

EXHIBIT I

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF OHIO
EASTERN DIVISION

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CERAMFAB, INC., CERAMSOURCE, INC., YONGGONG,  
LLC, and WYG  
REFRACTORIES, LLC,

Plaintiffs,

vs. Case No. 4:23-cv-02206-BYP

NORFOLK SOUTHERN CORPORATION and NORFOLK  
SOUTHERN RAILWAY  
COMPANY,

Defendants.

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Deposition of
STEPHEN E. PETTY, P.E., C.I.H., C.S.P.

June 23, 2026

9:12 a.m.

Taken at:

Embassy Suites
5100 Upper Metro Place
Dublin, OH

Rebecca Williams, RPR

Job No. CS8284158

Page 2 1 APPEARANCES: 2 3 On behalf of the Plaintiffs: 4 Cory Watson, by 5 JON CONLIN, Esquire 6 JAMIE CORY, Esquire 7 2131 Magnolia Ave, Suite 200 8 Birmingham, AL 35205 9 Jconlin@CoryWatson.com 10 205-328-2200 11 On behalf of the Defendants: 12 Mayer Brown, LLP, by 13 CHRISTOPHER A. RHEINHEIMER, Esquire 14 SAMANTHA BELLINA, Esquire 15 575 Market Street Suite 2500 16 San Francisco, CA 94105 17 Crheinheimer@mayerbrown.com 18 (415) 874-4225 19 20 ALSO PRESENT: 21 Robert Miller, Videographer 22 23 24 25	Page 4 1 INDEX OF EXHIBITS 2 NUMBER DESCRIPTION MARKED 3 Petty Notice..... 27 4 Exhibit 1 4 Petty Report..... 29 5 Exhibit 2 5 Petty Rebuttal Report..... 30 6 Exhibit 3 6 Petty Declaration..... 131 7 Exhibit 4 7 Petty Smith Declaration..... 212 8 Exhibit 5 8 Petty Invoice..... 277 9 Exhibit 6 9 Petty Invoice..... 277 10 Exhibit 7 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Page 3 1 TRANSCRIPT INDEX 2 3 APPEARANCES..... 2 4 5 INDEX OF EXHIBITS 4 6 7 EXAMINATION OF 8 STEPHEN E. PETTY, P.E., C.I.H., C.S.P. 9 By Mr. Rheinheimer..... 6 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	Page 5 1 THE VIDEOGRAPHER: We're on the 2 record. Today is June 23rd, 2026. This is the 3 video recorded deposition of Stephen Petty, 4 taken in the case of Ceramfab, Incorporated, et 5 al. versus Norfolk Southern Corporation, et al. 6 This case is pending in the United 7 States District Court for The Northern District 8 of Ohio, Case No. is 4:23-CV-2206. 9 Today we're located at 5100 Upper 10 Metro Place in Dublin, Ohio. I'm Robert 11 Miller, the videographer, and our court 12 reporter today is Rebecca Williams. 13 At this time, would counsel 14 identify themselves. 15 MR. RHEINHEIMER: Chris Rheinheimer 16 for the Defendants. 17 MS. BELLINA: Samantha Bellina for 18 the Defendants. 19 MR. CONLIN: Jon Conlin for 20 Plaintiffs. 21 MR. CORY: Jamie Cory for 22 Plaintiffs. 23 THE VIDEOGRAPHER: You may swear 24 the witness. 25 STEPHEN E. PETTY, P.E., C.I.H., C.S.P.,

