CITIZENS' ENVIRONMENTAL SAMPLING COMMITTEE

The following hearing was taken at the Arvada City Hall, 8101 Ralston Road, Arvada, Colorado 80002, on September 15, 1993, at 9:20 a.m., before Sharon R. Dobson, Registered Professional Reporter and Notary Public within Colorado.

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ADMIN RECORD
SW-A-003818

1/97

1 APPEARANCES:

2 JIM LaVELLE
GREG MARSH
3 TONY HARRISON
NIELS SCHONBECK
4 KEN KORKIA
TODD MARGULIES
5 PAULA ELOFSON-GARDINE
ANN J. LOCKHART
6 NORMIE MORIN
NANCY HUNTER
7 W. GALE BIGGS
MICHAEL GUILLAUME
8 KATHLEEN MEYER
HENRY STOVALL
9 BINI ABBOTT

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WHEREUPON, the following proceedings were taken:

MR. LaVELLE: Good morning. It's getting to be about 9:20. I think we better get started. We have basically two items on the agenda today, and then, of course, anything that you want to add. The first one, we're going to revisit just a little bit the sampling sites that we picked last time, and then we'll talk a little bit about the actual soil sampling methods when we actually get out to the field. I thought we'd start off by letting Todd give you a little bit of update on where he's been since the last meeting, and then we can talk about any of the other sampling sites that we need to. Todd, go ahead.

MR. MARGULIES: Last Friday, Bob Brockmann and I went out into the field. Bob was with the Boulder County health department, for those who don't know, and was instrumental in helping select the Boulder County sites. You were given a new soil sampling list by Ann. You might want to refer to that. I can just bring you up to date real quick.

There were five samples in the Boulder County. No. 1 originally was going to be Chautauqua. And Bob really had no strong feelings either way between Chautauqua and/or NCAR. That's NCAR's main car

1 up in--off Table Mesa in Boulder. We visited NCAR,
2 obtained the gentleman's name. The Saddlers, Steve
3 Saddler is his name. He says send my permission letter
4 with all the hows and whys and whos from the sampling
5 effort. He said it would be no problem. So that site
6 has been pretty much finalized and ready.
7 The second site which Ken Korkia was
8 interested as well is No. 2 on the list. We called
9 Ken. Ken could not make it to join us and help select
10 that. For those who aren't familiar with it, at the
11 mouth of Eldorado Canyon on 93, if you go about a mile
12 or so to the west, there is a section of land that is,
13 I believe, City of Boulder open space. It's mesa
14 head--mesa trailhead area. It has a lot of undisturbed
15 land.
16 Second site we looked at up in there was
17 all the way up into Eldorado State Park, which is
18 probably at least another three, four, five miles by
19 the time you get into the park. Bob felt real
20 comfortable with the first site down in the City of
21 Boulder open space area. There's a lot of undisturbed
22 land, like I said. He was real happy with that site
23 selection for the mouth of Eldorado Canyon. That gives
24 you an update, Ken, on where it would be. You said you
25 were amenable to that.

Third site is Marshall Lake area. We went up and took a look at Marshall Lake. One of the criteria was to speak to Mike Guillaume and see where he had sampled in that area. He was kind enough to join us and brought a map that shows some of the areas. For anyone that's interested, it is--correct me if I'm wrong, Mike--mile, mile and a half south of Marshall Lake. Is that correct?

MR. GUILLAUME: Yes.

MR. MARGULIES: I've seen the areas. Is that Boulder open space?

MR. GUILLAUME: Um-hum.

MR. MARGULIES: I am guessing, it's readily accessible. Anyone with any opinions or ideas, since this was on here. It says validate. So if that's the direction you wanted to head with that. Then I've seen on Mike's map where they are, and I can locate our sample in that general area. Or if someone has other ideas. There are some undisturbed lands on the north side. However anyone feels, as to whether to go where Mike was--or I'm happy with whatever.

MS. ELOFSON-GARDINE: Asking if it correlates with any points on aerial gamma survey that they were working from in the last meeting.

MR. MARGULIES: I have not taken that map

and compared it to exactly where Mike's samples were taken, so I don't know.

MS. ELOFSON-GARDINE: You weren't here last time, Mike. We were using this as a guide to look for relative undisturbance, to try to knock out some superfluous sampling points. You must have seen this, I'm sure.

MR. GUILLAUME: Yeah.

MS. ELOFSON-GARDINE: This is what we used as a working guide at the last meeting to try to pare down our list a little.

MR. SCHONBECK: Todd, what is the--what are the roads near Marshall Lake? Just want to orient myself.

MS. ABBOTT: There's one that goes to the dump.

MR. MARGULIES: From the south.

MS. ABBOTT: No, from the east. It's really that Marshall Road that starts at Superior. Well, in Eldorado Springs. The road that goes between the two, and then you turn off.

MR. MARGULIES: It's--170 is the north, come off--

MS. ABBOTT: Then you turn off that road, head south.

MR. MARGULIES: Right. Go down to where the gravel pits are--or go into the gravel pits. It has a name. I didn't write it down.

MR. SCHONBECK: Great. Thanks.

MR. MARGULIES: 170 is to the north. And to the east is the road that Bini is talking about. You can go down in and go in east, I guess. So anyway, anyone that has any ideas. If validation is the purpose, then I would definitely get together with Mike. And now, that sample would be, like I said, a mile to a mile and a half south of the lake. So I'm not sure--

MS. ABBOTT: I think for my own perspective, I think to the south would be very good because that's closer to Rocky Flats. And even though there aren't a zillion houses there, there aren't many to the north either. And you'd have way more undisturbed land, then, to validate. Just to see how much the figures differed I think would be very important.

MR. MARGULIES: Okay.

MS. ABBOTT: Anybody else differ?

MS. MORIN: Do we need to put this on the map right now?

MS. ELOFSON-GARDINE: Should we put a map

1 up?

2 MR. MARGULIES: I will put my map back up

3 that we had. You would be able to see the difference.

4 It really won't be too much of a difference on this

5 particular map, I don't think. You can see on the map,

6 here is Marshall Lake right in here. The spot that was

7 marked on the map was, oh, less than a mile to the

8 southwest. The samples that Mike has are in this area,

9 so it's not a significant difference from where we were

10 originally looking at. So anyway, like I said, anybody

11 that has any feelings or ideas--if people are happy

12 with that methodology of going where Mike was, then

13 I'll get together with Mike.

14 The fourth sample is No. 5 on the list,

15 the Stearns Lake, Rock Creek Farm. We drove right into

16 the lake. There again, the owner, if you will, is

17 Boulder County Parks and Open Space. It shouldn't be a

18 problem gaining access, et cetera. There is a man-made

19 rock dam that runs from the northeast to the southeast

20 end of the impoundment, so we'd want to take the sample

21 not in that area. It would be from the other area. So

22 we went in there where there's some concrete rebar and

23 stuff like that and where they built that rock dam. So

24 it would be from the less disturbed site around the

25 other side of the lake. And so that one shouldn't be a

1 problem.

2 The last one is No. 24, the last sample on

3 the map, which was the, quote, unquote, Superior site.

4 On one of my topos, I have it marked, for those of you

5 that aren't familiar, off of 128, McCaslin Boulevard,

6 if you go north about a mile is generically where the

7 sampling site would be located. This one is private

8 land. Relatively little, you know, going by the

9 request of the sampling location from the water tank

10 and west of McCaslin Boulevard that people asked for.

11 It is all private there. I've got, you know, no

12 problem, again, finding out who it is. Like I said, I

13 don't think there's a lot of undisturbed land, so that

14 might be one consideration. There's some--

15 MS. ABBOTT: Excuse me. That would put us

16 pretty close to the Marshall site also. The Marshall

17 site would--just be my guess, is maybe a half mile to a

18 mile directly west of it there.

19 MR. MARGULIES: It would almost be two

20 miles plus.

21 MS. ABBOTT: Oh, really?

22 MR. MARGULIES: Yes, a good two miles, as

23 the crow flies, to the east is our Superior site and a

24 little bit south.

25 MR. STOVALL: How far west of the McCaslin

9

1 are you proposing; quarter, half mile?

2 MR. MARGULIES: It's all private land.

3 It's all open field. It looks like it's probably been

4 grazed on and off over the years. There are some other

5 locations actually on the--a little bit further south

6 that may be a little bit better. Kind of comes around

7 a corner, over a hill, onto the plateau, if you will,

8 to hit where 128 is. So it could end up to be possibly

9 as much as another quarter mile south of that. Again,

10 I did not put any stakes in the ground. It was more or

11 less so that--Bob and Ken had been able to come along,

12 so they knew the general area. And Bob was happy with

13 all the general locations of all these. He walked all

14 these sites and so on and said where within this

15 general area you want to put the stake is fine when you

16 get out to the site.

17 MR. STOVALL: The reason I mention it is

18 Boulder County and City of Boulder has a rib in the

19 ground, open space west of McCaslin almost the full

20 length from Superior to 128. Some of that's recent

21 acquisition west of McCaslin and at least from 128

22 north almost to the City of Superior. So it may appear

23 to be private but--

24 MS. ELOFSON-GARDINE: As open space?

25 MR. STOVALL: Most of it purchased as open

space.

MS. ABBOTT: There are cattle on it.

MR. STOVALL: But it is in the City of Boulder, Boulder County.

MR. MARGULIES: I didn't see any signs.

MR. STOVALL: Some of that is newly acquired within the last month or two, so you have a lot of freedom there.

MR. MARGULIES: That would be a little south of where we were, probably half a mile south, I'm guessing. The two homes are located eight-tenths and nine-tenths of a mile north of 128 and they are on the west side there.

MR. STOVALL: Only reason I mention, if you have any problem with private property, there's public land.

MR. MARGULIES: All of the folks at NCAR--Bob Brockmann has already verbally contacted, both the City of Boulder Open Space--there's like three different entities. He's contacted them all verbally. One is City Open Space, one is Parks and Open City Space--I'm not sure exactly.

MS. ABBOTT: County open space.

MR. MARGULIES: Right. He's already verbally contacted all of Boulder's agencies, and all

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1 of them were very receptive and more than willing.
2 They said follow up with a hard copy when you have it
3 ready. And that was the same thing the gentleman at
4 NCAR said.
5 MS. ABBOTT: One thing, in determining the
6 exact site, Frank Gifford gave us the name of a
7 gentleman here in Denver who has studied the wind
8 patterns and where we'd fine the most contamination.
9 And I know Paula and I are both extremely interested in
10 where you'd find the greatest deposition. Did you
11 contact him at all?
12 MR. LaVELLE: I tried to several times and
13 haven't gotten through, but I will continue to do so.
14 He sounds like he might be very good. Name is Don
15 Schearer.
16 MS. ABBOTT: He's done studies at Rocky
17 Flats. Evidently, Gale, he's been involved with the
18 Ascott program and DOE and been pretty active doing a
19 lot of studies out there, yeah. Because that land just
20 to the north of Rocky Flats is huge--not relatively
21 flat land, and huge gullies and swales and so on. And
22 so if we do test, it would be, I think, interesting to
23 know, should we look at the bottom of the swale, the
24 top of the hillside, what?
25 MS. ELOFSON-GARDINE: Tony, do you have

1 feelings on that?

2 MR. HARRISON: Not particularly. It

3 sounds like a perfectly good idea. As far as where

4 you're going to find more deposition, on the top or the

5 bottom, I have some opinions about it to the south of

6 it, but to the north of the plant, we haven't really

7 seen much difference and haven't really looked that

8 much. So I don't know too much about the north side of

9 that.

10 MS. MEYER: I think you mentioned at the

11 HAP meeting last week too whether we would could help

12 out with that. I know there are a couple of people

13 with the HAP team who have done soil sampling and would

14 be willing to help out with that, Terrol Winsor and

15 Marilyn Case. So however it works out, we could help

16 with some of those decisions, get down to the actual

17 sampling area.

