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PROPOSED CLEANUP ACTIONS FOR REMEDIATION OF
HANFORD'S 300 AREA
(along the Columbia River)

MEETING

HELD ON
TUESDAY JULY 30, 2013
5:30 P.M.

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6 **MICHAEL TURNER:** Thank you everybody for giving up
7 a summer evening to come down here and learn about the 300
8 Area proposed plan. I trust you all have agendas with you
9 somewhere. You will note that on the agenda we have a
10 period at 7:30 that begins a formal public comment. I just
11 want to keep that, everybody keep that in mind. If you're
12 going to give public comment at 7:30 we're going to begin to
13 give formal public comment but we also have a question and
14 answer period before that. So there will be a lot of
15 dialogue to go through and everybody will be available after
16 this as well if you have any particular questions.

17 The exits as you can see there's one right there
18 and there's one right here if there's an emergency. The
19 bathrooms are out to right where you came in to the entrance
20 to the library. I think that would be key for everyone to
21 know.

22 Tonight we are learning about the 300 Area
23 proposed plan. Standing behind me is JD Dowell. He's the
24 assistant manager for river and plateau for the Department
25 of Energy's Richland Operations Office. Also with us

1 tonight are Mike Thompson, who's a hydrogeologist
2 specializing in soil and groundwater for the Department of
3 Energy Richland office. Also tonight here is Larry Gadbois
4 from the U.S. Environmental Protection Agency. And he is an
5 environmental scientist as well as the 300 Area project
6 manager. With that I'll turn it over to JD.

7 **JD DOWELL:** Thank you, Michael. Like Michael said
8 I'm JD Dowell. I'm the assistant manager for the River
9 Plateau which is responsible for all the projects as well as
10 the CERCLA decisions that we're going to talk about tonight.

11 The first thing I would like to do is thank you
12 all for coming out here. It's critically important that we
13 get the public to come out and ask questions, listen to what
14 we have to say. And that you get your questions answered.
15 And every question answered that you have so that these
16 decisions are clear.

17 Not only Department of Energy but I can speak for
18 EPA and Ecology, we all work for you. We're public servants
19 so it's imperative that you have this opportunity and this
20 exposure to these decisions to the necessary detail that you
21 have.

22 There's a broad experience level in the audience
23 so we'll try and keep it in as much plain language as we can
24 but if we get into something that you don't understand don't
25 hesitate to ask. This is the first of three public

1 hearings. We've got another public hearing tomorrow night
2 in Seattle and another next week in Hood River. So this is
3 the first of these three public hearings that we'll have.
4 And this is the first of six records of decisions that we'll
5 be making along the River Corridor.

6 So before we get into the actual discussion of the
7 300 Area I'm just going to give you a little broad
8 background of Hanford. Consider this like a Hanford 101.
9 This is the 586 square miles of the Hanford area. You can't
10 read the writing here. It says Hanford Reach National
11 Monument, the Central Plateau in the blue area, and River
12 Corridor in this light green highlighted area. The area
13 that we're going to talk about tonight is called the 300
14 Area. It's one of the six subsets of areas within the River
15 Corridor that are adjacent to the Columbia River. That's
16 the decision we're talking about tonight.

17 We've been conducting cleanup work for the last
18 decade and more along this River Corridor. We've been doing
19 that to interim cleanup standards. Tonight we're going to
20 talk about the final cleanup standards that will be part of
21 the final decisions for these areas and starting again with
22 the 300 Area tonight.

23 When you look at the Hanford overview there's two
24 offices that are responsible for the remediation and cleanup
25 work. Richland Operations Office. We're responsible for

1 the River Corridor and the Central Plateau. And within the
2 Central Plateau the Office of River Protection is
3 responsible for the tank waste, the 177 tanks that are
4 buried beneath the ground.

5 Richland cleanup work includes the treatment of
6 groundwater, all the contaminated groundwater, the deep
7 vadose zone, and all the facilities in that area, as well as
8 the burial waste sites, contaminated soils, and everything
9 other than the tanks that are responsible for Office of
10 River Protection.

11 So when we talk about the six major cleanup
12 decisions on the horizon at Hanford this is the first of
13 those decisions. It's called the 300 Area. That River
14 Corridor area is 220 square miles. This is about a 30-
15 square-mile area of that. I'm not going to go into too much
16 detail on that.

17 You know, it's really imperative that we get
18 public opinion, we get public comment. You help us make
19 these decisions so don't hesitate to make sure that we've
20 documented everything that you have to say about them.

21 Lastly, because I want to get off the stage and
22 really get into the discussion on the 300 Area, there's a
23 lot of ways for you to make your input. You can do it
24 electronically. You can do it in writing. We'll take
25 comments any which way that you want to give them to us. And

1 again, it's imperative that you understand and we explain
2 how these decisions are being made and what the basis of
3 those decisions are. That's our goal tonight. So thank you
4 again for coming and without further hesitation we'll bring
5 up Mike Thompson.

6 **MICHAEL TURNER:** I neglected to mention we have a
7 webinar tonight. It's open to everybody out there on the
8 world wide web. We've given that opportunity for this
9 meeting only but it's another mechanism we're using for
10 furthering public involvement.

11 **MIKE THOMPSON:** Good evening. I'm Mike Thompson.
12 I've been working here at Hanford for about 30 years now and
13 have been involved in the 300 Area on and off pretty much
14 from the beginning, starting with the Hanford Past Practice
15 Strategy where we tried to get into interim cleanup and the
16 initial records of decision that were made to start
17 remediation at the Hanford site. And tonight we're trying
18 to wrap up everything in the 300 Area to make a decision
19 that incorporates all the waste sites, all the groundwater.
20 Wrap it up and make a comprehensive decision for the future.

21 So in the 300 Area just to give you -- of course
22 you all know where we're at. It's just north of the city of
23 Richland. And it starts at the Richland city boundary. Goes
24 all the way out to Energy Northwest, which used to be the
25 Washington Public Power Supply System when I worked for

1 them. It includes two burial ground systems out here, 618-
2 11, 618-10, the industrialized area and the 300 Area which
3 you see here. The city of Richland as you can see, this
4 isn't very bright unfortunately, the city of Richland comes
5 right up through here. This is the core facilities here
6 where we bring submarine reactor compartments in to be
7 buried in the Central Plateau. And then of course the
8 industrialized area which is really a small part of the
9 total 300 Area. We'll talk about cleanup in that tonight.

10 What I would like to go over in terms of
11 organization tonight is the 300 Area's location and general
12 nature and extent of the contamination. What are the risks
13 driving contaminants of concern that we're trying to address
14 in the cleanup decisions and the remedial action objectives.
15 Lightly touch on the progress that has been made to date
16 because we've done a significant amount of progress in terms
17 of taking away the facilities, cleaning up the source term,
18 and making progress in the 300 Area. Common elements that
19 are in all of the remedial alternatives that we're
20 evaluating. Every one of the alternatives have some common
21 elements so we'll go over. And also the uranium
22 conceptual model and the remedial alternatives evaluated
23 in the proposed plan.

24 So if you look at the city of Richland, which
25 basically goes to here. This is the city limit as you can

1 tell. North is up this way. The Columbia River flows by.
2 Average flow is 115,000 cubic feet per second. This is the
3 core industrial area that we're going to talk about. We're
4 going to clean this up to industrial standards on the basis
5 that this has been and will be in the foreseeable future
6 industrial area up here. There's one burial ground up here
7 by Energy Northwest which will be cleaned up to industrial.
8 Everything else in the 300 Area is cleaned up to a level
9 that would allow virtually unlimited service use. Even
10 though our land use plan is for conservation industrial
11 we've decided to clean up to a higher level under the CERCLA
12 guide limits.

13 So again, in terms of the map, the decision covers
14 all that's in yellow. It does not cover the Hanford Patrol
15 Academy camera facility and of course not Energy Northwest.
16 But everything else within that large block of land the
17 decision covers.

18 If you look in terms of contaminants of concern
19 for groundwater what we do cover is those contaminants that
20 emanate from waste from 300 Area activities. Primarily
21 we're looking at uranium in the 300 Area core industrial
22 area. We're looking at a couple of organic chemicals that
23 are there. A tritium plume that came out of 618-11 burial
24 ground. What we're not covering in this is the contaminants
25 that are coming from facilities in the 200 Area that spread

1 across the site. Those contaminants will be covered in a
2 200 Area operable unit.

3 The risk-driving contaminants are concern for
4 soils in the 300 Area. 300 Area was used primarily for the
5 manufacture of the uranium fuel that went into the reactors
6 for weapons production. It was also used for research and
7 development. All of the processes that were used for
8 separations of nuclear materials in the 200 Area were
9 studied and optimized in laboratories here in the 300 Area.
10 So not only did they manufacture fuel but also a lot of the
11 materials and processes that were used in the 200 Area were
12 studied here so those wastes were generated.

13 So in the soils we have uranium which is primarily
14 a metal issue. Uranium isotopes, cesium-137, cobalt-60,
15 strontium-90, and alocors of PCBs. In the groundwater
16 we're looking at uranium in posts in terms of gross alpha,
17 the radiological component of it. And as a toxic metal
18 tritium, nitrate, and volatile organics, primarily TCE and
19 DCE.

20 Remedial action objectives, what we want to do of
21 course is prevent human exposure to groundwater above PRGs.
22 We want to prevent contaminants of concern from migrating or
23 leaching through the soil resulting in groundwater
24 contamination. We want to prevent human exposure in the top
25 15 feet of the soil and debris. And also we want to make

1 sure that in the industrialized area that's for industrial
2 purposes and outside is virtually unlimited. Manage direct
3 exposure to contaminated soils that are deeper than 15 feet.
4 Prevent ecological receptors from direct exposure in the
5 upper 15 feet of soil. And also restore the groundwater
6 impacted by Hanford releases to standards within a
7 reasonable amount of time. These are the general remedial
8 action objectives that we've decided.

