construction and operations engineering data that form the basis for environmental impact analysis of the alternatives are provided in the <i>Technical Information Document</i> prepared by Fluor Hanford (FH 2002)." When the land use commitments of Table 5.1 for "218-W-5 Exp" were checked in the referenced document, it was found that there are no impact analysis numbers included for this "contingency expansion" (see Appendix D, pages D-13 and D-14, Section D5.1 of <i>Technical Information Document</i> [FH 2002]). It should be noted that the "contingency expansion" of 202 hectares represents just less than half of the LLBG sub-total (425 hectares). The omission and the lack of an accompanying explanation are significant. Considering the zeros listed for upper and lower bounds, it is concluded that no impact analysis has been done for this 202 hectare "contingency expansion." If such an expansion were deemed necessary in the future, an additional NEPA review would be appropriate. Currently, such an omission renders the analysis incomplete and non-bounding. In addition, such an omission reduces confidence of the analysis referenced as being complete without an explanation for omission of numbers. Therefore, either remove the "218-W-5 Exp" from the scope of the Draft HSW-EIS or include the supporting bounding analysis. (§1502.7, 1502.14, 1502.15, 1502.16 and 1502.23)
128	Table 5.1, Page 5.4	Conclusions Not Supported	The land use commitment for 218-W-6 is identified as zero in several alternatives. No lettered note is indicated for the burial ground. The zeros could mean that this unit is currently unoccupied and that there is no intention of using the burial ground. Or, the zeros could mean that this unit is currently unoccupied and that there will be no disposal in the future, merely interim storage. Or, the zeros could mean that this unit is currently unoccupied and that the Draft HSW-EIS impact analysis was omitted. In an attempt to understand what the zeros mean, the referenced <i>Technical Information Document</i> (FH 2002) was reviewed. On pages D-13 through D-17, it is indicated on Tables D5-2 through D5-D10 that the total area of the burial ground is 16 but that the area to be capped under all scenarios is zero. From a third document

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			(Performance Assessment Monitoring Plan for the Hanford Site Low-Level Burial Grounds [DOE/RL-2000-72, Rev. 0]) it is indicated that the 218-W-6 burial ground has not yet received any waste and is reserved for future mixed waste disposal. If the 218-W-6 burial ground is to be used for mixed waste, all alternatives should analyze land use commitments for the unit (16 hectares). In summary, from Section 5.1, there is inadequate explanation or even reference to a document where it may be understood for the reader/decision-maker to understand what the land use numbers mean under the various scenarios and alternatives. (§1502.7, 1502.14, 1502.15, 1502.16 and 1502.23)
129	Page E.1, Line 25	Conclusions Not Supported	The reference 4.2.3 could not be found
130	Page E.3, Line 17	Conclusions Not Supported	All modeling assumptions should be listed.
131	2.1.3.1, Page 2.9	Conclusions Not Supported	USDOE states that, for the post-1970 TRU waste, "observations and monitoring of the area around the drums within the trenches has not detected the release of any alpha emitters, such as plutonium." It is Ecology's position that the current monitoring system is inadequate for detecting releases into the soil and/or groundwater from these trenches. USDOE does not state if the monitoring that was done detected releases from sources other than alpha emitters. (Supporting data)
132	Sec. S.3, pp. S.2-S.3	Conclusions Not Supported	The scope of this Draft HSW-EIS was narrowed, based on the issuance of the Record of Decision under the WM-PEIS. However, the WM-PEIS did not provide adequate information for decision-makers to select among specific sites, based on a comparison of site-specific impacts. In response to numerous comments about the inadequacy of site-specific environmental information in the Draft WM-PEIS, USDOE repeatedly referred commenters to the "Technical Report on Affected Environments." That document is apparently not available to reviewers of the Draft HSW-EIS, meaning that USDOE has still not provided the public an adequate basis for assessing impacts of treatment or disposal at alternate sites.
133		Conclusions Not Supported	The Draft HSW-EIS is a very complex document. Numbered sections in Volume 1 refer the reader for details to the lettered sections in Volume II. However, in Volume II, the equations, their derivations, and a range of values are not consistently presented for the reader to use in an independent verification of the calculations. For example, the equations used by RADTRAN 4 (Appendix H) are missing, but the basic air emission equation is shown in Appendix E (Equation E.1 on page E.9).
134	Chapter 5; Page. 5.12, Sect. 5.3.1, Lines 33 – 36	Conclusions Not Supported	Provide a basis for this expectation.
135	Chapter 5; Page. 5.12, Sect. 5.3.1, Lines 37 – 42	Conclusions Not Supported	Provide a basis for this expectation. Specify where in the vadose zone (i.e., how deep in relation to the water table and/or below trench bottoms) LLBG contaminants have infiltrated and at what rate are they infiltrating toward groundwater.
136	Chapter 5; Page. 5.13, Lines 9, 10	Conclusions Not Supported	Provide a basis for this expectation.
137	Chapter 5; Page. 5.14, Lines 10, 11	Conclusions Not Supported	Until such time as retrievably stored TRU wastes are retrieved, processed and shipped off-site, they are part of the vadose zone inventory attributable to the LLBG and should be included. Previous Hanford plans have gone awry (e.g., Grout), so until these TRU wastes are removed, or there is a firm schedule commitment and

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138	Chapter 5; Page. 5.16, Lines 16 – 34	Conclusions Not Supported	budget to accomplish the removal, they should be included as part of the inventory. Recent investigations at SST WMA S-SX indicate that sorption (i.e., distribution) coefficients may be variable because of waste and soil characteristics. Is it appropriate to use single values for all these contaminants throughout the entire vadose zone? Cobalt is indicated as belonging to Group 5; i.e., strongly sorbing. However, Co-60 will complex with organics and other constituents and become much more mobile. Are there any co-contaminants present in the waste or soil that would result in changed mobility for any other of the Group 5 constituents?
139	Chapter 5; Page. 5.12, Sect. 5.3, Lines 16, 17	Conclusions Not Supported	Provide a basis for the statement, "None of these contaminants are thought to have originated from the LLBG."
140	Chapter 5; Page. 5.12, Sect. 5.3, Lines 19 – 23	Conclusions Not Supported	How many of the listed contaminants were discharged in any form to any of the LLBG?
141	Section S.8	Editorial	General statements and assertions are made here. As this is a summary, the appropriate part of the document that addresses these specific issues (e.g., Land Use, Human Health) should be cited to allow the reader to verify that the supporting analyses provide the analytical basis for the assertions made in this section.
142	Page S.19, Table S.3	Editorial	Reference (here) should be made to the source and/or analyses that support the various quantities and conclusions listed in this table under various categories.
143	Page. S.18, Line 10	Editorial	Define and locate the "200 Area Industrial-Exclusive zone," preferably on a map.
144	Chapter 4; Page. 4.25, Figure 4.9	Editorial	This is taken from a BWIP document and shows a location labeled "Candidate Site." This is most likely the Reference Repository Location (RRL), the candidate for a basalt high-level nuclear waste repository at Hanford. This location is irrelevant to this Draft HSW-EIS and should be removed.
145	Chapter 4; Page. 4.31, Line 9	Editorial	Delete the word "all." These are the known earthquakes, but others may have occurred, so the map is likely incomplete.
146	Chapter 4; Page. 4.32, Line 10	Editorial	Insert word "known" between "all" and "earthquakes." Same reason as previous comment.
147	Chapter 4 Page. 4.45, Lines 1 through 5	Editorial	These two sentences are not clear. Rewrite for clarity. The USDOE's DCG is somewhat self-serving and not nearly as protective of human health and the environment as the DWS/MCL.
158	Chapter 5; Page. 5.16, Lines 36, 37		Provide a justification as to why analyses of chemical constituents were not performed.
149	Section 6.3, Page 6.2, Lines 23-25	Editorial	The paragraph includes several statements that are out of date. Update and clarify the description of the Hanford Site RCRA permit. Recommended wording for the sentence in lines 26-27 is: "The Hanford Site's RCRA permit was originally issued in two portions, one portion was issued by EPA Region X and the other portion was issued by Ecology." Similarly, recommended wording for the sentence in lines 27-28 is: "The EPA-issued portion of the RCRA permit covered the Hazardous and Solid Waste Amendments portion of the RCRA permit for the U.S. Ecology Site located on the Hanford Site (EPA 1994)." Similarly, recommended wording for the sentence in lines 28-30 is: "The second portion of the Hanford Site RCRA permit covered the dangerous waste provisions and was issued by Ecology (Ecology 1994)." Similarly, recommended wording for the sentence in lines 29-30 is: "The Hanford Site RCRA

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			<p>permit was recently modified for Ecology to cover Hazardous and Solid Waste Amendments (i.e. via Ecology's RCRA Corrective Action authorization) previously not included in the permit." Similarly, recommended wording for the sentence in lines 30-33 is: "The Ecology portion of the RCRA permit includes standard conditions, general facility conditions, and specific conditions for individual operating treatment, TSD units and SWMUs undergoing corrective action, and TSD units undergoing closure." (§1502.7)</p>
150	Sec. 3.7, p. 3.15		<p>Please explain how the costs reflected in Table 3.6 are consistent with those presented in USDOE's Report to Congress on the Cost of Waste Disposal (July 2002). Note the following statement on p. A-39 of the latter report: "Hanford does not have cost estimates for long-term stewardship."</p>
151	Appendix G; Page. G.4, Line 28		<p>Use of a 1-D model for vadose zone transport is rather simplistic. Justify this choice.</p>
152	Page. S.18, Sect. S.8.3, Paragraph 1		<p>Health effects appear to be limited to potential uptake of drinking water by citizens obtaining water from the Columbia River. One of the Hanford Site's remedial objectives is to restore groundwater to its "maximal beneficial use"; i.e., to make it potable. This analysis should also address impacts on groundwater within the Hanford Site before it discharges to the Columbia River.</p>
153	Page. S.18, Lines 43 – 46		<p>Where is the analysis that supports the conclusion that 28 latent cancer fatalities could result from consequences arising from the occurrence of a design basis earthquake?</p>
154	Chapter 4; Page. 4.42, Fig. 4.16		<p>Water table contours north and east of the Columbia River indicate significant differences in the elevation of the water table. However, north and east of the Columbia, there are no well locations shown, so it is difficult to determine how these elevations were obtained. What is the source of these elevation/head data?</p>

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State of Washington
DEPARTMENT OF FISH AND WILDLIFE

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August 20, 2002

Mr. Keith A. Klein, Manager
Department of Energy
Richland Operations Office
Post Office Box 550
Richland, Washington 99352

Dear Mr. Klein:

**SUBJECT: DRAFT HANFORD SITE SOLID (RADIOACTIVE AND HAZARDOUS)
WASTE PROGRAM ENVIRONMENTAL IMPACT STATEMENT (EIS)**

1 The Washington Department of Fish and Wildlife (WDFW) has completed review of the Draft Solid Waste EIS. The WDFW is providing comments on this EIS because of our responsibility to protect, preserve, perpetuate, and manage fish and wildlife resources in Washington State. The WDFW has significant fish and wildlife trustee resources associated with the Hanford site, and we are co-trustees with the Department of Ecology on the Hanford Trustee Council. Our comments are focused on the species potentially impacted by the proposed actions and the reluctance of Department of Energy's (DOE) commitment to fully mitigate for these actions.

2 Overall, the Draft EIS fails to adequately evaluate the impacts of proposed actions on state and federally listed species. The state has 18 listed species that are associated with shrub steppe habitat that are not evaluated within this document. This document devalues the importance of The Nature Conservancy's (TNC) ongoing biological inventory on the Hanford site. "From a conservation standpoint, the Hanford Site is a vital and perhaps the single most important link in preserving and sustaining the diverse plants and animals of the Columbia Basin Ecoregion" (TNC 1998). The 1999 TNC report indicated 28 rare plant taxa were located on the Hanford site, including three species that are new to science. Twenty species of butterflies and moths were new to science, and 14 species represent new state records for Washington. The bird inventories documented 221 species on the Hanford site including 22 not previously known.

3 Regarding the threatened and endangered species information presented on page 4.64, paragraph two, the following statement is incorrect, "no plants or mammals on the Federal list of threatened and endangered wildlife and plants are known to occur on the Hanford site," Table 4.11 should include the following species:

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Loggerhead shrike	SS/FSC
Sage Grouse	ST/FC
Washington Ground Squirrel	SS/FC
Burrowing Owl	SS/FSC
Pygmy Rabbit	SE/FE
Northern Goshawk	SC/FSC
Common Loon	SS
Sagebrush Lizard	FSC
Olive-sided Flycatcher	FSC
Willow Flycatcher	FSC

State Sensitive (SS), State Threatened (ST), State Endangered (SE), Federal Species of Concern (FSC), Federal Candidate (FC), Federal Endangered (FE),

The statement "the common loon is the only Washington State sensitive animal species found on the Hanford site," is also incorrect given the updated information, as shown above.

Table 4.12, Washington State Candidate (SC) species should include:

4

Lewis Woodpecker	SC
Vaux's Swift	SC

5

This Draft EIS fails to recognize the importance of the microbiotic crust to the shrub steppe ecosystem by excluding it in the limited analysis of project impacts to the environment. As stated in the TNC report, "it clearly plays an important role in ecosystem functioning by reducing erosion, contributing nitrogen and organic carbon to the soil, and increasing infiltration of precipitation into the soil. Intact crusts can also enhance native seedling establishment in arid ecosystems" (TNC 1999).

6

The Draft EIS does not include sufficient data regarding groundwater contamination and movement. Our concerns relate to the lack of information on current and potential contaminants and their impact to groundwater, which ultimately discharges to the Columbia River. Risks from carbon tetrachloride and PCB were not evaluated in this document. Within the Draft EIS it gives conflicting information on the impacts to the aquatic resources from this proposed project. The Appendix I states that potential impacts to riparian and aquatic resources would occur in the long-term (up to 10,000 years), following the conclusion of waste management operations. In

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- 6 another paragraph (5.5.5.), Impacts to Aquatic Ecology in the Long-term, "leaching of radionuclides and other hazardous chemicals from the waste via infiltrating precipitation would eventually result in small quantities of long-lived mobile nuclides reaching the Columbia River. There was no evidence of adverse impacts on aquatic biota for any of the alternatives". Given the limited analysis provided within the Draft EIS, there is no guarantee that aquatic receptors would not be impacted from the proposed actions. Further, impacts to federally listed steelhead are not adequately analyzed within this document.
- 7 The DOE should not attempt to exclude itself from potential liability by the use of the term "irreversible and irretrievable commitments of resources" by excluding ground water impacts from this process (page 5.109). As stated in two previous WDFW letters regarding I and I language, DOE should thoroughly identify the natural resources which may be injured during remediation or other activity for each project, develop a plan for a full and proper mitigation for those injuries, and then carry through with a plan.
- 8 The WDFW is concerned with the lack of apparent commitment from DOE for mitigation for the continued loss of shrub steppe habitat in the Low Level Burial Ground's (LLBGs) in the 200 Area West and East, due to the efforts of vegetation control (herbicide application) as indicated in Appendix I. We disagree with the following statement, "continued use of these LLBGs, or new disturbance of the extant plant communities within them, would not result in the loss of any habitats designated by Washington State as priority habitat". The WDFW mitigation policy goal is to maintain the functions and values of fish and wildlife habitat in the state, and we strive to **protect the productive capacity and opportunities reasonably expected of a site in the future**. In the long term, WDFW shall seek a net gain in productive capacity of habitat through restoration, creation and enhancement. Since shrub steppe habitat is a WDFW priority habitat, a mitigation ratio of 3:1 is recommended for the loss of shrub steppe habitat on central Hanford, as indicated in the Hanford Site Biological Resources Mitigation Strategy Plan (BRMiS), for compensatory mitigation.
- 9 Appendix I discusses the proposed project's expansion of a borrow site (Area C) within the Arid Lands Ecology Reserve (ALE). This area is part of the Hanford National Monument and also contains mitigation sites from DOE's operations within the 200 Area. The maps provided within the appendix (figure I.1, I.2, I.3) do not illustrate the extent of disturbance this activity would have on ALE. In addition, Appendix D mentions the blasting of basalt in Area C. The discussion of potential impacts to terrestrial resources is excluded largely within this Draft EIS. Elk impacts due to this activity are only mentioned passively within the Aesthetic and Scenic Resources section of the Draft EIS. Elk are a priority species for the WDFW, and a more thorough assessment of the impacts of blasting to elk and other species is recommended.

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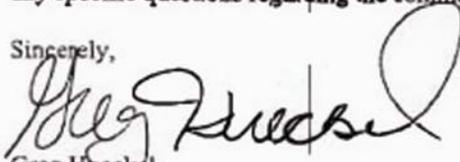
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Mr. Keith A. Klein
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The WDFW appreciates the opportunity to comment on this Draft Solid Waste EIS. If you have any specific questions regarding the comments please contact Lauri Vigue (360) 902-2425.

Sincerely,



Greg Hueckel
Assistant Director, Habitat Program

GH:LV:kam

Cc: Ted Clausing, Region 3 Habitat Program Manager
David Mudd, Major Projects Division Manager
Cynthia Pratt, SEPA Coordinator
Larry Goldstein, WDOE

References

The Nature Conservancy. 1998. Biodiversity Inventory and Analysis of the Hanford Site. Seattle, Wa.

The Nature Conservancy. 1999. Biodiversity Inventory and Analysis of the Hanford Site. Final Report: 1994-1999. Seattle, Wa.

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Heart of America Northwest

"Advancing our region's quality of life."

Michael Collins
U.S. Department of Energy-Richland Operations
825 Jadwin Avenue
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August 21, 2002

Comments RE: Hanford Site Solid Waste Environmental Impact Statement

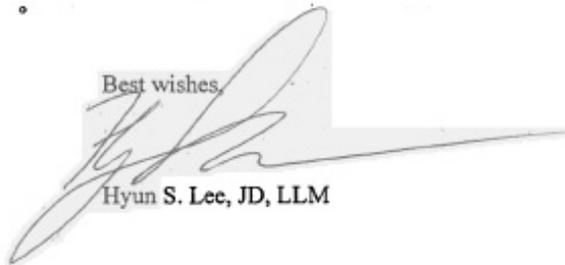
Dear Mr. Collins,

Enclosed are Heart of America Northwest and Heart of America Northwest Research Center's comments on the Draft Hanford Site Solid Waste Environmental Impact Statement. Our comments are in two sections. Our comments are titled:

- 1) "Heart of America Northwest, heart of America Northwest research Center Comments on the US Department of Energy's 'Hanford Site Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement, and Related Proposed Actions to Make Hanford a National Radioactive Waste Dump"; and
- 2) "Review Comments on 'Draft Hanford Site Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement Richland, Washington' DOE/EIS-0286d" prepared John R. Brodeur, P.E.

If you have any questions, please feel free to contact me at (206) 382-1014. Thank you for your time.

Best wishes,



Hyun S. Lee, JD, LLM

REC-2002-08-001

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Gerald M. Poffet, JD, Executive Director

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**Heart of America Northwest,
Heart of America Northwest Research Center
Comments on the
U.S. Department of Energy's
"Hanford Site Solid (Radioactive and Hazardous) Waste Program
Environmental Impact Statement,
and Related Proposed Actions
to Make Hanford a National Radioactive Waste Dump**

August, 2002

**Overview of Proposed USDOE Actions and Failure of the EIS to Consider
Impacts From Those Actions, and Failure to Consider Reasonable
Alternatives to USDOE's Proposed Actions:**

- 1** | **1. Import 70,000 truckloads of radioactive waste to Hanford for burial.**
 - EIS has no consideration of any alternative to use of Hanford for burial of these wastes. Reasonable alternatives include: waste minimization; increased treatment and characterization prior to landfill disposal (USDOE proposes "minimal treatment" only for Low-Level Radioactive Wastes [LLW]); use of externally regulated, commercial landfill disposal facilities for specific waste streams instead of using unlined soil trenches that are not externally regulated; charging offsite waste generators the fully burdened long-term costs of disposal (which generators would have to pay if they used a commercial, independently regulated facility), and, thereby, created financial incentives for generators to reduce waste volumes.
- 2** |
 - The EIS fails to have the legally required "no action alternative", which would be an alternative comparing the benefits of not adding 70,000 truckloads of radioactive waste to Hanford's soils and not placing large populations and environmentally sensitive areas along the shipment routes at risk.
- 3** |
 - the draft HSW-EIS was clearly prepared to be an ex-post facto justification of the decisions, goals and strategies adopted by USDOE in the Secretary of Energy's "Review" of the Environmental Management Program ("Top-to-Bottom Review") and the Hanford Performance Management Plan adopted to implement those national strategies, rather than being an independent analysis of Hanford site-specific issues.

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- 4
- EIS fails to consider the very real potential for terrorist attacks on USDOE nuclear weapons and research facility related radioactive waste shipments, especially Plutonium and other Trans-Uranic Waste Shipments. This analysis must include specific risks from use of truck routes through Oregon, along Interstate 5 and the Columbia Gorge.¹
- 5
2. **Add 12 million cubic feet of radioactive waste to Hanford’s unlined soil radioactive waste burial grounds – more than doubling the total amount of radioactive waste buried in the unlined soil trenches.**
- The Hanford Solid Waste EIS (HSWEIS) fails to consider ending the use of unlined soil trenches for disposal of radioactive wastes.
 - *It is illegal for a citizen in Washington to dump their kitchen garbage in unlined ditches. It is illegal for a local government to have an unlined soil garbage dump for municipal trash. It is no longer legal for USDOE to dump radioactive wastes in unlined trenches, and NEPA requires consideration of the wide range of reasonable alternatives. This practice must stop immediately* – and the EIS should consider how to dispose of Hanford’s own cleanup wastes, without adding more wastes from offsite.
- 6
- Reasonable alternatives must include different types of liners and caps, along with maximum segregation of wastes. Different types of radioactive wastes, as with different types of hazardous wastes, react differently with various liners and caps. For instance, certain radioactive or Mixed Wastes generate off-gases that are incompatible with liners and caps that would offer greater benefits to prevent intrusion by humans, wildlife, plants or water.
- 7
- The EIS ignored a proposal from USDOE’s discussions with regulators in the Cleanup Constraints and Challenges Team process (C3T) to end the use of unlined soil disposal by using a giant “mega-trench” for both LLW and Mixed Wastes. This proposal can not be acted upon unless fully considered in an EIS, along with its impacts and alternatives. Claims that USDOE has the freedom to do anything less destructive than the use of unlined trenches, referring to this EIS as providing only a “bounding analysis”, have no support in NEPA or relevant case law. NEPA requires description of the proposed action, and all reasonable alternatives. As noted above, mixing radioactive waste and Mixed Wastes in one trench has a set of impacts that may not be acceptable when compared to the use of trenches with liners,

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7 (cont)	leachate collection systems and caps that are tailored for each type of waste.
8	<ul style="list-style-type: none"> The EIS failed to consider ending the practice of leaving the trenches uncapped for the next forty years – increasing the mobilization and release of hazardous substances.
9	<ul style="list-style-type: none"> USDOE totally failed to disclose the presence of hazardous wastes in the unlined burial groundsⁱⁱ and consider their impacts on groundwater, future site users, environmental receptors. USDOE failed to disclose, for example, that numerous solvents from Plutonium and Uranium extraction processes were disposed to the very same burial grounds where USDOE proposes to undertake major expansion of trenches. These solvents were specifically selected for their ability to mobilize and dissolve Plutonium and Uranium, which are present in very large quantities in the trenches. The groundwater model used to predict contamination from the burial grounds utterly fails to consider the presence of mobilizing solvents, and it fails to consider and disclose the impact of the hazardous wastes on groundwater. (SEE detailed discussion and comments on USDOE’s “Performance Assessments” for the Burial Grounds, later in these comments. USDOE relies upon these outdated performance assessments for the claims made in the EIS). There is no risk assessment undertaken for this EIS on the hazardous substances in the burial grounds.
10	<ul style="list-style-type: none"> USDOE fails to consider alternative actions to change waste disposal practices, including improved verification and waste characterization procedures, independent regulation of waste characterization by waste generators.
11	<ul style="list-style-type: none"> USDOE must describe the current and recent failures to prevent misdocumented wastes, wrongly characterized wastes, and illegally disposal hazardous wastes from being buried in the Low-Level Burial Grounds. Under separate cover, we have submitted two reports (“Washington Beware” and an update) detailing failure by offsite waste generators to properly track wastes, identify wastes, characterize wastes. These should be responded to by having the EIS rescoped to include the presence of hazardous wastes in the landfills, description of actual waste acceptance criteria violations by generators (including rates of violations), consideration of the clear benefits to be derived from independent regulation of USDOE’s low-level radioactive waste burial grounds and practices, the impact of hazardous wastes on the mobility of radionuclides, and a risk
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assessment considering the potential for hazardous waste exposure through groundwater, intrusion, direct soil exposure and gaseous emissions.