18 MS. ABBOTT: I was hoping that maybe you

19 could get that gentleman, Mr. Schearer to--Dr.--I have

20 no idea--to speak to us.

21 MR. LaVELLE: I was kind of hoping I would

22 get hold of him last week and have him come today, but

23 I never did.

24 MS. ABBOTT: I guess he is a private

25 consultant, according to Frank. And Frank did mention

1 it to him. After he gave us that name, he called him
2 that evening and did talk to him about it.
3 MR. BIGGS: He just completed a rather
4 extensive study of the dispersion releases that they
5 made out at Rocky Flats in February of '92, '91,
6 whenever it was. So he's looked at the wind fields for
7 each of those experiments, so he went into a lot of
8 depth on that.
9 MR. LaVELLE: Sounds like he would be a
10 good person to come talk with us.
11 MS. ABBOTT: Do you have confidence in
12 him?
13 MR. BIGGS: I don't know him other than by
14 reputation, but let me say I've heard nothing about his
15 reputation that has been anything but good. I did get
16 copies of his reports. Unfortunately, I haven't had a
17 chance to look at them. But the feedback I'm getting
18 is that they were pretty good reports.
19 MS. ABBOTT: Um-hum.
20 MR. MARGULIES: Anyway, those were the
21 five sites we went out and took a look at last week.
22 Again, I am guessing that I will be out in the field
23 this Friday, as well. Between this afternoon and
24 tomorrow morning, I will try and put together an
25 itinerary, if you will, and then call the appropriate

1 people that might be associated with those sites and
2 let you know when I'm going to be out in the field. So
3 if you were to have a chance to come out, I'd love to
4 have you come out and take a look. If not, I will be
5 going to the sites. And then at the next meeting, I
6 would give an update. Again, I won't be sticking a
7 stake in the ground, but I'll be looking at the generic
8 general areas, and then I'll report back. And so that
9 whichever sites you're particularly interested in, if
10 you're not able to make it out in the field, at least
11 you can have a report on, you know, ballpark area and
12 so on and so forth. If you had some changes or
13 specific requests, we can work in, no problem. But I'd
14 love to have you come out, anyone that's available, on
15 the days that--Friday--pretty much every Friday I'll be
16 in the field till I take a look at all these. I know
17 Gale's been kind enough to come in. And I'll be able
18 to get to his after you folks get an update of where
19 he's interested in sampling. I know on Fridays I'll be
20 going out. You might want to keep that in mind. I'll
21 try and give you at least two or three days' notice
22 that I'm headed out to take a look, so that if you can
23 only make it a certain time, I can try and arrange it
24 to be at a certain site at a certain time. So I'll try
25 and work around your schedules as well.

MS. ELOFSON-GARDINE: Are you going out in the mornings or afternoon?

MR. MARGULIES: Fridays, pretty much all day. Other days, it would be in the afternoon's.

MS. ELOFSON-GARDINE: Has anybody called Harvey Nichols about locations?

MR. MARSH: Not me. He's just getting over a serious operation.

MR. SCHONBECK: Is that right?

MR. MARSH: Kidney stones.

MS. ELOFSON-GARDINE: I talked to him briefly a couple days ago. He's not languishing in bed; he was on his way out the door.

MR. MARSH: That's good.

MR. MARGULIES: I guess that's about all I have to report. I'll get together with Mike probably after the meeting.

MR. GUILLAUME: Sure, that would be fine.

MR. MARGULIES: Coordinate that. Most likely tomorrow I'll give some phone calls and try and let people know where I'm going to be at on Friday. If anybody wants to come out and play in the dirt, you're welcome.

MR. LaVELLE: Okay. Thanks, Todd.

MR. MARGULIES: Sure.

MR. LaVELLE: The one question that Todd brought up about the Marshall Lake sampling site, we agreed that it was going to be south. That was our agreement, south, closer to where Mike sampled before? Okay. Good.

I guess there are a couple of other issues that we need to cover. One, of course, Gale, is your sites. Do you have something you want to talk to us about on that?

MR. BIGGS: Yes. Can we get this handy dandy tape going again here?

MR. LaVELLE: Yes.

MR. BIGGS: This is a map that's a little better than most of you have seen before. Here is Rocky Flats. This is Denver, Boulder, Lafayette, Greeley, Fort Collins. What I've tried to do was black in the drainage areas. So this is South Walnut Creek and Woman's creek. They come together. This is Big Dry Fork, comes out and dumps into the South Platte. This is the South Platte coming up along here and out to Greeley. This is Boulder Creek and St. Vrain. I also tried to follow Coal Creek Canyon down and Rock Creek. And basically it looks like it dies right about there. I think what happens is that all the water is taken out of the creek by drainage ditches, because

where it dies is a drainage ditch. But there's nothing on my map that shows it connected into Boulder Creek. I'm sure it must have been at some time in its life.

MS. ABBOTT: Some water from Coal Creek Canyon is taken out from Rocky Flats and goes south of Rocky Flats. That's a little bit of the Coal Creek water that Westminster owns.

MR. BIGGS: There are several ditches that show coming off and going off in different directions here also, all the way along here as well.

MR. SCHONBECK: Gale, could you point out the South Platte again.

MR. BIGGS: South Platte is right along here.

MR. SCHONBECK: Where does it begin?

MR. BIGGS: It comes up through Denver and the mountains down in this area.

MS. ELOFSON-GARDINE: Goes along Santa Fe Boulevard.

MR. SCHONBECK: Continuing on up.

MR. BIGGS: Continues on up with this kind of little green, and then out goes south of Greeley and then turns east.

MR. SCHONBECK: Okay. Thank you.

MR. BIGGS: Maybe I can black that in

quickly here.

MR. MARSH: Where did you get that map, Gale?

MR. BIGGS: USGS.

MR. MARSH: What do they call it?

MR. BIGGS: Front Range Urban Corridor, Sheet 1 of 3. That's 1 of 2. I've taped to the bottom of it 3. 3 is--I've got two together there.

MR. MARSH: I see.

MR. BIGGS: I got this at the USGS map store. So anyway, I was thinking if we follow the concepts of the drainage flows following the topography, that we would expect, then, under the drainage flow conditions to see this air coming out of big Dry Creek and dumping into South Platte River Valley. I was thinking that anywhere along here that one would have a buildup, like a road or a treed area. It kind of acts as a dam to slow down the air and let the pollen fall out. I've not had an opportunity to go out and look yet, but right out in the area behind the Front Range Community College, just to the north and east of that area, I was thinking may be a place that one could--would expect to find this kind of a condition. So on this map, it's right about there. I did look at the CDH map. It does not look, at least on

1 their map, like samples have been taken there.
2 Although Rob Terry did say once to me that they've
3 taken a sample out in that area.
4 MS. ELOFSON-GARDINE: They did some PCB
5 remediation in that area behind the college on the
6 north side.
7 MR. BIGGS: There has been?
8 MS. ELOFSON-GARDINE: Yeah.
9 MR. BIGGS: That would not be undisturbed
10 land, then.
11 MS. ELOFSON-GARDINE: Usually you can tell
12 if there's some old native grasses. You have to look
13 around.
14 MR. BIGGS: Then the second thing--well,
15 following the concept that if you're looking for
16 plutonium, coming off from the plant is very fine
17 particles. If they attach themselves to larger
18 particles in the air, such as pollens or organic
19 matter, pollens are designed to float in the air and
20 settle out in calm air. If you follow that concept,
21 you would expect these pollens to be settling out into
22 the South Platte River Valley.
23 I've yellowed or greened in--this one is
24 the 5,000-foot contour, and so you can see that this
25 comes up around this way. Here is the 5,500-foot

contour, comes down around this way. And 6,000-foot contour is in this area, follows the Front Range. So if you get out into South Platte River Valley, about in this area, you see the contour comes back this way, and this one starts moving out. So the valley is starting to open up and get flat in this area. I was thinking this might be a good settling area. I was suggesting a site somewhere south of Platteville as being an area to sample. As close to the river bottom as you can get, but of course out of the flood plain, because you want to get undisturbed land. But as close to the bottom area as possible.

And then the other one, if you also look here at this 5,500-foot contour on this one, this one ends here, and this one backs off here, so you have another big opening in the valley right here. So I was thinking somewhere up in south and east of Milliken, just before you get to Greeley, which would be about, oh, halfway between Platteville and Greeley over on the South Platte River Valley. And no one, as far as I know, has ever really taken a sample out in that area, so we don't really know what's out there. I think this is an opportunity to at least explore that and see, you know, if anything has been carried out there by these drainage winds.

d1

1 MR. MARSH: How far would that be, air
2 miles, air kilometers?
3 MR. BIGGS: Greeley from the plant looks
4 like--I think it would be about 50 air miles. So my
5 furthest one out here would be in the neighborhood of
6 probably 40 or so. This one would be probably 30, I
7 would guess.
8 MS. ELOFSON-GARDINE: Gale, the Milliken
9 area, there is some problems up there that residents
10 have been discussing with respect to toxic waste dump
11 and a waste combuster. So you might want to be alert
12 to anything that would be competing for groundwater
13 contamination, et cetera, in that area.
14 MR. BIGGS: Yeah. I know the St. Vrain
15 nuclear plant is out in that area, but that would
16 hopefully be different.
17 MS. ELOFSON-GARDINE: Apparently they had
18 a lot of seepage problems from that toxic dump, so
19 wherever that's located, you want to be sure that the
20 samples are taken far enough afield from that area that
21 it's going to be representative of, quote, "our special
22 background."
23 MR. BIGGS: Yeah. Okay.
24 MS. ABBOTT: Would there be any problem
25 with Fort St. Vrain? Would that be a different type of

1 finding?

2 MR. BIGGS: I don't know that they have

3 any kind of plutonium. That's a helium-type thing and

4 burns mostly, I think, uranium.

5 MS. ELOFSON-GARDINE: They're in the

6 decommissioning phase now. I understand they had waste

7 problems with PU238 and that some of their waste

8 apparently has gone to that cement kiln up at Lyons.

9 They found that in some of their bottom ash there.

10 MR. HARRISON: There was no plutonium

11 found in any of that.

12 MS. ELOFSON-GARDINE: Who was that that

13 was--that was distributing those data sheets?

14 MR. HARRISON: EPA did testing and they

15 published some results, but all of their results were

16 below detection limits, and some were negative.

17 Recently, you know, the cement company was very

18 concerned about that, and they hired a bunch of

19 consultants and contractors. And they really dug into

20 it. And the final conclusion was that there was no

21 evidence of plutonium in any of that stuff, in any of

22 their fly ash or in any of their raw materials, and

23 that EPA never should have issued that report. All it

24 did was muddy the waters.

25 MS. ELOFSON-GARDINE: Some sheets passed

1 around from the different organizations looking at that
2 show some above detectable limit results. Maybe I
3 should dig that out and send that your way and let
4 you--
5 MR. HARRISON: We've got a file this thick
6 on it. I think we've seen anything that anybody has
7 written up on it.
8 MS. ELOFSON-GARDINE: I'd like to know if
9 they're passing around sheets that don't belong to the
10 right site or something.
11 MR. HARRISON: Could be. Yeah, the
12 original EPA report said that the only cement kilns
13 that had any plutonium in them were from states with
14 DOE facilities. But ultimately, when you really look
15 at the data, they're talking about the same plutonium
16 concentrations that they're finding in their own
17 laboratory.
18 MS. ELOFSON-GARDINE: So could be lab
19 contaminants?
20 MR. HARRISON: That, or just background
21 count rate in the appropriate region. That's why, you
22 know, that's really a classic case of bad science.
23 They never should have called those positive for
24 plutonium.
25 MR. BIGGS: Bad science from the EPA, oh,

shame. . .

MR. HARRISON: Surprise.

MR. MARSH: I was shocked.

MS. ELOFSON-GARDINE: I just want to be sure that we are considering all possibilities of any anything in the area.

MR. HARRISON: You need to do that, but I think you can rule that one right out.