9 So in terms of recent remediation progress there's
10 been a tremendous amount of progress that's been made in the
11 300 Area. Primarily we've removed most of the facilities
12 that are not going to be needed for future use by the
13 Pacific Northwest National Laboratory. There's still a
14 couple of facilities left to go that they're working on.
15 They've remediated a number of the waste sites. And in
16 terms of what's getting the groundwater, one of the early
17 actions that was done, and we're going to talk about this
18 area right here a lot. These are where the liquid waste
19 disposal areas were that we see. Upwards of two million
20 gallons a day of contaminated fluids from processes in the
21 300 Area. And this is -- has been and is the source of
22 uranium that feeds the plume.

23 If you look at this area here, give you an example
24 of the kind of progress we're making. That used to be
25 there. So there's been a significant amount of progress in

1 the 300 Area in terms of what Washington Enclosures is doing
2 and Rudy Garcia in the audience is overseeing that work. So
3 there is some progress. Nearly a million tons of
4 contaminated soil and debris have been excavated from the
5 300 Area and brought up to the 200 Area for disposal in the
6 environmental restoration disposal facility. About 38 tons
7 of suspected transuranic material has been removed and
8 shipped to the central waste complex for disposition. And
9 all but about 34 of 130 waste sites have been remediated at
10 this point in time.

11 There are some challenges. And the challenges
12 that are in front of us is first of all groundwater and
13 we'll talk about that, look at how to deal with the uranium
14 plume. But also there are high radiation source removals at
15 the two burial grounds, 618-10, 618-11, and also soils below
16 the 324 building and this 340 vault, which currently they're
17 working on here. And you can see the depth of this. This
18 was underneath the pot cells. And it's incredibly
19 radioactive underneath them and they're trying to find a way
20 to excavate that out. To put it in perspective this is
21 about a six-foot tall person right here in the part that
22 we're digging. We're just a few feet from groundwater on
23 this.

24 One of the answers that we're doing here is we're
25 actually going to use phosphates, which is in our proposal

1 for how to deal with the sources of groundwater, to tie up
2 some of the radionuclides that are underneath this facility.
3 So we'll be doing some test work there in the very near
4 future.

5 So I apologize for this that it's not as dark as
6 it should be but there is a persistent and dynamic uranium
7 plume in the 300 Area that's about 125 acres in size. It's
8 very dynamic in that the shape changes in relationship with
9 the stage of the Columbia River. And the conceptual model
10 is that we've removed the vast majority of the uranium that
11 was put into the soil there in the excavation. We had about
12 281,000 yards of contaminated soil that's been taken out of
13 the first 15 feet where most of the uranium resided and
14 that's been hauled up to ERDA. But what's remaining is
15 residual uranium between the bottom of the excavation depth
16 and groundwater. Approximately one percent of the remaining
17 inventory at any one time is in the groundwater. About
18 three percent of that or three percent is tied up in the
19 wetted soils in the groundwater. And 30 percent is in a
20 region where it's periodically rewetted because as the river
21 comes up and down groundwater backs up behind it. And the
22 groundwater goes up into the soil, captures more uranium,
23 brings it down, and that then feeds this persistent plume.

24 So at high river stage you can see, at the process
25 trenches and down here you can see it's feeding. And at low

1 river stage this goes out to the river and you don't see it
2 anymore but you see it anchored up here at the south end of
3 the process trench. This behavior in combination with
4 characterization data leads us to believe that the most
5 significant part of uranium inventory that we have to deal
6 with to make the uranium plume remediate itself faster is up
7 here in this zone. There's also -- you can't see it very
8 well -- there's a uranium plume here which is fairly new.
9 And that resulted from excavation of a burial ground that
10 had uranium in it. And we have to put water on the soil
11 when we dig because uranium is an alpha contaminant and you
12 don't want to breathe or ingest uranium. So that water
13 drove uranium out of the soil and into the groundwater. And
14 this is the sort of thing we're trying -- this plume here is
15 the sort of thing that we're trying to avoid by doing
16 further excavation.

17 So the process trenches are up here in this
18 corner. And then the north and south process ponds are down
19 here. And this is where the liquid waste was put into the
20 soil. Approximately 74,000 to 130,000 pounds of uranium
21 dissolved, most dissolved in particulate form or were
22 disposed to these facilities. The south process pond first.
23 When that started to fail they went to the north process
24 pond and then eventually up to the process trenches.

25 So if you look at, this is a plot of groundwater

1 level and a plot of uranium concentration in a well in the
2 most active zone where we think things are going on. And if
3 you look, early -- this is 1987 to 1991. Prior to
4 remediation you see the blue is water levels and the orange
5 is uranium. You see highly variable but quite high
6 concentrations, 400 micrograms per liter. This is the
7 drinking water standard down here at 30. See this is very
8 widely distributed in response to changes in water level.

9 We did a removal action early in the cleanup. And
10 it was an expedited response action. I believe it was the
11 first one we did where we removed the first few feet of soil
12 out of the process trench because that's where the uranium
13 was. And when we did that the uranium levels crashed to
14 below drinking water standards but we also were putting
15 clean river water into that facility as a discharge. And we
16 hadn't developed the treatment plant out there for water so
17 this is where the water from the laboratory still went. But
18 after we stopped discharging out there and we cut off all
19 discharges contaminated groundwater came back that was not
20 affected by the removal action. And uranium levels came
21 back up. So this is when we did our first record of
22 decision that said basically all we have to do is dig the
23 first 15 feet up and we think it's going to fix itself. We
24 know better.

25 So if you look at the response over time you'll

1 see that uranium levels went up but eventually came down
2 very close and hovered around the drinking water standard.
3 And this occurred over time between '95 and 2005. But what
4 happened between there is we did a remediation of those
5 ponds, the north process pond, the south process pond. Went
6 back to the trench, did that. Backfilled over the top, put
7 a lot of water in the system. And that recharged the
8 uranium again so it went up little bit. So you will see
9 that the uranium went up, came back down. We did a lot of
10 activity. It came up, came back down.

11 Last couple of years we've had incredibly high
12 water years. And what happened there is the groundwater
13 goes up higher into the system, grabs some more of the
14 uranium, comes down. But you'll notice that the spike goes
15 down very quickly. So the recovery is getting faster and
16 approaching groundwater all the time. So given what we see
17 in this sort of a situation we believe that with time the
18 groundwater will clean itself up, and especially if we can
19 tie up some of that source term that hovers right above the
20 groundwater.

21 So the challenge is not dealing with what's left
22 up here. The challenge is really dealing with what's
23 immediately above the groundwater. And that's going to be
24 hard to do. There's about 30 percent of the uranium that's
25 left after all the remediation activities. Then there's a

1 periodically rewetted zone at about four percent here
2 distributed, one percent at groundwater, three percent in
3 the soils.

4 So the challenge is treating this zone and making
5 that effective. And again, this is the same sort of
6 relationship between uranium levels and water levels. You
7 can see there's a direct correlation between the two.

8 So as we go forward with our alternatives there
9 are common elements that are going to be the same in all of
10 the remediation alternatives that we're dealing with. So
11 what we hope to do, and this is common to all the elements,
12 all the alternatives, we're going to continue and complete
13 the remove, treat, and dispose of the source terms, the
14 contaminated soil, the buildings, those things out there
15 that we started to do back in the '90s. We're going to
16 complete that effort. That hasn't changed. We're going to
17 live up to that commitment. We're going to monitor to
18 assure that the uranium and the nitrate attenuates. Now,
19 nitrate is coming in from offsite from other facilities. We
20 believe that will attenuate with time. We're going to do
21 institutional controls to assure that there's no access to
22 the groundwater. And then we're going to manage the surface
23 infiltration until standards are met to protect human health
24 and the environment. So this is common to all of them.

25 So we developed six alternatives. The first

1 alternative, which is a no action alternative, is required
2 by law. That's not on the table so we can take that off.

3 So five alternatives. Alternative 2 is basically
4 monitor the groundwater and see how long it takes to go
5 away. This is similar to the alternative that was selected
6 back in the early '90s when we thought that the source was
7 really the upper part of the vadose zone versus the
8 periodically rewetted zone.

9 Alternative 3 is the application of an in situ, in
10 place chemical treatment where you put phosphate into the
11 system. And the mobile fraction of the uranium then
12 combines with phosphate and precipitates out as a relatively
13 stable alunite mineral. And that would be done in two
14 phases throughout the system.

15 And then alternative 3a which is enhanced
16 attenuation. This is an attenuation decision. We believe
17 that the plume will attenuate itself within a reasonable
18 amount of time but if we enhance that attenuation by
19 treating a portion of the hotspot there we think that will
20 be a lot better. This is our preferred alternative. It
21 also has all the common elements emanate for tritium and
22 organics. We're going to monitor the groundwater for
23 uranium and nitrate.

24 Alternative 4 is to do deep, focused remove,
25 treat, and dispose of hotspots and add phosphate to the

1 outside peripheral part. Alternative 5 is dig it up and
2 haul it away.

3 So groundwater cleanup is really driven by three
4 factors: Mitigate risk to human health, mitigate risk to
5 the environment, and restoration of the aquifer. Frankly
6 the uranium plume that's currently getting to the Columbia
7 River is not at levels of risk for human health. The
8 uranium plume that's getting to the river is a small
9 discharge to the river. Where it's discharging at the river
10 is at levels that are below levels of risk for human health
11 and the environment that are established. And it does not
12 impact the water that I drink from the City of Richland in
13 terms of uranium levels.

14 You cannot see a statistical difference between
15 upstream and downstream of Hanford of what's put in. And if
16 you compare what the Hanford contribution is in the Hanford
17 Reach, the 54 miles, we're about anywhere from two percent
18 to eight percent of the total uranium that goes into the
19 river. The vast majority of uranium that goes into the
20 river is a combination of natural uranium seeping in in
21 groundwater and surface water discharges and uranium from
22 fertilizer applications. So the three irrigation returns
23 that are on the other side of the river actually put in 10
24 times more uranium than the Hanford component does. So
25 what's driving our decision for doing this work is

1 restoration of the aquifer within a reasonable time frame
2 given the conditions of the site. We're going to be out
3 there for decades. And it's our goal to try to get this
4 system to come back to drinking water standards within a
5 reasonable amount of time.