Page 6 1 of lawful age, called for examination, as 2 provided by the Ohio Rules of Civil Procedure, 3 being by me first duly sworn, as hereinafter 4 certified, deposed and said as follows: 5 EXAMINATION OF 6 STEPHEN E. PETTY, P.E., C.I.H., C.S.P. 7 BY MR. RHEINHEIMER: 8 Q. Good morning, Mr. Petty. My name 9 is Chris Rheinheimer. I'm an attorney from the 10 law firm Mayer Brown, and I represent Norfolk 11 Southern Corporation and Norfolk Southern 12 Railway Company in this case. 13 Is it okay with you if we refer to 14 Norfolk Southern collectively as Norfolk 15 Southern or NS? 16 A. Sure. 17 Q. Can you state and spell your name 18 for the record? 19 A. Sure. First name is Stephen, 20 S-T-E-P-H-E-N, last name is Petty, P-E-T-T-Y. 21 Q. What is your business address? 22 A. 1701 East Atlantic Boulevard, Suite 23 5, Pompano Beach, Florida 33060. 24 Q. And is there any reason you can't 25 provide full and accurate testimony today?	Page 8 1 report. I would say somewhere between 120 and 2 130 times, perhaps. 3 Q. And is Appendix C the -- all the 4 way up to date, or is there anything you would 5 need to add from the last month or two? 6 A. I think -- because Appendix C is 7 only disclosed cases, I think it's current. 8 Q. Okay. And have you testified as an 9 expert witness at trial? 10 A. Yes. 11 Q. About how many times? 12 A. Between 20 and 25 times, I believe. 13 They're listed again in Appendix C, so whatever 14 they are, they are. 15 Q. And is Appendix C up to date in 16 terms of trial testimony? 17 A. Yes. 18 Q. Okay. Stepping back to the 19 depositions, what percentage of your expert 20 testimony at depositions has been on behalf of 21 the Defendants versus the Plaintiffs? 22 A. Well, since about -- I would say 23 the vast majority is for Plaintiffs. It didn't 24 start that way because I was an expert for the 25 insurance industry. We did -- my corporation
Page 7 1 A. I don't believe so, no. 2 Q. Do you understand that the oath 3 that you just gave is the same as if you were 4 testifying in court? 5 A. I do. 6 Q. And have you ever been deposed as 7 an expert witness before? 8 A. Yes. 9 Q. Have you ever been deposed not in 10 an expert witness capacity, so as a fact 11 witness? 12 A. I don't know the answer to that. 13 Perhaps. I've been in -- what are they -- 14 negotiated settlements or -- where I've been 15 asked to testify in front of a judge. I don't 16 know if that's what you're asking or not. 17 Q. I meant more as in deposition where 18 you're not serving as an expert. You're not 19 providing expert opinions. You were a 20 percipient witness of a car crash or whatever? 21 A. No, I don't believe so. 22 Q. How many times have you been 23 deposed as an expert witness? 24 A. I'm not certain, but it's in -- it 25 would be listed in my Appendix C, I think in my	Page 9 1 did 10,000 projects on disputed claims, so I 2 was always on the Defense until about 2005 or 3 so, and then Plaintiffs' experts -- or 4 Plaintiffs' firms discovered me in some 5 Legionella cases, and I started doing 6 Plaintiff's work. 7 When I -- I was trying to retire in 8 2015, with the exception of a handful of just 9 really complex insurance claims involving 10 litigation, I pretty much worked for 11 Plaintiff's firms. 12 Q. And how would you describe your 13 area of expertise with respect to the testimony 14 that you give as an expert? 15 MR. CONLIN: Objection to form. 16 A. Well, if I had to summarize it in a 17 sentence, which would be hard to do, but I 18 would say that I'm typically an exposure 19 warnings and standard of care expert, with some 20 occasional work as a general causation expert. 21 Q. And what does general causation 22 mean to you? 23 MR. CONLIN: Objection to form. 24 A. General causation -- there's two 25 kinds of causation experts, at least from my