MR. BIGGS: I guess the three, then, to kind of summarize quickly here is that, you know, if the CDH has not taken one here in the Front Range Community College area, that would probably be a good place to take one. The second one would be somewhere in the area just south of Platteville, around near Maddux or that area. And then the third one I would recommend is somewhere just south and east of Milliken, again, in the valley.

MS. ELOFSON-GARDINE: Which way do the drainage flows--are you familiar with any of the groundwater flows in that area?

MR. BIGGS: Not the groundwater flows, no.

MS. ELOFSON-GARDINE: I'm wondering if that's something we would be checking into. If we're trying to follow the air flows, can we also look at, you know, the local problem areas with respect to any

1 groundwater mixing going on that--or surface water
2 problems.
3 MR. BIGGS: That's probably worth looking
4 into, yeah. Here's the Front Range Community College
5 right about there. Here's where I'm suggesting,
6 somewhere in this area.
7 MR. LaVELLE: While they're sort of
8 discussing the sites, more specifically, is there any
9 more discussion in general that those are reasonable
10 sites to look at?
11 MS. ELOFSON-GARDINE: If it makes Gale
12 happy, it makes us happy.
13 MR. SCHONBECK: I have one question,
14 Gale. Do you think that three sampling sites would
15 answer things that you're interested in or would you
16 like more?
17 MR. BIGGS: Well, you know, you always
18 have the question of whether or not you missed it in
19 your sampling sites. And density is always a big
20 question. What we're looking for out here is basically
21 to find out if there's been any long-range transport
22 out into that area. And, you know, two sites out of
23 the South Platte River Valley is kind of skimpy. Yeah,
24 I'd love to see more, but then there are other
25 priorities too. At this point we're fishing, and I

hate to put a lot of arguments on a lot of samples when you're just fishing.

MR. SCHONBECK: So right now you would suggest three? You're comfortable with that until we see what we got?

MR. BIGGS: See what we got and make a decision.

MS. ELOFSON-GARDINE: Are you still interested in that area east of 25 and north of 76?

MR. BIGGS: That would be quite a ways further south. That would be down in this area, which may be more localized. I think that will be more localized. I guess if I'm just fishing, I think I'd like to go where the higher probabilities are. But there should be something down here in that area.

MR. GUILLAUME: From these valley flows, what do you suppose your maximum air velocity would be on that?

MR. BIGGS: Well, it's pretty dependent on what's--how much of it is really dominated by the valley and how much is dominated by the whole general flow off the Front Range down across. Because it can get pretty deep down in the valley areas and it can also, you know, get pretty hefty velocities. We're talking maybe 10-, 15-mile-an-hour, as opposed to

1 drainage flows usually in the 5- to 10-mile-an-hour
2 range.
3 MR. GUILLAUME: So 10 to 15 miles an
4 hour?
5 MR. BIGGS: Yeah, I would think so.
6 Enough to keep pollen afloat several miles until it hit
7 the open area. It kind of allowed it to drop its--you
8 know, as you spread out into the valley, then the air
9 flows are going to slow down and become relatively
10 calm. And that's when the pollen starts falling out.
11 We see the same thing with the drainage flows.
12 Remember--I don't know if you were here when I gave my
13 lecture a year ago, months and months ago--that the
14 Denver basin basically drains out along this area, and
15 you get all of the sulfur oxides and nitrogen oxides
16 from the ground-level sources coming out in this area.
17 Then you have all of the feed cattle and the turkeys
18 and everything, which emit ammonia and combines to give
19 you ammonium sulfate and nitrogen sulfate, which is
20 then a particle and give us the visibility problem. So
21 whenever you look out in this area, what I call the
22 Greeley pool of pollution, you can look out there any
23 day and see this brown cloud up and down the South
24 Platte River Valley. And that's what happens, the air
25 drains out and kind of stagnates out in this area here

1 and does its chemical thing and forms its little ground
2 clouds and everything else.
3 MR. MARSH: What can you say about the
4 history, then? We're looking at distance. What--is
5 there some assessment of history or duration of
6 deposition?
7 MR. BIGGS: I don't know how to assess
8 that. You know, you always hear the rumors that they
9 did all this burning at night. And if they did it at
10 night, it's going to be caught in these drainage flows
11 75 percent of the time. At night, you know, pick the
12 winds out of the west and you're going to be right.
13 And it's these drainage flows off these mountains
14 carrying it all out this way. And of course, then it
15 gets influenced in the Denver area and turns up the
16 South Platte. And all this does the same way. So it's
17 got to be--you know, if one believes the history of
18 what you read, and not necessarily what really
19 happened--because I don't know. But if they really did
20 try to dump their stuff at night--that's a common
21 industry practice. It's dark. No one can see it. You
22 can smell it usually, but--that's what gets them into
23 trouble. But not plutonium. So if Rocky Flats follows
24 the same practice of trying to get rid of their stuff
25 at night by burning or whatever, then that's going to

be in the drainage flows and it should go out there. And I guess my reaction is I'd like to see if we find anything. If we do, well, then, we know something like that has happened.

MR. LaVELLE: Thanks, Gale. Just to summarize, make sure we're all on the same sheet of paper here, the sample that's going to be in the Front Range Community College area is No. 21 on our sheet. It's CS--CES 18. The one up near South Platte--or Platteville area, I mean, is No. 22 on the sheet. And that will be CES 19. And then the one up here, Milliken, in this area, will be--it's 23 on our sheet and CES 20, just so we've got them all named.

MS. ELOFSON-GARDINE: I would suggest that somebody check into the remediation that happened around Front Range. Maybe David Boone might know something about that. Whoever handled that PCB cleanup, you might want to know where that was located so they don't stumble into its dirt spot and not know it.

MR. LaVELLE: That's something Todd ought to--

MS. ELOFSON-GARDINE: I think it's been five or six years or longer.

MR. LaVELLE: This was pendacore phenol

1 (sic), did you say?

2 MS. ELOFSON-GARDINE: Yeah.

3 MR. LaVELLE: Okay. There was--Nancy had

4 prepared a couple summary sheets from some of our last

5 meetings, and we had brought up in the last couple of

6 meetings some action items, or at least some questions

7 that we might want to think about concerning sampling.

8 I was just looking over these, and there was a couple

9 that I thought we probably should talk about now. One

10 is the suggestion that the proposed sampling sites list

11 should be shown to Ed Martell and John Gouphman. If we

12 want to proceed on that, we need to designate a person,

13 I guess, to take the sampling sites out and explain

14 them and try to get that part rolling. So do we have

15 any suggestions on how and if we should follow up on

16 that suggestion?

17 MR. MARSH: I think Martell might have

18 some added input.

19 MS. ABBOTT: Didn't somebody also mention

20 that it was maybe premature for John Gouphman, that

21 they all agreed? I don't remember who made the

22 comment, but somebody thought that it was premature at

23 this stage for John Gouphman to look at it.

24 MR. LaVELLE: Okay. Todd.

25 MR. MARGULIES: Question, I guess. Who is

1 John Gouphman?

2 MS. ELOFSON-GARDINE: One of the original

3 Manhattan Project workers that did a lot of radiation

4 health studies. Yeah, as far as samples go, I think

5 Dr. Gouphman gave testimony regarding the lawsuit. But

6 I don't know if--I know he's working on several books

7 currently. I'm not sure if he would feel really

8 comfortable trying to look at all that stuff right now,

9 especially if he's not getting paid for his time. So,

10 you know, that may be when we get to the point where

11 there's some number crunching going on and some kind of

12 results, that, you know, would be probably appropriate

13 to say, "Can we ask you to look at this? Can we give

14 you a hundred dollars for your time?" or something.

15 But give him something solid to look at.

16 MR. LaVELLE: Okay. So that's a move to

17 say that maybe it is premature, I guess, at the moment

18 to ask John Gouphman to look at this. How about Ed

19 Martell? Do we want him to look at our sampling site

20 list?

21 MS. ABBOTT: Yes.

22 MR. LaVELLE: Okay. Then we need to have

23 someone that will actually take the list to him and do

24 it.

25 MR. SCHONBECK: I'll do it. I think

1 Martell is much more appropriate than Gouphman.
2 Gouphman is a physician interested in
3 low-level-radiation epidemiology. I don't think he'd
4 help much in terms of sampling at a site that he
5 doesn't even live near. But Martell has done sampling,
6 so I think that--I'm not sure that he will. Probably,
7 my suspiscion is that he will be somewhat noncommittal
8 in report. His recommendation is that we sample to the
9 southwest of the plant. That would be the place that
10 he'd like to see. And I'll show him the sites that
11 we've picked out for that, but I will take this up to
12 him and get his comments.
13 MR. LaVELLE: Good. Do you need to get a
14 copy of the map in bigger form to show him?
15 MR. SCHONBECK: That would help, yes.
16 Actually, you know, I do have a map. Unless there's
17 one that is of that nature where everything is
18 finalized. That would be a help.
19 MR. MARGULIES: When I'm all done there
20 will be all sorts of pretty stuff to look at. It's
21 pretty rough now.
22 MR. SCHONBECK: We probably need Martell's
23 comments before the pretty stuff comes out.
24 MS. ABBOTT: What about having Todd mark
25 them on these?

MR. SCHONBECK: That will be helpful.

MS. ABBOTT: So he could see specifically.

MR. SCHONBECK: Yes. Are those your maps, Todd?

MS. ABBOTT: These are mine.

MR. MARGULIES: I've got a set as well. When were you planning on--

MS. ABBOTT: That lists every house, everything.

MR. SCHONBECK: Usually Thursdays are my times, so perhaps--I don't know if we could do it before I leave, Todd. If not, I'll do it the following Thursday. Another question is how soon do we need to move on this? We did already have, light as it was, a snow. I'm out in the field moving as quick as I can. Do people feel are we realistically going to do sampling this year?

MS. ABBOTT: Yeah, sure. Because we'll have bare ground all through most of December. So there's a snow. You know, I mean, that's like saying there's been a rain. Probably the ground won't be covered.

MR. BIGGS: I love your optimism, bare ground through December.

MS. ABBOTT: There usually is.

MS. ELOFSON-GARDINE: At least through October.

MS. ABBOTT: Well, I just base it on my riding. And usually, you know, we can ride with no snow on the ground through times in December. You know, we usually do not have a white Christmas. That proves it.

MR. MARGULIES: This is just one topo.

MS. ABBOTT: I have three, but mine--

MR. MARGULIES: I've got all four. Maybe what I should try and do--I have to run over to the USGS map center to get, you know, additional maps for these new sites. What I'll do is I can pick up another set of the four or five that give most of it. I probably won't pick up an extra set of maybe where Gale's are, but I can give you verbiage as to where they'll be. You have all those three on maps and you could take them to Dr. Martell.

MR. SCHONBECK: Sounds good.

MR. MARGULIES: I'll talk to you after the meeting. Maybe we could hook up to hand you the maps. I can do it probably before next Thursday.

MR. SCHONBECK: Let's plan next Thursday.

MR. MARGULIES: I don't think I can get them done by the time you go tomorrow.

MR. SCHONBECK: Right.

MR. STOVALL: Jim, just by way of review, I have a question. We've looked at Woman Creek, Walnut Creek, Big Dry, either side of 120th, Rock Creek in the area of Stearns lake, Coal Creek in the area of Marshall. I'd ask Gale, is there any validity in taking a look at the confluence of Coal Creek and Boulder Creek?

MR. LaVELLE: Right here?

MR. STOVALL: Up further.

MR. BIGGS: Just go straight north. Up in that area, yeah.

MR. STOVALL: Somewhere in there. Because we're sampling all those that I mentioned close in, and then you're proposing going on the Platte. Obvious question, is there any point in taking a look there, do you think, from your professional standpoint or point of view?