6 So we talked about all these points. We talked
7 about all these. And so the preferred alternative, there's
8 about 130 total waste sites of which 38 require no
9 additional action. We're going to remove, treat, and
10 dispose of 74 to industrial standards within the core
11 industrial zone and 12 to residential standards, which are
12 outside of the core industrial zone. And we think that by
13 the time the record of decision is written there's about 34
14 of the 130 waste sites left to go. And seven of those sites
15 are tied up here with uranium.

16 So we want to treat this core zone of where we
17 believe the vast majority of uranium that's left that's
18 impacting the groundwater, we want to treat that with
19 phosphates. And that would be done by surface drip
20 irrigation, injection through vadose zone injection. And
21 then also put some in the groundwater to catch anything that
22 may come through.

23 Monitored natural attenuation is a good choice for
24 tritium. The half-life of tritium is less than 13 years so
25 it will attenuate away long before it gets to the river. You

1 don't need to spend money on that. And the organic
2 chemicals in groundwater, it's a very small occurrence. And
3 from all the characterization data it appears that natural
4 processes are also dealing with those quite effectively. And
5 we would of course continue groundwater monitoring and
6 institutional controls until we meet standards.

7 Larry, you want to wrap up?

8 **LARRY GADBOIS:** Sure. Again, I'm Larry Gadbois
9 with the EPA. EPA has been working with the Department of
10 Energy during this active cleanup for over 20 years. And
11 our job is regulatory oversight of what's been going on.
12 Like Mike illustrated, a lot's been done but we're looking
13 forward on what needs -- the remaining work that needs to be
14 done and what is our proposal to the public on what we
15 believe is the best answer going forward and other
16 alternatives that we've looked at. And we packaged those in
17 a proposed plan and we provide public comment opportunities.
18 And that's what tonight is is part of this.

19 We're in a public comment period through September
20 16th. And we highly encourage you to pick up some of the
21 information you have here or you've already looked at. If
22 you have information that you would like to share you can do
23 that tonight. You can do that online or via mail. There's
24 multiple opportunities for you to submit input. And that's
25 a really important part of the job. We have ideas, you all

1 have ideas. And this process is designed to pull together
2 the best thinking of everybody so we can make the best
3 decision going forward.

4 At the end of the public comment we take all the
5 comments. We look at all the information in there. And
6 Department of Energy and EPA provide a response to those
7 comments. And that's included in part of what we call a
8 record of decision that includes a response to comments, how
9 we considered the comments, and how that has changed the
10 remedy that we end up selecting at the end of all of this.

11 So Michael, do you want to introduce the next part
12 of where we're going?

13 **MICHAEL TURNER:** I will, yeah. Thanks.

14 **LARRY GADBOIS:** Okay.

15 **MICHAEL TURNER:** As part of our public involvement
16 process and our plan and how we run meetings we offer a
17 local perspective. And in this case we have Susan Leckband
18 who is going to -- you represent the League of Women Voters,
19 correct?

20 **SUSAN LECKBAND:** Right. And I'm also speaking for
21 the HAB.

22 **MICHAEL TURNER:** And Susan is also speaking for
23 the Hanford Advisory Board. Thank you, Susan.

24 Question back here?

25 **PRIVATE CITIZEN:** If we have questions on the

1 presentation do you want us to wait?

2 **MICHAEL TURNER:** We're going to have question and
3 answer period right after Susan speaks.

4 **SUSAN LECKBAND:** And I'll make it short.

5 Thank you. As Michael said my name is Susan
6 Leckband. I am vice chair of the Hanford Advisory Board,
7 which is a board of interest. I don't know. Is everyone
8 here familiar or is anyone unfamiliar with what the Hanford
9 Advisory Board is or does? Unfamiliar, okay. The Hanford
10 Advisory Board is a board of interests. It has 31 seats and
11 each one of those seats represents a separate interest.

12 We provide advice and recommendations,
13 conversations, to the Tri-Party Agencies. We are a FACA
14 board, F-A-C-A, Federal Advisory Committee Act charter
15 board. And we meet formally five or six times a year. We
16 also have several subcommittees. We have been following the
17 actions of Hanford cleanup. We are specific to
18 environmental management. And we provide advice to the Tri-
19 Party Agencies, the Department of Energy, EPA, and the
20 Washington State Department of Ecology on Hanford cleanup
21 matters at a policy level.

22 We also engage in conversations during our
23 subcommittee meetings mostly monthly. We have two very
24 technical committees that really delve into the technical
25 aspects and then raise up the advice to a policy level. So

1 we are incredibly interested and have been interested for
2 many years in the cleanup along the Columbia River. One of
3 the tenets of the Hanford Advisory Board is protect the
4 river. Everybody drinks from that water in the tri-party
5 area. And we are very concerned that any decisions made
6 will evolve into the best cleanup possible.

7 As JD said, this is the first of six final
8 decisions along the river. We've been studying the RIFS,
9 the Remedial Investigation Feasibility Study, as well as the
10 proposed plan very carefully because it will set the
11 standard or the tone for the rest of the decisions. There's
12 been excellent work done. The Department of Energy and EPA
13 have done monumental cleanup along the river. We're very
14 pleased with that.

15 We did issue some advice in June of this year
16 regarding this particular action that's going on right now.
17 It is Advice Number 270. You can find all of the Hanford
18 Advisory Board advice and the Agency response at
19 www.hanford.gov and find the Hanford Advisory Board. It's
20 listed on the right. Click on that and you'll be able to
21 see meeting minutes and all kinds of advice. And you can
22 see the in-depth advice that we have provided over the
23 years.

24 We're certainly happy that they are going to
25 continue with the cleanup in the 300 Area. We do have some

1 concerns. The Hanford Advisory Board as a baseline believes
2 in retrieve, treat, and dispose. Many of the contaminants
3 that you see here were disposed of as was per the
4 requirements during those times when it happened but we know
5 better now. We know that there are treatments for those
6 sorts of things. So as a general rule we believe, the Board
7 believes that retrieve, treat, and dispose properly is the
8 best way to safeguard the health of the Tri-Party Agency
9 constituents, which of course is the Tri-Cities, and really
10 the whole Pacific Northwest. The Columbia River is vital to
11 the economy as well as to the environment of the Pacific
12 Northwest.

13 In the advice, and I'm going to quote from the
14 advice, we advise DOE and EPA to undertake a treatability
15 test to determine the effectiveness of the uranium
16 sequestration, which is what is in the proposed plan, as the
17 preferred alternative. Upon a successful test result the
18 proposed plan for a record of decision will be better
19 informed and would be done in a more timely and cost-
20 effective manner. If the test was not successful the Board
21 advises the Agencies to continue to work with the Board on a
22 path forward. And we also advise the Agencies to continue
23 to communicate its plan for detecting with the Board and
24 with the public. And we advise DOE and EPA that if this
25 test is successful to look at the rest of the Hanford site

1 for opportunities to use the successful test. And in my
2 closing remarks I do want to say that the Hanford Advisory
3 Board has also issued a couple of -- in the past, these are
4 historical documents -- these are flow charts protecting,
5 how to protect the groundwater, how to involve the public in
6 decisions that will help protect the groundwater, cleanup
7 decisions, as well as Central Plateau actions. And these
8 are part of the mantra of the League of Women Voters and
9 that is become educated, be involved, understand, and try to
10 participate in those kinds of decisions. That's it.

11 **MICHAEL TURNER:** Thank you, Susan. This part of
12 the program or the meeting is now where we're going to open
13 it up for questions and answers. We have a half an hour for
14 that until 7:30 but we'll be a little flexible.

15 A couple of parameters if you would. Please try
16 and keep your questions focused on the topic at hand. I
17 know some of these questions will delve into other areas and
18 we'll deal with those the best we can but we're here to talk
19 about the 300 Area proposed cleanup plan. So if we can,
20 just focus those question as best you can on that area.

21 We have comment cards that were available when you
22 came in if you prefer not to voice your question. If you
23 would rather write them down we have some folks in the back
24 that will take your question or I will take them. We also
25 have webinar questions that I may get handed so I may

1 interrupt for a second to ask a question that came in from
2 somewhere around the globe.

3 With that let's open it up for questions. Our
4 Agency folks will respond. And Susan, if you get a question
5 are you willing to respond?

6 **SUSAN LECKBAND:** Oh, sure.

7 **MICHAEL TURNER:** Okay. So go ahead. Let's start
8 over here.

9 **PRIVATE CITIZEN:** Hi, there. I'm Laura Hanson.
10 Can you, Mike, go ahead and expand a little bit on what the
11 institutional controls would include and how long?

12 **MIKE THOMPSON:** Sure, I'd be glad to.

13 The Department of Energy will be utilizing the 300
14 Area for quite awhile in the future. Pacific Northwest
15 National Laboratory will be out there at least until 2027.
16 So we will be doing nuclear operations out there which means
17 that, you know, because of that you want to have safety
18 around that controlled access and that sort of thing. So
19 it's very easy for us. You know, it's Department of Energy
20 managed land. So the controls are basically access controls
21 to the surface, access controls to the groundwater.

22 The third part of the institutional controls is
23 from here forward we want to assure that we don't put water
24 in the wrong places out there. That we can manage the
25 infiltration of rainwater off of parking lots and buildings

1 and that sort of thing in a smart way that you don't put it
2 where there's residual contamination.

3 The excavation work that was done out there is
4 basically done such that the agreement was that first of all
5 we would dig out the engineered structure. And then we
6 would dig as deep as 15 feet chasing contamination if it
7 went that far that was above levels that would be an issue
8 for direct contact. And then below 15 feet we would
9 evaluate that residual contamination underneath to see if
10 there was a potential impact for groundwater in the future.
11 So we're going to continue that work out there until that
12 work is done so when we're done you can have virtually
13 unlimited access to the surface out there. We looked at
14 some of the cleanup we did in the industrial zone. Most of
15 that is also at levels that will be available for any
16 unlimited surface use.

17 But we want to make sure that there's no use,
18 consumptive use of the groundwater until it returns to
19 drinking water standards. We want to assure that the access
20 to what is left deep does not come up to the surface. So
21 there's institutional controls with that. So that virtually
22 sums up what the institution controls will be. And those
23 would be codified and put in any use agreement of the land.
24 You know, we're trying to reindustrialize part of that. It
25 would be in those use agreements or any land transfers would

1 have to go as of safety restriction to do that.