3. Add 7 million cubic feet of “Mixed Waste” containing both radioactive and hazardous wastes to Hanford’s soils:

13

- Washington State law explicitly forbids land disposal facilities for hazardous wastes to be sited in this manner or at this location, or to take these wastes.

14

- USDOE never discusses Washington’s Hazardous Waste Management Act and the state hazardous waste facility siting requirements, nor the State’s ban on land disposal of extremely hazardous wastes. Instead, USDOE repeatedly asserts in the EIS and in the Performance Management Plan that USDOE is permitted to use the Mixed Waste Burial Ground for offsite disposal of Mixed Wastes.

15

- In fact, Washington State can only permit the facility for onsite waste associated with cleanup, and must describe all waste streams and estimated total quantities in the permit. USDOE has failed to disclose any information about the nature of the mixed wastes to be disposed from offsite generators, total quantities for each waste stream and the unique impacts from each waste stream.

16

- USDOE failed to disclose and consider the proposal in the Performance Management Plan and the C3T documents to dispose of waste from Hanford’s High-Level Nuclear Waste Tanks, and melters and other equipment from the Hanford Vitrification Plants, in the burial grounds. This includes the failure to consider cumulative impacts from the proposals to NOT vitrify all wastes, to replace vitrified wastes with cement grout waste forms for burial, and proposals to leave wastes forever in Single Shell Tanks. Consideration of cumulative impacts must include these proposed related actions, and the cumulative impact on groundwater and human health from these related actions.

17

- Discussion of liner and leachate collection systems for Mixed Wastes, and for Low-Level Wastes, is totally missing. All liners are not equal. An integrated system of liners, including geologic elements (such as clays), leachate collection and caps is necessary to discuss mitigation for each type of waste.

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Heart of America Northwest's Interests:

18 Heart of America Northwest is the citizens' group that has been leading the fight for the cleanup of Hanford, America's most contaminated area, since 1987. Together, Heart of America Northwest and Heart of America Northwest Research Center have over 15,000 members across the region. The organizations have undertaken the bulk of the public notice, comment generation and turnout efforts for the hearings on the Hanford Solid Waste EIS (HSWEIS) and related proposals to make Hanford a National Radioactive Waste Dump. At the public hearings in Portland (attended by over 250 persons) and Seattle (attended by over 160), facilitators asked the attendees how they had heard about the hearings. In both cities, no one responded that they had seen any newspaper advertisement by USDOE, and only a handful had received mailed notice from the U.S. Department of Energy (USDOE). The majority of citizens attending only knew about the hearings and the proposed decisions that impact their values and could impact their health through the mailings, ads and phone banks run by Heart of America Northwest.

19 We formally request that all citizen comments, questions and presentations at the hearings be responded to, and that each of our members who gave comments receive a written response. Both the question and answer sessions and alternative public interest viewpoint presentations were transcribed, and we request that they be included in the record, and responded to as comments. Where questions were not responded to accurately, or when USDOE was not able to respond to a question, USDOE should fully respond in writing.

20 In addition to these written comments, please consider the presentations and comments made by Heart of America Northwest's representatives at the public hearings as part of our comments. Under separate cover, we will also forward you the comments of our technical consultant, hydrogeologist and licensed engineer **John Brodeur**. The comments of **John Brodeur, P.E.**, have been relied upon in part for our organizational comments, and should be considered to be a formal part of our organizations' comments.

Lack of Disclosure Violates NEPA:

21 Notice of the hearings has not been the only effort by USDOE to avoid public notice and information regarding the issues that are supposed to be covered in the Hanford Solid Waste EIS (HSWEIS). **USDOE deliberately, and illegallyⁱⁱⁱ, has**

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withheld the following from disclosure to the public during the EIS comment period:

22

a. A definitive plan and schedule to ship Plutonium and other Trans-Uranic wastes to Hanford. These wastes would be stored in facilities that are the subject of the EIS, and include waste forms for which Hanford lacks any permitted storage or treatment capacity for. These Plutonium and Trans-Uranic wastes (TRU wastes) would be shipped to Hanford via trucks using Interstate 5 from California, passing through Medford, Eugene, Salem and Portland on congested highways, before being trucked through the Columbia Gorge, with its high winds and treacherous road conditions. TRU wastes would also be shipped to Hanford via I-84 across Eastern Oregon, with treacherous passes through the Blue Mountains. USDOE has failed to consider the unique risks associated with TRU waste truck shipments along these routes, nor taken into account the specific types of wastes and their potential impacts on health and the environment in the event of either a terrorist attack on a truckload of TRU or Plutonium wastes, or an accident.

23

- USDOE adopted a set of national “goals” and “strategies” in November and again on February 4, 2002 accompanying the President’s Budget Request, and referenced in the USDOE Budget Request for FY 2003. Those goals and strategies included actions that would ship TRU waste to Hanford, as well as other goals and strategies to leave High-Level Nuclear Wastes forever in the Single Shell Tanks that have already leaked over a million gallons of waste to the soil. Neither of these goals or strategies is disclosed or discussed in the HSWEIS, despite relating to facilities reviewed for the EIS or being related decisions that would add cumulative impacts to the soil and groundwater. On May 1, 2002 Hanford issued a draft Performance Management Plan with a schedule to start TRU shipments to Hanford. This was adopted without the benefit of consideration of the risks and impacts, and alternatives, in violation of NEPA.

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- Heart of America Northwest discovered that there were specific plans and schedules to begin shipping TRU waste to Hanford only through the Freedom of Information Act. Documents obtained through the Freedom of Information Act revealed that USDOE had already made a decision to ship TRU wastes to Hanford, and an approved, change controlled USDOE document stated that:

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"Hanford will make receiving RH-TRU from offsite generators a priority over award fee workscope."

(RH-TRU is extremely radioactive Remote Handled TRU). Similar statements were made for TRU mixed with hazardous wastes (Mixed TRU) and Contact Handled TRU. Award fee workscope refers to contractor work to meet Hanford Clean-Up Agreement milestones and other legal requirements.

27

- NEPA requires USDOE to consider the impact on Hanford Clean-Up from the proposed action to take TRU waste from offsite generators. The statement in official USDOE documents that receipt of offsite TRU would be a higher priority, reflecting national goals and strategies, than Hanford Clean-Up Agreement workscope indicates that there will be an impact that must be disclosed and fully considered.

28

- For all offsite waste shipments to Hanford, not just the TRU shipments, USDOE studies have repeatedly documented that the offsite generators pay less than fifty percent (<50%) of the marginal cost incurred by Hanford's receipt of the wastes. Thus, the perpetually underfunded Hanford Clean-Up budget^{iv} must pay the long-term costs due to offsite waste, while deferring legally required safety upgrades and environmental remediation or monitoring.

29

- Heart of America Northwest has had a longstanding interest in ensuring that the underfunded Hanford Clean-Up Budget stop subsidizing offsite waste acceptance.
- As members of the Hanford Advisory Board, we formally requested copies of USDOE's own study of the costs of disposing of wastes at USDOE facilities and commercially available facilities that are independently regulated. USDOE has failed to make this report – which was requested by Congress, and due to Congress some time ago – available during the comment period. This report was repeatedly requested by the Hanford Advisory Board. Failure by USDOE to provide the information in this Congressionally requested report – and failure to incorporate it into the EIS –

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buttresses our call for the EIS to be withdrawn, totally rescoped and redrafted, and then reissued for public comment.

b. USDOE withheld from disclosure documentation of the release of hazardous substances into the environment from the unlined soil low-Level Waste Burial Grounds:

30

- Before the draft HSWEIS was released, USDOE took air samples from pipe “risers” venting the unlined soil trenches in Waste Management Unit Four (West of the Plutonium Finishing Plant), where USDOE has proposed to expand trench use and has several unlined trenches in service.
- The carcinogen carbon tetrachloride was found in Trench 4 at levels one hundred seventy six times the OSHA standard for worker exposure to carbon tetrachloride. Carbon Tetrachloride is also a poison and potent reproductive toxin. The maximum air sample from Trench Four was 63% of the LD/LC50 – the level at which 50% of rats exposed were killed.

31

- Chloroform was also found at levels up to six times the OSHA limit for worker exposure.
- At least one vent sampled had organic chemicals above standards in the breathing zone when initially sampled.

32

- USDOE is fully aware of the presence of a wide range of hazardous wastes in these Low-Level Burial Grounds, including explosive and flammable wastes and solvents. However, none of these risks were considered in the EIS, including the risk to worker health from the proposal to expand use of burial trenches in these areas.

33

- The presence of Carbon Tetrachloride was only revealed in response to a Freedom of Information Act request by Heart of America Northwest. That request was made in June, and noted the need for the readily identified documents to be released within the ten day period required by the Freedom of Information Act, in order to allow us to present this information to the public in a Citizens’ Guide and other materials being prepared for the hearings. Instead, it took the threat of litigation, after the Portland hearing, for the public records to be released to us. Thus, many of the citizens (and state officials and Members of Congress) attending the hearings on the EIS did not have the benefit of knowing this important information in time to provide their comments.

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- 34 ○ USDOE is legally required to undertake a Model Toxics Control Act Phase III investigation of the releases and potential releases from the unlined LLW burial grounds. The EIS should discuss the steps for this investigation, and how steps will be taken immediately to prevent worker exposure and to prevent further contamination spread from the burial grounds.
- 35 **c. USDOE fails to disclose that the groundwater monitoring wells around the Low-Level Burial Grounds are mostly dry, and incapable of measuring contamination from the burial grounds.**
- Instead of disclosing this, USDOE presents a ridiculous model for groundwater contamination relying on a single well one kilometer away from the closest edge of each area's burial grounds.
 - USDOE must use describe the groundwater contamination over time at the point of compliance for each burial ground – the edge of the burial ground. Then USDOE must disclose the impacts on future use values for Native American Nations, users of the Hanford Reach National Monument and others from the extensive groundwater contamination that comes from the burial grounds. Then, USDOE must propose mitigation and remedial action measures – instead, USDOE proposes to add waste and continue current burial practices, which will make the impacts worse.
 - The EIS must reference and describe how groundwater exposure and intrusion scenarios or other exposure will violate applicable and relevant standards, including Washington's Model Toxics Control Act standards. It is not acceptable for USDOE to rely upon its own orders and standards for determining acceptable doses or risks from exposure (See ensuing discussion relating to use of USDOE's Performance Assessments for the burial grounds). The EIS fails to disclose impacts to groundwater and human health at the point of compliance for waste management units. USDOE must consider the recent advice from the Hanford Advisory Board reflecting input from the Exposure Scenarios Task Force (consensus advice #132): The point of compliance should ensure no further degradation to ground water beyond the edge of the waste management unit. Non-degradation is required under both state and federal regulations. Without explanation, and in apparent violation of applicable standards, the EIS provides only a partial description of groundwater impacts for a single well one-kilometer away from the burial grounds.
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- 38 d. The EIS fails to include analysis of Environmental Restoration wastes that would be shipped to Hanford for burial. This is the same fatal legal flaw that USDOE had in the Waste Management Programmatic EIS, and which led to a court approved order.
- 39 e. Inadequate assessment for impacts of the proposed actions and cumulative impacts of related decisions on endangered or rare species.
- 40 f. Permits for the Waste Receiving and Processing facility, low level burial grounds, and the Central Waste Complex may not be made without knowledge of the quantities and nature of wastes proposed to be stored, disposed, or treated.^y Since SEPA requirements are not met in this draft EIS, we join the Hanford Advisory Board in urging that permitting agencies not grant any permit based solely upon the draft or the final HSW-EIS until such quantities and generators are specified and all requirements specified above are met. Nor can a Determination of Non-Significance be issued for permits for the CWC or WRAP given the acknowledgement of probable significant impacts to human health and the environment from the related actions, including waste import decisions that rely upon availability of permits for these facilities. Washington State's own comments on the Draft EIS preclude issuance of a Determination of Non-Significance as sought by USDOE.

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**Analysis of USDOE’s “Performance Assessments” for
Low-Level Radioactive Waste Burial Grounds**

Gerald Pollet, JD; Executive Director, Heart of America Northwest

USDOE relies upon two “Performance Assessments” for its analysis of the proposal to expand Hanford’s Low-Level Burial Grounds to accommodate disposal of an additional 350,000 cubic meters of Low-Level Radioactive Waste in the unlined trenches that comprise the burial grounds.^{vi} The Performance Assessments are the critical documents underlying conclusory statements in the Hanford Site Solid Waste Environmental Impact Statement (HSWEIS), that the burial of additional waste would not have unacceptable impacts on human health and the environment. The Performance Assessments were published for the burial grounds in 200 West in June, 1995 and for 200 East Area in August, 1996. The documents were provided to Heart of America Northwest by Michael Collins, USDOE Program Manager for the Hanford Site Solid Waste Environmental Impact Statement (HSWEIS), because – while relied upon for analysis in the EIS – the documents are not available on the internet.

- It is necessary to review the Performance Assessments in order to independently assess the basis for USDOE’s claims of low health risks from the proposal to more than double the total amount of radioactive waste buried in unlined soil trenches at Hanford. The unlined soil trenches have no leachate collection and inadequate groundwater monitoring.
- Claims related to health risks rely upon exposure scenarios for future users of the Hanford Site and Columbia River, which are found in the Performance Assessments.

Waste Quantity:

- More than double the total amount of radioactive waste buried in unlined soil trenches at Hanford:
 - Documentation: EIS Table 3.2 for LLW: “Previously buried waste” = 283,067 cubic meters
 - “Upper Bound” proposed = 631,427
 - Added Waste = 348,360
 - However: cf: WMPEIS^{vii} summary at 53 shows Hanford total “current inventory plus 20 years generation” = 89,000 cubic meters.
- 350,000 cubic meters LLW x 35.3 to get cubic feet = 12,355,000 cubic feet

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USDOE's Performance Assessments Use Criteria for Acceptable Health Impacts Which Exceed Legal Limits for Radiation Exposure and Health Risk to the Public:

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- Washington State's Model Toxics Control Act (Chapter 70.95D, R.C.W.; and implementing regulations at Chapter 173-303 WAC) set applicable health based standards for public exposure to "hazardous substances" and carcinogens released from disposal sites. Included in hazardous substances are radionuclides.
- The State limits exposure, and requires cleanup, if exposure would result in a total carcinogen risk (from all sources at the site) greater than **one in one hundred thousand**. Thus, if more than one exposed person in one hundred thousand would get cancer, additional cleanup is required. (This is often expressed in scientific notation as 1E-5). The State limit applies at federal Superfund sites in Washington.
 - This is one additional cancer in the most sensitive exposed population, per 100,000 exposed; i.e., children or Native American children who consume large quantities of water and food from the site.
- United States Environmental Protection Agency (EPA) sets a more relaxed standard utilizing a risk range allowing between one additional fatal cancer per ten thousand and one in one hundred thousand. (1E-4 to 1E-5).^{viii}
- USEPA has issued a formal opinion that exposure to 25 millirem per year of radiation from pollution at a federal Superfund site is not protective of human health or the environment, calling that level of exposure "unacceptably high" because it would result in 5 additional fatal cancers per ten thousand exposed adults (5E-4).^{ix}
 - EPA has formally found that a proposal to allow 100 millirem exposure annually "could create unacceptable health risks to the public... and potentially result in the creation of new Superfund sites."^x
 - The EPA and Washington State standards are applicable to the Hanford Low-Level Waste Burial Grounds because:
 - 1) The burial grounds have released wastes to the environment, and have illegally been used to dispose of hazardous wastes – subjecting them to RCRA and Washington Hazardous Waste Management Act requirements for permitting and remediation. Washington State utilizes the MTCA standard for RCRA permit actions – consistent with the philosophy that we should not create new Superfund sites requiring cleanup.

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- 2) The burial grounds are in the midst of the federal designated Superfund National Priority List site and MTCA designated site.

The USDOE's Performance Assessment – and Hanford Site Solid Waste EIS – are Based on Performance Objectives that “create unacceptable health risks to the public... and potentially result in the creation of new Superfund sites”:

USDOE's Performance Assessment is based on the burial grounds meeting “Performance Objectives” that allow radiation doses of 25 mrem per year to the public and continuous exposure to 100 mrem per year of radiation following reasonably foreseeable intrusions into the waste sites. Doses of 500 mrem per year are considered acceptable by USDOE for a single exposure following intrusion.

42

Rather than designing the burial grounds to meet the applicable EPA and Washington State standards, USDOE sets “performance objectives” (which are not regulatory rules) in DOE Order 5820.2A for general public exposure from all pathways and post-intrusion exposures.^{xi}

EPA has specifically called the 25 mrem per year annual exposure an “unacceptable health risk”.^{xii} This radiation dose is fifty times the allowable carcinogen risk under Washington's Model Toxics Control Act.

USDOE's performance objective for reasonably foreseeable continuous annual exposure after intrusion into the burial grounds results in 2 fatal cancers for every 1,000 adults exposed. It is now generally accepted that children are 5 to 8 times more susceptible to cancer from ionizing radiation exposure than adults. For children, post intrusion risk deemed acceptable under USDOE's performance objective could be as high as 1 in 100. (Washington State law sets the standard as additional cancer in 100,000 from all carcinogens remaining on the site).

USDOE's Performance Assessment Ignores the Disposal of Hazardous Wastes in the Low-Level Burial Grounds:

43

Extensive documentation exists of hazardous wastes disposed in the burial grounds.^{xiii}

The presence of non-radioactive hazardous wastes is highly significant because:

- Hazardous wastes migrating from the burial grounds create significant health and environmental risks – for the commercial Low-Level Waste Burial Grounds, Washington Ecology has documented releases of nonradioactive

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hazardous wastes other than radionuclides (there is also evidence of radionuclides reaching groundwater) have reached groundwater in less than forty years of operation, in concentrations exceeding Washington State cleanup standards and Safe Drinking Water Standards.

- Some of the hazardous wastes disposed included liquids that will mobilize other wastes; or were wastes that would increase the corrosion of waste containers.
- Some hazardous wastes disposed in the LLBG were explosive or flammable.
- Hazardous wastes disposed in the burial grounds were often solvents and wastes that will serve to mobilize radionuclide contaminants, and dramatically increase the speed at which they travel to groundwater.
- Hazardous wastes change the ability of radionuclides to “sorb” to the soil, destroying the basis for USDOE’s models that show limited radionuclide migration through soil to groundwater.

Incredibly, USDOE’s Performance Assessment – relied upon for the HSWEIS – totally ignores the presence of hazardous wastes in the Low-Level Burial Grounds.

The discovery in 2002 of Carbon Tetrachloride (CCL4) at 1,760 parts per million at a vent in Waste Management Area 4 of the Hanford Low-Level Burial Grounds shows the danger of relying upon a performance assessment that ignores the presence of non-radioactive hazardous wastes.

44

USDOE’s Performance Assessment does not even reference standards for the burial grounds to meet for non-radioactive hazardous wastes.

Cumulative impacts, which the National Environmental Policy Act and State Environmental Policy Act require to be considered in an EIS, from the burial grounds already appear to exceed applicable standards from the Carbon Tetra-Chloride release – before considering additional releases from adding more waste to the LLBGs.

It must be noted that, even without considering the impact of hazardous wastes on the models used to predict contaminant transport and perform the risks assessments, the HSWEIS admits that radioactive Iodine 129 and Tritium contamination from the burial grounds will greatly exceed standards at a well one kilometer away from the burial grounds, and require restricting access to a

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large area (which two Native America Nations have treaty rights to utilize) for “thousands of years”.

For the HSEWEIS, USDOE inexplicably only presents groundwater contamination data for a single well one kilometer away from the burial grounds – which is further than one kilometer from many of the burial grounds. No explanation is proffered for why or how this single point was chosen.

In discussing “parameters that could influence radionuclide groundwater concentrations”, USDOE never mentions the potential for non-radioactive hazardous wastes to increase contaminant mobility.^{xiv}

Groundwater Standards for Radionuclides Are Shown to be Exceeded in the Performance Assessment:

Despite the Solid Waste EIS depicting groundwater results only for a single well in the 200 West Area (one kilometer away from the edge of the nearest burial ground), the Performance Assessment for 200 West clearly shows that for a well 100 meters from the burial grounds, the radiation doses from use of groundwater would exceed standards.

45

As noted earlier, the Maximum Concentration Limit (MCL) under the Safe Drinking Water Standard, utilized by EPA and Washington State for Superfund and MTCA standards, is based on a maximum dose of 4 mrem per year. At Table 4-22, USDOE provides “Radionuclide Dose Estimates for Groundwater Pathways”^{xv}. Doses exceeding 4 millirem per year are shown for:

C¹⁴; Cl³⁶; Tc⁹⁹; I¹²⁹; Se⁷⁹; Np¹³⁷; Pa²³¹; U

The total cumulative dose – not shown in the Performance Assessment – from the groundwater pathways would equal >9E+4 mrem/year. The MCL standard would be 4E+1. In plain language, the MCL will be exceeded by three magnitudes.

The HSWEIS, however, presents results solely for one well a full kilometer away from the burial grounds. The EIS shows MCLs violated for that well for only Iodine 129 and Tritium (H3). The reason for USDOE choosing to only present data for a well 1 kilometer away from the burial grounds appears to be to prevent disclosure of the excessive groundwater contamination that will occur from these burial grounds.

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A final groundwater note: The majority of groundwater monitoring wells at the edge of the LLBGs are dry or out of compliance with RCRA requirements. A dry well can not find contamination in the aquifer. The Performance Assessment relies upon models, rather than actual data. The significance of this is shown by the investigation into the nearby Hanford commercial Low-Level Waste site run by US Ecology Corp.. For the EIS for relicensing that site, US Ecology relied upon the same model as USDOE used in the Performance Assessments for 200 East and West. As with the HSWEIS, little migration through soil was predicted and groundwater was not expected to be impacted. However, actual data from monitoring wells (starting in late 2000) conclusively revealed that hazardous substances had reached groundwater from the US Ecology burial grounds.

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¹ USDOE documents obtained by Heart of America Northwest Research Center reveal that this is a reasonably foreseeable potential occurrence with unknown and never considered (in NEPA related documents) impacts. USDOE acknowledges that the potential for such an occurrence is real, but has not considered the impact in an interdisciplinary fashion, with public disclosure, as required by NEPA. The Ohio Field Office Solid Waste Forecast cites "DOE shipping restrictions in response to potential terrorist actions" as the explanation for rating their confidence level in their forecast of shipments to Hanford as "medium".

² The EIS has a mention in Volume I that the trenches contain mixed wastes and TransUranic wastes. No further description is given of the nature or quantity of the hazardous wastes. Indeed, it is not even explained what is meant by stating that mixed wastes are present. This did not meet the NEPA requirement to describe the current conditions and potential for significant impacts to human health and the environment, including cumulative impacts.