MR. BIGGS: There are two ways, two immediate ways I can think of that pollutants from Rocky Flats get to that point. If you had a gentle south and southeast wind, which is very dominant in this area, to kind of move things up to get caught in that drainage flow, that would take it down that way. I was at a council meeting, oh, a year or two ago, it's

been a while, when some woman who claimed that she had worked at Rocky Flats made the statement that the highest level of cesium measured was in the Rock Creek area around Superior. And so obviously it gets into that area. A second route of getting into that area is during daytime when you have your east winds. The studies that they did for this when they released the plume and then measured it for the tracer, it went up to the Front Range and spread both north and south and then would go down that creek area. So, yeah, I think that would be a logical place to try to get.

MR. STOVALL: My point is we're covering close in. My question is, Do we want to extend out as far as the Coal Creek and Boulder Creek confluence area?

MR. BIGGS: I think it would be a good idea.

MR. STOVALL: It does connect. It may not look like it, but it does.

MR. BIGGS: The maps are not always reality. It's out north of Erie.

MR. LaVELLE: I would assume we would want it right in here as where it looks as though the valley is spreading, somewhere in this vicinity, if we're adding a site.

MR. STOVALL: Yeah.

MR. BIGGS: About halfway between there and where Fort--where St. Vrain Creek connects.

MR. LaVELLE: Between the confluence, somewhere in this vicinity. What is that? We're talking about southeast of Longmont?

MR. BIGGS: Yes.

MR. LaVELLE: Here's that confluence, and here's where it kind of spreads. We're talking about taking one right in here.

MR. MARGULIES: He says that does connect in here.

MR. STOVALL: I'm not sure how, but it does.

MR. LaVELLE: The topography will connect.

MR. STOVALL: Here, since you've got--you know, we're covering this. We're covering this. Your question is do we want to cover in here. And I think we ought to go out there and take a look through there.

MR. LaVELLE: Gale would probably say go a little further north to let this valley spread and let the air calm down, and you'd have more--might have more deposition down there a little further. Okay. Is that right--right in this--

MR. BIGGS: Right into that area.

MR. LaVELLE: Okay. Okay. You know what we're at as far as CES numbers?

MR. MARGULIES: That will be sample No. 25.

MR. LaVELLE: 25 on our list.

MR. MARGULIES: CES--let's go 41.

MR. LaVELLE: 41. Okay.

MS. ABBOTT: Confluence of Boulder and Coal Creek. Boulder Creek and Coal Creek.

MR. BIGGS: About a mile or so north along Boulder Creek.

MS. ABBOTT: Okay. A mile or so north of the confluence.

MR. BIGGS: Yeah. I guess it would be kind of north, northeast.

MR. STOVALL: Yeah.

MR. BIGGS: Still staying as close to the creek valley bottom as you can, but not getting in the flood plain.

MR. LaVELLE: Is there anything else we need to cover as far as sampling sites go, Bini?

MS. ABBOTT: Just one correction, and it's my error. But on--well, it's on the one for the Ralston school. Now I can't find the number. Okay.

1 No. 19. That should read about 68th Avenue and Indiana
2 rather than 72nd.
3 MR. LaVELLE: No. 19 closer to 68th.
4 I guess the next order of business is to
5 talk a little bit about soil sampling methods and also
6 analyses. Jim Stone couldn't be here today, of course,
7 but we did talk with him and spent some time with him
8 just a day or so ago.
9 MS. LOCKHART: Talked to him on the phone
10 last night.
11 MR. LaVELLE: After our last meeting,
12 spent some time talking about different methods of
13 sampling, trying to--or ways to make the sampling as
14 consistent as possible with what has been done before.
15 And we just had a couple of things we put up on the
16 board as maybe starting points for little bit of
17 discussion on how we should proceed. I'll try to
18 summarize these a little bit.
19 The first issue that Jim brought up was
20 sample depth. As you know, there's lots of different
21 methods for sampling plutonium in soil. And things
22 like little surface sweep in the first few millimeters,
23 and then the 3-centimeter sample, and then you can go
24 in depth. What Jim recommended was that we take both a
25 3-centimeter, which is sort of like the Rocky Flats

1 method, I guess, and the 21-centimeter sample. The
2 reason that he suggests those two is that in
3 undisturbed soil, you get--virtually all of the
4 plutonium remains in that upper 3 centimeters, not
5 always right on the surface that's been removed by
6 resuspension or leaching. But what's there seems to be
7 pretty much all in the upper 3 centimeters. On
8 disturbed sites, you can get virtually all of it in the
9 upper 21 centimeters or so. That is even if it's been
10 plowed or something, most of the plutonium stays within
11 that upper 21 centimeters, and so you get virtually all
12 of what's there either way when you take these two sort
13 of samples. So that's his first recommendation.
14 The second recommendation is that--and he
15 did a couple of test counts on one of his germanium
16 counters for americium to support the second suggestion
17 here. That is that the germanium detector probably
18 isn't going to be a very good way to screen for
19 plutonium. It might be just as well to go to plutonium
20 analyses and not worry about americium. The reason is
21 if you have plutonium that's down around the
22 concentration of, say, 1 DPM per gram, it might take
23 you four to eight hours on the counter per sample to
24 get enough americium counts to be confident in the
25 result. And that is going to be pretty expensive. So

1 that sort of starts to take it out of the screening
2 realm and more into the analytical realm. So that's
3 his second suggestion. You know, just may not be
4 possible, at least some of these lower levels, to
5 screen very effectively using the germanium detectors.
6 MS. ELOFSON-GARDINE: In other words, just
7 do it.
8 MR. LaVELLE: In other words, just do it.
9 Take the sample and do the plutonium analysis.
10 MS. MORIN: Do we have any idea about how
11 much that would cost per sample, Tony?
12 MR. HARRISON: Well, I can tell you what
13 our lab would charge, but you aren't asking our lab to
14 do it, are you?
15 MS. MORIN: We might, since our lab can't
16 do it.
17 MR. HARRISON: Our lab wants $250 a
18 sample. I imagine any other lab in town will want
19 more.
20 MS. MORIN: And the ATI for the other
21 sample was $65 a sample, so that is a real big
22 difference.
23 MR. HARRISON: 65 for plutonium analysis.
24 MS. MORIN: For the gamma--gamma spec, 65
25 versus 250.

1 MR. LaVELLE: That 65 was regardless of if
2 they had to count for eight hours per sample?
3 MS. MORIN: I don't know that.
4 MR. LaVELLE: We might look into it, if
5 there's that big a cost difference. Even if we had to
6 count for a long time, it might still be worth doing.
7 MR. HARRISON: Were you asking the cost of
8 the plutonium analysis?
9 MR. LaVELLE: Yes.
10 MS. LOCKHART: But the ATI was--
11 MS. MORIN: 65 for americium.
12 MS. LOCKHART: But we don't know how long.
13 MR. LaVELLE: We don't know if that would
14 vary by the length of time they had to keep that on the
15 machine. We should look into that, I guess, is what I
16 think it's coming down to. If there's that much of a
17 difference, maybe screening would be still a good
18 idea.
19 MS. MORIN: Can we take a five-minute
20 break and we'll call?
21 MR. HARRISON: I would suggest before you
22 call that, you know, you get them to quote you a price
23 on a detection limit. Because, you know, even if they
24 count it for eight hours, they may still say that it's
25 less than something that we already knew. So that

1 would be $65 wasted in any case.

2 MS. ELOFSON-GARDINE: Get them to commit

3 to a lower limit.

4 MR. HARRISON: Whatever you think the

5 ballpark is, or whatever you think the lowest number is

6 that you really need to be able to see, to get them to

7 say how much will you charge to do that.

8 MS. ELOFSON-GARDINE: What is your current

9 lower limit of detection?

10 MR. HARRISON: I don't know. We have a

11 new detector and I'm still in the middle of calibrating

12 it. And I don't know what our detection limit is for

13 americium.

14 MS. ELOFSON-GARDINE: Did you get those

15 computer problems resolved from that crash earlier in

16 the year?

17 MR. HARRISON: It's up and running. But

18 at this point I have other fish to fry. And we've done

19 some counting in soils. I don't know. I can't tell

20 you what our detection limit for americium is at this

21 point. We actually got two different detectors, one

22 specifically to look at the low-energy stuff like

23 americium and plutonium. But at this point, I don't

24 know what the detection limit would be or how long

25 they'd have to count to get there. The other thing it

1 depends on is the sample size. If you give them a
2 10-gram sample, you'll have to count longer than if you
3 give them a kilogram sample. So that's something else
4 you'll have to think about.
5 MS. ELOFSON-GARDINE: Do you want to call
6 Rob on the break?
7 MR. HARRISON: He's not there. He
8 doesn't--that's my job. Rob would tell me to get right
9 on it. So why don't you let me get right on it and
10 I'll try to get an answer to Ann or Normie or somebody
11 in the next week or two.
12 MR. LaVELLE: For right now, if it turns
13 out that it's in the 65 or 70 dollar range, would you
14 agree it would be worthwhile doing that first before we
15 do the more expensive plutonium analyses?
16 MS. ELOFSON-GARDINE: Depends. Is it
17 going to be anywhere in the ballpark of what you're
18 expecting your results to be?
19 MR. LaVELLE: I can only remember talking
20 with Jim Stone, but we talked about the plutonium
21 concentration that you could detect using the americium
22 screen. And so maybe we ought to say we got to be able
23 to detect plutonium down to X, and then see what they
24 can do.
25 MS. ELOFSON-GARDINE: Do they want to try

1 to give them a call and have a five-minute break, come
2 back to that?
3 MR. LaVELLE: We can call, but we should
4 be--we should give them some information about what we
5 need as a detection limit. I mean, is 1 DPM too high a
6 detection limit? Do we need to go down to .1 or .01?
7 What do we need?
8 MR. MARGULIES: You're going to find in
9 most locations, I think, it's going to be relatively
10 low levels.
11 MS. ELOFSON-GARDINE: Could be .01 for all
12 we need.
13 MR. HARRISON: At least two or three
14 zeros.
15 MS. MORIN: Can you detect that?
16 MR. HARRISON: I'm not going to promise
17 it. You know, that's what I'm saying, I don't know
18 what our detector would do. I do know that we have--I
19 think we have the best detector in the state, and maybe
20 the best detector west of the Mississippi. We have one
21 of the three largest germanium detectors ever made. I
22 don't know--at least in the free world. I don't know
23 who has the other two. But, yeah, we've got a running
24 machine. The problem is we just haven't--we haven't
25 had time to get calibrated for all the things we'd like

1 to do with it. But, if this committee needs an answer,
2 I will do my best to come up with one before too much
3 time goes by.
4 MR. LaVELLE: Sounds like we need a little
5 work on what may be feasible. We could tell them
6 something we got to be able to detect. If that's an
7 order of magnitude more or less than they can do, it
8 won't help us.
9 MS. ABBOTT: Would the amounts that Mike
10 has already found in their studies--if he could say a
11 couple of those amounts, maybe we could have an idea of
12 how low we want to be able to detect. I mean, there
13 were values of .03, .08, .01. How low do we want to be
14 able to detect? And those are in the pretty near
15 vicinity of Rocky Flats.
16 MR. GUILLAUME: Who is going to do the
17 calculations, come up with an americium figure? Who is
18 going to do the calculations?
19 MR. HARRISON: Whoever does an accounting,
20 I would hope. Whatever lab you end up picking.
21 MR. GUILLAUME: There's got to be a limit
22 there of what you need to have for a certain amount of
23 certainty in your prediction. You can't go so low you
24 get three zeros out there. The uncertainty of
25 predicting what you're going to get for plutonium has

1 got to be pretty great.

2 MR. HARRISON: I agree. As far as I'm

3 concerned, doing gamma spec on americium has value of

4 its own. If you find americium, that's fine. But

5 if--but any translation of that americium concentration

6 to a plutonium concentration in the same sample is

7 going to have a huge amount of error with it. And the

8 only way to know what plutonium concentration you're

9 going to have is to analyze for plutonium.

10 MR. GUILLAUME: Jim Stone will say with

11 his machine he was not able to detect any americium at

12 all. Now, that's obviously a very big difference

13 between Tony's machine, but that gives you a relative

14 feeling for how much americium is out there.