2 **PRIVATE CITIZEN:** Thank you.

3 **MICHAEL TURNER:** Questions? Right here please.

4 **PRIVATE CITIZEN:** It's going to be from a low
5 level but anyway, are groundwater and river water mixed or
6 are they separate entities?

7 **LARRY GADBOIS:** They do mix. Hanford and the
8 mountains to the west of Hanford receive rainfall. And the
9 rainfall goes into the groundwater and that groundwater
10 gradually moves to the Columbia River. All through Hanford
11 it's gradually moving to the river. But as you know the
12 river goes up and down on a daily cycle due to the dams and
13 seasonally even higher due to the summer runoff and spring
14 runoff and that's so that when the river goes way up the
15 river water is now higher than the groundwater. And river
16 water actually flows into the groundwater for a period of
17 time. Then when the river goes back down you've got the
18 route goes back. So for awhile near the river it's back and
19 forth. Way inland it's always going towards the river.

20 **MICHAEL TURNER:** I want to remind you that we have
21 a plethora of information in the back as well. If your
22 question didn't get answered and you want to ask it out
23 publicly. FAQ sheets. There's some background from
24 contractors back there on how the progress has gone in the
25 300 Area. Any other questions? Here's one back here.

1 **PRIVATE CITIZEN:** I have several questions so if
2 you wanted to go ahead.

3 **PRIVATE CITIZEN:** Okay. Thank you, Jean.

4 My other question is so your preferred alternative
5 if I understand it correctly is you want to inject this
6 phosphate. And so what I'm curious about is what is the
7 time span? How long will it take to do that? And then you
8 would do a second repeat? Is that right? But I'm just
9 curious how long would it take and how long do you expect it
10 to be effective and how did that affect your institutional
11 controls with making sure you didn't have water in that? And
12 then depending on how long that would take what's the
13 chances that budget could impact this path that you would
14 take?

15 **MIKE THOMPSON:** Oh, let me handle that. To go
16 back to your initial questions, the preferred alternative is
17 an attenuation alternative for the uranium. Best way I can
18 describe it is I'm approaching retirement somewhere in the
19 fairly near future, in fact a couple years. When you look
20 at retirement you want to look at your budget and you
21 generally have a nest egg which you're going to live on. And
22 think of the uranium that's left in the deep soil as a nest
23 egg. And that each time the groundwater comes up and down
24 you write a check against that nest egg but there's not a
25 whole lot of money coming in. So you're withdrawing out of

1 that nest egg and just getting smaller every year. And if
2 the river really comes up one year like it did the last
3 couple of years it's like buying a car. You've made a big
4 withdrawal off of that nest egg and it goes down really fast
5 right there. So if you keep writing against that nest egg
6 pretty soon the money is going to be gone. That's what we
7 want to do with the uranium.

8 The models that we have predict that it might take
9 28 years for the uranium to attenuate away. Now, do I
10 believe those models a hundred percent? No, because there's
11 a lot of uncertainty. Primarily the biggest uncertainty is
12 what's the river going to do over the next 30 years. I
13 don't know. But using the past behavior of the river and
14 what we know about inventory and what's left the model says
15 about 28 years. So I've been telling people less than 50
16 years because there's some uncertainty there, right?

17 So if we can treat even a portion of that highest
18 concentration part it's going to make that -- it's going to
19 take a bigger chunk of that nest egg away. And what's going
20 to be left is going to be smaller so reaching standards it's
21 going to get there faster. So depending on how successful
22 we are in applying this, now we know it works. We've had it
23 work in the laboratory. We've had a single well test out
24 there where we put phosphates in and we saw the treated area
25 drop dramatically with concentrations. At the time we were

1 looking at also forming another mineral called habitite
2 which would be a reactive barrier but the geochemistry and
3 the physical conditions weren't conducive so we X'd that off
4 and we're just doing the alunite part. So depending on how
5 successful we are in getting the solutions where we need to
6 go will depend on how fast that attenuates away.

7 Now, the rest of the equation is budget. We're
8 going to be making a lot of decisions here at Hanford in
9 terms of cleanup decisions. And I can't say what the budget
10 is going to be to match that. But we have to prioritize the
11 work. And what we would like to do is prioritize the work
12 in terms of as best we can risk-based decisions. You know,
13 where is the risk that you really want to deal with. If I
14 had maxed it up I would apply the money to the chromium
15 remediation before I apply money to this because the
16 chromium probably has more risk to the river than this does.
17 But, you know, that's a risk decision that we have to make
18 in the balance of all the work we do. So there's
19 uncertainties in the budget and those uncertainties are
20 going to play out with allocation of that money.

21 **LARRY GADBOIS:** Let me add one more idea to the
22 28-year idea. The plume is much larger than what we're
23 proposing going after with the active part of our remedy. If
24 we didn't do anything, roughly 28 years it would play out
25 and it would be below standards. We want to do better than

1 that. Let's see if we can accelerate on 28 years. Well,
2 the edges of the plume remediate themselves much more
3 quickly. The long pole in the tent if you will is this core
4 part of the plume. And if we want to be all done faster
5 than 28 years let's get rid of that long pole of the tent.
6 And that's what this preferred alternative is is treating
7 that part. If we can extract that, if we can deal with
8 that, then the rest of the plume is playing out sooner than
9 that. So that's why we're proposing. The whole idea is
10 let's accelerate cleanup of the groundwater faster than
11 nature would do on her own.

12 **MIKE THOMPSON:** And we have to go back at least
13 every five years and take a look at the performance to
14 assure ourselves that it's still protective. So there's
15 that safety net of going back and re-reviewing everything
16 you've done and comparing what you expected it to do versus
17 what you see in the field. And you have to ask yourself at
18 least every five years is the decision still protective.
19 Now, the original decision that was made in the early
20 nineties, because of that early disposal action where you
21 saw the uranium levels crash, well, we were kind of fooled
22 by that. So in the first five-year review it was obvious
23 that more was going on there. So that's when we went
24 through and did a lot of investigations and figured out the
25 full component of the conceptual model. And that's why

1 we're here today is because that first decision did not work
2 at the time frame that we expected it to. It will
3 eventually work but not within the 5 to 10 years that we
4 hoped it would. So there's that safety net of going back
5 and doing your evaluation of is this decision still good, is
6 this still protective in coming down. So that's required
7 under law to do that.

8 So we talk about final records of decision.
9 There's really no such thing as a final record of decision.
10 It is a record of decision under CERCLA. And we say final
11 just to discriminate between the interim work versus we wrap
12 it all up together to try to make a comprehensive decision.

13 **PRIVATE CITIZEN:** Thank you.

14 **MICHAEL TURNER:** I'm struggling with your analogy
15 on nest eggs because of my age it's difficult.

16 **PRIVATE CITIZEN:** What are the lower contamination
17 limits based on? Overall looking at the river water, the
18 contamination we've got in the soil. And where does it go
19 when it gets done. I know you've got models for all of
20 that. Are the lower limits really based on the EPA
21 requirements?

22 **MIKE THOMPSON:** Well, there's two things you do
23 under the Superfund law that you have to meet. And Larry,
24 back me up if I get this wrong. You have to meet applicable
25 regulations, applicable--

1 **PRIVATE CITIZEN:** Applicable.

2 **MIKE THOMPSON:** So if there's a regulation out
3 there that gives us a standard, such as a drinking water
4 standard. A drinking water standard for uranium is 30 parts
5 per billion so we have to meet that. There's standards for
6 some chemicals for surface water protection and we have to
7 meet those. There is not an ambient water quality standard
8 per se in the federal -- ambient water quality standards for
9 uranium. There is a FACA surface water standard and it's
10 much higher.

11 But you also have to deal with risk. And there's
12 risk calculations in terms of appropriate levels of risk for
13 both human and environment. And we have to do both, meet
14 all the standards. And we also have to assure that the
15 levels of risk are within a range that's established within
16 the law. So within our calculations we've established those
17 risk levels and we've looked at the law. And what we're
18 trying to do for the groundwater, the most restrictive, is
19 the drinking water standard. We're trying to bring that
20 groundwater back to drinking water standards to protect and
21 have that resource available for future generations.

22 **PRIVATE CITIZEN:** And that's necessary?

23 **MIKE THOMPSON:** Under the law. Yeah, under the
24 law, under the national contingency plan it is the goal to
25 restore aquifers to its highest beneficial use, which in

1 this case would be drinking water standards.

2 **PRIVATE CITIZEN:** What I'm concerned with is the
3 TPA had a lot of stringent requirements in that respect 20
4 years ago. And we've done a lot of cleanup since then and
5 they should be using lessons learned in making sure that a
6 lot of these stringent requirements aren't really necessary.
7 And I think the TPA constituents should get together and
8 review the TPA requirements from all aspects of cleanup. And
9 they're going to do it pretty soon when they start cleaning
10 up the rest of these waste tanks.

11 **LARRY GADBOIS:** And that's a very good point.

12 **PRIVATE CITIZEN:** They'd better get together and
13 do it because they can save a lot of effort I think if they
14 do.

15 **LARRY GADBOIS:** And in the process of putting
16 together this proposed plan for the 300 Area we've looked at
17 all of the current, new regulations, not things that were
18 set 20 or 30 years ago. So we're looking at what the
19 current laws expect in terms of cleanup. And that's what
20 this cleanup plan is built around.

21 **PRIVATE CITIZEN:** In the Manhattan Project people
22 expected to clean this up in 100 years. Do you think they
23 did? Do you think they weren't doing things right in the
24 way they thought was right? If you had a lot of these older
25 guys here that have been through all of this stuff there

1 would be a lot of head shaking. And just the main thing is
2 that we make sure that we're using realistic requirements
3 and needs when you dump some of this stuff in the Columbia
4 River going down there seven mile an hour. You know, I
5 don't really see how there can be much in there that would
6 hurt us from a drinking water standpoint. And so much is
7 natural in there anyway.

8 **LARRY GADBOIS:** And the focus again for the
9 groundwater part here is we're trying to restore the
10 groundwater to a beneficial use. We would love to have
11 groundwater going into the river. And that's not causing a
12 risk, that's not causing a violation of laws. But the
13 groundwater itself, we can do better than just let nature
14 play out. And that's what we're proposing.