Page 10 1 perspective. Specific causation with respect 2 to -- now I'm talking about with respect to 3 personal injury, as opposed to environmental, 4 but in terms of personal injury, I would say 5 that specific causation requires a medical 6 degree, which I don't have, so I'm precluded 7 from being a specific causation expert. 8 General causation is, for example, 9 would be for me to be able to opine that 10 benzene causes leukemia in general, but I 11 couldn't say that benzene caused this 12 individual's leukemia. 13 So that's the distinction, is that 14 I can opine on the causation related to a 15 specific contaminant or biologic and the 16 diseases or disease it caused, but not opine 17 with respect to an individual. 18 Q. And with respect to your testimony 19 at trial, you said you've done it about 20, 25 20 times. What percentage of those 20 to 25 times 21 testifying at trial has been on behalf of 22 Plaintiffs versus Defendants? 23 A. I'm not certain, but I think almost 24 all of them, if not all of them, are probably 25 -- the trial testimony is probably the	Page 12 1 on ASTM 1739. 2 And then I was selected to train 3 the regulators and then help write the manual 4 and then write the code, online codes. 5 So it was all related to how do we 6 streamline environmental contamination of USD 7 sites with respect to risk assessment. 8 And a lot of what I had to do here 9 had to do with knowing BUSTR and knowing 10 contamination and how it flows, and knowing the 11 mechanisms by which contaminants can reach the 12 surface or individuals. 13 So a lot of it has to do with my 14 background with BUSTR, I think, more than 15 outside of litigation, really. 16 Q. And what was BUSTR again? It was 17 an acronym? 18 A. Yeah; it's a strange acronym, I 19 know. In all the states, the Ohio -- federal 20 Ohio delegated USTs to the states, and in most 21 states, it went to the State EPA, but in Ohio, 22 it didn't. It got -- it got delegated to the 23 Department of Commerce, which created an entity 24 called Bureau of Underground Storage Tank 25 Regulators, BUSTR.
Page 11 1 Plaintiffs. 2 Q. And out of any of the cases where 3 you've testified at deposition or trial, if you 4 had to pick one that was most similar to this 5 case, what would it be? 6 MR. CONLIN: Objection to form. 7 A. Well, I would have to think about 8 that. In terms of my role in this case, this 9 is more like what I did for years, in terms of 10 environmental work, as opposed to testifying in 11 trial. This is really, in my view, an 12 environmental case, at least at this point. 13 It's not a personal injury case. 14 So I would have to go back and -- 15 I'm not sure -- there's elements of it that 16 look a lot like the C8 trials, but those were 17 personal injury cases, as opposed to 18 environmental cases, although they did involve 19 environmental contamination, but it's really -- 20 It reminds me a lot of my days in 21 the '90s of -- there's a group called BUSTR, 22 Bureau Of Underground Storage Tank Regulators, 23 in Ohio, and they regulate USTs. And I was 24 selected in the '90s to basically update their 25 methodologies to risk-based methodologies based	Page 13 1 And I was -- in the period where 2 there was a huge amount of UST replacement from 3 the late '90s to the early 2000s, people had to 4 remove or update all of their tanks, and there 5 was a lot of releases and a lot of 6 environmental work. 7 And as a consequence of that, there 8 was -- it was where risk assessment really 9 began to take hold in these entities. 10 And before that, you sort of had 11 these weird lookup tables as to what the level 12 of contamination was. It wasn't really as 13 science based, I'll say, and with the advent of 14 ASTM 1739, which is the risk assessment 15 standard, I think it's E 1739, there was a 16 movement amongst the states to have a more 17 rigorous process by which to rule in or rule 18 out whether a site was contaminated or not. 19 And I was involved in implementing 20 that and in training the regulators on risk 21 assessment. I gave six full-day seminars to 22 the regulators, including one on how you can 23 cheat on risk assessment. 24 In other words, what parameters are 25 most effective in terms of either increasing or