15 MR. LaVELLE: You're talking about his

16 field detector?

17 MR. GUILLAUME: Right.

18 MR. LaVELLE: He did take some samples

19 into a lab, put it in one of his lab detectors. And it

20 had a plutonium--measured plutonium concentration of

21 about 1 DPM per gram. And he couldn't get anything

22 that he would be confident in as far as an americium

23 peak, unless he counted for more than four hours. So,

24 you know, we probably can detect some americium. I

25 guess the purpose of the screening originally was, are

1 there any places where we detect a lot of americium,
2 and do we want to then focus attention on those areas,
3 or are we really interested in just getting the
4 americium values or the plutonium values for
5 everything? I'm not really sure. I think the
6 committee--Paula.
7 MS. ELOFSON-GARDINE: I'm thinking we need
8 to have a little clarification. And that is I know
9 that plutonium is not the only contaminant of concern.
10 Are we going to let them go ahead and test for
11 plutonium, americium, and germanium? Maybe we need to
12 just go straight to having all of those things tested.
13 MS. MORIN: How expensive would that be,
14 Tony?
15 MR. HARRISON: Keep going.
16 MS. ELOFSON-GARDINE: Maybe we need to cut
17 to the chase and decide what are we going to do with
18 this? Do we want to have at least plutonium and
19 americium sampling?
20 MR. STOVALL: When we started out, we were
21 looking for--we thought we had a breakthrough on the
22 screening approach to look at a lot of sites, narrow it
23 down to the hottest ones, and take a second-layer look.
24 MS. ELOFSON-GARDINE: Sounds like that
25 could be a waste of time and money.

1 MR. STOVALL: We now are unable to do the
2 screening process. Looks like we're back to doing the
3 full test on whatever it is we want to do. But we--the
4 reason we got into this germanium testing approach was
5 to look at a lot of sites to see what could be detected
6 from a screening standpoint.
7 MS. MEYER: I think that it's very
8 important to understand what screening is all about,
9 and it's a decision that I think the group has to
10 make. In many circumstances, you do use screening to
11 go in and see where you might have higher levels, and
12 then you zero in on those. So you need to decide
13 whether or not that would satisfy you. If you do go in
14 and use this screening method and find that everything
15 is fairly low, which is, you know, a level you'll have
16 to decide, then generally you assume you are not going
17 to go back in to do further analysis.
18 If in your mind you feel that you would
19 not be satisfied with the screening results, then it
20 seems kind of a waste of time and effort to do the
21 screening when, in fact, you really do want those, you
22 know, more detailed results. But generally, you know,
23 for a lot of applications, people use screening because
24 it's lower cost and it gives you kind of a cutoff. You
25 say, okay, if there's something there below this level,

we're really not concerned about it or it's below our level of detection or whatever, and then you kind of go with those results. But I guess it's a decision that the group has to make. It sounds almost like you wouldn't be comfortable with just screening.

MS. ELOFSON-GARDINE: How much time would we be wasting doing both, if you essentially end up wanting to do both?

MR. GUILLAUME: The thing is the screening has already been done. There's a wealth of soil samples out there. If you want to key in on a particular area, all you have to do is look at all of the sampling that's already been done. That's how you key in.

MS. ELOFSON-GARDINE: Part of this exercise is validating some of that.

MR. GUILLAUME: That's another problem. But the screening is when you don't know what's out there. You don't know what level of magnitude you're dealing with. But you already do.

MR. SCHONBECK: You're arguing for just looking at plutonium, Mike?

MR. GUILLAUME: Looking at most of the locations where you're looking at sampling, you won't find anything with a current day screening unless you

take it into the lab and do a great deal of work with it.

MR. SCHONBECK: You won't find anything with americium, but you may find something if you go straight for plutonium.

MR. GUILLAUME: Yes, with chemistry methods going to the lab.

MR. LaVELLE: When--

MR. SCHONBECK: Just in general, where did we go wrong? We spent a lot of time here. I think a simple question long ago, what is the detection limit, would have saved ourselves a little bit of effort.

MR. MARGULIES: Jim was not able to answer that question. He gave us a rough figure between 1 and 2, closer to 1 DPM at one point in time.

MS. ELOFSON-GARDINE: For screening.

MR. MARGULIES: He said that was all he could give as to this point, depending on which containers.

MR. SCHONBECK: Just sort of as a parenthetical note for future work, ask the right question at the right time.

MR. LaVELLE: Do we want to consider--I assume that the germanium detector would also give us uranium if we wanted to look for it.

1 MR. SCHONBECK: How would it do that? You
2 mean just the gamma itself?
3 MR. LaVELLE: The gamma. It is a
4 spectroscopy, and so you can look at the different
5 energies. I don't know if that is an important or
6 unimportant fact, that the germanium detector might be
7 able to give us uranium also.
8 MS. MEYER: What kind of cost does that
9 add? Do you have any feeling on that?
10 MR. HARRISON: I don't know about other
11 labs. The way we do it, you know, if we do gamma spec,
12 you know, we can look for various nuclides in one
13 count, and we can turn out a report for all those
14 nuclides. So the cost would be the same. If we're
15 doing gamma spec, you get the whole--everything you
16 want that we can measure. Uranium detection limits
17 tends to be a lot higher that way. There are certainly
18 better methods to do uranium. I'm always uncomfortable
19 doing uranium by gamma spec because so much of the
20 general background radiation comes from uranium, and
21 that background can vary quite a bit from hour to hour
22 or day to day. And so you still have a lot of
23 uncertainty with it, unless you actually have big
24 chunks of uranium in there. Because for the most part,
25 what you're sampling out on the ground is not too

1 different from the ground that your detector is sitting
2 on. And so even with a lot of shielding and stuff,
3 you're still going to see those uranium peaks, and as
4 the background varies, you lose certainty about what
5 you're really measuring.
6 MS. ELOFSON-GARDINE: I would make a
7 suggestion, I think, at this point. I'm very concerned
8 about what kind of sensitivity we can get out of CSU
9 for screening or analysis, and I think that that is a
10 question that needs to be answered before we go any
11 further. What kind of sensitivity does CSU have
12 compared to the state lab or any of the other private
13 labs in the area? If they don't have the sensitivity
14 we need to look at remote samples, that's kind of a
15 waste.
16 MS. MORIN: That's not an issue.
17 MR. LaVELLE: That's one of the issues we
18 were going to bring up with you. It doesn't look as
19 though we're going to be able to use CSU's lab anyway,
20 so we're probably going to have to go elsewhere for the
21 analysis if we want to do them anytime soon.
22 MS. ELOFSON-GARDINE: Can we get a survey
23 done between now and the next meeting we're going to
24 have as to what are the LLDs for screening and analyses
25 for americium and plutonium?

1 MR. MARGULIES: Are you volunteering to do
2 that?
3 MS. ELOFSON-GARDINE: If they want to pay
4 for my billable time, you bet. Otherwise, I'm sure we
5 have people that are paid to do this in here.
6 MR. LaVELLE: I don't know. I imagine
7 that we can find that out. We'll ask Tony what his
8 detection limits are. We'll make him go to work.
9 MR. HARRISON: The other thing, if you
10 don't like all the data we've generated in the last
11 20 years out of that lab, I can't imagine why you'd
12 want to give your samples to us. We'll be happy to
13 analyze it. We can use the money. Not that we get to
14 keep the money, but we'll be happy to analyze it. And
15 what it will take is a long, long time to get you any
16 results, and when we give you results that look just
17 like all of our other results, what are you going to
18 think then?
19 MS. ELOFSON-GARDINE: I still need the
20 question answered about the LLDs before we do anything.
21 MR. HARRISON: I'll come up with some sort
22 of numbers for you on that.
23 MS. ELOFSON-GARDINE: We may end up
24 saying, well, gee, the state lab has better sensitivity
25 than anybody else. So we don't know. We don't know

1 the answer until we see the numbers.

2 MR. STOVALL: All this equipment you have,

3 what was it spec'd at? What detection limits were you

4 supposed to be able to get from it?

5 MR. HARRISON: That's not how it works.

6 They give specs on various electronic things, and it

7 depends on sample time and backgrounds and that sort of

8 thing.

9 MR. STOVALL: There are no comparative

10 projections when this thing was designed as to if the

11 answer is no, then why did we bother designing a bigger

12 and better mousetrap?

13 MR. HARRISON: There's no doubt it's more

14 sensitive and more precise. We can prove that all

15 different ways.

16 MR. GUILLAUME: The sample matrix, just

17 what kind of clay structure, what kind of soil

18 structure, what kind of interfering things you have in

19 the soil. There's so many variables that go into that.

20 MR. HARRISON: What altitude you're at.

21 MR. MARSH: Usually when you sell a piece

22 of hardware, if there are variables, you put that in.

23 It's just like when you buy an audio amplifier, you say

24 so much power, you're driving it at such and such a

25 load, and so forth, and usually market it in that

manner.

MR. HARRISON: I can tell you about efficiency, and I can tell you about full and half maximum and full width, temple maximum, and all sorts of specs, none of which--all of which contribute to giving you a good detection limit, but none of which directly translate into a detection limit for anything.

MS. ELOFSON-GARDINE: What we need is comparative LLDs and costs for plutonium and americium testing.

MR. MARSH: When will you have your machine on line?

MR. HARRISON: It's on line.

MR. MARSH: Fully calibrated on line.

MR. HARRISON: If I could clone myself and work around the clock, it wouldn't take that long. All the time I spend at meetings like this and waiving survey meters around at Rocky Flats keeps me from getting that calibration work done.

MS. ELOFSON-GARDINE: We need turbo coffee.

MR. MARSH: What kind of detector is it, and what size is it?

MR. HARRISON: A hypopure germanium detector. Usually when people talk about germanium

1 detectors, they will say it's a something percenter.
2 That means it's measuring efficiency relative to a
3 3-by-3 cellumydon (sic) crystal, which was for years
4 the most efficient thing anybody could come up with.
5 Our old one was a 12, meaning it was 12 percent as
6 efficient as that sodium iodide detector. CSU, I think
7 they have a 20 percenter. Our new one is 125
8 percenter. And we have what we call low-axe detector,
9 a plainer detector, which is specifically good for
10 low-energy stuff. And that would be what we would use
11 on the--use to look for americium. I don't know what
12 percent--or what kind of a percent that is because it's
13 a different type of detector. Even though it's still
14 hypopure germanium. For additional details, contact
15 Rob Terry at the Colorado Department of Health. And in
16 the meantime, I will try to come up with some sort of
17 detection on nominal detection limit for americium and
18 uranium in soils in some volume or some mass of soil
19 for some count time. And that'll give you something to
20 work with.
21 MS. ELOFSON-GARDINE: And plutonium.
22 MR. HARRISON: Well, plutonium by gamma
23 spec is a real problem. I'll give you a detection
24 limit, sure.
25 MR. GUILLAUME: Was this ever discussed

1 during your objectives, what you're going to use this
2 data for as to how low a detection limit you actually
3 need?
4 MS. ELOFSON-GARDINE: That's just
5 something we didn't get around to talking about with
6 the LLDs.
7 MR. GUILLAUME: If you're talking about
8 .001 versus .05, it probably doesn't make any
9 difference because we can detect rads so easily. I
10 mean, if you--the general rule in chemistry is that you
11 can determine--in a matrix of something, you can
12 determine by chemistry methods about 1 part in a
13 million. That's just general rule of thumb. With
14 rads, you can get down to quadrillions. Rads are nice
15 because they emit something. Trying to find a piece of
16 beryllium within a matrix of soil, that's hard. But
17 with rads, it's very easy. Our detection limits for
18 rads compared to metals or organics or any of those
19 other things are three orders of magnitude greater. So
20 your discussion about trying to get down to this
21 lowest, lowest, lowest detection limit--we're way down
22 there already. They report .005329 units. I mean,
23 there are more significant numbers in that data set or
24 that number than for metals or organics or anything
25 else. Rads are easy to find. So this discussion of,

1 you know, getting way down to the, you know, one or
2 two orders of magnitude of detection limit,
3 that--because of your background radioactivity, you're
4 already at .02, .03, up to .05 in some cases.
5 MS. ELOFSON-GARDINE: If we're looking to
6 CSU to do some of this work, do they have sufficient
7 sophisticated equipment to give us some good results?
8 MS. MORIN: But we're not.
9 MR. GUILLAUME: To be honest, I'm trying
10 to push Normie to find out what kind of lab--we have
11 some samples that are sitting around we would like you
12 to analyze. Remember those ones we took out in the
13 field? Those are sitting up at CSU's lab that we would
14 really like to get some results on to compare with the
15 results that we have.
16 MS. ELOFSON-GARDINE: I think our idea
17 here is some idea of QA perhaps. That we want to know
18 that whoever does it is going to have the ability to
19 meet or match or exceed what we have seen from other
20 labs already. You know, we need to have some kind of a
21 measuring stick in terms of the abilities to detect the
22 lab we're sending to.
23 MR. GUILLAUME: Any reputable lab is going
24 to have a good QA program.
25 MS. ELOFSON-GARDINE: You assume that.