15 **PRIVATE CITIZEN:** If you've got a lot of filtering
16 going on there back and forth you probably end up with
17 uranium deposits that you can go and mine them later on.

18 **LARRY GADBOIS:** We don't have that much.

19 **MICHAEL TURNER:** Another question back there? Do
20 you want to go ahead and ask your two-part?

21 **PRIVATE CITIZEN:** I have more than just two and
22 most people know that. That's why I was going to let
23 everybody go ahead of me and they did go ahead of me.

24 **MICHAEL TURNER:** Do you want to get in?

25 **PRIVATE CITIZEN:** I don't want to be forever long

1 but you can go ahead and talk.

2 **MIKE THOMPSON:** Mr. McCain?

3 **PRIVATE CITIZEN:** I have a quick question, Mike,
4 that hopefully you can answer quickly. The question, the
5 River Corridor documents seem to be hard to find. I'm
6 wrestling with this 4,500-page monster that we're supposed
7 to be reviewing. And in the course of going through that
8 I'm finding a lot of peripheral material I would like to be
9 able to find, specifically right now related to the 324
10 building. Is there some place I can go to get some of those
11 reports that have been released? Are there any web pages
12 out there? It's not in the administrative record. I've
13 already checked.

14 **MIKE THOMPSON:** You didn't find it in the
15 administrative record?

16 **PRIVATE CITIZEN:** No.

17 **MIKE THOMPSON:** Okay. If you can give me a list
18 of what you can't find I will be glad to fix that problem
19 because anything that is utilized in the decision needs to
20 be in the administrative record. And if you believe that
21 there's some documents out there that are not in there we
22 need to fix that.

23 **PRIVATE CITIZEN:** Just a point of clarification.
24 I'm Jim Hanson from DOE. We found that there is a lot of
25 literature sources, like PNL reports, journal articles,

1 those sorts of things. Those are not in the administrative
2 record. Those are copywrited but those, you should be able
3 to find those on the web.

4 **PRIVATE CITIZEN:** Well, I'm not having any trouble
5 with those but for some reason River Corridor documents are
6 really hard to find in general. And for instance I'm
7 interested in what can I get on the measurements.

8 **MIKE THOMPSON:** If you can send me a list of those
9 we'll do a search and see where they're at and try to fix
10 that.

11 **PRIVATE CITIZEN:** I'll let you know right offhand
12 what I have found and that's the P&O.

13 **MICHAEL TURNER:** Was there a question on this
14 side?

15 **PRIVATE CITIZEN:** Mike, you mentioned that some
16 work is continuing by the site contractor on facilities and
17 some surplus cleanup activities in the 300 Area. On that
18 last map that you showed, I can't see what number slide it
19 is, it shows like the focus area where there's some
20 additional stabilization of uranium. Right at the end of
21 your talk. A little round rectangle.

22 **MIKE THOMPSON:** That would be the last slide right
23 here, number 19.

24 **PRIVATE CITIZEN:** What I was wondering and it
25 might be helpful to some of this topic, could you point out

1 want work remains to be done by the site contractor that
2 might involve excavating some soil that's contaminated that
3 hasn't been completed yet?

4 **MIKE THOMPSON:** This map is basically those liquid
5 waste disposal areas that were part of the 300-FF-1 operable
6 unit. Now that's jargon, right? So the waste that came out
7 of the 300 Area that contained the uranium that is the
8 source of the uranium plume virtually all went out through
9 pipelines to the south process pond, the north process pond,
10 and these trenches. So the primary actors in terms of where
11 the uranium went and what had to be dug up were these two
12 ponds and these trenches here.

13 Early in the process we decided to dig those up.
14 Bechtel was the contractor at the time. We went through and
15 we excavated those and removed, treat, and dispose in
16 accordance with the record of decision for interim action
17 down to about 15 feet down to what was then the cleanup
18 levels for uranium. It was about 281,000 cubic yards of
19 uranium-contaminated material. And it was the vast majority
20 of the uranium mass that was put into the environment. That
21 work was done a long time ago. This has all been regraded,
22 backfilled, regraded, and is vegetated at this point in
23 time.

24 Under the preferred alternative we would address
25 what we think is a hotspot here. Under the fifth

1 alternative, the one massive dig it up, you're virtually
2 digging all of this up down to groundwater. So it's this
3 massive, big excavation that goes down at least to
4 groundwater for this whole area. It's huge. It's a billion
5 to a billion and a half dollars worth of work. It would
6 also put more uranium into the river than if we did nothing
7 because to excavate it you have to control the dust.
8 Controlling the dust means putting water on it which means
9 driving the uranium into the groundwater. You're doing more
10 harm than good. So in my mind that would not even pass the
11 threshold criteria very well or the CERCLA decision
12 criteria. And in number four we would go in and find
13 hotspots in here and selectively dig out hotspots and apply
14 sequestration around that.

15 So in the alternatives there's some evaluation of
16 more digging but the preferred alternative we would not dig
17 any of this again. We would try to take what little
18 residual uranium is left and bind it up in place in the
19 soil.

20 Did I miss your question?

21 **PRIVATE CITIZEN:** No, thank you. But one
22 additional aspect of it. What amount of excavation work
23 would be done before this new record of decision would be in
24 place? What amount of excavation is still left in the
25 Washington enclosure?

1 **MIKE THOMPSON:** How much is left in the Washington
2 enclosure.

3 **LARRY GADBOIS:** Let me take a look at that. Can
4 you go back a few slides to one of those burial pictures?
5 Either one of these.

6 **MIKE THOMPSON:** Yeah, right there.

7 **LARRY GADBOIS:** Okay. This is roughly current.
8 Again, the liquid waste disposal facilities out here that is
9 the origin of the uranium plume that we've been talking a
10 lot about, there were waste sites all through -- there were
11 buildings here with waste sites under and around them. Those
12 have by and large been completed as well as -- I need to
13 step back to see this well. This is gone. We're finishing
14 up the 340 building here so that will be gone. Battelle
15 continues to occupy this facility. That's on its way to
16 coming down. This is gone. So with a few exceptions we
17 have a FITA station that's necessary to do response for this
18 building. Homeland Security building. This is our 324
19 building with soil that -- it's in DCH's contract. There's
20 one more aquatic lab over here that Battelle is using and
21 will for quite awhile. But most of this other we're working
22 on taking out.

23 **MIKE THOMPSON:** 618-10 and 11.

24 **LARRY GADBOIS:** Way up the road. Around the curve
25 is 618-10. We've been in the process of remediating that

1 for three years or so. We've got a few more years to go.
2 618-11 way up by Energy Northwest, we haven't started there
3 yet.

4 So roughly two-thirds of an area as well as two-
5 thirds of the sites are done done, with a couple of
6 exceptions. These facilities historically sent their
7 radioactive liquid waste, the worst of the worst went to
8 this facility. And if it was really bad we put it on rail
9 cars and it became tank waste. If it wasn't that bad it
10 went out to these disposal ponds. We've also sent waste up
11 to this treated effluent disposal facility. And it would
12 treat waste and then it had a discharge permit. More
13 recently waste went there. It would be queued up. They
14 would sample it. If it was clean they would send it down
15 and put it through the Richland municipal wastewater system.
16 So there's pipelines going out to that and coming back.
17 They're no longer using that facility. We weren't able to
18 remediate those pipelines while we were doing these waste
19 sites. That's off the map now. That makes some of these
20 pipelines available to go after. So in this area that's now
21 largely remediated we have a few pieces of pipeline that we
22 have to go back and get.

23 Is that getting to kind of your question?

24 **PRIVATE CITIZEN:** I just -- the question I would
25 still ask is is there any excavation planned in the area

1 outlined as high priority for future treatment, treatment
2 under the future RODs?

3 **LARRY GADBOIS:** Mostly no. A couple I believe --
4 Rudy, correct me if I'm wrong but there's a couple little
5 fragments of pipeline in here that we need to take out.

6 **PRIVATE CITIZEN:** About a hundred feet of pipe
7 right at the bottom end of the process trenches and the
8 process pond.

9 **LARRY GADBOIS:** So largely no.

10 **PRIVATE CITIZEN:** Well, but the facilities that
11 Rudy just mentioned would be excavated prior to this ROD. In
12 other words, the work would be done under the existent
13 interim action.

14 **LARRY GADBOIS:** At the point that we finish our
15 public comment and go through and respond to comments and
16 issue a ROD, at the time that we issue the ROD all of the
17 interim actions that are underway right now basically flip
18 over and they're now being done as part of a final action
19 with whatever new cleanup levels come out of this process
20 and any new other little requirements. But by and large the
21 RTD part of the remedy isn't changing much. And really the
22 new big thing on the table is, you know, going after the
23 uranium plume and the best way to do that.

24 **PRIVATE CITIZEN:** Thank you.

25 **PRIVATE CITIZEN:** Is 327 gone?

1 **LARRY GADBOIS:** Yes.

2 **PRIVATE CITIZEN:** It's all gone?

3 **LARRY GADBOIS:** 327 was in here and it's gone.

4 That was a chore.

5 **MICHAEL TURNER:** Okay. We've got public comment
6 coming up so but we'll probably take a few more questions,
7 of course including yours. So go ahead.

8 **PRIVATE CITIZEN:** Do I have to give you my name?

9 **MICHAEL TURNER:** No.

10 **PRIVATE CITIZEN:** Okay. I just need -- I just
11 went through from the beginning so if you have this document
12 you could go through it and maybe I can explain. You can
13 follow my questions.

14 On page 2 you said everything except what's in the
15 white is going to be cleaned up. And I don't believe -- I
16 just need a yes or no. I just want a yes or no, okay? So
17 is the FFTF included in this proposed plan to be cleaned up?

18 **MIKE THOMPSON:** The reactor itself is not part of
19 the record of decision. The disposition of the--

20 **(Cell phone ringing.)**

21 **PRIVATE CITIZEN:** Sorry, we couldn't hear.