³ Failure to disclose related proposed actions is a violation of the National Environmental Policy Act (NEPA) and implementing regulations from the Council on Environmental Quality. Failure to disclose known environmental releases of hazardous wastes from waste sites that are the subject of the EIS is also violative of NEPA's requirements that the agency disclose and consider reasonably foreseeable environmental impacts, including both cumulative impacts from related decisions and from current conditions. Additionally, in June, Heart of America Northwest and HoANWRC submitted a Freedom of Information Act request for documents relating to the presence and potential release of carbon tetrachloride (a known carcinogen, reproductive toxin and poison) in the unlined soil radioactive waste trenches. The USDOE failed to provide a timely response, as defined in the Freedom of Information Act, to the prejudice of the organizations' ability to comment on the EIS, and to the prejudice of the public's ability to comment. Despite the request noting the need to receive the documents in time to prepare comments and a Citizens' Guide for the public in advance of the hearings, it took a threat of litigation to obtain the documents. The documentation of the carbon tetrachloride (and also chloroform) contamination in burial grounds that are not supposed to contain hazardous wastes, and which the EIS failed to consider the impacts from such hazardous wastes, was only provided to the citizen groups after the hearings in La Grande and Portland, and after all

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mailings, Citizens' Guides to the EIS, and media notices had been prepared. The requested documents were well identified, and easily obtainable. Thus, the failure to release public records was a serious violation of the Freedom of Information Act, and greatly injured the public interest.

^{iv} Claims that Hanford Clean-Up is fully funded belie projections of "compliance gaps" in funding. USDOE must acknowledge and use official baselines and funding target assumptions in responding to our comments and in preparing an EIS that considers the potential impact of taking offsite waste, with associated increased costs for Hanford facilities, monitoring programs, burial ground capping, burial ground remediation, facility and trench expansion, etc.... For example, USDOE has repeatedly claimed that it lacks the funds to upgrade the groundwater monitoring wells around the Low-Level Burial Grounds, which are the subject of this EIS. It is clear that USDOE does make receipt of offsite waste a higher priority than compliance with legal requirements for groundwater monitoring at the same burial grounds where this EIS proposes that USDOE dump an additional 12 million cubic feet of radioactive wastes.

^v SEE Washington Administrative Code.

^{vi} "Performance Assessment for the Disposal of Low-Level Waste in the 200 West Burial Grounds", WHC-EP-0645, prepared for the U.S. Department of Energy by Westinghouse Hanford Company, June 1995; and, "Performance Assessment for the Disposal of Low-Level Waste in the 200 East Burial Grounds", WHC-SD-WM-TI-730, prepared for the U.S. Department of Energy by Westinghouse Hanford Company, August, 1996.

^{vii} Waste Management Programmatic Environmental Impact Statement, USDOE, 1997.

^{viii} "This guidance clarifies that cleanups of radionuclides are governed by the risk range for all carcinogens established in the NCP (National Contingency Plan) when ARARs are not available or are not sufficiently protective. That is to say, such cleanups should generally achieve risk levels in the 10⁻⁴ to 10⁻⁶ range." OSWER No. 9200.4-18; USEPA; August 22, 1997, at P.3.

^{ix} "Analysis of what Radiation Dose Limit is Protective of Human Health at CERCLA Sites"; USEPA; August 20, 1997 at Page 7. EPA's limit is 10 millirem from a single source of airborne radionuclides for NESHAP; 4 millirem per year from groundwater and no more than 10 to 15 millirem from all sources would meet NCP requirements.

^x U.S. Environmental Protection Agency; April 19, 1999; letter to Conference of Radiation Control Program Directors commenting on proposal to allow residual contamination levels resulting in 100 millirem per year of potential public exposure. The EPA cited the same concern for NRC's license termination rule. July 7, 2000.

^{xi} USDOE Performance Assessment for 200 West Burial Grounds, Table S-1 at Page vi; see also same table in 200 East Assessment.

^{xii} Id and EPA August 20, 1997, Op.Cit.

^{xiii} See Heart of America Northwest Reports available on our website: www.heartofamericanorthwest.org:

"Washington Beware". USDOE has acknowledged prior disposal of hazardous wastes in a Part B RCRA application to Washington State. The Heart of America Northwest report conclusively shows that illegal disposal of hazardous wastes continued in the trenches after 1989.

^{xiv} SEE Performance Assessment for 200 West at 4.2.5

^{xv} Page 4-48; Assessment for 200 West.

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Review comments on "Draft Hanford Site Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement Richland, Washington" DOE/EIS-0286D

Review comments by:
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Comments on the source material.

47

P2.21(16) "LLW has been buried on the Hanford Site since the start of the defense materials production mission". It is assumed that this statement includes radioactive as well as hazardous wastes which are also buried in the LLBG. If that assumption is not correct, please explain where the older hazardous wastes were disposed.

48

Section 2.1.1.5 refers only to waste from 1962 to 1999 (283,000 m³). So we are missing radioactive and hazardous waste from 1944 to 1962 (almost 20 years of operations) that is not included in the EIS. A complete review, discussion, description and estimation of the solid waste generated during that time needs to be included in the EIS. What is the probability that the bulk of this waste is buried in the older portions of the LLBG?

49

Next, there is little to no information in the EIS on the composition of the previously buried waste (referring to Section 2.1.1.5 and Fig 2.1). Does this waste include hazardous constituents? What dates or time-frames are associated with what portions of this landfill. Please provide a comprehensive description of all previously buried waste and provide information on the composition of the material in the various landfill cells. If the composition of the individual cells is not known, this should be stated and the level of uncertainty of the cell contents should be clearly identified.

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Figure 2.1 also does not include a box element showing the previously buried mixed low-level waste. Is the implied conclusion that we do not have any previously buried mixed low-level waste a valid conclusion? If that implication is not appropriate, then the EIS should be rewritten to provide a thorough discussion of all mixed low-level waste in the landfill.

51

Considering the apparent "anomalous" occurrence of carbon-tetrachloride vapor in the risers of LL WMU#4 and the absence of any discussion of the mixed waste in the landfill, an objective reader of the draft EIS is left with a default suspicion that the DOE is hiding information on the mixed waste in the LLBG.

52

To prevent this, the EIS must include a better description and characterization of the source material, ie. the stuff in the old landfills. This must include any and all information on hazardous constituents as well as radionuclide composition.

Emphasis for disclosure in the EIS of certain hazardous constituent in the landfill is also required because of the potential for specific chemicals such as carbon-tetrachloride to enhance the migration of specific radionuclides such as plutonium or other transuranic elements. At the State LLBG operated by US Ecology, Inc. recent site

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characterization data indicate this very thing may be happening at that site. Since the DOE LLBGs were constructed in the same manner, within the same geologic formations and largely contains the same hazardous and radionuclide contaminants in similar forms, it is not unreasonable to assume that the organic chemicals in the landfill may be causing enhanced migration of very hazardous radionuclides. It appears that the findings from the site characterization of the State LLBG were not considered in the draft solid waste EIS. This problem should be rectified by providing a complete discussion of the findings from the characterization of the State LLBG.

Now we must address the source material characterization or lack thereof. Very little information is presented in the draft EIS on the composition and characteristics of the material in the LLBGs. This implies that little is known of the composition of this material and it indicates a need to perform a source material characterization. This data need is especially applicable to the older portions of the LLBGs.

If records and information on the composition of the various cells within the LLBGs do not exist, the DOE must address this as a characterization issue and perform an appropriate characterization of that source material. Now this does not mean that DOE needs to put together a multi-million dollar project and expose a bunch of workers to radiation and chemical hazards. What it means is that the DOE needs to put together a reasonable program with a realistic budget to assess the contents of the landfill. Such an assessment would first involve an extensive review of any records and the conduct of interviews of former Hanford personnel to objectively assess what potentially could be in the landfill. Then consideration should be given to applying in-situ characterization techniques such as vapor sampling, remote sensing or borehole geophysics screening methods to regions of the landfill for which records do not exist and for which the contents remains unknown. Actual intrusive characterization should only be considered if data cannot be obtained by any other means or if specific hazards are indicated to exist within a cell.

This characterization must be completed and the resulting information must be used to develop an accurate source model for the contaminant transport model and properly assess the environmental impacts. The current form of the environmental impact assessment does not consider an appropriate upper bounding condition that includes all of the contaminants known or indicated to be in the burial grounds. This lack of consideration is exemplified by the recent finding of carbon tetrachloride in a ventilation risers of WMU#4. The occurrence of this contaminant in the landfill shows that the site has not been properly characterized and the environmental impacts of this contamination have not been evaluated.

The draft EIS must provide source characterization data and it must include a description and evaluation of the uncertainties associated with the source material. In the draft EIS, there is no discussion of how well we know the source term. As a result, we have no assurance that the assessment of environmental impacts is accurate.

Page 5.17.

There are problems with the soil-debris release model that cause it not to be conservative. First, the assumed and model assigned hydraulic characteristics, being the same as that of the surrounding soil, are not realistic. The source waste material is

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(cont)

generally composed of everything from cardboard containers to wood to various parts, piping, machinery, etc that all contain substantial voids which greatly enhance permeability to both vapor transport (such as carbon tetrachloride) and liquid.

Next, much of the older waste materials contain free liquid in drums or other containers. That free liquid is released when the containers break down, potentially causing significant migration of previously contained radionuclides and hazardous constituents through the unlined waste facility. As the free liquids are released they can pick up additional contaminants causing an enhanced source-term release.

We must also consider the infiltration rate. While an infiltration rate of 0.05 cm/yr may be applicable to the covered landfill, that infiltration rate does not consider infiltration during the operational lifetime of the landfill, before an infiltration barrier cover is installed. The source models do not account for this significantly enhanced infiltration prior to cover installation.

It is likely that an enhanced infiltration process is responsible for the enhanced migration of contaminants at the State's commercial LLBG (US Ecology site). Since this mechanism appears to have created a problem at the State LLBG, it is likely that a similar occurrence will be found at the DOE LLBG when an appropriate site characterization is conducted.

The draft EIS source term must be modified to include an enhanced infiltration during operations as well as a free liquid material source from within the landfill.

Comments on the contaminant transport model

54

A problem exists with the contaminant transport model and the resulting assessment of environmental impacts in that the vadose zone model is overly simplistic and does not properly represent actual conditions within the vadose zone.

P4.38(1) states "Preferential flow may also occur along discontinuities, such as clastic dikes and fractures" which have the "potential to either enhance or inhibit vertical and lateral movement of contaminants in the subsurface, depending on textural relationships".

This preferential flow is not considered or accounted for by the simplistic homogeneous, one-dimensional vadose zone model. Even with conservative parameters are used in the model, preferential flow and an unfavorable source material chemistry can cause enhanced migration in a manner that is similar to what occurred at several of the tank farms.

We must consider data and information obtained from vadose zone characterization work at other sites at Hanford. It is apparent from vadose zone characterization data, that the migration of radionuclides does not occur in a manner that can be described by simple diffusion and dispersion. Rather contamination migration through the vadose zone, particularly within the Hanford formation is generally known to occur in a manner that is described as a discontinuous and tortuous flow path. This type of contaminant migration pattern is seen at essentially all of the subsurface contamination plumes around the tank farms and at most of the plumes originating from waste crib sites. This type of tortuous migration pattern is the rule at Hanford rather than the exception. If a proper site characterization were to be conducted at the LLBGs, it would likely reveal that this type of contaminant migration is characteristic of the plumes originating from the LLBGs.

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This characteristic pattern of contamination migration is not represented by the simplistic diffusion and dispersion calculations of the one dimensional model that was used in the draft. The simplistic model described in Appendix G of the draft EIS is entirely inappropriate and does not properly represent the actual contaminant migration mechanisms or patterns. As a result, it is concluded that the estimations of environmental impacts from the subsurface pathway are inaccurate to an unknown degree and the draft EIS must be rewritten to correctly and appropriately assess and quantify the true environmental impacts.

Additional problems with the contaminant transport model are identified above and relate to the inappropriate source terms that are used in the model.

55 The model is also not calibrated by comparing a projected model to actual site conditions which are generally revealed by characterizing the distribution of contaminants during a site characterization. That type of site characterization was not conducted for the DOE LLBGs so the simplistic model presented in the draft EIS is essentially uncalibrated and its accuracy is unknown.

56 Finally, no contaminant transport model sensitivity assessment was performed. As a result, there is no way to determine if the uncertainties of the model parameters are significant relative to the environmental impact assessment. If, for instance, the model source term is highly underestimated in composition or quantity, there is no way of knowing how that will effect the estimation of contamination delivered to the groundwater.

57 There is also concern about the location of the receptor well 1km downstream from the waste site. Since the LLBGs are RCRA regulated waste sites, the receptor well for exposure calculations should be located just outside of the waste site boundaries. In effect, the site model uses the dispersion and dilution that occurs within the groundwater to minimize the reported environmental impacts. It is reasonable to assume that a receptor well could be placed just outside of the LLBGs at the end of institutional control. Therefore, such a well placement should be analyzed in the environmental impact assessment as prescribed by the RCRA rather than using CERCLA groundwater prescribed criteria. We are interested in the true impacts to groundwater from the actions proposed in the solid waste EIS, not the impacts of the groundwater cleanup work.

Site characterization and monitoring data needs

58 There is a great paucity of site characterization and monitoring data that are needed for contaminant migration model development and for assessing the current and future environmental impacts of the LLBGs.

As discussed above in the comments on the source material, there has been very little characterization of what was put into the landfills over the years to the point that an unexpected occurrence of carbon-tetrachloride was recently found in the LLBGs. This problem must be rectified by characterizing and assessing what was placed into the older portions of the landfills.

Characterization data are also needed on the current distribution of contaminants within the vadose zone beneath the landfills. According to the vadose zone contaminant transport model presented in the EIS, there should be essentially no radionuclide

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contamination beneath the landfills at this time. This must be confirmed by drilling and sampling or by some other means of assessing the distribution of contamination in the vadose zone. Because of source material uncertainties discussed above, it is highly likely that a little bit of site characterization will reveal migration of contamination that is more extensive than anticipated or expected.

59

Because of the importance of the subsurface contaminant migration pathway relative to the environmental impact determination, characterization of the distribution of subsurface contaminants is critical. This subsurface characterization data are needed to confirm and calibrate the vadose zone and/or groundwater models.

The only subsurface monitoring currently applied at the LLBGs is monitoring of the groundwater. However, the groundwater has already been contaminated beneath all of the LLBGs with varying hazardous and radionuclide contaminants from other waste sites making it difficult if not impossible to determine if the LLBGs are contributing to groundwater contamination. In addition, the groundwater has been subjected to large changes in the flow regime resulting in reversals and changes in groundwater flow direction. Current decreases in groundwater elevation are making the groundwater monitoring well system non-compliant with some of the basic RCRA groundwater monitoring requirements. This further complicates any effort to truly monitor the LLBGs using a groundwater monitoring strategy.

Finally, if one accepts the vadose zone transport model presented in the EIS as accurate, it is apparent that contaminants from the LLBGs will not even reach the groundwater for many hundreds of years. So, what is the point of using groundwater monitoring for the purpose of short term monitoring of contamination from the waste site. This is not to say that we do not need a monitoring scheme for the short term. On the contrary, that is exactly what is needed.

60

To accomplish the goal of providing a way to monitor the LLBGs for the short term and to provide current contaminant distribution data, an extensive vadose zone characterization and monitoring program is required. This characterization and monitoring must be implemented before the environmental impacts can be assessed.

The current distribution of contamination (both radionuclide and hazardous chemicals) beneath the LLBGs is completely unknown at this time. Thus the contaminant transport model cannot be confirmed and the current environmental impacts cannot be assessed. This large and glaring data gap must be eliminated before we can realistically say that we know and understand the environmental impacts of the LLBGs. This issue must be resolved before we can massively expand the LLBGs and import low level waste from other DOE facilities.

Consideration of a liner

Under Section 3.1, Alternatives for Management of Low-Level Waste

A potential range of realistic alternatives for disposal of the low level waste is not considered in the EIS. This range of realistic alternatives encompasses an alternative to dispose of the waste at Hanford within a facility that is constructed with an engineered liner system similar to the Environmental Restoration Disposal Facility (ERDF). On the more conservative side is an alternative to dispose of the waste off-site, at a facility

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within a geologic environment that is more conducive to satisfying the requirements for isolation of the waste. Such a facility may be the Envirocare commercial low-level waste facility in Utah or a new facility constructed in lacustrine clay deposits or within a massive salt dome deposit.

61 Instead, the EIS only considers disposal of the waste in near-surface, unlined facilities at Hanford. The only difference between the two alternatives that are analyzed in the draft EIS (excluding the no-action alternative) relates to the size and geometric configuration of the disposal cells. These are not the only viable alternatives that can and should be analyzed in the Hanford solid waste EIS regardless of the limited scope and conclusions presented in the previous Programmatic Defense Waste EIS.

One alternative that clearly must be considered in the EIS is the alternative to construct an engineered liner with a leachate collection system. This liner and leachate collection system would retain the contaminants and provide assurance that the waste site will not leak, at least during the operational phases of the facility. Considering the potential inaccuracies and uncertainties of the environmental impact assessment and the simplistic nature of the contaminant transport models for both the vadose zone and groundwater portions, a liner may be required to assure the performance of the LLBG system. In addition, a liner with a leachate collection system provides an ability to monitor the LLBG system until a cover is installed and infiltration has effectively been stopped.

Comparison with the State LLBG

P3.11, section 3.5.3.4 Use of the U.S. Ecology Disposal Facility

62 The use of the US Ecology disposal facility should not be considered for disposal of any DOE LLW due to the fact that contaminants from this facility have already reached groundwater and the DOE is now under a corrective action order by the State for that facility. It is important to note that the environmental "impacts (at the US Ecology site) are expected to be similar to those determined for burial of wastes in the LLBGs" (P3.11(34)). This means that much of what was discovered with the small amount of site characterization that was conducted at the US Ecology LLW site, applies to the DOE LLBGs because of the similar geology, waste site configuration and source material.

As a result of the investigation and characterization of the US Ecology Site, it was determined that the contaminants disposed at that facility have migrated a considerable distance through the vadose zone and some contaminants have already reached groundwater. This conflicts with contaminant transport models developed for the State LLBG. Because the DOE LLBGs are of similar construction (unlined and uncapped at this point) and because they received similar hazardous materials and radionuclides, it is reasonable to assume that the DOE LLBG contaminants have also migrated from the facility and may have already reached groundwater. The observed patterns of contaminant distribution and migration found at the US Ecology LLW site conflicts with the contaminant transport models developed for the DOE LLBGs. Because the contaminant transport models are largely the same for the two sites, this discrepancy must be explained by way of an extensive characterization of the DOE waste sites before a model can be prepared and before an estimation of potential environmental impacts can

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proffered. Therefore, it is recommended to withdraw the EIS until more characterization is completed and accurate models can be developed for the DOE LLBGs.

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Finally, the EIS that was prepared for the US Ecology LLW site has not been finalized due to the gross inaccuracies of the environmental impact estimations. This fact was not explained in the DOE EIS (Section 3.5.3.4). The DOE solid waste draft EIS should fully explain the problems and inaccuracies that were identified at the US Ecology LLW site along with the problems identified with that EIS. The problems with the State commercial LLBG create a faulty waste disposal system that has tremendous implications for the DOE LLBGs. Without a complete assessment of the US Ecology site findings, the DOE EIS is incomplete and most probably inaccurate.

Summary of primary concern

64

This reviewer's primary concern is with the current level of understanding of the migration of contaminants through the vadose zone. We must ask if that level of understanding is adequate to justify the burial of low level radioactive waste materials (both Hanford generated and imported) in unlined trenches within a complex geologic environment composed primarily of fluvial sands, silt and gravel. The problem is, the DOE has almost no data on the distribution or migration of the LLBG contaminants through the geologic media comprising the vadose zone and there is a very poor understanding of the source material composition as demonstrated by the discovery of carbon tetrachloride.

We know from studies at the tank farms, that contaminants from the tanks migrate through the complex geologic materials in a rather complicated manner that is difficult to define in a characterization and even more difficult to effectively model. Considering differences in source material and differences in the migration driving mechanisms (water, etc.), we do not know if the same type of contaminant migration behavior exhibited at the tank farms is also found at the LLBGs.

If we look at limited vadose zone characterization work that has been done at the crib sites at Hanford, we find that a similar tortuous contaminant distribution and migration pathway is also the norm. This same complex distribution of contaminants is found even though there are significant differences in the sources when comparing the cribs and the tank farms. Those sources differ in liquid volume, liquid chemistry, radionuclide content and release mechanics. We do not know how the limited knowledge of the distribution of contaminants in the vadose zone at the tank farms and cribs is related to the LLBGs as there is almost no information available on the distribution of contamination beneath the LLBGs. Most of the characterization and monitoring to date at the LLBGs has focused on groundwater.

The only information available on the contamination distribution beneath a LLBG is the data from the limited characterization that was conducted at the commercial LLBG at Hanford. The limitations of that characterization effort do not permit development of a sound prediction model and they certainly do not justify the adoption of a one-dimensional homogeneous layered earth model for quantitative predictions of impacts to the groundwater.

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However, data from the commercial LLBG at Hanford indicate significant migration of contaminants has already occurred at that facility. These data demonstrate that the model presented in the draft solid waste EIS is not representative of actual conditions at a similar facility with the same geology, source type and waste burial configuration. Yet, there has been no consideration in the draft EIS for this data.

The recent discovery of carbon tetra chloride at the LLBGs demonstrates the simplistic vadose zone model presented in the draft EIS is not accurate and that a significant amount of site characterization is required to define the source material and contaminant transport mechanisms.

It is this reviewer's conclusion that the current level of understanding of the mechanisms and modes of contaminant transport through the vadose zone at the DOE LLBGs is not adequate to predict the impacts to groundwater. The draft EIS is inadequate to justify the current and planned disposal of Hanford generated waste, much less the importation of massive quantities of off-site waste.

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Heart of America Northwest

"Advancing our region's quality of life."
August 30, 2002

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Dear Messrs. Klein and Collins

1 At the very end of the comment period on the draft Hanford Solid Waste EIS (HSWEIS), and in response to the concerns from hundreds of persons who attended the hearings and submitted comments, you issued a letter with significant new proposals for USDOE actions to import radioactive wastes to Hanford and changes to proposed actions considered in the draft HSWEIS. We urge you to withdraw the draft EIS, rescope it and revise it in consultation with other agencies, tribes and stakeholders (as legally required, which was not done for the initial draft) and then reissue it for public comment. Furthermore, we must point out that any effort to import Plutonium and other Trans-Uranic Wastes to Hanford without such rescoping and consideration of the impacts of the proposed USDOE action, will violate the requirements of the National Environmental Policy Act. The outpouring of public and Congressional opposition to this dangerous scheme should have already convinced you and USDOE that it is a course of action that USDOE will not be allowed to carry out.

Our comments echoed the Hanford Advisory Board's (HAB) advice in July on the Hanford Solid Waste EIS (HSWEIS), which concluded that the HSWEIS: *"is incomplete and inadequate to support proposed decisions. Therefore, the Board urges the current draft be withdrawn and reissued in draft form for public comment, ... based on appropriate consultation and including the scope discussed below."* (3 pages of detailed comments followed). The Board requested that USDOE extend the comment period, in part to allow the Board to consider additional information requested from USDOE. Although USDOE chose not to extend the comment period, USDOE did commit to fully consider additional comments or advice provided by the Board at our September meeting. Because of both the new information and your unusual action of making new proposals for USDOE action at the close of the comment period on the EIS, we request that you include the following in the formal record for response, as well as responding directly to this letter.

2 USDOE must not ignore the public concern shown over the potential impacts from the proposed actions, which resulted in an unprecedented level of public comment and hearing attendance.

3 New information which should have been available to the Board and public at the outset of the comment period has become available, some of it only through Freedom of Information Act Requests rather than USDOE voluntarily providing this information in the draft EIS or via broadly disseminated

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3 supplementary material prior to the public hearings. However, many essential underlying documents
(cont) and assumptions relied upon in the draft EIS remain unavailable.

4 On August 22, 2002, you announced that USDOE would issue a supplementary "information package" by October 1st to cure concerns over the failure of the HSWEIS to summarize and discuss the prior documents and assumptions relied upon in the HSWEIS, and over the failure of USDOE to provide access to requested information. This will not meet our fundamental concern over the inadequacy of the draft EIS. Again, we urge USDOE to withdraw the draft EIS, rescope and revise it to include all necessary analyses in consultation with other agencies, Tribes and stakeholders, and then to reissue it for public comment.