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1 MR. GUILLAUME: They can't stay in
2 business if they don't.
3 MR. HARRISON: Everybody who submits a
4 sample is going to ask about their QA setup.
5 MR. GUILLAUME: Especially something as
6 highly specialized as rads.
7 MR. BIGGS: I missed your point earlier
8 talking about rads being three or four orders of
9 magnitude better detection of other kinds of metals. I
10 guess my answer is so what? What is the relative
11 danger of any of these things? Rads five times more
12 dangerous than regular metals so, therefore, we still
13 haven't got a detection limit good enough. How does it
14 fit into the picture?
15 MR. GUILLAUME: Comes into interpretation
16 of results.
17 MR. BIGGS: I'm getting at that,
18 interpretation of results. If we're worried about a
19 health effect or the danger, whatever you want to call
20 it, of a particular rad, and a particular unit of
21 metals' detection limits, instead of just looking at
22 detection limit, you also have to throw into that
23 what's the relative health effect or danger there? So
24 that's my question I'm asking you now. Were you making
25 the point that the rads can be detected at three to

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1 four more orders of magnitude to what the equivalent
2 danger level of some metal is?
3 MR. GUILLAUME: I was not trying to
4 correlate the metals and the rads. I was saying our
5 understanding of background radioactivity has a certain
6 uncertainty associated with it. And you are getting
7 down beyond your ability to get past that, your
8 uncertainty. You're not gaining anything. The
9 uncertainty is going to be how you interpret the data.
10 MR. BIGGS: The uncertainty you're talking
11 about, not the danger level?
12 MR. GUILLAUME: Right. If in your
13 objective you would say, well, I want to see some kind
14 of relative risk number. See, if you went out with
15 these detection limits, you would get out and say, What
16 do I need to see? What is a risk? And then you would
17 get some kind of laboratory method. And you can get
18 very, very sophisticated laboratory methods that will
19 get you down lower, but are they of any value? Is it
20 worth the cost when you're looking at a risk range way
21 up here? That's where usually in your objective you
22 would state something like that.
23 MS. ELOFSON-GARDINE: We're looking
24 at--here we're doing remote sampling. I mean, I'm sure
25 that most of us recognize that the chances are you're

1 going to see some very low levels. And we want to know
2 that even if they are very low levels, hopefully
3 they'll be within the detectable range or a limit of
4 whatever methods are being used to test.
5 MR. GUILLAUME: Right. I agree. And you
6 want to get down to that. But Tony is talking about a
7 detectable limit that is probably two orders of
8 magnitude lower than that.
9 MS. ELOFSON-GARDINE: The real point here
10 is if we have very low levels that we're looking at to
11 begin with, obviously screening probably isn't going to
12 help. So some of those remote locations where we
13 expect to see very low levels, we may need to cut to
14 the chase and just have it analyzed.
15 MR. GUILLAUME: Well, the next question
16 is, How are you going to interpret that data. That is
17 the next question. You're going out to a landscape
18 that already has lots of--not natural, but background
19 plutonium levels out there already. And if, in fact,
20 something did come from Rocky Flats and it's out in a
21 remote area, how are you going to differentiate between
22 what's out there already and, say, your hypothesis that
23 something came from Rocky Flats?
24 MS. ELOFSON-GARDINE: I think that's a
25 very biased viewpoint that a lot of residents discount

1 because it comes from the plant. You know,
2 it's-all-background argument sounds to enrage--tends to
3 enrage most of the local residents. We want to see
4 what's there. And how it's interpreted is really
5 probably an individual thing.
6 MR. BIGGS: It's also my understanding
7 it's easy to distinguish between a weapons-grade
8 plutonium and that that has come from Rocky Flats and
9 that that has come from background. I've been told
10 over and over again that it is not difficult at all to
11 distinguish between plutonium from Rocky Flats and
12 background that's come in from weapons, things like
13 that.
14 MR. GUILLAUME: I think when you get out
15 to these various remote areas, that will be difficult,
16 extremely, because you don't have enough to deal with.
17 You're talking about variations in isotope ratios, and
18 your uncertainty in your value because you're down
19 close to your detection limits is going to be difficult
20 there. You're talking about another analysis method.
21 Talking about a mass spec or something to differentiate
22 those isotopes, which is another analytical tool on top
23 of what you've already given.
24 MS. ELOFSON-GARDINE: So in order for
25 these to be meaningful samples, we're going to have to

1 determine there's sufficient quantity taken from each
2 site to give you all those various testing
3 availabilities? Is that what you're saying?
4 MS. MEYER: I think, too, that even if you
5 do set up sampling protocol with multiple samples and
6 long counting times, when you're talking about these
7 uncertainties, even if you do all of that, it may be
8 that you're down in that area where you can't make a
9 definitive statement about where the plutonium came
10 from. And you're right, you can detect, you know,
11 weapons-grade versus fallout. But, again, you're in
12 this area where you have this--you know, your median
13 value, but it's bounded by this uncertainty. If both
14 values kind of fall within each other's uncertainty
15 range, it's difficult--even if you've gone to a lot of
16 effort and expense, you know, you're not--it's not
17 certain that you're going to come up with a definitive
18 answer.
19 MR. MARSH: Well, to expand on what Gale
20 is showing, and this is a real concern, what we really
21 should be looking at possibly is more than one peak.
22 In other words, when we look at plutonium, if the
23 situation is such that the plutonium is so low from
24 emissions--plant emissions in relation to what's out
25 there--in other words, let's say it's a small fraction

1 of the plutonium from atmospheric testing. We know
2 that the atmospheric testing plutonium is linked to
3 isotopes. I would expect, depending on the technology
4 of the bombs going off, you're going to find different
5 isotopic ratios between plutonium that doesn't undergo
6 fission, in the case of a nuclear blast, and you're
7 going to find the fission products from the plutonium
8 of that same blast that will produce other isotopes,
9 cesium and strontium, be that as it may.
10 And we're suggesting or anticipating very
11 low levels, that what we're going to have to do is say,
12 well, we have to do PU239, which is weapons-grade
13 plutonium, not to be confused with 38--238, which is
14 nuclear reactor fuel for power generation. And we
15 should determine--or it should be determined what
16 isotopic ratio and of what isotopes we should also look
17 at simultaneously. So it will probably have to involve
18 mass spectroscopy. We're going to need at least two
19 peaks, and we're going to use the cesium present, if
20 that's the best choice, as sort of an internal
21 standard. The presence of cesium should be a measure
22 of the presence of plutonium that is there from foreign
23 sources atmospheric testing.
24 MS. ELOFSON-GARDINE: We do have a cesium
25 source in Northglenn, though, at that food irradiation

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1 plant, which could be a possible--

2 MR. MARSH: Certainly if we're going

3 around that plant as well as the Rocky Flats plant,

4 we're going to see some of that too. That could be a

5 problem. The way to get around that, then, is to look

6 at two more, cesium and strontium and 239. So it gets

7 complex. We're talking spectroscopy here.

8 MR. SCHONBECK: Mike, what do you think?

9 MR. HARRISON: Did somebody ask for a

10 break?

11 MR. GUILLAUME: You're talking about some

12 pretty sophisticated analytical methodology as well as

13 calculation. You're talking about establishing some

14 very good backgrounds for cesium, et cetera. This is

15 pretty sophisticated stuff.

16 MR. MARSH: Except that cesium and

17 strontium are relatively easy to detect, high energy

18 emitters, so whatever.

19 MR. GUILLAUME: This is done in a couple

20 of places where you have some material, and you have

21 some things like that. But to do it on a low-level

22 site off site in Rocky Flats, that's--that would be

23 very difficult.

24 MR. MARGULIES: There was another point

25 when they brought up QA, that in looking at the

1 sampling program, that--and I briefly discussed it with
2 Mike--was something of a QA program, if you will, for
3 whatever the sampling analysis turns out to be. And
4 that whether it be a standard 10 to 20 percent, one
5 would guess that we would want to take a couple of--you
6 know, two, three, four, QA/QC samples ourselves in the
7 field. Not so much importantly where they're taken,
8 but when we come up with a total number, I mean, I
9 could go into different kinds of blanks and field QA/QC
10 types of samples and so forth. But at some point in
11 time, that needs to be talked about a little bit
12 again. Regardless of the premise of how sites are
13 selected, once you get those selected and you're
14 actually doing the sampling, there needs to be some
15 sort of vent put into place to ensure the credibility
16 of the data. So we don't necessarily have to come to a
17 firm conclusion on that today, but at some point in
18 time I think it needs to be discussed in a little
19 detail as to determine what we want to do in that
20 regard.
21 MR. LaVELLE: Good thing we're not going
22 out to analyze samples tomorrow. We obviously need
23 some more information. The detection limits will
24 probably be one. We might want to think a little more
25 about this idea of interpreting the data, because that

1 might tell us a little about how far we want to go with
2 the analysis. The key thing, I think, is if you have a
3 large background and a very small addition to it, it's
4 always really hard to determine that. So, you know,
5 how big an increase over background do we think is
6 significant is something we have to explore. It's
7 something to think about. I don't have any answers for
8 any of that, but certainly that's what we've been
9 talking about, I guess.
10 MR. BIGGS: I think that the appropriate
11 way to start is to go out and measure plutonium.
12 Assume it all came from Rocky Flats. If that proves
13 not to be--if that starts giving us problems,
14 interpretation of data, then we say, let's do more
15 detailed analysis. I guess my question, though, Does
16 that mean that we're duplicating costs to go back and
17 redo this?
18 MS. ELOFSON-GARDINE: Um-hum.
19 MR. BIGGS: Forget that idea.
20 MR. MARSH: I'm not so sure about that.
21 Not necessarily. If you do something quick and find
22 something there for plutonium, then it might be a good
23 idea to go back and look at isotopic ratios of other
24 stuff, cesium and whatever. See if it can be nailed
25 down that way. This is not new technology, those old

1 isotopic ratios things. That's how we determi
2 back in the '50s what kinds of bombs the [illegible]sk
3 the Evil Empire had.
4 MS. ELOFSON-GARDINE: Shouldn't v
5 making sure that we have sufficient samples?
6 MR. MARSH: Take a couple kilogr
7 whatever.
8 MS. ELOFSON-GARDINE: Let's make
9 have a criteria established, so when they wan
10 back, they don't have to go all way back to s
11 in the field.
12 MR. GUILLAUME: Your holding tin
13 generally not as good with rads.
14 MR. SCHONBECK: Say again.
15 MR. GUILLAUME: Your holding ti
16 other types of materials, you might lose som
17 during the storage.
18 MR. LaVELLE: Niels.
19 MR. SCHONBECK: I was just sitt
20 thinking where do we go now? None of this
21 should be a surprise to any of us. I'll ju
22 couple things I've been thinking about, and
23 that there are people who have been attendi
24 Mike, Greg, others, who have had experience
25 and then we have people here from the citiz

1 see something. But lucky in the sense that if you see
2 a positive number, then it validates everything else
3 too. I mean, you know, well, here is something that we
4 can say we did see. If every sample we take is--it's a
5 little dissatisfying if every sample you take is going
6 to be at the detection limit. I've worked with this
7 personally in the lab, atmospheric species, and it's a
8 bear. You can't--if you're at the detection limit, the
9 errors are--it's so--I'd like to have a focused
10 discussion of that.
11 I would appreciate having people who have
12 been in the field. Even though they are from these
13 agencies, I'd like to hear from you, you know, where we
14 can sit down and talk real numbers. What are the
15 detection limits? What techniques can we do? What are
16 the samples sizes? I think we're probably hitting the
17 right sample size so that we can archive it and go
18 back. And I would--if we do this for the purposes of
19 the committee, I want to make sure that the right
20 people are present for that, namely the four and more.
21 I mean, it would be good if we had Gale and Harvey as
22 well, but especially those who--Paula and Greg and who
23 else is not here today, that probably would be
24 important to have as the audience. And if Mike is
25 willing to come back and Tony, and maybe Rob Terry. I

1 don't know, who else? And CSU.