22 **MIKE THOMPSON:** Oh, I'm sorry. Yes, disposition
23 of the reactor is not covered in this record of decision.
24 It's known as a MEBA action, that waste sites in that
25 general area are included. The Hanford Patrol Facility,

1 HAMMER, and of course Energy Northwest are specifically
2 excluded from this decision.

3 **PRIVATE CITIZEN:** Okay. Then turning the page to
4 page 5. I think this might help answer the last question.
5 It says all the 34 of the 130 sites have been remediated. So
6 I was wondering which operable unit specific number of waste
7 sites come from because there's--

8 **MIKE THOMPSON:** 300-FF-2.

9 **PRIVATE CITIZEN:** So this is -- this is the FF-2?

10 **MIKE THOMPSON:** Yes.

11 **PRIVATE CITIZEN:** Okay. So there's 34 more sites
12 that have to be cleaned up under the FF-2 that will just
13 roll into the FF-1. Is that correct.

14 **MIKE THOMPSON:** Will role into the new record of
15 decision. All the sites were evaluated in this record of
16 decision.

17 **PRIVATE CITIZEN:** Okay.

18 **MIKE THOMPSON:** And the decision covers all of the
19 waste sites in the 300 Area, all 130 I think is the number.
20 Yes.

21 **PRIVATE CITIZEN:** Okay. So how many waste sites?

22 **LARRY GADBOIS:** 130 total.

23 **PRIVATE CITIZEN:** 130 total for?

24 **LARRY GADBOIS:** Waste sites are covered in this
25 proposed plan.

1 **MIKE THOMPSON:** We evaluated all the waste sites
2 against all the new criteria that were developed in this
3 record of decision to assure that the protectiveness of this
4 decision would cover previous work.

5 **PRIVATE CITIZEN:** Okay. So I'm still confused. So
6 in this proposed plan there will be a total of 130 waste
7 sites from both the FF-2 and the FF-1 that are being
8 remediated.

9 **MIKE THOMPSON:** That are being evaluated as to --
10 if they've already been remediated they're being evaluated
11 to be sure that the remediation that was done in the past
12 meets the current requirement.

13 **PRIVATE CITIZEN:** Okay. But there will be some
14 continued remediation.

15 **MIKE THOMPSON:** Yes.

16 **PRIVATE CITIZEN:** And it will be those 34 waste
17 sites.

18 **MIKE THOMPSON:** Yes.

19 **PRIVATE CITIZEN:** Okay. Does that help you
20 because it helps me. Okay. The one at the bottom which is
21 persistent and dynamic uranium plume. The statement was
22 made that -- can you go to that slide? It's on page 5.

23 **MIKE THOMPSON:** Yes, I have to apologize for that.
24 I didn't know it would be so light when we threw it up on
25 the wall. A little further. That one.

1 **PRIVATE CITIZEN:** The comment was made that the
2 plume in the left diagram was 125 acres. And I think it's
3 just clarification because on the -- for the northern one.
4 Is that correct?

5 **MIKE THOMPSON:** The total amount of the plume that
6 exceeds drinking water standards, 30 micrograms per liter,
7 in any one time averages about half of a square kilometer,
8 which in our English background is about 125 acres.

9 **PRIVATE CITIZEN:** Okay. The total.

10 **MIKE THOMPSON:** Now, there is variability around
11 that depending on the time of year and how high the river
12 gets but it generally is about that. There's a table in the
13 RIFS report that goes back year by year by year for a number
14 of years and gives you the mass of uranium that's in the
15 plume, the area of the plume for all the years back. So if
16 you want to look at the variability it's actually quite
17 stable in terms of total amount of size but the shape is
18 like an amoeba that varies in accordance with what the river
19 is doing.

20 **PRIVATE CITIZEN:** Yeah, I can see that in the
21 diagram, the slide that's on the right.

22 **MIKE THOMPSON:** Yes, to the right. When the water
23 levels go down that uranium plume tends to go towards the
24 river but it's anchored at that place where we want to do
25 our remediation.

1 **PRIVATE CITIZEN:** And that is three acres.

2 **MIKE THOMPSON:** And that's approximately three
3 acres, correct. The characterization activities and the
4 dynamics of the plume we believe is the most important spot
5 to deal with.

6 **PRIVATE CITIZEN:** On page 6 there is a spike
7 listed on page 6. The second slide on the bottom.

8 **MIKE THOMPSON:** This is my favorite slide. Okay.

9 **PRIVATE CITIZEN:** Well, when I compare the
10 groundwater which is the blue line.

11 **MIKE THOMPSON:** Yes, ma'am.

12 **PRIVATE CITIZEN:** All the way across I do see that
13 there are exceedances like in 1997 area that went up. And
14 then I see it went down and you said that was because you
15 had remediation of the ponds. And that's great. Then it
16 really spiked high on the end, higher even though the water
17 level in general when compared to other high level marks is
18 pretty much average for those high level marks. So my
19 question was is that spike or could that spike be due to a
20 new uranium source or some new remediation that was done?

21 **MIKE THOMPSON:** I believe it's a combination. It's
22 primarily because the river stage went up dramatically and
23 we picked up uranium out of here. But there were a lot of
24 activities that occurred back here in those liquid waste
25 disposal areas where when they dug out that 281,000 cubic

1 yards of contaminated soil they put a lot of water on that.
2 And if you look at the uranium a little more than half of
3 the uranium that's down there is moved. And if you put
4 water on top of it you're going to move it down into the
5 system. Okay? And you didn't see it in this well very much
6 in here because we were dumping river water into that trench
7 and river water tends to -- it has a lot less bicarbonate in
8 it so the uranium tends to bind. But when groundwater hits
9 it with bicarbonates in it it tends to mobilize it, okay?

10 So this masked a lot of things that were going on
11 here. So these activities I believe helped move some of
12 that uranium that was underneath the dig and went a little
13 further deeper. Okay? And when the river came up here you
14 had a large spike in the stage up here but I think maybe
15 some of the uranium got pushed deeper and picked up right
16 here. So that's why I don't want to do any more dig work
17 out there because we're going to push that to groundwater
18 and that's going to create more of a problem than if we do
19 nothing.

20 **MICHAEL TURNER:** Brief interruption, sorry. I
21 just want to get the public comment at some point and then
22 possibly come back. We have three public commenters. And
23 to be fair to you folks would you like to continue the Q&A?
24 Or should be go to public comment and then go back to Q&A?

25 **PRIVATE CITIZEN:** Public comment.

1 **PRIVATE CITIZEN:** Public comment.

2 **PRIVATE CITIZEN:** Public comment.

3 **MIKE THOMPSON:** Okay. Are you all right with
4 that? Do you have one more follow-up from this slide?

5 **MIKE THOMPSON:** We can come back. I promise.

6 **PRIVATE CITIZEN:** I don't -- your response to this
7 question about the spike is not clear to me because the
8 water spike is not that out of the ordinary with the other
9 high water spikes but the contaminant level is. But since
10 people want to go to public comment I can come back to this
11 question.

12 **MICHAEL TURNER:** Thank you. Public comment, we
13 have a court reporter on hand. We just kindly ask that you
14 state your name. Give your comment. Keep it, you know,
15 reasonably brief. If you can do it within three minutes
16 that's great. That's the parameter. We'll do our public
17 comment and then as we said we'll go back to the questions.
18 The first commenter I have was Susan. Are you ready to go,
19 Susan?

20 **SUSAN LECKBAND:** I'm going to enter in the two
21 pieces of advice that the Hanford Advisory Board has issued
22 on the 300 Area RFS as public comment. And I will provide
23 that.

24 **MICHAEL TURNER:** Thanks, Susan. Next we have Rick
25 McCain.

1 **RICK MCCAIN:** Thank you all. My name is obviously
2 Rick McCain. My comment concerns the 324 building again.
3 There's a lot of talk about groundwater remediation as a
4 major component of this proposed plan at one time or
5 another. And from what I've been able to determine so far I
6 think you've got a gap in your groundwater remediation,
7 specifically with respect to this building. And what I mean
8 by that is there's one well shown on the PNL web page,
9 Phoenix, has about 130 feet from the 324 building. And that
10 well in the past has shown strontium which is attributed to
11 a number of sites including B cell. But that wasn't to be
12 decommissioned. You have no other wells in that area. So
13 what are your plans or what, you know, what are you going to
14 do about this in terms of monitoring wells on sites like 324
15 which are small, localized contamination that's close to the
16 groundwater and yet right now your nearest monitoring well
17 is about 800 feet away? That's my comment.

18 **MICHAEL TURNER:** Thank you. Last we have Larry
19 Fulstrom please.

20 **LARRY FULSTROM:** I'm wasn't sure I was going to
21 make a comment.

22 **MICHAEL TURNER:** I had you down. I'm sorry. You
23 didn't want to?

24 **LARRY FULSTROM:** I provided the comments in the e-
25 mail.

1 **MICHAEL TURNER:** Okay. Anybody else want to make
2 a public comment?

3 All right. That concludes the formal portion of
4 our meeting but as I said we will stay and take all your
5 questions. So if you wanted to leave feel free. If not,
6 stick around and we'll continue the questions.

7 **PRIVATE CITIZEN:** Can I ask my questions?

8 **MICHAEL TURNER:** Yes.

9 **PRIVATE CITIZEN:** Okay. I'm still on the slide.
10 So I don't know what your slide is. Ours is number seven.

11 **MIKE THOMPSON:** This one?

12 **PRIVATE CITIZEN:** I will talk to Mike about this
13 for a follow-up because I would like to move on if that's
14 all right.

15 **MIKE THOMPSON:** Yes.

16 **PRIVATE CITIZEN:** So the next slide for us is on
17 page 7. That one. And it indicates here that the primary
18 source of uranium to the groundwater is in the kind of
19 purple zone there?

20 **MIKE THOMPSON:** Yes, that area that gets rewetted
21 as the groundwater comes up.

22 **PRIVATE CITIZEN:** So that means 70--

23 **MIKE THOMPSON:** There's a couple things that are
24 going on there. When the river rises the groundwater is
25 essentially damned. It wants, to use anthropomorphic terms,

1 it wants to go to the river but it gets damned up so it
2 backs up. And that uranium has bicarbonates in it which
3 tends to dissolve the uranium that's in the soil column. So
4 it's a combination of both rising and then also the
5 bicarbonates in the groundwater that release the mobile
6 fraction and gets it down in. And then as it moves towards
7 the river and it starts getting into more of a mixture of
8 river water and groundwater or river water and bicarbonates
9 it tends to go away and it tends to precipitate out as it
10 moves towards the river. So there's not only a physical but
11 also a geophysical and geochemistry things going on there.