5 One point of the HAB advice and our comments, reflecting the requirements of the National Environmental Policy Act (NEPA), is that the underlying assumptions and prior documentation must be summarized and discussed in the draft EIS.ⁱ During the comment period, numerous parties unsuccessfully attempted to obtain documents incorporated into the draft EIS by reference (including: Washington State's efforts to obtain the Hanford specific technical information document or appendix that was referred to in the USDOE's 1997 Waste Management Programmatic EIS (WMPEIS); numerous parties' efforts to obtain the WMPEIS; the performance assessments for the Hanford Low-Level Burial Grounds and the documentation relied upon for those assessments). USDOE's proposal of August 22nd to issue an "information package" with some of these materials is neither responsive to our advice nor will it meet the requirements that the draft EIS provide a single comprehensive discussion of impacts, environmental conditions, alternatives and analyses which USDOE claims to rely upon from documents that are not readily available to the public. Regulations of the Council on Environmental Quality state that "No material shall be incorporated by reference unless it is reasonably available for inspection by potentially interested persons within the time allowed for comment."ⁱⁱ

6 In the HSWEIS, USDOE did not disclose that the proposed actions to import and bury Low-Level and Mixed Waste (LLW and MW) would result in 70,000 truckloads of radioactive waste crossing Oregon and Washington along routes with specific dangers due to weather, mountain passes or travelling through congested urban areas. Nor did the HSWEIS disclose and consider the impacts of the USDOE's proposed action to import Trans-Uranic Wastes (TRU) to Hanford. This proposed action came to light only through use of the Freedom of Information Act. Public and Congressional concern over these actions can not be ignored. USDOE has claimed that the impacts of these proposed actions were considered in the 1997 Waste Management PEIS. However, relevant analyses of route and waste specific impacts from the WMPEIS were not summarized in the draft HSWEIS, and the document was not available for public review during the comment period (USDOE removed it from the website and informed the public that it lacked copies to meet requests). Indeed, claims that route and waste specific impacts for importing LLW, MW and TRU waste to Hanford were considered in the WMPEIS are not correct.

8 During the comment period USDOE announced that it intends to revise the Record of Decision to begin shipments of various forms of TRU waste to Hanford (Remote Handled TRU, Mixed Waste TRU and Contact Handled TRU). There is no consideration of the impacts of this decision, or alternatives to this action, in the HSWEIS, including consideration of the cumulative impacts. A review of the WMPEIS – which, contrary to Council on Environmental Quality regulations is not readily available to the public - reveals that USDOE specifically never considered the serious impacts from importing TRU waste to Hanford, including both transportation impacts (i.e., the dangers of transporting Plutonium wastes through the I-5 and Columbia River Gorge corridors, or over the passes of the Blue Mountains in Oregon) and the impacts from long-term storage of TRU at Hanford. For

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(cont) MW, the WMPEIS only analyzed alternatives in which only a smaller portion of the waste streams from various sites would be shipped to Hanford, rather than Hanford being the sole or one of just two sites for treatment, storage or disposal.ⁱⁱⁱ As our prior comments note, there is no permitted or safe storage capacity for such wastes at Hanford. We urge USDOE not to proceed with any action to import TRU wastes to Hanford, and we urge Washington State to ensure that permit conditions preclude the storage of additional offsite TRU wastes in facilities or in burial grounds.

9 The USDOE letter of August 22 offers to ship out two barrels of TRU waste for every barrel imported – within 18 months of receipt of offsite wastes. The impacts of importing these wastes, however, have not been considered in the HSWEIS. Not all TRU wastes are of equal hazard. USDOE proposes to truck Remote Handled and Mixed TRU wastes to Hanford – for which there is no appropriate and legally permitted storage and treatment capacity, and which pose higher dangers in transport and for storage than the Contact Handled TRU that USDOE is already legally bound to ship to WIPP. *Apart from the unacceptable “trust us” aspect of this “offer”, it is objectionable because USDOE is proposing to hold efforts to accelerate cleanup (which it seeks to save money via reducing the operational period for WIPP) hostage unless our region accepts the risks of taking more waste.*

Our prior comments discuss why the HSWEIS must consider and analyze specific alternatives for ending the use of unlined soil trenches for disposal of LLW. The public outcry over this practice has resulted in USDOE stating, in its letter of August 22, that it will now consider “plans to... (c)hange the current practice of disposing of low-level wastes in unlined trenches to more modern practices.” USDOE must revise the HSWEIS to specifically consider:

- 10**
1. The benefits and varying impacts from different burial ground trench designs, including caps and leachate collection systems;
 2. The impacts from the proposals to bury MW together with LLW, including the impacts on engineered performance from commingling wastes;
 3. The cumulative impacts from USDOE’s announced decision – since the draft HSWEIS was issued – to bury 1.8 million curies of waste from the High-Level Waste Tanks in massive separate trenches or in combination with the trenches proposed in the HSWEIS;
 4. The impacts from the proposal to commingle offsite and newly generated MW and LLW in Hanford’s ERDF landfill;
 5. Where a new “mega” trench or separate trenches would be placed, taking into consideration the values of the Board, tribes and public to reduce the footprint of the impacted area of the Central Plateau and the need to avoid locating new burial grounds in areas of potential contamination (specifically considering the impact of the new information that volatile organic chemical wastes have spread from the burial ground trenches in the area where USDOE had previously proposed to expand trench capacity or place a “mega” trench);
 6. The latest analyses of groundwater impacts utilizing the most recent characterization data and Systems Assessment Capability model effort;
 7. The comparison of impacts (e.g., items above) between expansion of burial capacity to meet Hanford clean-up needs and the capacity required to serve offsite disposal and storage plans.

11 In sum, it is not acceptable for USDOE to claim that the draft HSWEIS “bounds” the worst case scenario rather than consider the environmental benefits and impacts of the specific proposed actions and alternatives to them. USDOE’s own NEPA regulation requires mitigation commitments addressing the adverse environmental impacts from specific proposed actions, are to be incorporated into a Record of Decision and Mitigation Action Plan.^{iv} The HSWEIS fails to even provide an outline of the proposed actions and alternatives (i.e., size of trenches and location, how commingled wastes would be managed, where TRU wastes would be stored, routes for importing wastes, etc...) necessary to

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determine adverse impacts and potential mitigation measures. Further, as we have stated in these and our prior advice, the draft HSWEIS fails to even disclose the total cumulative impacts from the proposal – failing to even provide a useful “bounding” analysis.

12

During the course of the comment period, it was publicly disclosed, as a result of Heart of America Northwest’s Freedom of Information Act Request, that volatile organic chemical hazardous wastes had been detected released from Low-Level Burial Grounds in the area West of the Plutonium Finishing Plant, where the prior USDOE EA on LLBG Trench Expansion had proposed new trenches or a “mega” trench. USDOE failed to meet its obligations under NEPA and public involvement policies when it failed to provide the public with a clear supplement to the draft EIS detailing this significant new information. The release of chemical wastes was confirmed in sampling done prior to the public release of the Draft EIS. Carbon Tetrachloride (a carcinogen, poison and reproductive toxin) and chloroform were found in air samples in the vent risers in the trenches at levels reaching 176 times and 6 times, respectively, the OSHA exposure limit for workers. Other chemical solvents from the Plutonium Finishing Plant were known to be disposed in trenches throughout the W-4-C burial ground. This was not disclosed in the draft HSWEIS. The Board is concerned that ongoing disposal in this burial ground is both an environmental hazard and worker safety concern. The hazardous wastes that are known to have been disposed in these trenches were selected for use as solvents because of their ability to mobilize Plutonium and Uranium. The chemical wastes pose significant health and environmental hazards on their own. We urge: a) that no additional wastes be added to this burial ground to prevent additional environmental harm and to reduce the potential for worker exposure; b) that a full scale investigation and characterization effort be launched for the full range of chemical wastes that may be released from all the trenches in the burial ground; c) that new groundwater monitoring wells be placed at all the LLBGs in compliance with minimum requirements for Dangerous waste units per Washington Administrative Code; d) that Ecology utilize its authority under RCRA and Washington hazardous waste laws to accomplish these goals and to ensure that workers are not exposed to the release of the hazardous substances; and, e) that the HSWEIS be revised to fully disclose the extent of chemical disposal and potential for release from these trenches, along with a full discussion of alternatives for mitigation and corrective action.

13

14

Both the Board and I repeatedly requested that USDOE provide us and the public with the USDOE’s own analysis comparing the long-term costs of disposal of LLW between different USDOE sites and commercial sites. This analysis was directed to be done by Congress and was delivered to the Senate Appropriations Committee along with proposed new USDOE policies early in the comment period and before the public hearings. These were never provided to the Board, states, Heart of America Northwest, or public despite having major implications for comparing the alternatives to disposal of LLW at Hanford and the impacts of disposal at Hanford. The study concludes that Hanford charges generators only about 50% of the cost of disposal of offsite LLW, and concludes that “Environmental Management sites should be directed to consider the ‘cradle to grave’ costs for each waste stream as disposal decisions are being made.” Further, the study concluded: “Commercial facilities offer the lowest disposal cost for some DOE waste,” and, “Comparison of disposal alternatives must consider more than just disposal fees.”

15

The HAB criticized the draft HSWEIS for failing to consider the long-term, fully burdened costs of disposal and the reasonable alternative of charging generators these costs. If this analysis is not included in a revised draft HSWEIS, then USDOE will be failing to meet its newly announced policy, and will not provide any generator or the Hanford site with the ability to consider “cradle to grave” costs as USDOE committed to Congress it would do.

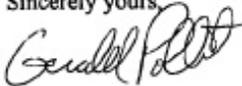
Letter: L098c

16 During the comment period, we learned that the groundwater Systems Assessment Capability was not utilized to assist in analyzing the cumulative impacts to groundwater from the proposed actions. It was also learned that the 1995 Performance Assessments, relied upon and referred to in the draft HSWEIS, failed to consider the presence of chemical wastes. The Performance Assessment does, however, disclose much higher impacts to health from the future use of groundwater via a well 100 meters from the 200 E and W burial grounds, compared to the discussion of impacts from a well one kilometer away in the draft HSWEIS. The Performance Assessment for 200 W, for example, discloses a cumulative annual dose from groundwater exposure pathways, at a point one hundred meters from the burial grounds, exceeding $9E+4$ mrem per year ($>90,000$ mrem/year).^{vi}

17 USDOE public notice effort for the hearings on the draft HSWEIS was a joke. At each hearing, the public was asked if they had received notice via USDOE's advertisements or mailings. There was no positive response by the public to receipt of notice via USDOE's newspaper ads at any hearing – because they were not designed to provide meaningful notice of how the proposed actions would impact public concerns and values (e.g.: not providing notice that the proposed actions would result in 70,000 truckloads of radioactive waste through Oregon) and because they were placed weeks ahead of the hearings. USDOE failed to collaborate with any stakeholders or other agencies on the notice ads, unlike the notice mailed to the TPA list which was the result of collaborative input and provided notice of significant issues of public concern. We have shown that, despite having far less in the way of monetary resources, a well designed newspaper ad on the subject of the Hanford Solid Waste EIS can provide appropriate notice to the public and encourage their attendance and participation. We reject USDOE's repeated claims that it will not place newspaper ads for hearings because they are ineffective or too costly. In the future, we expect USDOE to meet its obligations to provide real notice to the public regarding the opportunity to comment on actions that affect public concerns for health and the environment.

18 In closing, adding more waste to Hanford has unacceptable impacts and there are reasonable
19 alternatives to such plans that USDOE has failed to consider. The public will not fall for a proposed
20 deal to take more waste in exchange for USDOE's overdue end to the illicit practice of dumping radioactive waste in unlined soil trenches.

Sincerely yours



Gerald Pollet, JD

Endnotes follow on next page

Cc:

Senator Patty Murray;

Senator Ron Wyden;

Senator Maria Cantwell;

Senator Gordon Smith;

Tom Fitzsimmons, WA Dept. of Ecology

Letter: L098d

ⁱ Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, Council on Environmental Quality, Executive Office of the President; 40 CFR 1502.20 "Tiering".

ⁱⁱ 40 CFR 1502.21. "Incorporation by Reference".

ⁱⁱⁱ WMPEIS Summary at 45: "DOE analyzed two of the intermediate alternatives – disposal at 12 sites and at 6 sites – as regionalized alternatives." The WMPEIS was based on a total of 183,000 cubic meters of MLLW for all other sites than Hanford. However, the HSWEIS is based on an action which would import and bury 192,000 cubic meters of waste at Hanford, in addition to the Hanford inventory and projected generation of MLLW.

^{iv} 10 CFR Part 1021.331(a) and 57 FR 15128.

^v The study found that the life cycle cost of disposal of LLW at Hanford is \$2000 per cubic meter. Hanford charges just over \$1000. This life cycle cost does not consider the cost of capping, the cost of investigating the newly discovered chemical waste releases from the burial grounds, the cost of having fully compliant groundwater monitoring wells and the costs of remediation and final closure with capping. Nor does this \$2000 per cubic meter life cycle cost include the costs of the new commitment to end the use of unlined burial grounds without leachate collection.

^{vi} Table 4-22, Performance Assessment for 200W LLBG. 1995.

Letter: L098e



League of Women Voters of Washington • 4710 University Way NE, #214, Seattle, WA 98105
Ph: 206-622-8961, 1-800-419-2596, Fax: 206-622-4906 • email: lwwa@lwwa.org • website: http://www.lwwa.org

August 7, 2002

To: Mr. Michael Collins
HSW EIS Document Manager
Richland Operations Office
US Department of Energy
PO Box 550
Richland WA 99352-0550

Subject: Comments on Draft Hanford Site Solid Waste Program Environmental Impact Statement

From: Elizabeth Tabbutt, Nuclear Waste Chair for League of Women Voters of Washington

- 1 The League of Women Voters has a long history of involvement in issues of resource protection and, specifically, nuclear waste management. Our underlying position is that "pollution must be controlled in order to preserve the physical, chemical and biological integrity of ecosystems and to protect public health."

Our position on nuclear waste management states, in part, that the League "supports policies for the management of civilian and military high- and low-level radioactive wastes to protect public health, and air, water and land resources."

The intractable and expensive problems we are facing in the cleanup of our weapons complex sites reflect the fact that these principles were not followed. Prevention of pollution was ignored throughout the production effort; public health and the integrity of our resources were blatantly disregarded.
- 2 Now the public is offered a plan which essentially repeats the history we should have learned from. The plan in the draft EIS calls for again dumping huge quantities of wastes into the same type of unlined, poorly monitored trenches that we are still struggling to clean up. The threat to the groundwater will be enhanced.
- 3 Once again, the DOE is looking for the cheapest, most expedient solution with little concern for long-term cost and protection.
- 4 Moreover, the plan would require the transportation of vast quantities of nuclear waste through most of the country to end up in Washington state, at Hanford. Again citizens of the Northwest will have the burden of more contamination even before responsible cleanup has protected our resources: the land and water on which we depend.
- 5 Six years ago the League of Women Voters of Washington, along with Washington Physicians for Social Responsibility and other groups, held a Roundtable focused on the problem of site-wide waste disposal, especially weapons-grade plutonium. We received from the Department of Energy a commitment that they would convene an inclusive and representative "National Dialogue" to give a full public airing to questions of equitable and responsible decisions on the storage and disposal of nuclear waste from the cleanup of our weapons program. There was a minor effort to shape such a Dialogue, but the commitment was never fulfilled. The flawed proposal in this EIS would never have emerged if such a full public discussion had occurred.
- 6 The League submits that a "National Dialogue" still needs to happen. There should be a full public discussion of the most environmentally sound solution for the management of all cleanup waste. The public needs the assurance that mistakes of the past are not going to be repeated. The public needs to be able to trust the decision makers. The public of the Northwest must know that the wider public also values our resources, our land and our water.

Letter: L100

B.399

Revised Draft HSW EIS March 2003



Nez Perce

ENVIRONMENTAL RESTORATION & WASTE MANAGEMENT
P.O. BOX 365 • LAPWAI, IDAHO 83540-0365 • (208) 843-7375 / FAX: 843-7378

August 19, 2002

Michael Collins
NEPA Document Manager
U.S. DOE, Richland Operations Office
P.O. Box 550, MSIN A6-38
Richland, Washington 99352

Re: Comments on *Draft Hanford Site Solid (Radioactive and Hazardous Waste Program Environmental Impact Statement (HSW EIS))*

Dear Mr. Collins:

The Nez Perce Tribe's Environmental Restoration and Waste Management Program (ERWM) have reviewed the above-mentioned document.

Since 1855, reserved treaty rights of the Nez Perce Tribe in the Mid-Columbia have been recognized and affirmed through a series of federal and state actions. These actions protect Nez Perce rights to utilize their usual and accustomed resources and resource areas in the Hanford Reach of the Columbia River and elsewhere. Accordingly, the ERWM responds to actions that impact the Hanford ecosystem.

General Comments

- 1 Our comments come from reviewing the EIS and by having some of our staff attend the Richland Public meeting on August 6, 2002. It is obvious that a great deal of work went into the preparation of the EIS and the intent is good, but in general we concur with most of the comments that have been previously submitted by the Environmental Protection Agency (EPA) and the Hanford Advisory Board (HAB), and voiced at the public meeting in that it still needs a lot of work to make it a functional EIS. Specific comments made by the EPA and the HAB that need resolution include integration of Long Term Stewardship concerns, more specifics on capping and barriers, and more discussion on modeling and inventory assumptions.
- 2
- 3
- 4 For the purposes of brevity we will not reiterate very many of their concerns, but will focus on issues that our program feels are important.
- 5 The document in its present form doesn't appear to meet the needs for which it was intended. One shortfall of the document is that some of the source terms for the various contaminants are not adequately characterized. An example of this is the newly discovered carbon tetrachloride plume. How does the EIS deal with this?
- 6 Another concern is the proposed importation of waste from other sites. DOE is currently trying to amend the programmatic EIS to allow TRU waste to come onto site from other sources. In its present form the EIS doesn't deal adequately with that issue.

RECEIVED

AUG 22 2002

DOE-RL/RLCC

Letter: L101

Specific comments are listed below.

7 **●** *First sentence of the third paragraph in the EPA general comments on the HSW EIS reads: "It appears that alternatives were formulated based on cost concerns rather than environmental ones." We agree. One of many examples is found in page S.15, line 20 of the HSW EIS - In general, these three alternatives provide the most cost-effective and environmentally preferable approach to waste management at Hanford for the range of waste volumes that might be managed at the Site as a results of WM PEIS decisions. Such an emphasis alerts us to consider that the over-riding motive of DOE at Hanford may be cost, not clean up.*

8 **●** *Page 3 of EPA general comments, third paragraph: The Purpose and Need statement is unclear. It should clearly define the primary and secondary needs of the EIS in relation to Hanford waste and off-site waste. As the HSW EIS currently exists, it cannot adequately address how solid waste management is affecting the environment because it has not clearly described the potential for taking off-site waste. In the current atmosphere of accelerated cleanup, this document seems to leave open many possibilities for shifting legacy waste from site to site across the complex without appropriate adherence to human and ecological environmental protections.*

9 **●** *Transportation issues of the HSW EIS in relation to the WM PEIS: The HSW EIS declines to analyze transportation issues because that was done in the Waste Management Programmatic EIS (1996). The WM PEIS, however, used 1990 census data, which is no longer current or applicable for such analyses.*

10 **●** *Specifically in reference to TRU wastes: There seem to be three categories of TRU waste produced at Hanford. Nowhere did we find a description of the categories to be expected from off-site. These three categories of on-site TRU waste are pre-1970 waste, which will apparently continue to be managed as LLW as there is no discussion about attempts to retrieve any of it; 1970-1984 waste that is "suspect", and set aside, apparently for possible retrieval; and post 1985 TRU waste, which is waiting to be processed and certified for disposal at WIPP. It should be remembered that any of these categories may contain either contact-handled TRU waste, or remote-handled TRU waste, which suggests that even small amounts in old LLW trenches may be of considerable danger to the environment.*

11 **●** *Page 3.8, line 23 states: "Only small quantities of TRU waste are forecast from offsite generators." The alternatives for handling the TRU waste management were "evaluated using the maximum TRU waste volume forecast for management at Hanford." What are the "future TRU waste receipts"? Is it appropriate to give some finite figures and descriptions of these quantities?*

12 **●** *Page 5.6, line 25 - "DOE is determining whether suspect TRU waste should be retrieved and processed as TRU waste, or whether it can remain disposed of in the LLBGs." However, on Page S.9, line 33, we read, "After onsite characterization and packaging, DOE plans to send post-1970 TRU waste to the WIPP repository for disposal." It is unclear what is considered "suspect" TRU, and therefore, what will or won't be processed and sent on to WIPP.*

13 **●** *Page G.68, line 40: "TRU waste would be retrieved and sent to WIPP for disposal and would not add to Hanford groundwater contamination levels." And again, page 5.24, line 10, "Inventories of retrievably stored TRU waste in trenches and caissons located in the LLBGs were not considered [for long-term impacts on groundwater] because they will eventually be retrieved and sent to the WIPP for disposal." Thus, the EIS does not evaluate an impact of TRU wastes on groundwater because of the assumption these wastes will not remain at Hanford. Realizing that DOE is considering leaving some of the Hanford TRU in place, and in addition not having assurance that all TRU received and processed at Hanford will in the long-term will be shipped off-site for storage, we are very concerned about the lack of evaluation of the potential effect of TRU on-site may have on groundwater. In other words, the need for analysis of TRU impact should not be denied when it is unclear how much TRU will be on-site, and then when and where TRU will be treated, stored, and disposed.*

14 **●** *The short-term groundwater quality impacts of LLW (which can contain pre-1970 TRU waste) are summarily dismissed as a problem. Page 5.13, line 6, "Because less rigorous requirements for waste*

Letter: L101a

B.401

Revised Draft HSW EIS March 2003

16 contaminant and content were used prior to 1988, contaminants contained in LLW disposed of prior to 1988 offer the highest potential for leaching and release into the vadose zone prior to the time of site closure. However, releases to groundwater from these earlier disposals are not expected to occur during the period of operations." There is no further explanation as to why this expectation exists. Many waste sites have unexpectedly contaminated the vadose zone and groundwater. Why are these sites held to a different standard?

17 Page 5.19, line 7 indicates that "Preliminary estimates of transport times of constituents in Groups 3, 4 and 5 that considered their affinity to be sorbed onto Hanford sediments indicated their release through the thick vadose zone to the unconfined aquifer beneath the LLBGs would be beyond the 10,000 year period of analysis. Thus, all constituents in these groups were eliminated from further consideration." There are current ongoing studies of the sorption characteristics and conditions for a number of these elements, such as cesium and plutonium, because in some sites at Hanford these elements have moved further through the vadose zone than expected and have actually encountered the groundwater. Thus to eliminate them from consideration of having an environmental impact appears to be inappropriate.

18 Section 5.8.5, *Cumulative Impacts*: This section contends that the cumulative impacts for the resources considered in the EIS are small and that they would not be expected to contribute substantially to impacts of other Hanford activities. On the contrary we believe that many of these impacts could potentially be very significant, especially for those impacts that may end up exceeding the MCLs in the groundwater.

19 Appendix I *Ecological Resources*: Area C is defined as an area from which future-capping materials may come from. There is no discussion that provides specific information relative to the amount of material that is proposed to be mined and what mitigation measures will be taken. This area appears to be contained within the Hanford Reach National Monument so there should be some discussion about the ramifications and prudence of creating large physical disturbances on a National Monument.

We respectfully suggest that the EIS in its present form is inadequate for its stated purpose, and needs to be rewritten and updated to reflect our concerns, as well as other concerns voiced by other reviewers and agencies.

Sincerely,



Patrick Sobotta
ERWM Director

Cc: Kevin Clarke
Larry Goldstein
Todd Martin

Letter: L101b



Washington Physicians for Social Responsibility

Committed to public health through the elimination of nuclear weapons and other weapons of mass destruction, the reduction of human violence, and the promotion of a sustainable environment and economic and social justice.