2 MS. MORIN: CSU is unavailable until

3 March.

4 MR. SCHONBECK: You mean to come and talk

5 to us?

6 MS. LOCKHART: Unless there's a real rainy

7 day. They've got to get their own sampling done.

8 MR. SCHONBECK: I'm talking about this

9 discussion.

10 MS. MORIN: The only people--Ward Whicker

11 might be available, or Shane Reece. But Jim Stone is

12 not available.

13 MR. SCHONBECK: I'll take Ward Whicker.

14 MS. ELOFSON-GARDINE: Can we at least send

15 a communique to CSU expressing our concerns and where

16 we're at now in terms of wanting some resolution?

17 Because we don't want this to be a futile exercise. We

18 want whatever we do to be able to be potentially

19 integratable with some other databases. So we don't

20 want it to be--you know, for example, what Mike's doing

21 and what Tony's doing. We'd like, whatever we end up

22 with, to be able to look at that and say maybe we can

23 compare this with what some other people have done. We

24 don't want it to be useless in the final result.

25 MR. SCHONBECK: Todd has something to say.

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MS. ELOFSON-GARDINE: Sure.

MR. MARGULIES: It just seems like we hit on this two or three meetings ago, and everybody was kind of on the other side of the cone, it's not that important. Now it seems like--

MS. ELOFSON-GARDINE: It's coming to bear because we're ready to do it.

MR. MARSH: I think we can take the samples, and we can take these samples that we've identified. We want to make sure that they're big enough. The issue about detection limits and all that, we really shouldn't go into this with preconceived ideas about what we're going to find. Granted, when you look at hundreds and hundreds of samples, as you guys over at health have, it's easy to say that we're going to see stuff, numbers just like we've always seen before. But, in fact, we've seen some numbers before that have definitely raised some eyebrows. We've had people like Al Hazle kind of sluff them off without coming up with any valid explanations, like the hot spot in Lake Dillon. So anyway, we have to go into it.

This is a screening process. We have called it a screening process from day one. And the purpose, as I see it, is to, in fact, go out and see if

1 we can find some hot spots that would tend to refute
2 some of the bunk that we've been getting from the
3 polluters from day one for the last 40 years. So
4 although the question about detection limits is
5 definitely very important in this, we should be able to
6 proceed. We can proceed and create good information.
7 It may not be good enough for what we would like to
8 have, but maybe we should wait and cross that bridge
9 when we get to it.
10 MR. HARRISON: One thing I can do without
11 spending too much of my own energy, about a year ago,
12 the state health department called in people from just
13 about every commercial and government lab in the state
14 to talk about PQLs. PQL stands for practical
15 quantifiable limit. And it was basically a workshop to
16 compare what sort of nominal detection limits people
17 routinely give for these things. And that was written
18 up in some sort of memorandum. All that took place
19 about a year ago, I think. Maybe it's been a couple
20 years. In any case, I can bring in or get a copy of
21 that memo to Ann or someone and sometime before the
22 next meeting hopefully get everybody a copy. And then
23 you'll have some idea of what the state-of-the-art was
24 a year or--year or two ago. It'll be a starting
25 point. And then, maybe, if you want to talk to a

1 particular lab or something, you might be able to
2 negotiate better detection limits. Would that be of
3 value to this committee?
4 MS. ELOFSON-GARDINE: I'd like to see
5 that. And if we can compare that to what are the
6 current levels--I mean changes happen pretty rapidly
7 now with all of the different advances that are
8 happening, so we need to know currently what is out
9 there. And that sounds like a good starting place,
10 that memo from a year ago, as to where we were and
11 where we are now. At least it's a comparison. This
12 shouldn't stop us from going ahead in our samples.
13 Start there. Don't waste more time on that. And then
14 let's deal with the technical issues. That's my
15 suggestion.
16 MR. SCHONBECK: Are there people,
17 Kathleen, in RAC, who would be appropriate to have
18 here?
19 MS. MEYER: Yeah. For the analytical
20 part, yeah. Sue Rope from Idaho Falls. She comes down
21 here regularly. She hasn't attended one of these
22 meetings. She would be good.
23 MR. MARSH: What's her background?
24 MS. MEYER: Environmental sampling and
25 analysis.

MR. MARSH: For what?

MS. MEYER: I don't know that she's done any plutonium, but I'd have to check with her on that. But she's done various environmental sampling. But you could--you know, I could sure get you some background information on her.

MR. MARSH: That would be useful.

MR. SCHONBECK: Terrol Winsor.

MS. MEYER: Terrol Winsor has done a lot of sampling. And I know he might want to go out with you and look at some of these sites, and he would be very good for that.

MR. SCHONBECK: I think--

MS. MEYER: That might be important if Sue could get involved with the group. She might have some input.

MR. SCHONBECK: Whatever agenda that we come up with for that discussion, technical discussion, I guess it would be really good to make an effort that the important players can be here, so I don't know who to hand this to. Maybe Ann or Normie. Not that we haven't done it, but just that it's really critical not only to have those who have done the sampling, like Mike and Tony or whoever, but also Paula and Greg, who are going to be the critics.

1 MS. MORIN: Can you make a list of the
2 people you want, and we'll have Pat coordinate that.
3 We have really limited days in October when we can
4 meet; it's either the 4th and 5th or the 27th. That's
5 it. So if you make a list of all the people, I'll have
6 Pat call around and see how we can get the most people
7 to one of those dates.
8 MR. STOVALL: What were those two dates?
9 MS. MORIN: Either 4th and 5th or 22nd of
10 October. Those are the only three days available in
11 the whole entire month.
12 MR. SCHONBECK: Can we go earlier than
13 that into September?
14 MS. MORIN: We could do the last week of
15 September, the 27th, 28th, 29th, or 30th.
16 MS. ELOFSON-GARDINE: Those are TRG
17 information exchange meeting days.
18 MS. MORIN: So it's back to the 4th, 5th,
19 or 27th.
20 MS. LOCKHART: Is it all four days?
21 MR. MARGULIES: Just Monday, Tuesday.
22 MS. MORIN: Those people who are here,
23 what's preferable out of the 4th, 5th, and 27th?
24 MS. LOCKHART: September 27.
25 MS. MORIN: Paula said those wouldn't work

1 for her.

2 (Discussion off the record.)

3 MS. MORIN: Can we make up a list of

4 specific issues we want to talk about? We want talk

5 about detection limits?

6 MR. STOVALL: Yes.

7 MR. SCHONBECK: What do we want to

8 measure? What can be measured out there?

9 MS. ELOFSON-GARDINE: Isotopic ratios.

10 MR. MARSH: Isotopic spectroscopy or

11 isotopic analysis?

12 MR. MARGULIES: Even though it's a little

13 bit different from this exact discussion, as we move

14 closer to sampling again, I'd like a little bit of

15 discussion on the QA/QC sampling to be implemented in

16 our sampling scheme, whatever that might be. I think

17 these same folks will have a lot of--myself included,

18 with the amount of work I've done, I think they'll have

19 some good input on that as well.

20 MR. GUILLAUME: You will be there, Normie,

21 at that meeting?

22 MS. MORIN: Yeah.

23 MS. LOCKHART: What about costs?

24 MR. SCHONBECK: Yes, costs.

25 MS. ELOFSON-GARDINE: If we can have some

1 tables of labs' lower limits of detection and cost
2 comparisons, that would be very helpful.
3 MS. MORIN: Nancy, can you get that from
4 ATI?
5 MS. HUNTER: Yeah.
6 MR. SCHONBECK: Mike, what else would you
7 suggest?
8 MR. GUILLAUME: Sounds like the technical
9 expertise is there.
10 MR. SCHONBECK: In terms of the agenda.
11 MR. GUILLAUME: You have the sample sites,
12 you have the sampling. And I assume if Jim is offering
13 that, he can use whatever his protocol is. Is Jim
14 going to be doing--obviously not.
15 MS. MORIN: Todd's going to be doing the
16 sampling.
17 MR. GUILLAUME: That's right. If he--Jim
18 must have some kind of protocol.
19 MR. MARGULIES: Whatever the methodology
20 that's finally decided upon, since I don't think we've
21 really come to a full decision--I will be going out
22 with Jim. If it turns out to be this methodology, I
23 would be going out with Jim sometime in the next
24 30 days while he's doing some other sampling to see and
25 observe his methodology and get his equipment, so on,

so forth. If it turns out to be a variation or another methodology, I will do the same thing another time, if anybody is interested, I've got about 10 years of field experience, so I have taken a few soil samples.

MR. HARRISON: Do you have a preferred method or something you've found to work better than other things?

MR. MARGULIES: I will at this point in time kind of deflect that question to the experts in radiological analyte sampling. The majority of my sampling is organics, metals, pesticides, so on, so forth. I have done some radiological sampling and, therefore, I am happy to go with whatever methodology that people with a little more experience than myself come to a decision upon. I've taken thousands and thousands of soil samples every conceivable way, and the methodology there is. And some I like and some I don't like for different reasons. But I'm not going to sit down and say this is what I--this is the methodology that should be used. Whatever the group feels is the best methodology for what we're trying to do, I'm happy to go along with. That's no problem.

MR. GUILLAUME: Many of these items are still hampered by the limitation on clear objective. That sampling methodology is critical to the objective.

MR. MARGULIES: I agree very much with that statement.

MR. SCHONBECK: That should be part of the agenda.

MR. GUILLAUME: To establish a clear objective.

MR. SCHONBECK: Establish the goals so we can determine the sampling method.

MS. LOCKHART: In four hours we'll do all this?

MR. SCHONBECK: We've been preparing for this for a year.

MS. MORIN: Didn't we have a list of objectives?

MS. LOCKHART: Three objectives for this sample.

MR. MARGULIES: Two objectives I recall being either--I believe they were actually on paper. One was to be able--when the numbers come out, to be able to integrate those with existing data. And the second one, which I know both Bini and Paula were very strongly in favor of, was the citizen representation of the sampling site selection. Those are the only two I ever recall being formally discussed.

MR. GUILLAUME: That is a good start, and

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it just needs another couple--few items to go along with that objective.

MS. ELOFSON-GARDINE: Another thing that we did at the last meeting--if you didn't get a copy of the soil sampling list.

MR. GUILLAUME: I did.

MS. ELOFSON-GARDINE: We tried to categorize the purposes of the sampling as part of that objective-seeking criteria. What are we after? What are we trying to do? We want it to be a defensible science by the time we're done. We don't want it to be a haphazard, let's look here. And, you know, you don't want to blow a bunch of money that ends up on being useless numbers.

MR. BIGGS: No pun intended on haphazard?

MR. GUILLAUME: I think if you itemize your objectives fairly clearly, many of these items will be much easier. You don't have to go round and round on discussions.