12 **PRIVATE CITIZEN:** That's very helpful because I
13 didn't want to ask the question but I was confused about the
14 bicarbonate influences so that was helpful. But my question
15 is that the vadose zone, which is soil and is not saturated
16 with groundwater, has 70 percent of the remaining primary
17 source of the groundwater because it's -- so you're not
18 doing -- are you doing anything at all for vadose zone
19 remediation?

20 **MIKE THOMPSON:** Yes, we removed 281,000 cubic
21 yards of contaminated soil down to levels that were
22 predicted to be protective of groundwater down below it. And
23 that's based on meteoric recharged through the soil column.
24 That soil cleanup level did not, in the interim record of
25 decision, incorporate that issue of the groundwater rising.

1 So the remedial actions looked at what could be left behind
2 based on, you know, rainwater, snowmelt, that sort of thing
3 moving down and still not impacting the ground water above
4 standards, whereas the new numbers we've looked at is a
5 combination of the chemistry, the river going up and down,
6 and that small complement of what's going down.

7 If you look at the response virtually all the
8 response we see in the aquifer out there, if you look at
9 each well everything can be attributed to the operation of
10 the groundwater stage and that geochemistry of the
11 bicarbonates. There is not one incident in the record that
12 I can see that's a result of the natural infiltration. There
13 are examples of where we put too much water on the soil when
14 we excavated and we drove contaminants, the uranium down
15 into the groundwater. Especially at 618-7 burial ground.
16 We created a new groundwater plume there that will dissipate
17 away but it's very clear that that groundwater plume is a
18 result of putting water on the excavation as you're digging.

19 **PRIVATE CITIZEN:** So are you telling me that the
20 seven percent of what's left of the vadose zone is not going
21 to eventually move into the periodically rewetted zone?

22 **MIKE THOMPSON:** No, I'm not telling you that. What
23 I'm saying is that that rate of transfer is very, very slow
24 because the only way you're going to get down there is
25 through water. And the amount of water that moves through

1 the dry part of the soil column, by the time you put seven
2 inches of rain on it and abotransporation takes the majority
3 of that away, that little wet that's left moves down. There
4 will be some component moving into the periodically rewetted
5 zone but it's a small trickle compared to what's going on
6 with the ground removal.

7 **PRIVATE CITIZEN:** Okay.

8 **PRIVATE CITIZEN:** Can I add to your comment? I
9 want to ask a quick question. Isn't something else going to
10 lead into this? I mean do we have any records of subsonic
11 or whatever, subsurface earthquakes or the level of
12 waterfall we've had the past two, three years in the Pacific
13 Northwest. Are some of these other attributes listed in
14 this?

15 **MIKE THOMPSON:** We cannot observe any response
16 from snowmelt or rainfall that I can pluck out of the
17 record. But what I do see is when the river responds to
18 those things and the groundwater responds in turn it's very
19 dramatic. It's so overwhelmed by this river groundwater
20 interaction.

21 **PRIVATE CITIZEN:** Right. Well, the two variables
22 that we have is the release and then we have the
23 groundwater. Those are two variables. The other variable
24 that aren't accounted for are shifts in tectonic plates,
25 groundwater up north of us. I'm asking.

1 **MIKE THOMPSON:** None of that is in the conceptual
2 model because we don't think those activities bear any
3 direct bearing on the levels.

4 **PRIVATE CITIZEN:** Okay.

5 **PRIVATE CITIZEN:** So that was difficult to hear
6 your question but, you know, I think I understand. If you
7 could talk to me afterwards that would be helpful and I
8 think there are some of us here that couldn't hear your
9 response.

10 If you would go to page 9. The bottom slide on
11 page 9. I don't know what it is.

12 **MIKE THOMPSON:** Slide 18.

13 **PRIVATE CITIZEN:** The very last bullet there says
14 that the attenuations of the uranium plume, and that is not
15 for the entire plume. That's only for the three acres of
16 the source plume. Is that correct?

17 **MIKE THOMPSON:** No, that's not correct. The plume
18 itself should clean itself up within a matter of decades,
19 30, 40, 50 years. There may be some hotspots out there
20 where, you know, at some time because of high water it may
21 spike above the drinking water standard. We think within
22 200 years even that will be away. But in terms of meeting
23 the restoration of the aquifer across the aquifer we believe
24 that will happen like you see here maybe 30 to 40 years. The
25 model says 28 so there's uncertainty.

1 **PRIVATE CITIZEN:** That just seems like a
2 conflicting statement because -- and maybe you need to
3 clarify that in the proposed plan and clarify the numbers in
4 the proposed plan because some of the information presented
5 here is not in the proposed plan. And so you might want to
6 do a check on that. But because to say it will be, it will
7 make the proposed cleanup levels in 30 or 40 years, but then
8 to also put a caveat on it that says oh, but it may take 200
9 years to achieve it in all the wells that's--

10 **MIKE THOMPSON:** You may have a well that goes for
11 a long period of time. Then when you get one of those
12 really, really odd years it may spike up above drinking
13 water standard. And that's okay. But the plume itself, the
14 aquifer itself will be available -- it will be considered
15 restored.

16 **PRIVATE CITIZEN:** But it may be that you will have
17 to have institutional controls for at least 200 years and
18 that is not stated in the proposed plan because -- and
19 that's incorrect. I mean you should cover the full extent
20 of your institutional controls in your proposed plan.

21 **LARRY GADBOIS:** Right. The institutional controls
22 for all of the groundwater plumes, we talked about soil
23 already in industrial review, but for all groundwater plumes
24 institutional controls will be required until it's meeting
25 standards. Now, is the 30 or 40 years from now or something

1 sooner if we choose an enhanced attenuation, if at that
2 point we're most of the time meeting the standard that's
3 what the criteria are to be able to lift it.

4 You know, drinking water standards are set for if
5 somebody is drinking this water every day of the year, you
6 know, for year after year after year what's a safe level.
7 And 30 parts per billion is the drinking water standard for
8 uranium. That doesn't mean that you can't have occasional
9 excursions over that. And I think that's what Mike's
10 referring to is, you know, if you look 200 years out there
11 should never be an occasional excursion over that.

12 **PRIVATE CITIZEN:** Then you need to clarify that in
13 your proposed plan because that's not stated.

14 **LARRY GADBOIS:** I don't think the 200-year idea is
15 in the proposed plan.

16 **PRIVATE CITIZEN:** No, it is not. Can you go to
17 the next slide because I know everybody is tired of
18 listening to me. Okay. The first slide says ICs are used
19 to control access as long as they exceed. And my question
20 was, well, how long is that potentially possible. And my
21 answer that I get today is at least up to 200 years is the
22 potential possible. So how long is IC controls going to be
23 because -- is it 30, 40 years or is it 200 years?

24 **LARRY GADBOIS:** Let's talk of -- you really have
25 to talk about the different plumes. Tritium up around 618-

1 11, that plays out in 18, 19 years, something like that. So
2 we'll need ICs for that plume that long. Nitrate, it's
3 coming from off site and moving to the southern part of
4 Hanford. We need ICs in place until those activities aren't
5 generating that plume and it's no longer impacting our
6 groundwater. So I can't put a time on that because I don't
7 know how long those off-site activities are going to
8 continue to generate nitric. Who knows. That's not Hanford
9 but it's coming through Hanford so we need to respond to
10 that to be safe and a remedy.

11 Uranium which we've been talking about, again,
12 natural conditions might play out in 28 years, give or take,
13 depending upon what the river does. At the point that we're
14 consistently meeting standards at that point we lift
15 institutional controls. And actually EPA is working on real
16 specific guidance on how to set that. But right now it's
17 basically just -- if you've been trending and you're now
18 below the standard and you continue to be below standard for
19 a reasonable amount of time, and that's sort of based on the
20 data, institutional controls will be lifted.

21 **PRIVATE CITIZEN:** Okay. The last slide -- well,
22 it's not on the last slide but the question was there was a
23 comment that was made. Restrictions for necessary
24 institutional controls would be codified, I think was the
25 word you used, codified -- I don't know how to say that --

1 in any transferred documents. So is there any process on
2 how that's going to occur because once the land is sold DOE
3 has no more obligations to it but the restrictions need to
4 stay in place.

5 **LARRY GADBOIS:** Right. The obligations run, in a
6 sense they run with the land. The DOE is responsible to
7 make that happen. So while DOE owns the land, manages the
8 land, DOE is responsible for all of those controls. If they
9 lease the land to somebody else or they let another federal
10 agency come and do something with it so it's not exactly a
11 lease but the same idea, if there's another tenant activity
12 DOE needs to make sure that that other activity is complying
13 with those restrictions. If DOE ends up selling or giving
14 away or, you know, relinquishes title at that point, you
15 know, a deed would be generated. I don't believe federal
16 land has a deed per se but if it transfers out of that a
17 title is generated and the land-use restrictions would go
18 onto that title. So there's -- property law covers this and
19 there's, you know, some of us may have deed restrictions on
20 our property. That's normal procedure in property law.

21 **PRIVATE CITIZEN:** Because I represent the Yakima -
22 - my job is to work for the Yakima Nation. And the plan
23 does not protect most of our treaty rights with regard to
24 unrestricted use of the shoreline. And we are concerned
25 about if the land were sold who deals with our treaty

1 rights. We don't have a treaty right with, you know, Ted
2 down the street. We have a treaty right with DOE. So
3 that's a concern and those components are not identified in
4 this proposed plan and -- so that's kind of part of the
5 background and I don't know if you have a response for how
6 that's going to be dealt with.

7 **LARRY GADBOIS:** That would be dealt with outside
8 of this. Again, this is a CERCLA cleanup document
9 identifying the cleanup that needs to be done. It's not a
10 property management sort of thing. I mean we look at future
11 uses. And, you know, try to set a cleanup that's supportive
12 of that. But the nuances of land transfer and treaty rights
13 associated with that is beyond the CERCLA cleanup planning.
14 That's intergovernmental agencies sort of.