Aug. 8, 2002

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Michael S. Collins
 HSW EIS Document Manager
 Richland Operations Office
 US Dept. of Energy, A6-38
 PO Box 550
 Richland, WA 99352-0550

Dear Michael Collins:

- 1 | The Washington Physicians for Social Responsibility Hanford Task Force is very disappointed in the draft Hanford Solid Waste Program Environmental Impact Statement. As medical professionals, our chief concern is long-term public and environmental health. Huge gaps in the draft EIS could adversely affect human and environmental health over the whole region for generations to come. The EIS does not -- but should:
 - 2 | Integrate all waste site analyses to determine the full cumulative impacts both at Hanford and nationwide of the disposition of these materials.
 - 3, 4 | Include adequate analysis for DOE's upcoming decisions about importing and burying low-level and mixed (including hazardous chemicals) radioactive waste, and about expanding unlined soil trenches for disposing of this waste.
 - 5, 6 | Include analysis of the effects of importing transuranic wastes, and plans to retrieve and deal with the impacts of this dangerous radioactive waste buried before 1970.
 - 7 | Include consultation with the Tribes before the EIS is released.
 - 8, 9 | Disclose impacts to groundwater and human health.
 - 10 | Analyze and disclose the area of groundwater that could be affected, how badly it could be affected, and for how long.
 - 11 | Include an adequate assessment for endangered species.
 - 12 | Include modeling and inventory assumptions that are clearly explained and consistent with known data from waste at Hanford and other sites that have the potential to impact Hanford.
 - 13 | Include an alternative that does NOT import low-level waste and mixed low-level waste from other sites.
 - 14 | • Include a reasonable alternative that ends the use of unlined burial trenches.
 - 15 | • Include malevolent events in the accident analysis.
 - 16 | • Include the national cumulative and route-specific effects of transporting waste from multiple sites to Hanford.
 - 17 | • Include the disposition in soil of waste from high-level tanks and K-Basins.
 - 18 | • Include adequate analysis of cap performance.
 - 19 | • Include analysis specifically for the use of deep lined "megatrenches."
 - 20 | • Include Environmental Restoration waste.
 - 21 | • Include impacts of burying hazardous waste with various forms of radioactive waste.
 - 22 | • Only analyze receipt of mixed low-level waste for short-term storage. Washington State has authority to limit the import of this waste.
 - 23 | Include long-term stewardship considerations.
 - 24 | Charge the generators of the waste for the long-term costs of disposal, treatment or storage of the wastes.
 - 25 | Include detailed analyses of offsite wastes for hazardous substances before any more waste is imported.

Letter: L102

B.403

Revised Draft HSW EIS March 2003

26

Finally, a publicly vetted national strategy for the disposition of all nuclear materials is needed. US DOE continues to piecemeal the public in its disposition plans. Nuclear materials are being moved without agreement to these recipient states. This policy pits States against one another. We call for continuing the National Dialogue process begun in 1997, to fully inform the public on issues of nuclear materials and waste disposition and to define values and principles to apply to decisions about nuclear materials and waste across the nation.

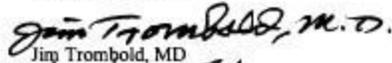
27

We call on the WA State Department of Ecology and the Environmental Protection Agency to find the document inadequate. We call on the US Department of Energy to withdraw, revise and reissue the draft EIS, following the advice from the Hanford Advisory Board and from the public comment by people throughout the northwest.

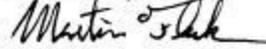
Sincerely yours,



Tim K. Takaro, MD



Jim Trombold, MD



Martin Fleck, WPSR Executive Director



Ruth Yarrow, WPSR Hanford Issues Coordinator

Letter: L102a



Oregon

John A. Kitzhaber, M.D., Governor



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August 15, 2002

Mr. Michael S. Collins
HSW EIS Document Manager
Richland Operations Office
U.S. Department of Energy, A6-38
P.O. Box 550
Richland, WA 99352-0550

Re: Draft Hanford Site Solid (Radioactive and Hazardous) Waste Program
Environmental Impact Statement, Richland, Washington (DOE/EIS-0286D), April
2002

Dear Mr. Collins:

The Oregon Office of Energy appreciates the opportunity to review and comment on the Draft Hanford Site Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement (Draft HSW EIS).

1 | The Oregon Office of Energy highly values transparency in all clean-up and disposal decision-making at the Hanford Site. We also highly value seeking involvement from all those in the region who may be affected by such clean-up and disposal decisions. Simply put, transparency and broad involvement help insure sound decision-making.

2 | The May 15, 2002 letter to citizens accompanying the Draft HSW EIS describes the document as a "decision supporting document, not a decision making document...to ensure the decision maker is able to consider the environmental impacts of a proposed major Federal action." The Oregon Office of Energy's extensive review indicates that the Draft HSW EIS is incomplete and contains insufficient detail to fulfill that stated purpose. The document is inadequate to support the thorough analysis of alternatives and environmental, health and safety effects required by the National Environmental Policy Act (NEPA).

Consequently, we urge the U.S. Department of Energy to withdraw the document, revise it to include the information and analyses identified in the following summary comments, and reissue a revised draft for public review and comment.

Letter: L103

B.405

Revised Draft HSW EIS March 2003

SUMMARY

3 The Council on Environmental Quality (CEQ) NEPA implementing regulations, 40 CFR § 1502.12, require the summary of an environmental impact statement (EIS) to adequately and accurately summarize the EIS, including the major conclusions and areas of controversy. The summary for the Draft HSW EIS is incomplete without a discussion of the Waste Management Programmatic Environmental Impact Statement (DOE/EIS-0200), which supported the decision to dispose low-level and mixed low-level waste at the Hanford Site and the Nevada Test Site. Explanations of that document and decision are essential to understanding the proposed action.

4 The decision to send low-level and mixed low-level waste to the Hanford Site is what the CEQ regulations describe as a "connected action."¹ The CEQ regulations require connected actions to be considered together to prevent agencies from minimizing potential environmental consequences by segmenting actions. 40 CFR § 1508.25(a)(1).
5 The summary should explain how the Draft HSW EIS relates to the decision to send low-level and mixed-low waste to the Hanford Site. It should specifically list site specific information and analysis deferred by the Waste Management Programmatic EIS for inclusion in the Draft HSW EIS.

STATEMENT OF PURPOSE AND NEED

6 The Statement of Purpose and Need conflicts with the statement in the May 15, 2002 letter to citizens that the Draft HSW EIS is a decision supporting document. The Statement of Purpose and Need states that "DOE needs to enhance and expand...and to make decisions that will enable[.]" (Draft HWS EIS at S.2, emphasis added.) The revised Draft HSW EIS should specify whether the need is to support a decision or make a decision.

7 Further, the proposed action will not occur in a void, but in a place where there is already extensive soil and groundwater contamination. It will occur in the midst of an enormous, complex environmental cleanup. For example, the Draft HSW EIS does not account for the pre-1970 transuranic waste that is buried at the Hanford Site. Also, the River Protection Project is seriously considering additional methods of treating Hanford's tank wastes that will create materials that likely will be disposed of in trenches on-site. The Draft HSW EIS fails to account for such activities.

40 CFR § 1508.25(a)(1) provides:

- "1. Connected actions, which means that they are closely related and therefore should be discussed in the same impact statement. Actions are connected if they:
- (i) Automatically trigger other actions which may require environmental impact statements.
 - (ii) Cannot or will not proceed unless other actions are taken previously or simultaneously.
 - (iii) Are interdependent parts of a larger action and depend on the larger action for their justification."

The decision to send low-level and mixed low-level waste to the Hanford Site is a connected action under (i). The proposed action in this Draft HSW EIS is a connected action under (iii).

Letter: L103a

8 We are particularly disturbed that the Draft HSW EIS perpetuates the piecemeal approach to analyzing waste handling, treatment and disposal impacts that the Oregon Office of Energy identified as a problem in its February 1996 comments (1996 Waste Management PEIS Comments) on the Draft Waste Management Programmatic Environmental Impact Statement For Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste (DOE/EIS-0200-D), August 1995.² In those comments, we identified at least two other environmental impact statements describing proposed actions that could leave large quantities of waste in place at the Hanford Site. We noted that contamination plumes from those wastes would have impacts across the Hanford Site for tens of thousands of years. We urged that “[t]he EIS should comprehensively examine the cumulative action of all existing, planned or considered federal actions at each site.” (See 1996 Waste Management PEIS Comments at 2.) Unfortunately, the U.S. Department of Energy never responded to those comments and the problem of piecemeal analysis persists in this Draft HSW EIS.

9 Accordingly, the Statement of Purpose and Need should be revised to specify that the proposed action must occur in conformance with ongoing waste management, treatment, disposal and clean-up activities at the Hanford Site. Those activities and their corresponding risks and regulatory requirements constrain the proposed action. The failure to include information about the interrelationship between the proposed action and ongoing Hanford clean-up activities in the Statement of Purpose and Need causes incomplete analyses throughout the Draft HSW EIS.

ALTERNATIVES

10 The alternatives section is the heart of an EIS. It should rigorously explore and objectively evaluate all reasonable alternatives and explain why alternatives were eliminated from consideration. It should present the environmental impacts of the proposal in comparative form to define the issues and provide a clear basis for choosing among the alternatives. There should be sufficient comparative detail to allow reviewers to evaluate the merits of the alternatives. Finally, the CEQ NEPA regulations specifically require the alternatives section to include appropriate mitigation measures not already included in the proposed action or alternatives. 40 CFR § 1502.14(f).

11 The Oregon Office of Energy’s review indicates that the alternatives section of the Draft HSW EIS is seriously flawed. First, there is no true no-action alternative.³ Second, there is no consideration of a range of alternatives. Third, there is insufficient detail about the alternatives to evaluate them individually or compare them to one another. Finally, none of the alternatives includes any mitigation measures.

² We enclose a copy of those comments as a courtesy for ease of reference.

³ We note that the no-action alternative for disposal of low-level waste listed in the Draft HSW EIS, burial without a cap, is invalid, because it would violate the regulatory requirements for shallow land burial of radioactive waste. Class C wastes must be disposed of a minimum of 5 meters below the surface of the cover or be disposed of with barriers that protect against inadvertent intrusion for at least 500 years. 10 CFR § 61.52(a)(2).

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- 12 | The Oregon Office of Energy believes that a true no-action alternative would be a
combination of treatment and disposal methods at the originating sites that eliminate the
need for shipping waste to the Hanford Site. The alternatives for low-level and mixed
13 | low-level waste described in the Draft HSW EIS focus on varying levels of pretreatment
and disposal at Hanford. A reasonable range of alternatives should include different
methods of treatment to change the wastes into forms that do not release hazardous or
radioactive constituents into the vadose zone and groundwater. The alternatives should
include a range of locations and trench sizes at the Hanford Site. Most importantly, the
alternatives should discuss in detail a range of different trench designs, including liners,
leachate collection and treatment systems, gas collection and treatment systems, and
14 | cover and cap designs. The alternatives should also include detailed information on the
performance standards for these structures, systems for monitoring their performance,
measures to mitigate any adverse environmental impacts and institutional controls. All of
this information should be discussed and placed in context with ongoing Hanford clean-
up activities.
- 15 | The Draft HSW EIS contains essentially no information about the design of the disposal
trenches or how the U.S. Department of Energy will assure performance. Without such
information, it is impossible to meaningfully compare the alternatives or assess their
impacts.

ENVIRONMENTAL CONSEQUENCES

- 16 | The environmental consequences section of an EIS forms the scientific and analytic basis
for comparing the alternatives for a proposed action. The CEQ NEPA regulations require
this section of an EIS to include unavoidable adverse impacts (direct, indirect and
cumulative) as well as means to mitigate them and irreversible or irretrievable resource
commitments. 40 CFR § 1502.16.
- 17 | The Oregon Office of Energy's review indicates that the information and analysis
deficiencies described above continue into this section of the Draft HSW EIS. There is
insufficient detail or information about the alternatives to evaluate their environmental,
health and safety impacts. Moreover, the analysis in the Draft HSW EIS is incomplete
without factoring the past, present and future waste disposal and clean-up operations at
the Hanford Site into all the environmental consequences analyses. The failure to address
such activities means that the Draft HSW EIS minimizes the total risk presented by the
Hanford Site. It presents incomplete analysis of only the incremental risk increase of the
proposed action. Instead, the revised Draft HSW EIS should present a comprehensive
analysis of the Hanford Site's risks that includes and identifies the increased risks caused
by the proposed action. Finally, several of the impacts discussed in the Draft HSW EIS
have questionable scientific or analytic bases.
- 18 | The revised Draft HSW EIS should specify the form of the wastes to be disposed and
their radiological activity. The form of the waste – whether and how it may be bound to
other materials – has a significant impact on its mobility in the vadose zone and

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18 | groundwater. Different waste forms will require different burial trench designs to prevent or minimize environmental impacts. Because there is no information about the form of the waste in the Draft HSW EIS, the environmental impacts of the alternatives are uncertain.

19 | The revised Draft HSW EIS should also specify waste acceptance criteria, performance standards, maintenance and monitoring plans for the disposal trenches as well as permitting requirements. The waste acceptance criteria assure that the wastes being received at the Hanford Site are the types of wastes the trenches are designed to safely dispose.⁴ The performance standards should take into account existing inventory uncertainty and current environmental effects from past disposal practices as well as the additional impacts of the proposed action. Today, even solid waste landfills are constructed to stringent, predefined engineering and performance standards to minimize environmental impacts. The Draft HSW EIS does not specify trench performance standards. Without information about such standards and plans to assure those standards are being met and maintained, the environmental impacts of the alternatives are unknown.

The revised Draft HSW EIS should also address the following:

Burial Trench Performance Monitoring

- 20 |
- Contaminant Detection. The U.S. Environmental Protection Agency's RCRA Ground Water Monitoring Technical Enforcement Guidance Document (TEGD) defines the basic goal of monitoring as detecting the first arrival of a contaminant.⁵ The point of detection monitoring well is usually geographically closer to the area being monitored than the point of compliance monitoring well. This allows intervention to maintain compliance if a contaminant is detected in the point of detection monitoring well. However, the Hanford Site's 200 Area already contains extensive contamination caused by buried wastes with many of the same contaminants that would be disposed under the alternatives presented. The revised Draft HSW EIS should describe how the monitoring system for the proposed burial trenches will distinguish existing contamination from new contamination from wastes in the proposed new burial trenches. The revised Draft HSW EIS should also explain how the proposed monitoring system will be adjusted in response to declining water table levels across the Hanford Site.
 - 21 | • Monitoring Point of Compliance. The Draft HSW EIS locates points of compliance one kilometer down gradient from the waste disposal site and adjacent to the Columbia River. This groundwater only monitoring strategy allows potential

⁴ Moreover, we repeat our 1996 comment, "Appropriate acceptance criteria must be imposed to limit the risks to the appropriate standards when considered along with the risks from all other wastes and activities on the site." (1996 Waste Management PEIS Comments at 10.)

⁵ See RCRA Ground Water Monitoring Technical Enforcement Guidance Document (TEGD), OSWER Document Number 9950.1, September 1986, Chapter Two at 46.

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21 | degradation of the aquifer upgradient from the monitoring point. Standard scientific practice and the U.S. Environmental Protection Agency's TEGD recommend locating monitoring wells on the disposal site boundary to allow immediate detection of releases.⁶ This does not preclude monitoring the vadose zone. The revised Draft HSW EIS should explain the basis for departing from that practice and why the proposed locations will assure an equivalent level of aquifer protection and early detection of releases.

Burial Trench Impacts

22 | • Groundwater and Risk Models. The Draft HSW EIS contains numerical fate and transport results that predict groundwater plumes that develop differently from past releases and projections. For example, the predicted plume (Draft HSW EIS Figure G.7, at G.34 to G.37) turns to the northeast. That is perpendicular to existing flow lines and may be an artifact of transition from a fine grid discretization to a coarser grid discretization. Additionally, the groundwater and vadose zone flow numerical models assume numerous uniform isotropic conditions, which tend to homogenize impacts, and do not reflect actual conditions. Further, the contaminant fate and transport numerical model that overlies the groundwater flow numerical model uses generalized Kd values. The use of generalized Kd values is contrary to U.S. Environmental Protection Agency guidance (EPA/402-R-99-004A), which recommends using site specific contaminant values.

The revised Draft HSW EIS should explain why the predicted plumes and impacts differ from actual site conditions and historic projections. It should explain why the models may be used to reliably predict future conditions when they do not reliably predict current conditions. Moreover, the revised Draft HSW EIS should explain whether the values used in the models are consistent with the values used in the Resource Conservation and Recovery Act Permit Models and Comprehensive Environmental Compensation and Liability Act groundwater monitoring results for the Hanford Site. If the values differ, there should be an explanation why. Finally, the revised Draft HSW EIS should explain the basis for departing from the U.S. Environmental Protection Agency's guidance regarding use of site specific Kd values.

23 | • Construction Borrow Sources. The Draft HSW EIS describes only the general area where capping material would be obtained and the disturbance to that area (Draft HSW EIS at 5.22 to 5.24). The Draft HSW EIS does not provide information on the sources, volumes or types of soils required for trench construction under the various alternatives. The necessary volumes may exceed available on-site resources or there may be insufficient supplies of the necessary type of soil. Either possibility would require shipment of soils from off-site or manufacture of amended soil on-site. The impacts of either possibility should be discussed. Even if there is a sufficient on-site

⁶ See TEGD at 47.

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23

source, the revised Draft HSW EIS should explain how that source will be used consistent with the regulatory requirements for national monuments. It should also describe in detail a reclamation plan for any on-site sources.⁷ This is another issue that we raised in our 1996 Waste Management PEIS Comments that the U.S. Department of Energy has failed to address.

- **Threatened or Endangered Species.** The Draft HSW EIS indicates that the U.S. Department of Energy consulted with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service, and requested a listing of federally protected species in the existing low-level burial grounds and “other areas potentially disturbed by waste management activities” in 1998. The Draft HSW EIS further indicates that the U.S. Department of Energy re-initiated those consultations, because the potential surface disturbance areas for the proposed action expanded well beyond the area considered in 1998. The Draft HSW EIS indicates that the National Marine Fisheries Service’s and the U.S. Fish and Wildlife Service’s responses to the most recent requests are pending. (Draft HSW EIS Section 5.5.4 at 5.24.)

24

The U.S. Department of Energy did not re-initiate consultations with the National Marine Fisheries Service or the U.S. Fish and Wildlife Service until preparation of the Draft HSW EIS was well underway. Appendix I of the Draft HSW EIS contains letters to both agencies from Steven H. Wisness, Director of the Richland Operations Office’s Office of Site Services, dated March 25, 2002. (See Draft HSW EIS at I.15 to I.24.) The National Marine Fisheries Service responded by telephone on April 26, 2002 and the U.S. Fish and Wildlife Service responded with an April 23, 2002 letter describing three threatened species and twenty-three species of concern in the area of the proposed action. (See Draft HSW EIS at I.20-I.21.) The Draft HSW EIS is dated April 2002.

The Draft HSW EIS indicates that species concerns were not considered until very late in the development of the proposed action. Such late consideration is contrary to CEQ’s NEPA regulations, which require agencies to prepare draft environmental impact statements concurrently with and integrated with environmental impact analyses required by the federal Endangered Species Act. 40 CFR § 1502.25. The revised Draft HSW EIS should discuss in detail how the various alternatives will impact the species identified by the National Marine Fisheries Service and the U.S. Fish and Wildlife Service.

Transportation Impacts

25

The Draft HSW EIS relies on the Final Waste Management Programmatic Environmental Impact Statement For Managing Treatment, Storage and Disposal of Radioactive and Hazardous Waste (DOE/EIS-0200-F), May 1997, for analysis of off-site transportation

⁷ As we recommended in our 1996 Waste Management PEIS Comments, the reclamation plan should include replanting with native seed and plant stock. (See discussion of infrastructure impacts, 1996 Waste Management PEIS Comments, at 2.)

Letter: L103f

25 | impacts. That Waste Management Programmatic EIS analyzed transportation risks associated with the waste volumes stored and projected to be generated through 2017.⁸ However, the Draft HSW EIS applies to waste volumes to be generated through 2046. Because the periods of analysis in the Waste Management Programmatic EIS and the Draft HSW EIS differ and the actual and projected waste volumes have changed significantly in the five years since the Waste Management Programmatic EIS was completed, it is inappropriate to rely on that document for analysis of off-site transportation impacts. The revised Draft HSW EIS should include a new analysis of such impacts using the most up to date waste volumes (current and projected). The analysis should extend through 2046.

Moreover, as we urged in our 1996 Waste Management PEIS Comments (at 7-9), we strongly suggest that the transportation impacts analysis include the following:

- 26 | 1. A route specific analysis – rather than a generic analysis – which identifies and considers the specific geographic and weather-related conditions for the portions of the transportation routes through Oregon to the Hanford Site.
- 27 | 2. The potential for impacts to the Confederated Tribes of the Umatilla Indian Reservation.
- 28 | 3. The use of dedicated or special trains to haul waste, rather than limiting the analysis strictly to the use of general freight for waste shipped by rail.

MITIGATION

29 | The CEQ NEPA regulations require the environmental consequences section of an EIS to discuss means to mitigate environmental impacts if not discussed in the alternatives section of an EIS. 40 CFR § 1502.16(h). The regulations further define mitigation as avoiding the impacts altogether, minimizing the impacts, rectifying the impacts by repairing, rehabilitating or restoring the affected environment, reducing the impact or compensating for the impact. 40 CFR § 1508.20(a)-(e).

As noted previously, the Draft HSW EIS does not discuss mitigation in the alternatives section. Section 5.18 (Draft HSW EIS at 5.112 to 5.114) describes potential mitigation measures for the impacts identified. This section is wholly inadequate and fails to meet NEPA's requirements. The fundamental problem with this section is no mitigation measures are specified and performance of mitigation is contingent upon U.S. Department of Energy discretion.

For example, the introduction to Section 5.18 provides: "This section contains a description of mitigation measures that *might be considered* to avoid or reduce

⁸Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage and Disposal of Radioactive and Hazardous Waste (DOE/EIS-0200-F), May 1997, Appendix E, Section E.2.3 at E-11.

Letter: L103g

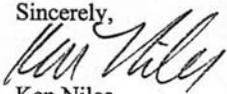
29 | environmental impacts made as a result of Hanford Site operations in support of solid waste management.” (Draft HSW EIS at 5.112, emphasis added). The same paragraph states that after preparation of the Record of Decision, “a mitigation plan *would be prepared if warranted*” to address action specific to the alternative selected for implementation. “That plan *would be implemented as necessary to mitigate significant adverse impacts* of solid waste management activities.” In essence, the Draft HSW EIS states that the U.S. Department of Energy will develop a mitigation plan if it decides one is necessary.

30 | A description of specific measures to mitigate the identified impacts is essential to comparing the environmental impacts of the alternatives and choosing a preferred alternative. Postponing a detailed analysis and plan for mitigation until just prior to initiating operations (see Draft HSW EIS Section 5.18.3 at 5.112) defeats the whole purpose of the NEPA process. That process requires assessment of such measures at the go-no go stage of planning a project, not when a project is underway. The mitigation measures must be developed and analyzed during the early stages of planning, because they may influence or alter the alternative selected.

31 | In addition, implementation of mitigation measures should not be left up to U.S. Department of Energy discretion. If the impacts are so uncertain that the U.S. Department of Energy cannot specify measures to mitigate them or whether it will implement any such measures, then the impacts of the proposed action are too uncertain to proceed. In that event, the U.S. Department of Energy should postpone the proposed action until it can characterize the impacts with sufficient certainty to specify mitigation measures.

In short, the revised Draft HSW EIS should describe specific measures that the U.S. Department of Energy will implement to mitigate the impacts identified in Section 5.0 of the Draft HSW EIS. The Oregon Office of Energy recommends that the U.S. Department of Energy develop those mitigation measures in consultation with the Hanford Natural Resources Trustee Council.

Again, the Oregon Office of Energy appreciates the opportunity to comment on the Draft HSW EIS. We look forward to receiving the U.S. Department of Energy’s direct, written responses to these comments. If you have questions, please contact me at 503-378-4906.