MR. HARRISON: Two of the three, as I look at this list, purposes for sampling are to sample. You know, what are you really getting at here? What are you really trying to figure out? If you're saying the purpose of the sample is to sample a new area, that's fine and it gives you a number. What does that tell

1 you? What information are you really trying to extract
2 here?
3 MR. MARSH: That depends on the number.
4 You get a big number and you have something.
5 MR. MARGULIES: Absolutely not.
6 MR. HARRISON: Whatever information you
7 want, you've got to know that before you collect
8 something, otherwise you're spinning your wheels.
9 MR. MARSH: Are you saying you don't think
10 we've identified what we want to do?
11 MR. HARRISON: The only reason I see here
12 that makes sense is to validate other people's
13 sampling. Then you can--previous sampling was good or
14 bad or marginal. I don't--even if you have a plutonium
15 concentration, if you sample your front yard now, you
16 know how much plutonium is in your yard, what does that
17 tell you?
18 MS. ELOFSON-GARDINE: Part of this goes
19 back to some discussions in the full HAP meetings
20 last--September and December of last year. And that
21 was--the subcommittee basically came about with the
22 concept of trying to answer some local
23 people's--concerns of the residents in the city
24 surrounding the facility as to at least very limited
25 off-site sampling. It's basically to give a ballpark

1 idea of what did we find in terms of a ballpark profile
2 away from the basic facility and towards the
3 communities. Does that answer your question? It was
4 just a very general idea to start with, that we want to
5 kind of know basically right now what's there.
6 MR. HARRISON: Okay. That helps some. I
7 mean, I would refer you to either Rocky Flats or--
8 MS. ELOFSON-GARDINE: You know, that's
9 basic paraphrasing. That's what we started with.
10 You'd have to read transcripts otherwise.
11 MR. MARSH: People like Al Hazle and
12 Rockwell International, most of them are not very
13 credible sources. That's all we have.
14 MR. HARRISON: I understand that. What I
15 can say is that Al Hazle didn't do the analysis and
16 didn't produce the numbers. I don't believe he edited
17 any of the numbers.
18 MR. MARSH: I would hope not.
19 MR. HARRISON: If Al took those numbers
20 and said this indicates that the risk is X, or the risk
21 is too low to be worth considering, then that's one
22 thing. But if you want to find out about risk,
23 sampling and finding plutonium concentrations is a step
24 along that path. But there are a lot of other steps on
25 that path, and I'm kind of concerned that nobody seems

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1 to be thinking past the sampling and past the
2 getting-the-numbers part.
3 MR. MARSH: Could you write a one-page
4 statement of identifying these concerns that you have
5 before the next meeting. This is basic philosophy.
6 MR. HARRISON: I'm an observer at this
7 committee. I was told to come here--I'm not on this
8 committee--just to find out what you folks are doing.
9 I don't want to get into the position of steering this
10 or directing it at all.
11 MR. MARSH: That's not the purpose of your
12 policy, because you have concerns that I think we
13 should know. And I think they're very valid. If you
14 put them down on a one-page piece of paper, 50 or a
15 hundred words, and this is the protocol that should be
16 followed, we can evaluate that and maybe it will steer
17 us in another direction or make it better for us and
18 the results that we get.
19 MR. HARRISON: I'll come up with
20 something.
21 MR. MARSH: This is three or four hundred
22 words. You don't need that many.
23 MS. ELOFSON-GARDINE: We are interested in
24 your concerns. If you feel like you're not sure, those
25 are all concerns that we have too. A perspective of

1 someone who hasn't been at every meeting might be
2 helpful to look at.
3 MR. HARRISON: I'll be willing to do it if
4 you will. Apparently when this committee was formed,
5 there was some idea of what the purpose was, and I get
6 the feeling that purpose has been lost in the shuffle
7 somehow.
8 MS. LOCKHART: It was never voted on.
9 MS. ABBOTT: I don't believe it has been
10 lost at all, Tony. The reason that this all came about
11 is Owen Hoffman, myself, other people on the health
12 advisory panel, felt that we, as a panel, from the
13 first day we met in September of '90, that in order to
14 have credibility, in order to make this worthwhile at
15 all, that we have to have the citizens, the active
16 visits, the other people either come out and say you're
17 all wet, everything you've done is worthless, or have
18 you looked here, have you looked there? And
19 whether--so in other words, that their concerns are
20 addressed and that they can look at the health advisory
21 panel and determine what they think of the findings
22 that come out of the health advisory panel. So I think
23 we are addressing the reasons for this committee. And
24 even though it may look hodgepodge--
25 MR. HARRISON: Sounds like a lot of it was

1 just to make sure that the important areas are being
2 sampled.
3 MS. ABBOTT: No, I don't agree with you.
4 I think it was--such as Gale's idea, that had never
5 been brought up. And to have these people at last have
6 a forum where we can find out. I mean, maybe for years
7 they've been crying in the dark. Greg talking about
8 northwest--on the northwest corner of the plant, and
9 yet he can cry in the dark for years and nobody pays
10 any attention to it. So at last these people have a
11 chance to find out some results. And I think we've
12 accomplished a heck of a lot.
13 MR. HARRISON: Okay.
14 MS. ELOFSON-GARDINE: We've taken a long
15 time to get where we're at to even come up with the
16 sampling points of interest, to hone it down. I mean,
17 24 points is, you know, doing pretty darn good
18 considering what we started with, which was kind of
19 like over here, over there.
20 MS. MEYER: I think another point is you
21 do have a unique situation here. It's probably the
22 only place in the country where you do have citizens
23 involved in the samplings and around the site. To me
24 one of the biggest objectives of this is to actually
25 implement some of their ideas. Now, I think maybe

1 we're going to get down into--some of this discussion
2 we had really focuses on interpretation. I think there
3 will be some muddy issues there.
4 But I think the fact that the process has
5 really been undertaken--and I think even the discussion
6 today indicates how valuable it's been that the group
7 has been able to go through this whole process. Maybe
8 some people are very familiar with and kind of can see
9 from the beginning. But to let everybody go through
10 this process, you know, selecting samples, coming--you
11 know, what are we going to analyze or how are we going
12 to do it, limits of detection, you are all able to go
13 through these steps and see where the difficulties
14 lie. And so when we come to the point of
15 interpretation, I'm sure you all will understand
16 difficulties a lot more than saying, "We've done all
17 this, here are the results, these are the problems." I
18 think the group is really going to appreciate the
19 problems of soil sampling, the difficulties of soil
20 sampling, having gone through it. I think it's a
21 positive group. Some of you may not be feeling very
22 positive all the time, but I think--overall I think it
23 was a good step.
24 MS. ABBOTT: And it goes back to the
25 mistrust that many people have, as Greg mentioned, with

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either CDH, Rockwell, Dow, whatever, DOE.

MR. MARSH: Don't forget ChemRisk.

MS. ABBOTT: Now you can add ChemRisk. That some people have history.

MR. MARSH: History of mistrust. We're fighting that issue right now in another arena.

MR. GUILLAUME: That's why Tony is here and that's why I'm hear.

MR. MARSH: Where were you 10 years ago or 20 years ago?

MR. GUILLAUME: High school. We recognize that aura around Rocky Flats hasn't all been positive. We have data. We're here to share it out, here talking to people.

MR. MARSH: Five years ago that was not the case.

MR. GUILLAUME: You can't maintain your attitude for five years ago today as well.

MR. MARSH: That's true, but we have to realize what we've been told in the past and never forget that.

MR. GUILLAUME: That's why we're doing a new study, new data, new samples. EPA, CDH, everybody is involved. You guys are involved. That's why we're here.

1 MS. ELOFSON-GARDINE: But at least we have
2 been trying to approach this in a stepwise process with
3 a lot of evaluation of a best approach, even to
4 bringing the aerial gamma survey to coordinate with
5 that. At least we're leaving pretty much no stone
6 unturned in terms of trying to make a best guess choice
7 for some good sample points. They'll give us that
8 ballpark of should we be concerned about this area over
9 here where a lot of residents think that there's a
10 problem? Should we continue to be concerned about this
11 area because residents think there's a problem there?
12 Will this give us those answers? It may not, but it
13 may, and that's the question. It's kind of to be or
14 not to be, you know; to worry or not to worry here.
15 MR. GUILLAUME: Tony and I are here trying
16 to let you know that we're not looking at the
17 ballpark. We're down on the pitcher's mound. We're
18 looking at it in fine detail now. We're not just
19 getting ballpark figures around Rocky Flats. Those
20 things have been done for such a long time.
21 MS. ELOFSON-GARDINE: That's why we're
22 having this discussion. We want to have something
23 resolved from all this planning that is integratable
24 with whatever you guys are doing.
25 MR. LaVELLE: I think that's a pretty good

1 summary we just went through of where we are and maybe
2 a little bit of where we need to go. I think we do
3 need to leave at 11:30 here. And I think--tell me if
4 I'm wrong, but I think we're kind of at a good stopping
5 point at the moment. We have a plan for the next
6 meeting, which I think is going to--we hope is going to
7 solve a bunch of these issues and maybe state our
8 objectives a little better.
9 If I can quickly summarize what we need
10 for that meeting, we're going to collect from different
11 sources, as many as we can, some detection limits,
12 costs, those sorts of things for different sorts of
13 analyses. We need to bring those in. We need to look
14 back in our notes. And I know that at some point in
15 time I was up here writing down objectives. They were
16 in pretty general form. We need to pull those out and
17 bring those with us so we know what we talked about
18 before. We need to make sure that we get ahold of
19 people and that everybody can make it. Someone from
20 CSU, probably Ward Whicker, Mike, hopefully Tony or
21 Rob, hopefully, or both hopefully.
22 MS. ELOFSON-GARDINE: What time did we
23 settle on?
24 MS. MORIN: 8:30.
25 MR. LaVELLE: I think we settled on 8:30.

1 MS. ABBOTT: Even though you wanted 7:30,
2 Paula.
3 MR. STOVALL: May I suggest this proposed
4 agenda be faxed out to some people to take a quick look
5 to be sure we get all our bases covered for the next
6 time.
7 MR. LaVELLE: Who took notes down on what
8 the agenda was going to be? Are you going to take a
9 shot at the agenda? Who would like to see it before it
10 goes out in final form?
11 MS. LOCKHART: Jim and Paula.
12 MR. STOVALL: I suggest that Mike and Tony
13 both see it too.
14 MS. ELOFSON-GARDINE: Maybe just a full
15 pass around. And if anybody wants a change, to call in
16 and let her know.
17 MS. LOCKHART: Tony.
18 MR. LaVELLE: Anything that I left out of
19 that list that we need for the October 4 meeting?
20 MS. ELOFSON-GARDINE: Pass that out with
21 the agenda, and you'll get critique back before it's
22 finalized.
23 MS. ABBOTT: I don't know if there would
24 be more time, but--if the present agenda would take up
25 all the time, but what about this Don Schearer so that

at some time, before we go on to much more, that we get his information?

MS. ELOFSON-GARDINE: I think that's for a meeting after this next one. I want to make sure that whenever we have him come, I want to know that Gale's going to be here. He can't be here the next meeting. Let's not try to combine too many different things. We should deal with the technical issues before we go.

MR. LaVELLE: We might be biting off more than we can chew. I will certainly contact him and make sure that we can set him up for some point in time.

WHEREUPON, the within proceedings were concluded at the approximate hour of 11:30 a.m. on the 15th day of September, 1993.

1 CERTIFICATION

2

3 I, Sharon R. Dobson, Registered
4 Professional Reporter, certify that on September 15,
5 1993, the above proceedings were had; then reduced to
6 typewritten form, by means of computer-aided
7 transcription, consisting of 96 pages herein.
8 I further certify that I am not related to
9 any party herein or their counsel and have no interest
10 in the result of this litigation.
11 IN WITNESS WHEREOF, I have hereunto set my
12 hand this 21st day of September, 1993.
13 Sharon R Dobson
14 SHARON R. DOBSON
Registered Professional Reporter
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