15 **PRIVATE CITIZEN:** It's just -- okay. Well, that
16 is -- this was just questions on this presentation. We do
17 have lots of other concerns and, you know, we'll submit them
18 as additional comments, so. But I just wanted to get a
19 better understanding. Thank you.

20 **MICHAEL TURNER:** All right. We have a question
21 over here.

22 **PRIVATE CITIZEN:** Yes. I was curious of the
23 timeline for option five, the least favorable one as far as-
24 -

25 **MIKE THOMPSON:** Yes, that is a very good question

1 because if option five were chosen it is a price tag that is
2 a billion to a billion and a half dollars. So to be able to
3 allocate that much of the federal budget that's allocated to
4 Hanford it would be a very long and extended cleanup effort
5 because we would not allocate the full, you know, budget
6 that comes to Hanford for this cleanup activity. So while
7 we look at the time to meet standards there's a couple of
8 issues with option five and that's the big dig. It is my
9 professional opinion that if we do massive excavation out
10 there we will actually mobilize more uranium to the
11 groundwater in the river than if we did nothing. So you
12 have to ask yourself why would you want to do that. The
13 other is that it's a billion to a billion and a half dollar
14 price tag which takes away from other activities which are
15 probably more risk producing than this is. And then the
16 third is that if you did decide to do that the ability to
17 execute something with that big of a budget would have to be
18 open for a very, very long time which would leave these
19 excavations over a very, very, very long time.

20 So the short answer to your question is depending
21 on the allocation budget. And at Hanford I wouldn't think
22 it would be big enough to do it in a short time. It would
23 be a very long extended time. And I think the unintended
24 consequences would be not what you would want.

25 **PRIVATE CITIZEN:** Your assumption of the 28 years,

1 the underlying assumption is that the 70 percent that's in
2 the vadose zone stays in the vadose zone, right?

3 **LARRY GADBOIS:** No. The assumption is it moves
4 slowly. And it doesn't move quickly enough to sustain a
5 groundwater plume above standards.

6 **PRIVATE CITIZEN:** So it's more correct to say that
7 in 28 years whatever the model says is gone and not just
8 separated from the.

9 **LARRY GADBOIS:** No. I think the correct would be
10 at 70 percent up in the vadose zone 28 years from now a
11 little bit of that will have moved into the rewetted zone
12 and gotten into the aquifer. And the rest of it is still
13 mostly there. And over a very long period of time that
14 dribbles in. Protracted enough that it's not -- it can't
15 sustain.

16 **PRIVATE CITIZEN:** Okay.

17 **MICHAEL TURNER:** Any other questions?

18 **PRIVATE CITIZEN:** Just one more.

19 **MICHAEL TURNER:** Go ahead. No, we're here.

20 **PRIVATE CITIZEN:** Have the cleanup standards
21 changed since Bechtel, the 15 feet down in the trenches
22 versus what they are now?

23 **PRIVATE CITIZEN:** Could you repeat your question?

24 **PRIVATE CITIZEN:** I was just curious if the
25 cleanup levels have changed from when Bechtel did the

1 trenches to where we are now as far as what is acceptable.

2 **LARRY GADBOIS:** I'll start with uranium since that
3 seems to be the biggest topic. The original cleanup levels
4 that they started digging was 300 parts per billion. I'm
5 sorry, in the soil it was 300 parts per billion in the soil.
6 But when they made that decision they said, you know, we
7 need to do a little more leach testing and see if that's --
8 and that was based on the technicals they were drawing on.
9 So that was the decision but part of that decision included
10 doing that test to confirm that that's the right number.

11 When they did the test, the leach ability rating,
12 they decided no, 300 is not the right number. I believe 257
13 is what they determined was the right number. So that's
14 what they've been using for 15 years roughly.

15 Looking at it now, like Mike said we're adding in
16 the idea of the fluctuating river. We know more about the
17 geochemical behavior of uranium. And what's in our plan now
18 that we're proposing is I believe it's 157 parts per billion
19 for the soil.

20 **PRIVATE CITIZEN:** In the soil.

21 **LARRY GADBOIS:** And that's in a soil to be
22 protective of groundwater. In a soil to be protective of
23 direct exposure to humans can be a high number -- a higher
24 number. So it's really protecting of the groundwater is the
25 driver for the uranium cleanup. There's a lot of other

1 contaminants in the soil out there. Those have changed a
2 little bit. Not dramatically. The radionuclides we're
3 using a new standard. It's a risk base rather than a dose
4 base. And that's lowered the cleanup level for quite a few
5 of the radionuclides a little bit, not enough to have
6 changed what we did in the past but it's, you know, a little
7 bit. A whole bunch of the numbers have changed a little
8 bit. The state standards that we've been using for
9 chemicals they've shuffled a little bit as well.

10 **PRIVATE CITIZEN:** Just FYI for your information.
11 If you want I can give you little memo that was sent to me
12 by EPA Region 10 recommending 10 micrograms per liter. I
13 believe that's it, being used as a standard for cleanup for
14 the groundwater -- for the drinking water standard instead
15 of 30. And it's specifically for the Hanford site.

16 There's been a lot of resistance from EPA here and
17 DOE here and Ecology here to follow the recommendation of
18 Region 10. So we're going to make that comment as to why
19 you're choosing to use the, you know, NCL level just because
20 the database hasn't been updated when EPA clearly made a
21 determination to be.

22 **PRIVATE CITIZEN:** What's the argument EPA puts
23 forth in their more stringent standards needed for Hanford?

24 **PRIVATE CITIZEN:** I can show you the memo.

25 **PRIVATE CITIZEN:** No, I'm just curious what was in

1 the memo.

2 **PRIVATE CITIZEN:** I'm sure it has to do with the
3 quantity and the types of and volumes of uranium. I'm sure
4 it's all in there. They had an actual -- they actually
5 included it in the Federal Register and published it. They
6 just haven't updated their database since 1989.

7 **PRIVATE CITIZEN:** You really don't know what their
8 argument is compared to (inaudible) and things like that,
9 other uranium contaminated sites with much more uranium than
10 here.

11 **PRIVATE CITIZEN:** Well, I can certainly look it up
12 for you. All I'm doing is telling you this is a proposed
13 and it's -- Ecology staff has noted it back in 2008 and it
14 has been ignored, so.

15 **PRIVATE CITIZEN:** No, I'm just curious what the
16 argument is, not the--

17 **PRIVATE CITIZEN:** Well, I will provide it to you
18 if you just give me your name and your e-mail.

19 **LARRY GADBOIS:** Last Monday or Tuesday I was
20 talking to the person in Region 10 who generated this
21 guidance and we communicate a lot. He's a very good human
22 health risk assessor. Kind of the issue is EPA at the
23 national level has our high-risk database, integrated risk
24 information system. And it takes the accepted risk
25 information that's gone through peer review and EPA has

1 decided this is the best science that we should go with and
2 it goes into this national database. Our Region 10 people
3 had questioned the uranium toxicity number in there. If you
4 use this national database, and EPA has a default approach
5 for generating uranium sort of cleanup levels. If you take
6 that number and you compare it with what we've generated on
7 site were three times more conservative than that national
8 number. So we've got significant safety in there.

9 **PRIVATE CITIZEN:** We're talking soil cleanup
10 levels versus groundwater.

11 **LARRY GADBOIS:** Yes. And it's the soil cleanup
12 level that ends up being protective of groundwater and ends
13 up being the driver. That's why we're ending up being more
14 conservative than nationally when EPA would say we're three
15 times more conservative in the residential and restrictive
16 use and we're much more conservative in the industrial area.

17 **PRIVATE CITIZEN:** But the recommended -- but this
18 memo still recommends 10 for the groundwater, not the NCL
19 level of 30.

20 **LARRY GADBOIS:** I would like to see that because
21 I've read that multiple times and I haven't seen the 10. I
22 don't know what that comes from. And I talked with Mark
23 about 10 and he doesn't know where it comes from, so. We
24 can talk online about that.

25 **PRIVATE CITIZEN:** It comes from changes in a

1 parameter that they use.

2 **LARRY GADBOIS:** A slope factor.

3 **PRIVATE CITIZEN:** A slope factor that's used in
4 the calculation and so. And that slope factor is what was
5 promulgated and the calculation has not been updated.

6 **MIKE THOMPSON:** Well, my understanding the current
7 calculation for risk if we use what's available the number
8 is actually pretty close.

9 **PRIVATE CITIZEN:** The response that Mark sent me I
10 can certainly share with everyone but he said "Until the
11 database is actually updated it's an adequate number to use.
12 However, the full memo states the fact that this database
13 wasn't updated and despite that it is recommended that it is
14 used." I don't want to get into a political discussion
15 about this. If anybody wants the memo just let me know and
16 I will send you the memo and you can make your own decision.

17 **MICHAEL TURNER:** Okay. Let's leave it at that
18 then. Any other questions?

19 **PRIVATE CITIZEN:** Whoever is talking about the 324
20 building if you would like to talk with me I have some
21 additional concerns that I can just share with you on that
22 because that is one piece of information that is in the
23 proposed plan. And it talks about a memo that indicates how
24 it's going to be cleaned up under the FF-2 and that is not
25 available on the administrative record. I cannot find it

1 anywhere.

2 **MICHAEL TURNER:** Well, we have this room until at
3 least 8:30 so if there is more discussion we would be happy
4 to certainly do that. I want to thank everybody for coming
5 out tonight and giving up their evening for this. Public
6 involvement is key to Hanford cleanup and we really
7 appreciate your time and the good talk that we have had.
8 Thank you.

9 **(The proceedings were concluded at 8:10 p.m.)**

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CERTIFICATE

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3 I, Kathleen M. McKee, do hereby certify that pursuant
4 to the Rules of Civil Procedure, the witness named
5 herein appeared before me at the time and place set
6 forth in the caption herein; that at the said time
7 and place, I reported in stenotype all testimony
8 adduced and other oral proceedings had in the
9 foregoing matter; and that the foregoing transcript
10 pages constitute a full, true and correct record of
11 such testimony adduced and oral proceeding had and
12 of the whole thereof.

13
14 IN WITNESS HEREOF, I have hereunto set my hand this
15 8th day of August, 2013.

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21 /S/ Kathleen M. McKee
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