Sincerely,

Ken Niles
Administrator, Nuclear Safety Division

Letter: L103h



Oregon

John A. Kitzhaber, M.D., Governor



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August 15, 2002

Mr. Keith Klein
Manager, Richland Operations Office
PO Box 550
Richland, WA 99352

Dear Keith:

201 | Enclosed with this letter are the comments of the Oregon Office of Energy on the draft Hanford Solid Waste Program Environmental Impact Statement (Solid Waste EIS). Our review has found many deficiencies in the draft Solid Waste EIS and our comments reflect our concern about the adequacy of this document. We believe that the draft Solid Waste EIS is so inadequate that USDOE should begin again and issue a revised draft for public review that adequately addresses the issues raised in our comments.

202 | In addition to other deficiencies, the draft Solid Waste EIS raises questions about the adequacy of treatment and disposal plans both for existing solid waste already at Hanford and the massive amounts of additional waste which would be sent to Hanford. In prior programmatic and Hanford site-specific environmental impact statements we have opposed proposals by USDOE to send large amounts of new waste to Hanford and we have filed comments which expressed in great detail the reasons for our opposition. None of those concerns were addressed in prior environmental impact statements nor have they been 203 | addressed in the current draft Solid Waste EIS. Our concerns about the impacts of shipping such large amounts of waste through Oregon have also not been addressed 204 |

205 | I am also concerned that the inadequacy of the draft Solid Waste EIS undermines the important work to accelerate Hanford cleanup through the Cleanup Constraints and Challenges Team (C3T). Oregon continues to support the C3T effort and the commitments made by USDOE in the latest draft of the Performance Management Plan for the Accelerated Cleanup of the Hanford Site. However, the draft Solid Waste EIS raises a number of questions about the ability of USDOE to meet those commitments. For example, the large amount of new solid waste which would be stored and disposed at the Hanford site may divert efforts from the actions needed to implement the Accelerated Cleanup Plan.

RL COMMITMENT CONTROL
AUG 20 2002
RICHLAND OPERATIONS OFFICE

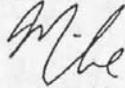
Letter: L103i

August 15, 2002
Page 2

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I regret that our comments are not more positive. However, I encourage you to reissue a draft environmental impact statement for public review which remedies these shortcomings. Please contact me at (503) 378-5489 or Ken Niles at (503) 378-4906 if you have any questions or would like to discuss this further.

Sincerely,



Michael W. Graine
Director

Cc: Mr. Tom Fitzsimmons, Director, Washington Department of Ecology
Mr. Mike Gearheard, U. S. Environmental Protection Agency
Stuart Harris, Confederated Tribes of the Umatilla Indian Reservation
Russell Jim, Yakama Indian Nation
Patrick Sobotta, Nez Perce Tribe
Oregon Hanford Waste Board
Todd Martin, Hanford Advisory Board
Oregon Congressional Delegation

Mwg/hanford/2002/solidwasteistr.doc

Letter: L103j

B.415

Revised Draft HSW EIS March 2003

**Government Accountability Project
West Coast Office**

1402 Third Avenue•Suite 1215•Seattle, WA•98101•Tel 206.292.2850•Fax 206.292.0610
E-mail: gap@whistleblower.org•Website: www.whistleblower.org

VIA U.S. MAIL

August 24, 2002

Michael S. Collins
HSW EIS Document Manager
Richland Operations Office
US Department of Energy, A6-38
PO Box 550
Richland WA 99352-0550

Re: GAP's Comments on the HSW-EIS

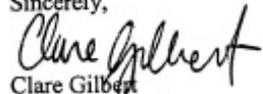
Dear Mr. Collins:

Enclosed you will find the Government Accountability Project's Comments on the Hanford Solid Waste Environmental Impact Statement (HSW-EIS). I am afraid I was unable to put these in the mail until Monday, August 26, 2002 – one business day after the comment period officially ended. I hope you will accept these comments regardless of the delay, as you stated you would during the public hearing in Seattle.

I hope our comments are helpful to you. If you have any questions or concerns about the comments, please feel free to contact me at the number below.

Thank you for your hard work on the HSW-EIS and for your patience and attention at the public hearings.

Sincerely,


Clare Gilbert
Program Associate
Nuclear Weapons Oversight
Ph: (206)292-2850
clareg@whistleblower.org

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AUG 28 2002

DOE-RL/RLCC

National Office: 1612 K Street NW•Suite 400•Washington, DC•20006•Tel 202.408.0034•Fax 202.408.9855

Letter: L104

**GOVERNMENT ACCOUNTABILITY
PROJECT**
WEST COAST OFFICE

**COMMENTS ON DOE'S
DRAFT HANFORD SITE SOLID
WASTE PROGRAM
ENVIRONMENTAL IMPACT
STATEMENT**

August 23, 2002

Letter: L104a

B.417

Revised Draft HSW EIS March 2003

**COMMENTS ON DOE'S DRAFT HANFORD SITE SOLID WASTE
PROGRAM ENVIRONMENTAL IMPACT STATEMENT**

The Government Accountability Project hereby submits its comments on the Department of Energy's "Draft Hanford Site Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement" (DOE/EIS-0286D) published in April 2002. These comments are addressed to Michael S. Collins, the Hanford Solid Waste EIS Document Manager at the Richland Operations Office of the U.S. Department of Energy.

I. INTEREST OF THE COMMENTOR

The Government Accountability Project (GAP) is a public interest watchdog organization with offices in Washington, D.C. and Seattle, Washington. The mission of GAP is to protect the public interest and promote government and corporate accountability by advancing occupational free speech, defending whistleblowers and empowering citizen activists. We also advise public agencies and legislative bodies about management policies and practices that help government deal more effectively with substantive information and concerns, while protecting the jobs and identities of those who provide this critical information.

GAP has monitored and commented on activities at the U.S. DOE Hanford Site since 1987. GAP has represented dozens of Hanford whistleblowers, has members on the Hanford Advisory Board, serves on the Hanford Joint Council, and has engaged the Department of Energy (DOE; the Department) and its contractors in litigation, when necessary.

Letter: L104b

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	F. Tim Jarvis, <i>Stewardship and the United States Nuclear Weapon Production Wastes - An Introduction</i> , 21Environmental Progress 2, July 2002.	

Government Accountability Project's
Comments on DOE's HSW-EIS

i

Letter: L104c

B.419

Revised Draft HSW EIS March 2003

II. FUNDAMENTAL OBJECTION TO HANFORD AS THE NATION'S NUCLEAR WASTE DUMP

As a policy matter, the Government Accountability Project abhors the Department of Energy's implicit view that the Hanford Site is the national government's nuclear trash can in the desert. Hanford already struggles to deal with the mountains and oceans of nuclear waste that is the legacy of the Cold War. Hanford holds the largest inventory of high-level nuclear waste in the weapons complex. It has the largest volume of contaminated soils. It has the largest volume of contaminated groundwater. Over the past 50 years, some 440 billion gallons of contaminated liquids were directly disposed in the ground – enough to create a poisonous lake the size of Manhattan 120 feet deep. This alone makes Hanford the most contaminated zone in the Western Hemisphere. Hanford has the largest volume of buried transuranic wastes - long-lived deadly wastes including plutonium, a speck of which is considered lethal if inhaled.

It is a gross understatement to state that Hanford is an environmental crisis in its own right, a public health menace of the first magnitude, and a gigantic dirty bomb ready to detonate over the populations of a three-state area. The Department of Energy euphemistically refers to the Hanford Site as a "cleanup site," but the truth of the matter is writ large in these draft documents - DOE does not intend to clean up Hanford, but to dump even more waste there from around the country - and walk away.

1 The draft Hanford Solid Waste EIS (HSW-EIS) adds insult to injury. The fish in the Hanford Reach are already the most chemically-contaminated in the entire Columbia River system. The fish are so poisonous that the EPA reports that tribal peoples suffer a cancer risk of 1 in 50 simply from consuming these fish. Tribal children eating fish from the Hanford Reach have risks of immune diseases and central nervous system disorders that are over 100 times greater than for non-Indian children, according to the EPA.¹

The EPA has rated the HSW-EIS as an EO-2 (Environmental Objection – Insufficient Information). The EPA found that the EIS created problems in meeting the

See Appendix A: GAP's Analysis of the Accelerated Clean-up Plan and Summary of EPA Fish Report

Letter: L104d

accelerated clean-up schedule by potentially creating increased contamination which will require increased clean-up and by diverting resources and capacity from the clean-up. The EPA also found many other errors in the EIS and GAP agrees with the EPA's call for changes in the HSW-EIS and similar commitments in the Record of Decision.

III. INADEQUATE NEPA COMPLIANCE

2 The HSW-EIS is not compliant with the National Environmental Policy Act (NEPA) and must be reissued after addressing all of the following legally mandated compliance issues.

A. The Waste Management Programmatic EIS

The HSW-EIS is based on a flawed and discredited study, the Waste Management Programmatic Environmental Impact Statement (WM-PEIS). The WM-PEIS was a nation-wide study performed to help the DOE analyze what to do with two million cubic meters of radioactive and hazardous wastes stored carelessly across the country – the toxic legacy of 50 years of nuclear weapons production. Programmatic EISs are designed to provide general consideration of alternate and long-range effects of agency policy on many related issues. More detailed, site-specific EISs, such as the HSW-EIS, follow in the wake of the Programmatic EIS' Record of Decision.

3 The current problem arises in that the WM-PEIS contains insufficient analysis. Public comment on the PEIS reveals that the states, Tribes, and other stakeholders were dissatisfied with the analysis supporting the decision to select Hanford as a disposal site for imported waste.

4 In a front-page investigative report by the USA TODAY newspaper entitled, *The \$59 Million Lemon: Is this nuclear waste study worth the paper its written on?*, the WM-PEIS was described as "so flawed, so incomplete and so irrelevant that the Energy Department needs at least three more studies to fill in the gaps," and as "a comedy of

4
(cont)

errors or a tragedy of errors.”² Larry Cornett, a scientist who worked on preparing the WM-PEIS referred to it as “grossly misleading.” Cornett, a whistleblower who prevailed in court, was laid off by the project contractor after raising technical concerns. “They wasted a lot of taxpayers’ money,” said Cornett.

5

Cornett was not alone. In 1994, four scientists involved with the WM-PEIS had complained about the study, leading DOE to ask the EPA to review the matter. In their report, EPA reviewers warned of “obvious weaknesses that must be dealt with if the end product is to be credible.”

6

According to the USA TODAY report, “the EPA team attributed most problems to controversial ‘policy decisions’ to exclude certain information from the study. But DOE didn’t reverse the most controversial decision - the move to exclude any detailed analysis of what to do with waste that will be generated by cleaning up polluted sites.” Likewise, Stephan Schwartz, a Brookings Institute scholar, predicted “If they can’t get their act together in terms of planning how to deal with this problem, how can they tackle the problem.” He was right; the EIS does not adequately deal with the waste management problem.

7

The HSW-EIS repeatedly references the more general and woefully inadequate WM-PEIS. Such transparent cross-referencing by the DOE to the WM-PEIS, an extremely flawed document that even its own authors could not countenance, does not tackle the problem of waste management in any scientifically sound way and is simply another act in this tragedy of errors.

8

B. Incorporating Documents by Reference

NEPA mandates that “no material may be incorporated by reference unless it is reasonably available for inspection by potentially interested persons within the time allowed for comment.”³ DOE has failed to follow this requirement in that the WM-PEIS

² See Appendix B: USA Today article: *The \$59 Million Lemon: Is this nuclear waste study worth the paper it’s written on?*

³ 40 CFR Section 1502.21.

Letter: L104f

8
(cont)

is not readily available and many other referenced documents either are not readily available or are not even briefly described.⁴

9

The DOE asserts that the decision to import thousands of truckloads of waste into Hanford was made in the WM-PEIS, and that the HSW-EIS merely provides analysis of what could be done with the waste once it arrives at Hanford. Yet the WM-PEIS is not readily available for inspection. A search of the DOE website reveals only edited summaries of the document. When GAP called the 1-800 number provided by DOE to obtain copies of the WM-PEIS, GAP was told that the document is "out of print and there are no copies left."⁵ This was in violation of NEPA. GAP was contacted 4 days later, on August 5, 2002, and informed that a DOE official found "a few copies" of the WM-PEIS in storage and that GAP would receive one in a week. While "a few copies" buried in storage may meet GAP's immediate need to review the document, it further indicates that the WM-PEIS is not 'reasonably available' to the greater public that may also want to follow up on DOE's numerous cross references and bold assertions.

C. Consultation

10

Consultation for EISs is legally required under Subsection 102(2) (C) of NEPA.⁶ DOE blatantly disregarded this requirement by failing to consult with Tribes, such as the Yakama Nation, and other federal and state agencies, such as the Environmental Protection Agency, Department of Ecology, and the Department of Health. Concerning Tribes, the EIS should also state whether their reserved rights, such as fishing, hunting, and gathering, will be imposed upon and how the federal government will resolve such a conflict. DOE must perform such consultation and then reissue the EIS.

⁴ See page 5.34 of HSW-EIS. References made to the WIPP-EIS (1997), the Oak Ridge Reservation environmental assessment (2001), and the Savannah River Site environmental assessment (2001).

⁵ Telephone conversation with Steve Frank, DOE NEPA Compliance Officer, on August 1, 2002.

D. Scoping Period

11 The HSW-EIS is not compliant with NEPA because it exceeds the scope of the EIS established in the scoping period.⁷ For example, the volume of off-site waste is greater in the draft EIS than in the scoping period.

E. Quantity of Waste

12 The HSW-EIS also fails to give an exact quantity of waste that would be imported. Instead, it gives lower and upper boundaries that span from ~430,000 m³ to 630,000 m³ for LLW and from ~65,000 m³ to ~205,000 m³ for MLLW.⁸ The lower bound represents waste generated at the Hanford Site, and the upper bound represents waste that would be imported. This quantification is error because 1) each extreme of these ranges could produce very different environmental impacts, 2) there is no clear estimate of pre-1970 TRU waste, and 3) the EIS is vague about what "suspect" TRU encompasses and whether waste generated from tank remediation is included in the estimates. The EIS should 1) pinpoint the exact quantity and source of each type of waste to be disposed at Hanford, 2) state explicitly the relative proportions of waste going to Nevada Test Site versus the Hanford Site, and 3) elaborate on the nature of "suspect" TRU.

F. Proposed Alternatives

13 The three alternatives analyzed in the HSW-EIS are inadequate. They appear to be selected based upon a cost analysis rather than an environmental analysis. The alternatives do not represent the spectrum of possible actions.

14 First, the HSW-EIS does not contain a true "no action" alternative, which would be a scenario of *zero* importation of offsite-generated LLW and MLLW. Such an omission violates NEPA and makes it impossible to gauge the true impacts of the alternatives. When the importation of thousands of truckloads of nuclear waste is

⁶ 42 U.S.C. Sec. 4332.

⁷ 40 CFR Sec. 1508.25 and 1502.7(a)(2).

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(cont)

assumed, only slightly tweaked alternatives on what to do with the waste once it arrives remain. The real impact of the importation waste as a given, we are left to compare slightly tweaked alternatives. The real impact of this proposed action can be shown only by comparing a) no importation of waste with b) importation of waste.

15

Secondly, there needs to be an alternative that considers the use of lined as opposed to unlined trenches. Unlined trenches are a major contributing source of pollution to the Hanford Reach. The photograph in Appendix C depicts DOE's present practices in the 200 West Area Low-Level Burial Grounds (LLBG).⁹ The trench shown in the picture is strewn with radioactive waste, there is no lining, and some sort of liquid has darkened the soil on the right side of the picture. The photograph shows the complete inadequacy of this type of "storage". One could not legally dispose of kitchen waste in such a manner! Lining trenches will prevent such leaching for at least some period of time and must be considered in the alternatives. Burying radioactive waste in the ground is not "cleaning up" unless the waste can be contained.

16

17

Additionally, the alternatives should also encompass: 1) not shipping post-1970 TRU to WIPP, 2) increased cap usage (with analysis of cap performance), 3) mounded soil covering the trenches, which would shed rainwater and create less leachate, and 4) concentration limits for radionuclides.

18

Finally, in selecting Alternative One as the preferred alternative, DOE should state both the cost savings of Alternative One over the other alternatives, and the environmental advantages and disadvantages of Alternative One over the other alternatives.

G. Cumulative Impact Analysis

19

In order to predict cumulative impacts accurately, it is necessary to examine not only the particular waste to be imported, but also the impacts of the new waste *when*

⁸ HSW-EIS Tables 3.2, 3.3, 3.4

⁹ See Appendix C: Photograph of burial site on Hanford Site 200 West Area. Taken in August 2001 by Tom Carpenter, GAP Nuclear Weapons Oversight Director.

19
(cont)

combined with waste already existing at the burial grounds. Therefore, the necessary precursor to an accurate cumulative impact analysis is an understanding of what waste already exists at Hanford. However, as noted below in Section IV(C), Waste Inventory, there is no such inventory of existing waste at Hanford.

20

The perilous nature of Hanford clean-up is discussed in a recent Office of Inspector General Special Report, which reveals severe problems with DOE's waste inventory practices.¹⁰ According to the report, DOE could not fully account for nuclear materials loaned or leased to domestic licensees: substantial amounts of nuclear materials were identified as located at two licensed facilities that later turned out not to exist; several licensed facilities were shown to have negative balances that were not logical; and incomplete records and information on nuclear materials were provided by DOE to licensees. The OIG report called for more action by DOE to prevent such occurrences in the future. GAP requests that DOE immediately create an accurate inventory of the all nuclear waste currently stored and disposed of at the Hanford site.

21

If there were already such an inventory, it would reveal that Hanford is the most polluted area in the Western Hemisphere. The Hanford Reach arguably is the most polluted waterway in Washington and is becoming increasingly more polluted as contaminated groundwater seeps into it. What is the cumulative impact of 70,000

22

truckloads of waste leaking, as the waste in the photograph in Appendix C appears to be doing, into the soil and the already contaminated groundwater? The cumulative impacts of such careless disposal practices upon the pre-existing contamination at Hanford must be addressed in the HSW-EIS.

23

The harm associated with unlined trenches is even more apparent when juxtaposed with DOE Order 435.1, in which DOE grants itself permission to reclassify high-level radioactive waste as "incidental waste." The reclassification, in effect, allows DOE to dump what was formerly known as *high-level waste* into shallow land burial right on the

¹⁰ See Appendix E. DOE Special Report: Management Challenges at the Department of Energy. Dec 2001.

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23
(cont)

Hanford site.¹¹ Now the DOE wants to bury the “incidental waste” and the “low activity waste” in the same 200 Area as the 70,000 truckloads of waste discussed in the HSW-EIS! The cumulative impact of the ‘low-activity waste’ plus the proposed HSW-EIS imported waste upon the groundwater contamination and human health *must be* (but is not) *addressed* in the HSW-EIS.

24

25

Additionally, in the cumulative impact analysis for groundwater, DOE notes, but does not quantify, that tritium, Tc-99, and other contaminants are in the groundwater below Hanford and seeping toward the Columbia. DOE also mentions that some unquantified amount of groundwater might be an “irreversible and irretrievable commitment of resources.” Yet the DOE has neither explained the criteria used as a basis of its assertion nor discussed the area at risk. The EIS should include analysis of current contamination and more information about future risks to groundwater.

26

Other gaps in the cumulative impact analysis include: 1) no analysis of high level tanks, K-Basin sludge, reactor components, naval reactor compartments disposal, and existing pre-1970 TRU waste in the burial grounds; 2) no analysis of the fact that the maximum containment levels are exceeded in all action alternatives or the cumulative impact of this upon existing contamination at Hanford; and 3) no cumulative impact analysis of the transportation of an estimated 70,000 truckloads of radioactive and chemically toxic waste from across the country.

27

In order to comply with NEPA, the HSW-EIS must be withdrawn and rewritten to include the cumulative impacts discussed above.

H. Transportation Analysis

28

The HSW-EIS not only failed to do a cumulative impact analysis of transportation, but actually failed to do *any* analysis of transportation. There was no delineation of

¹¹ DOE Order 435.1 is being challenged in US District Court by public interest organizations, indigenous Tribes, and the States of Washington and Idaho. See Appendix D: Plaintiff’s complaint, NRDC v. DOE, No. 01-CV-413 (BLW) (D. Idaho. Filed Feb. 28, 2002).

28
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routes, no plans to minimize risks to the people in towns en route, and no analysis of transportation vehicles as possible terrorist targets.

29

As discussed above in Section III(B), Incorporating Documents by Reference, the DOE failed to analyze transportation in either the Transportation or the Accident Analysis sections of the HSW-EIS. Instead DOE sends concerned readers on a wild goose chase to track down four other documents, none of which are on line and at least one of which is not readily available: the WM-PEIS (1997), the WIPP-EIS (1997), the Oak Ridge Reservation Environmental Assessment (2001), and the Savannah River Site Environmental Assessment (2001). None of these documents are specific to transporting 70,000 truckloads of waste along the roads of Washington and Oregon. Such empty cross-referencing does not meet the legal requirements of NEPA.

30

Remarkably, in light of the tragic events of September 11, 2001, the EIS failed to consider the possibility of terrorist attacks on the transporting vehicles. In a recent report, the Office of Inspector General noted that the DOE "[should maintain] the strictest possible control over [nuclear] materials that could, in the wrong hands, threaten national security." DOE should heed the advice contained in the OIG report. In the wrong hands, this waste material could be used against the United States, with deadly results. Such scenarios must be addressed in the HSW-EIS.

I. Public Health Analysis

31

The Public Health prediction methods used by the HSW-EIS are not professionally accepted methods. The Emergency Response Planning Guides (ERPGs) used in the HSW-EIS were developed for worker exposures, not public exposures, and were intended to *set exposure limits* rather than to *predict public health impacts*. The ERPGs have failed to gain acceptance as exposure limits, and certainly have never gained any acceptance for prediction of public health impacts. The use of ERPGs in the HSW-EIS is scientifically inappropriate and ethically misleading.

32 Secondly, the prediction of cancer rates from potential exposures to radionuclides using Radiological Dose Rates and Radiological 'Quality Factors' is scientifically inappropriate and not widely accepted for prediction of public health impacts. This method was developed for evaluation of individuals and individual exposures, not for widespread public exposures. It does not adequately account for the differences in linear threshold energies between radionuclides and thus does not account for a major source of radiological damage to tissue.

33 In order to measure properly the public health impacts resulting from potential exposures to cancer causing hazardous chemicals and radionuclides, the professionally recognized EPA methodology *utilizing cancer potency factors* should be used in the HSW-EIS. This methodology has been used extensively and is the most widely accepted method of predicting potential cancer impacts by risk assessment professionals and toxicologists.

34 Similarly, to measure public health impacts resulting from potential exposures to disease causing chemicals and radionuclides, the professionally recognized EPA methodology *utilizing reference dose values* should be used. This is the most extensively used and widely accepted method used by risk assessment professionals and toxicologists.

35 The above referenced EPA methods utilizing cancer potency factors and reference dose values require scientific estimates of potential exposures. These estimates must be based upon an accurate scientific inventory of hazardous and radioactive wastes, which was lacking in the HSW-EIS.

36 The HSW-EIS will need to incorporate a scientific inventory of hazardous and radioactive waste to support the prediction of public health impacts.

J. Endangered Species Analysis

37 DOE inadequately assessed the impact of the proposed nuclear waste importation upon on endangered species, as legally required by NEPA and the Endangered Species

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Act. In the Hanford Reach, there are over 75 species of plants and animals that have been identified as endangered, threatened, sensitive, candidate species, or species of concern under state or federal law. The HSW-EIS endangered species "analysis" consisted only of listing species and stating that consultation has been initiated with NMFS and FWS. This is not analysis. The HSW-EIS must be reissued with a concrete discussion about the potential impacts upon these threatened and endangered species.

K. Procedural Snafu

38

On August 22, 2002, DOE-Richland Operations Office Manager Keith Klein stated in a letter that by October 2002 DOE will write a Supplement to the HSW-EIS. The HSW-EIS is not final; it should not be supplemented with new significant information unless that information was unknown to the DOE initially! DOE's procedural manipulation is simply another indication that the HSW-EIS failed to consider major federal actions with significant impacts. The draft HSW-EIS should be withdrawn and re-written rather than amended and supplemented in a piecemeal and non-comprehensive manner.