Page 14 1 decreasing risk. 2 Q. And was your work with -- relating 3 to BUSTR addressing a specific contaminant or 4 set of contaminants? 5 A. No, not specifically, but mostly 6 they were BTEX on the volatile side and then 7 PAHs. The one that drives risk assessment is 8 benzo(a)pyrene. 9 THE REPORTER: I'm sorry; say that 10 again. 11 A. Benzo(a)pyrene. Really benzene and 12 benzo(a)pyrene in risk assessment almost always 13 drive the risks. 14 Q. And you said BTEX on the volatile 15 side. What is BTEX? 16 A. Benzene, Toluene, Ethyl benzene, 17 and Xylenes. 18 Q. And why are those chemicals or 19 compounds grouped together? 20 A. Why? I guess, traditionally, 21 they're found in gasoline, because we were 22 looking at gasoline or diesel USTs, underground 23 storage tanks. 24 At the same time, I was actually 25 implementing -- I was actually doing design	Page 16 1 give the same answer for depositions, or have 2 the depositions been different than your trial 3 testimony? 4 MR. CONLIN: Objection to form. 5 A. I would -- it would -- I would have 6 to look at all the depositions to give you -- I 7 mean, unfortunately, I've been in over a 8 hundred, probably 120 depositions, and I would 9 be hard pressed to give you an exact answer to 10 that question. 11 Q. Is there a deposition or trial 12 testimony that you can think of, sitting here 13 today, that would qualify as -- how you 14 characterize it -- pure environmental and not 15 personal injury? 16 MR. CONLIN: Objection to form. 17 A. Well, I think you just asked that 18 question. It's just a different way you're 19 asking it again, and the answer would be the 20 same. 21 Q. The same being that, sitting here 22 today, you can't think of one specifically, but 23 you've had a lot of depositions? 24 MR. CONLIN: Objection to form. 25 A. Well, no. I mean, if you want me
Page 15 1 work and -- like the Ohio State University 2 airport, I designed and installed all their 3 underground storage tanks, so I was actually -- 4 actually working on other alternatives to USTs. 5 But all the UST work I did for 6 BUSTR was done basically gratis. I did all 7 that for free. 8 Q. And you distinguished that work 9 from BUSTR from the work that you did in the 10 depositions and trials. I believe you said the 11 depositions and trials related to personal 12 injury; is that right? 13 MR. CONLIN: Objection to form. 14 A. In general. The -- you were asking 15 which ones -- which trials were most related to 16 this case, and I'm trying to think how do I 17 distinguish between trials where I was involved 18 in personal injury situations versus pure 19 environmental. 20 And almost all the trials that I've 21 ultimately been involved in have been personal 22 injury, but you can't escape the fact that in 23 most of those trials, it was related to the 24 release of contaminants to the environment. 25 Q. Is that same answer -- would you	Page 17 1 to sit here and go through Appendix C and go 2 through them all, I can try to answer that 3 question, but I just think my answer is I think 4 most of them have been related to -- I'm just 5 trying to think back -- personal injury, but 6 they've all -- almost all involved some form of 7 environmental contamination. 8 I'm just trying to think back on -- 9 I think the -- I'm just trying to think back on 10 all the depositions and see if there were any 11 based purely on environmental. I just don't 12 know without going through the whole list. 13 Q. Have you ever -- and now I'm 14 stepping out of just testimony and just saying 15 at large, have you ever worked on a CERCLA 16 removal action? 17 A. I don't know about CERCLA, but 18 Terminal C at the airport here at Port 19 Columbus, I was responsible for all of the 20 environmental strategy and risk and 21 remediation. I don't think it was CERCLA, but 22 it was a massive project. 23 I'm trying to think if I've 24 actually done CERCLA. I'm not sure that I 25 have.

Page 18 1 I know that I was involved in the 2 formation of the National Priorities List, so 3 that dates me, 1979. 4 Q. You mentioned Terminal C at the 5 airport. That's the Columbus airport? 6 A. Delta, Delta terminal. 7 Q. And about when was that project? 8 A. I want to say probably right around 9 2000. 10 Q. And is there -- oh, I'm sorry. 11 A. Fascinating stories about that 12 project. 13 Q. It involved building a new 14 terminal; is that right? 15 A. Yeah, they were building a new 16 terminal over a highly-contaminated area. It 17 was an old -- it was actually an old gas and 18 service station. The contamination was so bad 19 that when we put sheet piling in and tried to 20 weld it, it caught the ground wire on fire. 21 Q. Do you remember what the 22 contaminants of concern were for the Terminal C 23 project? 24 A. Primarily gasoline. 25 Q. Anything other than gasoline,	Page 20 1 that was responsible for sampling releases, so 2 I would be the consultant that would be doing 3 sampling. 4 Q. And in what time period were you a 5 consultant who did that type of sampling? 6 A. Probably in the '90s and early 7 2000s, primarily. I did a lot of sampling in 8 borings back then. That was the UST era. 9 Q. And you said that was the UST era. 10 Was that work primarily relating to USTs? 11 A. Primarily, yes. 12 Q. But not exclusively? 13 A. I would have to think back on that. 14 Probably not exclusively, but primarily. 15 Q. And have you ever worked on a 16 matter that relates to a train derailment 17 before? 18 A. A train derailment? I don't 19 believe so. I worked on a lot of railroad 20 cases, but not a train derailment. 21 Q. When you say railroad cases, what 22 in general is the nature of the railroad cases 23 you've worked on? 24 A. Well, my initial work on the 25 railroads was outside of litigation. I was
Page 19 1 recognizing this is 26 years ago, but anything 2 that you recall sitting here today? 3 A. Well, the ones that drove the risk 4 were gas -- well, benzene, so that would have 5 been gas, as opposed to diesel, not that 6 there's some trace of amounts of benzene in 7 diesel, but there's many, many times higher 8 levels of benzene in gas than in diesel. 9 MR. CONLIN: Chris, the realtime 10 link just came in. 11 MR. RHEINHEIMER: Why don't we take 12 a couple minutes off the record. 13 THE VIDEOGRAPHER: We're off the 14 record. 15 (Recess is taken.) 16 THE VIDEOGRAPHER: We're on the 17 record. 18 Q. Okay. Have you ever been retained 19 by EPA or a state environmental agency to 20 perform sampling following chemical release? 21 MR. CONLIN: Objection to form. 22 A. Not directly. It would be 23 indirectly. 24 Q. What do you mean by indirectly? 25 A. I would be working for a company	Page 21 1 funding millions of dollars worth of work on 2 converting railroad locomotives to natural gas 3 in the '90s. 4 Primarily the work was done at 5 Southwest Research Institute on behalf of many 6 utilities, Southern Cal Gas, Columbia, Union 7 Gas. Consolidated Gas were the big players, 8 and we were -- I was coordinating most of that. 9 And like I would ride up LNG 10 locomotives up in Minnesota -- 11 THE REPORTER: I would ride on 12 what? 13 A. LNG locomotives up in Minnesota. 14 So I had a lot of background on emissions from 15 locomotives because we were comparing our work 16 to work from diesel locomotives and trying to 17 convince the railroads that that was the way to 18 go. 19 And, in fact, AAR, I think, has 20 summaries of a lot of the work we did back 21 then. And then after that -- 22 Q. Wait. Before you move on, what 23 time period was the natural gas locomotives 24 work? 25 A. '90s, 1990s.