IV. NEGLECTED CONSIDERATIONS

39

The HSW-EIS neglects to consider many necessary issues, including how best to analyze the impacts of the imported waste and even what waste is under DOE's jurisdiction.

A. Mixed Low-Level Waste and RCRA

40

The HSW-EIS analyzes the disposal of mixed low-level waste (MLLW) without a prior decision by the State of Washington to dispose of MLLW at Hanford. As per the Resource Conservation and Recovery Act (RCRA), the State of Washington has jurisdiction over the disposal of MLLW because of its hazardous waste properties. Thus, the HSW-EIS should be limited to evaluating only the short term *storage and treatment* of MLLW, *not* the *disposal* of MLLW. GAP urges the State of Washington to refuse to

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permit the DOE increase the volume of MLLW disposed of at Hanford beyond what was decided for Hanford cleanup.

B. Tri-Party Agreement

41

GAP agrees with the Hanford Advisory Board's (HAB) assertion that the draft EIS does not consider the delay to the construction of TRU processing facilities required under Tri-Party Agreement (TPA) Milestone 91. The draft EIS also fails to consider the impact from delayed/lesser TRU waste retrieval and the impacts of importing TRU.

C. Inventory of Hazardous and Radiological Wastes

42

Environmental impact statements must present scientifically defensible predictions of the impacts resulting from the proposed federal action. Without an accurate and comprehensive inventory of both present and expected values of hazardous and radiological waste at Hanford, the HSW-EIS' predictions are not scientifically defensible. The HSW-EIS must be withdrawn and rewritten to include a complete inventory.

43

This inventory must account for all hazardous waste and radiological waste, including high-level tank wastes, spent reactor cores (Navy and otherwise), wastes in the Purex tunnels, waste in closed buildings, wastes in the soils of Hanford, wastes in the groundwater of Hanford, wastes in the sediment of Hanford, wastes in the biota of Hanford, and all other sources of waste within the limits of Hanford.

Given the scope of the HSW-EIS, removing waste from consideration by definition is ethically misleading and scientifically inappropriate. Also, removing waste from consideration because data on the waste is not readily available is scientifically inappropriate and a regulatory violation.

44

The complete waste inventory needs to be presented in a temporal format to show the movement of waste from one storage status to another, the waste imports and exports from Hanford, the effect of treatment on the inventory, and the cumulative environmental releases over time. Such inventory should include: 1) identification of the

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waste by IUPAC nomenclature and CAS number - wastes not in pure form should identify both chemical and/or radiological constituents of the waste; 2) location of the waste by latitude/longitude or state plane coordinates and by DOE location names/numbers; 3) mass of the identified waste or waste constituent at each location in Kilograms; 4) density of the identified waste or waste constituent at each location in grams/cubic centimeter; 5) activity of the identified waste or waste constituent at each location in grays; 6) storage status of identified waste or waste constituent at each location in terms of "contained-retrievable waste," "contained-non-retrievable waste," or "non-contained waste" (waste already in the environment).

D. Waste Nomenclature

45

It is inappropriate to use non-scientific nomenclature in an environmental impact statement. Identification nomenclature, such as low-level waste, mixed low-level waste, high-level waste, and transuranic waste, was coined for the production of special nuclear materials, including plutonium, and for the security requirements surrounding such materials; neither of which concern the HSW-EIS' proposed action. These old production terms are not appropriate, not accurate scientifically, and do not yield the detailed information necessary to make scientific predictions on public and worker health, environmental, natural resource, and cultural impacts.

46

The HSW-EIS also uses arbitrary waste identification nomenclature, such as Category 1, Category 2, Category 3, greater than Category 3, remote handled, contact handled, non-conforming, previously buried, pre-1970, and post-1970. Such non-scientific, arbitrary nomenclature has no place in an EIS and only confuses the issues.

All inappropriate waste identification nomenclature should be removed from the HSW-EIS. Hazardous and radiological wastes at Hanford should be referred to by their proper scientific name and identifiers.

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E. Curies

47 It also is inappropriate for the HSW-EIS to use the unit 'Curies' to measure the radiological wastes at Hanford. Curies are a measure of the number of radiological disintegrations that occur in one second. Use of the unit Curies does not identify or explain any of the following: 1) the radionuclide that produced the disintegration, 2) the type of disintegration, 3) the energy imparted by the disintegration, 4) the mass of the radionuclide, and/or 5) the density of the radionuclide that produced the disintegration. Without knowing the radionuclide, mass, radiation type, density, and energy it is impossible to make informed scientific predictions or decisions regarding readings reported in 'Curies'.

The unit of measurement 'Curie' was originally developed to compare samples of the same radionuclide, as in: "Which of these two ores is the better source of uranium?" Therefore, the use of the unit 'Curie' as a measure of inventory is scientifically inappropriate and misleading to the readers of the HSW-EIS. The unit 'Curie' should be dropped from the HSW-EIS and more scientifically appropriate units of measurement should be used to communicate the inventory of radiological waste at Hanford.

F. Long-Term Stewardship Analysis

48 Any plan to clean up nuclear waste is incomplete without a long-term stewardship plan. The HSW-EIS lacks such a plan.

Nuclear waste has an average half-life of 3,000 years, and therefore, "clean-up" at best means "safe storage." Long-term stewardship that extends over the next several centuries and millennia is necessary to ensure that the storage is safe and that human health and the environment are protected.

49 Long-term stewardship is necessary regardless of where or how the waste is stored because the risks of nuclear waste release are so great. At risk are natural resources such as the coastal oceans (fed by rivers running through the Savannah River Site and Hanford), irrigated farm lands, groundwater aquifers, and fisheries. Human health risks

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include increased incidence and severity of cancer and other diseases. For example, just one nuclear weapon processing site has the potential to induce cancer in every person currently on the planet, 208 million times over. The impacts on the regions designated as “national sacrifice areas” and their buffer zones also must be considered.

50

The need for environmental stewardship at nuclear weapons production sites and the gross inefficiencies of the DOE in several of their clean up projects has also been noted by the US DOE Office of Inspector General and Office of Audit Service.¹² In a 2001 Special Report by these offices, it was revealed that an audit of DOE found that there was no comprehensive approach to maximize waste disposal. This has resulted in unused capacity and increased risk. The Special Report calls for more efficient and responsive environmental clean-up effort and warned that the OIG would continue to monitor the DOE in these regards.

51

The HSW-EIS should be reissued with a long-term stewardship plan including provisions for decision making, the organization framework, funding, and trans-generational information transfer.¹³

G. Generator Cost Method

52

GAP agrees with the Hanford Advisory Board’s advice that DOE should consider a cost method whereby the generators of the imported waste pay the cost of treatment and disposal of their waste. If the costs are covered by money designated for Hanford Clean-up, then the clean-up will necessarily suffer and might not meet the Tri-Party Agreement milestones or other compliance requirements.

¹² See Appendix D: DOE Special Report: Management Challenges at the Department of Energy. Dec 2001.

¹³ See Appendix F: Stewardship and the United States Nuclear Weapon Production Wastes - An Introduction by Tim Jarvis.

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V. CONCLUSION

53 In conclusion, the Hanford Site must be cleaned up and restored. This vision is
not realized by dumping more waste and piling more radioactive and toxic junk on
top of an already severely contaminated site. The Government Accountability
54 Project calls upon the Department of Energy to abandon its plans to make Hanford
even dirtier, and to get on with the job of the cleanup as agreed to in the
compliance agreements and as stipulated by law. This begins by performing
scientifically justifiable and legally compliant environmental impact statements.
55 The Hanford Solid Waste Environmental Impact Statement should be withdrawn
and rewritten (not supplemented!) to consider, address, and analyze all of the
comments detailed above.

30 August 2002

Mr. Mike Collins
Department of Energy
Richland Operations Office
825 Jadwin Ave., Mail Stop A6-38
Richland, WA 99352

Dear Mr. Collins;

On behalf of the Environmental Science and Technology Program (ESTP) of the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), I am submitting the following comments to the Draft Hanford Site Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement. Given the highly technical nature of this document and the potential impacts this change will have on the operations at the Hanford Site, the CTUIR may provide further comments to your office in the future.

If you have any questions concerning this matter please feel free to contact me at (541) 966-2413.

Sincerely;

Mr. Richard Gay
Acting Manager, CTUIR-ESTP
Cc:
Armand Minthorn, Member, CTUIR-BOT
Kevin Clarke, DOE-RL
File

Enclosure

Letter: L105

Comments to Summary

Section S.4, Page S.5: “Waste that does not meet the HSSWAC is stored until it can be treated to permit final disposal.”

1

Comment: The CTUIR is concerned that waste stored at the site will ultimately be abandoned in place.

Requested Action: Please clarify how and where the material will be treated to meet the HSSWAC.

Section S.8.3, Page S.19, Table S.3: “Potential for impacts on cultural resources “Low”.”

2

Comment: It is difficult to surmise how the Department can assert that the impact of each scenario on cultural resources is low. Disposal of low-level waste and mixed waste on the Hanford site will have numerous cultural impacts. First, the 200 Areas will become sacrifice zones where access will be permanently restricted for cultural purposes. Second, the springs and seeps along the Columbia River will be contaminated and so unusable for numerous generations. Third, from a Tribal perspective, the biota associated with the Columbia River ecosystem has the potential of being contaminated with radionuclides and so will also be unusable for millennia.

Requested Action: Please reconsider the impacts of these disposal options on cultural resources.

Comments to Chapter 1

Section 1.4.5.1, Page 1.11: “DOE would construct new disposal capacity using a deeper, wider trench design...”

3

Comment: What is the reason for redesigning the trenches? If the new design is superior to the old design why was it not included in both alternatives since both require the installation of new trenches?

Requested Action: Please address the questions listed in the above comment.

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Comments to Chapter 2

Section 2.1.1, Page 2.3: *“However, some bulk waste (that is soil or rubble) is disposed of without containers.”*

4 | **Comment:** The disposal of this material without containers will result in the potential for immediate leaching of contaminants from the burial trenches. This should be accounted for in the contaminant transport analysis

Requested Action: Please verify that the indicated assumption was included in the contaminant transport analysis.

Section 2.1.1.2, Page 2.4: *“Cat 3 LLW...high-integrity containers (HICs) or by creating a monolithic waste from the trench...”*

5 | **Comment:** The assumption implied by placing Cat 3 LLW in containers is that the container will delay the release of contaminants to the environment and reduce the hazard. Has the Department evaluated the lifetime of the containers in comparison to the lifetime of the hazard placed in the containers? Do the containers result in a reduction in the release of contaminants over time or merely a delay in when the release occurs? If the containers reduce the release, has the Department considered using this additional containment for all LLW?

Requested Action: Please address the questions raised in the above comment.

Section 2.2.2.3, Page 2.18: *“If the leachate does not meet these requirements, an alternative treatment is required.”*

6 | **Comment:** What alternative treatment technologies are being considered?

Requested Action: Please clarify what alternative treatment technologies being considered for leachate.

Section 3.5.3.1, Page 3.11: *“ERDF was rejected as an option because none of the LLW or MLLW under evaluation in the HSW EIS would be generated by CERCLA actions.”*

7 | **Comment:** This statement indicates that a paper technicality has eliminated a potential option for disposal of LLW and MLLW. If contaminant transport analysis were to indicate that ERDF were a more protective solution for the LLW and MLLW, would it not be possible to get around this regulatory roadblock? Has the Department evaluated

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whether ERDF is technically a viable option for the disposal of LLW and MLLW?
Would ERDF provide a better technical solution?

Requested Action: Please clarify whether ERDF would provide a better technical solution for disposal of LLW and MLLW.

Comments to Chapter 5

Section 5.2, Page 5.5: General Comment.

8 **Comment:** The air quality analysis focuses on criteria air pollutant emissions from activities associated with construction and capping of the borrow pit. The analysis fails to examine haze and visibility or consider the cumulative air quality impacts of these activities. Other activities that will be occurring in the area (e.g., the Waste Treatment Plant) will also be producing problematic and regulated air emissions. This assertion is particularly true since diesel powered boilers are proposed for the Waste Treatment Plant.

Requested Action: Conduct a cumulative air quality impact analysis that takes into account all sources of air pollution at Hanford. This analysis should include evaluation of haze and visibility parameters.

Section 5.3 Page 5.12: *“As a result of wastewater management activities during past Hanford Site operations, groundwater beneath the 200 Areas has been contaminated with radionuclides and non-radioactive chemicals. The contaminants emanating from the 200 Areas are moving toward the Columbia River. None of these contaminants are thought to have originated from the LLBGs.”*

9 **Comment:** Contamination is emanating from the 200 area towards the Columbia River from sources that were not direct discharges to the vadose zone, nor were they intended to “leak”. An example is the contamination coming from the tank farms. Thus the argument should not be made that LLBG’s could not be a source of contamination. In addition, other burial grounds outside of the 200 area, such as the 618-10 and 618-11 site are a source of contamination.

Requested Action: Please provide the quantitative justification for the above statement made in the EIS.

Section 5.3.1, Page 5.12: *“In the case of capping of LLBGs at closure where water is used for short-term dust suppression, the 25-cm (10-in) layer of asphalt at the base of the*

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cap is expected to divert water away from the waste and would not be expected to result in impacts on groundwater quality.”

10

Comment: Water could migrate into site laterally due to clay layers under the site. The water is not limited to vertical migration alone.

Requested Action: Provide evidence of the effects of laterally migration of moisture on the movement of contaminants from the proposed LLBGs.

Section 5.3.1, Page 5.12: *“The thick vadose zone (see Section 4.5) between the LLBGs and the underlying water table is expected to limit any release of contaminants from the LLBGs to groundwater until well after the time of site closure.”*

11

Comment: Having any waste leak into the ground water is unacceptable and contradictory to the accelerated cleanup plan for site closure. In the past, it was also argued that there would not be any waste leaking into the ground water from past activities on the 200 area due to the thickness of the vadose zone. This theory was found to be invalid once the contamination was discovered beneath the 200 areas.

Requested Action: Reevaluate the waste disposal options that will result in migration of contaminants into the vadose zone and ground water to determine if options exist to further limit contaminant migration.

Section 5.3.1, Page 5.13: *“LLW, disposed in the LLBGs, are largely dry solid waste disposals. Category (Cat) 1 and 3 LLW disposed of since 1988 follow stringent Hanford Site Solid Waste Acceptance Criteria (HSSWAC) for waste containment and content (i.e., use of steel boxes, drums, high-integrity containers, and grouted waste forms) that will minimize leaching and release of contaminants during the period of operations.”*

12

Comment: Just because the waste is dry does not mean the containers will not become damaged from moisture. As an example, old drums have been found on the Hanford site that have rusted through. Part of this rusting is the result of soil moisture. In addition, the CTUIR is concerned about leaching and release of contaminants beyond the “period of operations.” CTUIR has a long-term interest in this area, and as such, any contaminates that may leach into the environment.

Requested Action: Reevaluate the waste disposal options that will result in migration of contaminants into the vadose zone and ground water to determine if options exist to further limit contaminant migration.

Section 5.3.1, Page 5.13: *“Because less rigorous requirements for waste contaminant and content were used prior to 1988, contaminants contained in LLW disposed of prior to 1988 offer the highest potential for leaching and release into the vadose zone prior to the time of site closure.”*

13

Comment: If the waste was stored in containers prior to 1988, there is a greater chance of this leaching into the environment. Again, the CTUIR is concerned about waste leaching into the environment beyond the time of site closure.

Requested Action: Reevaluate the waste disposal options that will result in migration of contaminants into the vadose zone and ground water to determine if options exist to further limit contaminant migration.

Section 5.3.2, Page 5.13: *“Wastes considered in this assessment include previously disposed LLW and LLW to be disposed in the LLBGs as follows:*

- *LLW disposed of between 1962 and 1970 (referred to as pre-1970 LLW in this section)*
- *LLW buried after 1970 but before 1988 (referred to as 1970-1988 LLW in this section)*
- *Cat 1 LLW disposed of after 1988 including LLW forecasted to be disposed of through 2046 (referred to as Cat 1 LLW in this section)*
- *Cat 3 and greater than Cat 3 (GTC3) LLW disposed of after 1988 including LLW forecasted to be disposed of through 2046 (referred to collectively as Cat 3 LLW in this section)*
- *MLLW disposed of after 1988 including waste forecasted to be disposed of through 2046 (referred to as MLLW in this section).”*

14

Comment: Many different waste types will be disposed of in the LLBG.

Requested Action: A thorough waste evaluation, type, categorization, and classification is needed for all wastes that will be and have been disposed of in the LLBG. This level of detail is needed to assure the containers are adequate since the classification of waste types have changed over time but the waste has not. This level of detail is also need for modeling any movement of waste through the vadose and ground water system.

Section 5.3.2, Page 5.14: *“Inventories of retrievably stored TRU waste in trenches and caissons located in the LLBGs were not considered because they will eventually be retrieved and sent to the WIPP for disposal.”*

15

Comment: TRU waste will be “temporarily disposed” in the same trenches as the MLLW and the LLW. Is there a time-line on when these wastes will be dug up and removed from site? Could the trenches become a *de facto* long-term storage facility for

1. The ground water flow is currently still in a state of flux. The flow conditions are not known well enough to place a signal well in the flow path.
2. A single well for the purposes of monitoring contaminates from these LLBG in even a known ground water table is insufficient to assure ground water quality.
3. As is evident from Figure 5.2, these three wells are not currently located in the path of the current ground water flow directions. The current Tritium and other plumes are trending more to the Southeast. These proposed wells would not be able to capture this plume and define this flow. In fact, the third well along the Columbia River appears to be located on the other side of a ridge or a barrier to the ground water flow direction. This would be a good way to assure that any level of contamination is not measured in this monitoring well.
4. The ground water has been shown to sometimes have preferred pathways of flow. This shows up along the Columbia River as springs day-lighting along the river. The ground water flow directions are currently not well defined (as seen via the recent contamination from 618-10 and 618-11 plume). Thus it can not be expected that a single well would be able to capture a plume nor be in the path of the flow.
5. The hypothetical well near the Columbia River is essentially a shallow well that may be capturing river water or water that may be partially diluted with Columbia River water. The discharge of some of the ground water pathways may be further out under the Columbia River as was shown in Dr. Robert Peterson's ground water simulations.

Requested Action: Please assess the potential impacts of the LLBGs using points of maximum concentration versus time derived from the modeling results. This analysis will provide a better understanding of the predicted concentrations in the ground water.

Section 5.3.2, Page 5.15: *"To establish the relative mobility of the constituents, they were grouped based on their mobility in the vadose zone and underlying unconfined aquifer. Contaminant groupings were used rather than the individual mobility of each contaminant because of the uncertainty involved in determining the mobility of individual constituents."*

Comment: Some of these contaminants interact and affect the overall mobility. For example, if binding sites are occupied by one contaminant, then it is not available for another contaminant. Thus that second contaminant would be more mobile and be transported further than if it was in the system by itself.

Requested Action: Please add a discussion of the potential impacts of multiple contaminants on the mobility of individual species through the vadose zone and ground water. Quantitative estimates of synergistic effects must be included in the discussion.

Section 5.3.2, Page 5.16: *"Because of its affinity to be sorbed onto Hanford Sediments, lead falls within..."*

18

7

Letter: L105f

19

Comment: Are the assumptions for contaminant mobility within the vadose zone and ground water consistent with present monitoring data?

Requested Action: Please compare the assumptions, and the results they generate to determine if they are consistent with observed levels of contamination within the 200 Areas.

Section 5.3.2, Page 5.17: *“TRU waste retrievably stored in trenches and caissons would be retrieved, treated, repackaged as necessary, processed, and shipped for final disposal at WIPP, hence no impacts on Hanford groundwater quality would be expected from these wastes and are not considered further.”*

20

Comments: Depending on the length of time of storage, state of storage, environmental conditions, etc., there could be impacts from this TRU waste and as such, it should be modeled in the ground water contamination scenario.

Requested Action: Please include the impacts of buried TRU waste in the evaluation of ground water impacts.

Section 5.3.2.1, Page 5.17: *“Source-term release for the LLW was estimated using the soil-debris release model. In this model, the waste itself is assumed to have the same hydraulic characteristics of the surrounding soil materials.”*

21

Comment: This assumption appears to be a large departure from the actual properties of the waste. How sensitive are the projected ground water concentrations to this assumption? Also, the last sentence of this bullet lists uranium solubility as 0.2 g/L which is inconsistent with the value reported on Page 5.18.

Requested Action: Please provide a sensitivity analysis for this parameter. In addition, verify that a correct value for uranium solubility is presented in this section.

Section 5.3.2.1, Page 5.17: *“The infiltration rate was assumed to be 0.05 cm/yr to reflect the effective recharge through the assumed RCRA Subtitle C barrier placed over all the LLBGs. In the absence of the RCRA cover, the assumed infiltration rate used was 0.5 cm/yr.”*

22

Comment: Was a breakdown in the projected barrier after its design life included in the analysis of contaminant migration? This feature will be important to include in the model since the cap is very unlikely to maintain its integrity for 10,000 years.

Requested Action: Please evaluate the effects of cap degradation on waste mobility over the lifetime of the hazard.

Section 5.3.2.1, Page 5.17: *“In the absence of artificial recharge, vadose simulation results based on this assumed infiltration rate indicated a travel time to the water table of about 500 yr in the 200 East Area and 900 yr in the 200 West Area.”*

23 **Comment:** Hasn't contamination reached the ground water in the 200 areas much faster than these assumed rates? Also, given the differences in the travel times, has the Department considered using only the 200 West Area as a disposal sight?

Requested Action: Please indicate whether this assumption is consistent with present observations. Also, please comment on why the 200 East Area is a suitable site for waste disposal given it is closer to the river and travel times to ground water are substantial shorter than for the 200 West Area.

Section 5.3.2.2, Page 5.18: *“Because all LLW in this category is buried in high-integrity containers (HICs) constructed of concrete or in-trench grouted, the release calculations considered a 300-yr delay in release (expected lifetime of an individual HIC).”*

24 **Comment:** Have some containers and grouting been found to have a shorter lifespan than expected due to the interaction of the radioactive and hazardous waste with the grout and cement material? 300 years is a relatively short time-frame considering the life-span of the contaminants.

Requested Action: Please cite the reference used to indicate that a 300 year life span is a reasonable assumption for the HICs and in-trench grouted waste.

Section 5.3.3, Page 5.19: *“Selenium and chlorine were not included in the assessment because the total inventories for both of these constituents were estimated to be less than 0.01 Ci.”*

25 **Comment:** What fraction of Group 1 radioactivity is represented by the projected inventory of selenium and chlorine?

Requested Action: Please indicate in the text the fraction of Group 1 radioactivity that is represented by the projected inventory of selenium and chlorine.

Section 5.3.3, Page 5.19: *“Preliminary estimates of transport times of constituents in Groups 3, 4, and 5 that considered their affinity to be sorbed onto Hanford sediments indicated their release through the thick vadose zone to the unconfined aquifer beneath*

the LLBGs would be beyond the 10,000-yr period of analysis. Thus, all constituents in these groups were eliminated from further consideration.”

26

Comment: It appears that many assumptions have been made to eliminate constituents from the analysis rather than including them in the event that they could enter the environment. This is not an expectable approach for this EIS since we know that contaminants have migrated in the 200 area vadose zone and aquifer far beyond the distances the extent expected just a few years ago.

Requested Action: The contaminant transport modeling used for this EIS does not appear to account for our current knowledge of contaminant transport at Hanford, nor is there an uncertainty analysis for the solution. This is an unacceptable approach since the results of the model are the primary method being used to determine whether or not resources will be impacted by solid waste burial. Please evaluate the transport parameters used in the model and determine if they are consistent with our current understanding of contaminant transport at Hanford. Also, please provide an uncertainty analysis on the solution given the possible variability of the input properties.

Section 5.3.3, Page 5.20: *“...Concentration levels in the Columbia River after groundwater discharges of this magnitude are introduced and mixed with the annual total river flow (at 3300 m³/s) would be significantly diluted.”*

27

Comment: The ground water is discharged in distinct zones rather than as an overall seep. This can be seen at the surface as locations where springs daylight. These locations are where contaminants would also be more concentrated. In addition, some contaminants could bioaccumulate in the environment. The bioaccumulation of materials will result in the concentration of materials in the food chain and potential negative long-term health impacts on those using natural materials from the Columbia River. As such, it does not seem reasonable to use a drinking water standard as an indication of the impacts of the releases at the river.

Requested Action: Please provide an analysis of the increases in concentration of accumulating contaminants in the Columbia River biota and the long-term health risks associated with those using these materials as a food source. This analysis should include aquatic species, plants, and the terrestrial organisms that consume the plants and river water.

Section 5.5.5, Page 5.24: *“There is no evidence for adverse impacts on aquatic biota for any of the alternatives.”*

28

Comment: The authors provide no supporting evidence for this statement, nor does it appear that any analysis was conducted to estimate the potential impacts of bioaccumulative contaminants on the Columbia River ecosystem.

Requested Action: Please provide supporting evidence for this statement.

Section 5.11, Page 5.43: *“The impacts to populations downstream of Hanford have also been evaluated for Tri-Cities, Washington, and Portland, Oregon. The entire populations of the cities were assumed to use the Columbia River as the sole source of drinking water...”*

29

Comment: It appears that the only source of contamination ingestion was the drinking of river water. If the consumption of contaminated biota were included would the conclusions of this document be altered?

Requested Action: Please address the question raised in the above comment.

Section 5.14.1, Page 5.102: *“Because of past practices, some of the land within the 200 Area has been already committed in perpetuity for waste disposal. The reason for this commitment is the current presence in soil of radionuclides that had been discharged to ground or leaked from tanks.... Actions addressed in all alternatives in this EIS and similar future disposal actions, such as onsite disposal of immobilized low-activity tank waste, would add to that commitment.”*

30

Comment: This is a true statement. Substantial subsurface contamination already exists within the 200 Area at Hanford and the proposed burial grounds will add to this contamination. However, it is not clear whether the presence of the current contamination was taken into account when modeling contaminant transport from solid waste disposal areas. The presence of other contaminants has the potential to both increase detrimental health impacts as well as change contaminant mobility.

Requested Action: Please clarify whether the presence of other contaminant plumes has been included in the analysis presented in this EIS. Also, comment on the cultural impacts on Native Americans of leaving the 200 Areas as sacrifice zones.

Section 5.14.5.3, Page 5.106: *“Leaching of radionuclides from wastes disposed of in LLBGs, within the scope of this EIS; and their transport through the vadose zone to groundwater and on to the Columbia River would, in the long-term, lead to small additional collective doses (less than 0.15 person-rem) to down stream populations as indicated in Section 5.11.”*

11

Letter: L105j

31 **Comment:** Are additional doses acceptable to the goal of cleaning up Hanford and the Columbia River reach? If the river corridor is turned over to another agency to manage, are they aware that there will be additional contamination discharging from their managed area into the Columbia River. Also, has the Department of Energy considered the accumulative dose of radiation experienced by down stream populations from all Hanford derived contamination?

Requested Action: Please evaluate the impacts of the proposed burial grounds in light of all contamination entering the groundwater and river.

Section 5.14.5.3, Page 5.106: *“Because of extremely low infiltration rates of water in the absence of process water discharge, and with the very low rate of precipitation, it is expected that it will take centuries to millennia for the contaminants in the plumes and in the vadose zone beneath presently contaminated near-surface soils or LLBGs to be completely delivered up to the Columbia River.”*

32 **Comment:** Unfortunately the hazard associated with these compounds will outlive the projected transport times and resulted in contamination of water.

Requested Action: Note comment.

Section 5.14.5.3, Page 5.106: *“As may be noted in Section 5.3, at a maximum, the concentrations of mobile nuclides at a near-river well or spring would be small in comparison to derived permissible drinking water contaminant concentrations. Future activities, for example, disposal of low-activity tank waste, can be expected to result in small increases in concentrations of contaminants in groundwater in the distant future. Since individual contaminants will move at different rates and be spread over very long time periods, it is not expected that they would add significantly to impacts from past activities.”*

33 **Comment:** The DOE is counting on concentrations near the Columbia River to be small due to dilution of contaminants. These may not be small if the ground water has preferred flow pathways and discharges from smaller, concentrated zones. It does not appear wise to this reviewer to make such assumptions without a better understanding of the true system being represented.

Requested Action: As has been mentioned in previous comments, the contaminant transport modeling must be validated and a sensitivity analysis is necessary to determine the uncertainty of the model results.

Section 5.14.5.3, Page 5.108: *“Because the occurrence of contaminants reaching the Columbia River will be over very long periods of time, the impacts would be multi-generational (that is, extend over many generations in the future) but would be smaller for any given generation than that received by the generation centered on Hanford’s period of special nuclear materials production.”*

34 | **Comment:** Due to the bioaccumulation of contaminants in the environment, some of these impacts may not be as minor as is claimed. The multigenerational impacts have to assume that contaminants are being removed from the system at a rate equal to, or greater than their entry rate.

Requested Action: As has been stated before, the effects of bioaccumulation of contaminants must be included in this analysis.

Section 5.14.5.3, Page 5.108: *“Plumes of contaminants (for example, tritium and Tc-99) presently in groundwater are moving down gradient toward the Columbia River. Although these contaminants would not be expected to result in substantial doses to downstream users of Columbia River water, quantities and arrival times at sources of public drinking water have not been quantified.”*

35 | **Comment:** More work needs to be done to determine what the impacts and quantities are to the public drinking water and to the environment before a statement can be made where it is expected that there won’t be any impacts.

Requested Action: Please quantify these impacts.

Section 5.15, Page 5.109: *“In addition, after a few hundred years following disposal, groundwater beneath the LLBGs would be contaminated by continued slow entry of radionuclides and might, depending on concentrations at the time and down-gradient location of interest (generally easterly to north-easterly from 200 Areas to vicinity of the Old Hanford Town Site), constitute a continuing (thousands of years) commitment of a water resource. The criteria for restricted groundwater use and area extent of such commitment have not been quantified. When the groundwater reaches the Columbia River and is diluted by the large flow of the river, the contamination levels would fall well below those for which restricted use would be necessary to comply with the National Primary Drinking Water Regulations (40 CFR 141).”*

36 | **Comment:** Will there be resources available for thousands of years to monitor and remediate this site if the contaminants reach unacceptable limits? In addition, if there is a “continuing (thousands of years) commitment of a water resource” from exposure to these additional contaminants, will there be a continuing commitment of financial

resources to help the CTUIR monitor the problem to assure that their treaty rights are not being violated?

Requested Action: Please address the questions mentioned above.

Collins, Michael S

From: Gregory deBruler [cruwa@gorge.net]
Sent: Thursday, August 22, 2002 9:07 PM
To: michael_s_collins@rl.gov
Subject: HSWEIS Columbia Riverkeeper comments



CRK DSWEIS
comments

Mr. Michael S. Collins

8/22/02
HSW EIS Document Manager
U.S. Department of Energy, A6-38
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michael_s_collins@rl.gov

Dear Mr. Collins:

1 Columbia Riverkeeper has reviewed the draft Environmental Impact Statement (EIS) for the Draft Hanford Site Solid (Radioactive and Hazardous) Waste Program. This draft EIS provides the most limited environmental and technical information of any EIS that we have reviewed in the last 13 years. There is reference that some of the information was assessed in the Waste Management Programmatic Environmental Impact Statement. (WMPEIS), we 2 commented on the scoping and draft WMPEIS and reviewed the final document, and again this document failed to assess many issues that are detailed below. It is unfortunate that the Department of Energy has failed to properly assess everything that is required under NEPA and therefore will not be able to justify any decision that imports more waste to the already most contaminated site in North America.

3 Columbia Riverkeeper has reviewed the comments generated by the Environmental Protection Agency, WA State Department of Ecology, Heart of America Northwest, and the Hanford Advisory Board we support and endorse their analysis of these entities and have incorporated most of their comments in our official written response.

4 We formally request that all citizen comments, questions and presentations at the hearings be responded to, and that each of our members who gave comments receives a written response. Both the question and answer sessions and alternative public interest viewpoint presentations were transcribed, and we request that they be included in the record, and responded to as comments. Where questions were not responded to accurately, or when USDOE was not able to respond to a question, USDOE should fully respond in writing.

5 Under NEPA USDOE must assess all options and all potential impacts from any proposed action. In order to assess these, one must look comprehensively at the site and not assume this is a new site where existing contamination doesn't exist. Hanford is the most contaminated site in North America and in specific, the 200 Area is where this waste is proposed to be dumped. During the scoping of the Draft WMPEIS Columbia Riverkeeper (formerly Columbia River United) submitted, and publicly commented that USDOE must comprehensively assess Hanford for all the wastes. When the WMPEIS was completed, the US Department of Energy still had not performed a site wide comprehensive assessment. To this date, USDOE has failed to perform a site wide comprehensive assessment that assesses at all wastes for their potential cumulative impacts for as long as the wastes remain hazardous.

Letter: L106

5 (cont) In March 1998 USDOE released a document entitled "Screening Assessment and Requirements for a Comprehensive Assessment, Columbia River Comprehensive Impact Assessment" (CRCIA), DOE/RL-96-16 Revision 1, UC-630. Part II of this document "Requirements for a Comprehensive Assessment" clearly defines what is expected of USDOE when performing a comprehensive assessment of the Hanford site or any site specific risk assessment. Later in 1998, USDOE committed that it would use the CRCIA as the template for all assessments at Hanford. CRCIA Part II should be considered as part of these official comments.

After reviewing this Draft SWEIS it is clearly obvious that CRCIA was not used and USDOE did not honor the commitment made to the stakeholders, to the State of Oregon, Washington and the Nez Perce, Yakama, and Umatilla Indian nations and has clearly failed as is required under NEPA.

Draft HSWEIS Deficiencies:

- 6 ... EIS has no consideration of any alternative to use of Hanford for burial of these wastes. Reasonable alternatives include: waste minimization; increased treatment and characterization prior to landfill disposal (USDOE proposes "minimal treatment" only for Low-Level Radioactive Wastes [LLW]); use of externally regulated, commercial landfill disposal facilities for specific waste streams
- 7 ... The EIS fails to have the legally required "no action alternative", which would be an alternative comparing the benefits of not adding 70,000 truckloads of radioactive waste to Hanford's soils
- 8 ... EIS fails to consider the very real potential for terrorist attacks on USDOE nuclear weapons and research facility related radioactive waste shipments, especially Plutonium and other Trans-Uranic Waste Shipments. This analysis must include specific risks from use of truck routes through Oregon, along Interstate 5 and the Columbia Gorge
- 9 ... The EIS failed to consider ending the practice of leaving the trenches uncapped for the next forty years
- 10 ... USDOE failed to disclose the presence of hazardous wastes in the unlined burial grounds and consider their impacts on groundwater, future site users, and environmental receptors.
- 11 ... The groundwater model used to predict contamination from the burial grounds fails to consider the presence of mobilizing solvents, fails to consider and disclose the impact of the hazardous wastes on groundwater.
- 12 ... Inadequate assessment for impacts of the proposed actions and cumulative impacts of related decisions on endangered or rare species
- 13 ... USDOE fails to consider alternative actions to change waste disposal practices, including improved verification and waste characterization procedures, independent regulation of waste characterization by waste generators.
- 14 ... Failed to consider the removal and disposal of so called Pre-70 TRU. Section S.04, Waste Types, page S.6 Since this EIS is supposed to bound conditions, it is not clear why an estimate of pre-1970 TRU was not provided. The EIS should provide this explanation. In addition, the explanation of "suspect" TRU waste is confusing and the statement that DOE has not determined whether to retrieve and process "suspect" TRU waste as TRU waste or leave it buried in Low Level Burial Grounds (LLBGs) is concerning. Do future references to TRU in the document allude only to TRU or do they also include "suspect" TRU wastes? Why was the decision
- 15 concerning how to best deal with "suspect" TRU not made prior to, or as part of, this EIS? It appears that the outcome of this decision will have a bearing on the program design, either the quantity of waste treated as TRU would increase or LLBGs would need design parameters sufficient to contain unknown quantities of TRU in an environmentally sound manner. The EIS should discuss "suspect" TRU, the environmental risks it poses, and how it influences the design of action alternatives.

- 16 ... Section S.8.5, Cumulative Impacts, page S.20 states that impacts for all resources considered in the HSW EIS are relatively small and would not be expected to contribute substantially to impacts of other activities at Hanford or in the surrounding region. EPA strongly believes environmental impacts from proposed action alternatives, which exceed or contribute to exceedences of MCLs in the groundwater and vadose zone should not be trivialized by comparing them to the nationally significant impacts, which have occurred at the Hanford Site over the last 56 years. Instead, impacts which exceed MCLs be viewed as adding to an already environmentally unsatisfactory situation requiring clean up with the impacts from these actions.
- 17 ... Section S.8.6, Mitigation, page S.20 Trust organizations should be added as a group that needs to agree on the appropriate mitigation measures and this section should include mitigation measures for groundwater and the vadose zone, since they would result in exceedences of MCLs.
- 18 ... Section 1.4.1, Scoping Process, page 1.5 The EIS states that decommissioning, surveillance, and maintenance activities that occur after closure of the waste management facilities, are not included within the scope of the HSW EIS. The EIS should state why this is the case, when, and how they will be considered.
- 19 ... Section 1.5.1.2, RCRA Requirements, page 1.16 This section states that DOE is currently characterizing sites in the 200 area. The EIS should state when this characterization is scheduled to be completed and if draft information from this incomplete characterization is, or should be, included in the EIS.
- 20 ... Section 1.5.3, Related NEPA Documents, page 1.18 The EIS should identify related NEPA documents or other environmental processes which analyze methods to avoid and minimize the production of wastes which subsequently needs to be stored, treated and disposed.
- 21 ... Section 1.5.3, Waste PEIS, page 1.22 states that DOE decided in its February 25, 2000 ROD for LLW and MLLW states that DOE sites that have existing capacity to treat or dispose of LLW and MLLW would do so and that Hanford and Nevada Test Site would receive these wastes from DOE sites that lack this capacity. The EIS should give readers and the decision-makers additional information about the amount of off-site waste Hanford would receive. For example, the EIS could describe how DOE would divide between the Hanford Site and Nevada Test Site, wastes that other DOE facilities lack the capacity to treat or dispose. In addition, the EIS could use historical information to describe how much waste Hanford has received in past years from these facilities.
- 22 ... Section 3.3.1, Post 1970 TRU Alt. 1, page 3.6 The EIS states that for the purpose of analysis, this EIS assumes that WIPP would have the necessary administrative and permitting authority to accept these wastes. The EIS should state when DOE expects WIPP would have the necessary authorities to accept wastes and if significant obstacles to obtain those authorities appear to exist.
- 23 ... Table 3.5, Comparison of Impacts, page 3.13 The EIS should explain why maximum nuclide concentrations for iodine-129 and technetium-99 are greatest in the No Action Alternative when less waste would be buried. Table 3.5 should also identify the time period after action alternatives are adopted that these maximum concentrations are predicted.
- 24 ... Section 3.7, Costs of Alternatives, page 3.15 Costs should include total life cycle costs such as cap replacements, institutional control requirements, etc. The EIS should not rely on net present value estimates. The EIS should also state how costs were predicted for the No Action Alternative. Were costs discounted based on when DOE predicts treatment and disposal of the majority of MLLW and difficult to treat TRU? Did the EIS employ consistent methodology for estimating the costs of all the alternatives?
- 25 ... Section 3.8, DOE Preferred Alternative, page 3.16 states that Alternative 1 is the most cost effective and environmental preferable approach to waste management at Hanford. This section should provide more supporting detail.

25 (cont) For example, it should state the overall cost savings as well as show how Alternative 1 was and was not environmental preferable to Alternative 2 and the No Action Alternative.

26 ... Section 4.7.1, Native American Cultural Resources, page 4.70 The EIS should state whether tribes who signed treaties reserving their ability to hunt, fish, collect berries, etc., on the Hanford Reservation can do so. If not, the EIS should state how the Federal government has resolved this conflict with agreed upon treaty rights. The third paragraph states that well-watered areas inland from the river also show evidence of concentrated human activity. The EIS should define concentrated human activity (e.g., gatherings, communal living, agriculture).

27 ... Section 5.14 Cumulative risks presented should include risks from transuranic disposals (not included in Table 5.61) and should show comparative risks over time (not just at the end of 2046 see Table 5.61).

28 ... Section 5.18, Potential Mitigation Measures, page 5.112-114 The EIS should identify potential mitigation measures for groundwater.

29 ... Section 5.3.2, Methods for Assessment of Long-term Impacts, page 5.14 states that inventories of retrievably stored TRU waste in trenches and caissons located in the LLBGs were not considered because they will eventually be retrieved and sent to the WIPP for disposal. The EIS should estimate when these wastes will be sent to WIPP and if releases are likely to occur in the interim.

30 ... Section 5.3.3 This section does not address the important technical consideration of plutonium mobile fractions. Recent evidence is that small but highly mobile fractions of plutonium wastes can have significant impacts over the short term as well as the 10,000-year groundwater timeframe considered in the EIS. In addition, plutonium is know to exist in a number of oxidation states each of which has unique mobility characteristics. Transuranic wastes should not be screened out of future groundwater evaluations without consideration of the complex nature of plutonium chemistry, facilitated transport, and mobility. The EIS should include a section discussing the potential for mobile plutonium fractions, possible impacts on risk estimates, and actions that could be taken to mitigate impacts.

31 ... Section 5.3.3, Long-term Impacts on Water Quality, pages 5.18-5.20 does not differentiate the long-term impacts between alternatives on water quality. The EIS should do so to make meaningful information available to the decision-maker for comparing alternatives.

32 ... Section 5.5.1, LLBGs, page 5.22 states that any mitigation for plant and animal species of concern within the 200 Areas would follow DOE policy. The EIS should identify specific mitigation measures for plant and animal species of concerns and commitments to implement these mitigation measures made in the ROD. The EIS should also state or summarize the referenced DOE policy.

33 ... Section 2.1.1.5 refers only to waste from 1962 to 1999 (283,000 m3). You are missing radioactive and hazardous waste from 1944 to 1962 (almost 20 years of operations) that is not included in the EIS. A complete review, discussion, description and estimation of the solid waste generated during that time needs to be included in the EIS. What is the probability that the bulk of this waste is buried in the older portions of the LLBG?

34 ... Section 2.1.1.5 and Fig 2.1 Does this waste include hazardous constituents? What dates or time frames are associated with what portions of this landfill. Please provide a comprehensive description of all previously buried waste and provide information on the composition of the material in the various landfill cells. If the composition of the individual cells is not known, this should be stated and the level of uncertainty of the cell contents should be clearly identified.

35 ... Considering the apparent "anomalous" occurrence of carbon-tetrachloride vapor in the risers of LL WMU#4 and the absence of any discussion of the mixed waste in the landfill, an objective reader of the draft EIS is left with a default suspicion that the DOE is hiding information on the mixed waste in the LLBG. To prevent this, the EIS must include a better

35 (cont) description and characterization of the source material. This must include any and all information on hazardous constituents as well as radionuclide composition.

36 ... EIS must provide source characterization data and it must include a description and evaluation of the uncertainties associated with the source material. In the draft EIS, there is no discussion of how well we know the source term. As a result, we have no assurance that the assessment of environmental impacts is accurate.

37 ... The assumed and model assigned hydraulic characteristics, being the same as that of the surrounding soil, are not realistic. The source waste material is generally composed of everything from cardboard containers to wood to various parts, piping, machinery, etc that all contain substantial voids which greatly enhance permeability to both vapor transport (such as carbon tetrachloride) and liquid. The older waste materials contain free liquid in drums or other containers. That free liquid is released when the containers break down, potentially causing significant migration of previously contained radionuclides and hazardous constituents through the unlined waste facility. As the free liquids are released they can pick up additional contaminants causing an enhanced source-term release. You must also consider the infiltration rate. While an infiltration rate of 0.05 cm/yr. may be applicable to the covered landfill, that infiltration rate does not consider infiltration during the operational lifetime of the landfill, before an infiltration barrier cover is installed. The source models do not account for this significantly enhanced infiltration prior to cover installation.

38 ... A problem exists with the contaminant transport model and the resulting assessment of environmental impacts in that the vadose zone model is overly simplistic and does not properly represent actual conditions within the vadose zone. P4.38(1) states "Preferential flow may also occur along discontinuities, such as clastic dikes and fractures" which have the "potential to either enhance or inhibit vertical and lateral movement of contaminants in the subsurface, depending on textural relationships".

39 ... This preferential flow is not considered or accounted for by the simplistic homogeneous, one-dimensional vadose zone model. Even with conservative parameters are used in the model, preferential flow and an unfavorable source material chemistry can cause enhanced migration in a manner that is similar to what occurred at several of the tank farms. The model is also not calibrated by comparing a projected model to actual site conditions which are generally revealed by characterizing the distribution of contaminants during a site characterization. That type of site characterization was not conducted for the DOE LLBGs so the simplistic model presented in the draft EIS. Finally, no contaminant transport model sensitivity assessment was performed. There is no way to determine if the uncertainties of the model parameters are significant relative to the environmental impact assessment.

40 ... EIS assumes that the 1997 Waste Management Programmatic EIS adequately compared the effects of treatment and disposal facilities at various sites, but it did not. The Programmatic EIS relied on data now several years old and did not have available even the limited information about Hanford contained in the Draft Hanford Solid Waste EIS.

41 ... EIS assumes continued or increased off-site low-level waste and mixed low-level waste disposal at Hanford. It does not separately assess needs for disposing Hanford waste.

42 ... EIS evaluates only the management of wastes owned by or coming to the existing Waste Management Program, touching only lightly on previously buried wastes, environmental restoration wastes, naval reactors, and other wastes disposed near the surface at Hanford.

43 ... The Draft EIS does not evaluate other options currently under active discussion, such as the lined, RCRA-compliant mega-trench for disposing of low-level waste, expanded use of the Environmental Restoration Disposal Facility (ERDF), or storing and treating transuranic wastes from other sites.

- 44 | ... The Draft EIS does not include sufficient data about groundwater
contamination and movement at Hanford.
- 45 | ... The Draft EIS does not include sufficient data about the extent and
characteristics of wastes and contamination already in the ground at
Hanford.
- 46 | ... The analysis of cumulative impacts from the proposed treatment and
disposal activities, in conjunction with other reasonably foreseeable
actions at Hanford, is extremely limited and not credible based on the
material presented.
- 47 | ... The Draft EIS does not include data about the effects on the full range of
plant and animal species, nor does it recognize USDOE's obligation to
protect and restore priority habitat, even if fire or pesticides have
degraded it.
- 48 | ... The Draft EIS assumes a point-of-compliance/impact assessment that has no
basis in regulations (1 km down gradient from burial ground).
- 49 | ... The Draft EIS does not adequately address the requirement under Washington
and federal laws that mixed waste be treated to the maximum reasonable
extent.
- 50 | ... The Draft EIS assumes continuation of USDOE's self-regulation for
radioactive wastes without any discussion of alternatives or implications.
- 51 | ... The Draft EIS reflects insufficient attention to consultation requirements
under the Endangered Species Act.
- 52 | ... What is the net benefit or harm of importing additional wastes for
storage, treatment or disposal at Hanford?
- 53 | ... Are there much better alternatives to burying minimally treated waste in
shallow, unlined trenches?
- 54 | ... What are the long-term costs and requirements for monitoring, maintaining,
and preventing failures at, and radioactive releases from, waste sites, and
how can we be confident that these activities will be effectively and
accountably managed?
- 55 | ... What is the rationale for continuing self-regulation by USDOE when the
issue is not national defense but environmental protection?
- 56 | This Draft EIS should be withdrawn and redone based on at least the above
mentioned deficiencies. Based on this rewrite I would expect another round
of public hearings before the final EIS is submitted. Considering the
magnitude of concerns this is the only course appropriate before any final
decision should be made.

Sincerely,

Greg deBruler for
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