Page 22 1 Q. Thank you. 2 A. And then since then, I've been 3 involved in -- I would have to look at the list 4 -- maybe a dozen railroad cases. They were all 5 personal injury cases, primarily looking at 6 exposure to diesel exhaust, diesel fuel, 7 benzene and benzene compounds, and then 8 evaluating primarily Norfolk Southern and CSX's 9 databases on monitoring of workers. 10 Q. Are those personal injury cases all 11 railroad workers related? 12 A. Yes. Yeah, trackmen, engineers, 13 people like that. 14 Q. When were you retained to serve as 15 an expert in this matter? 16 A. It's -- pardon me. I believe it's 17 on the agreement, retention agreement. It's 18 the last appendix in the first report, April 6 19 report. I think it was in January of this 20 year. I think that's right. 21 Q. And who retained you? 22 A. Cory Watson Law Firm. 23 Q. What is your hourly rate for this 24 engagement? 25 A. \$625 an hour, and then I have a	Page 24 1 MR. CONLIN: I'm going to object to 2 the extent that you were a nondisclosed expert 3 by another law firm. I would instruct you not 4 to discuss that. 5 THE WITNESS: Oh, okay. Yeah, I 6 wasn't disclosed in that case. 7 MR. CONLIN: Other than what's 8 publicly been -- already been available in 9 court documents. 10 Q. What you -- you collected data from 11 East Palestine prior to January of 2026, 12 right? 13 A. Correct. What do you mean by 14 collected? 15 Q. Well, let me ask: You have data 16 listed in your report under Petty Data, and was 17 that data that you personally collected or that 18 was collected on your behalf? 19 MR. CONLIN: Objection to form. 20 A. I don't think -- I wouldn't put the 21 question that way. I certainly collected some 22 data myself, and I was responsible for 23 analyzing data taken by others. 24 Q. Okay. Of the data that you 25 collected yourself, was that prior to January
Page 23 1 rate for depositions and trial, which is a 2 running clock, fixed price, if you will. 3 Q. What do you mean by a running 4 clock, fixed price? 5 A. What I mean is for deposition and 6 trial testimony, my clock starts when I first 7 show up and ends when I leave, regardless of 8 breaks, and it's -- I believe for this case, 9 it's \$3,000 for four hours and \$5,000 for eight 10 hours, and then at eight hours, it starts over 11 again. 12 This is a holdover from a 13 deposition I had in San Francisco years ago, 14 where I started the deposition at 9:00. At 15 11:00, the attorney said, I've got to go to the 16 courthouse. I sat there til 6:00. He deposed 17 me another hour, and he says, well, you can 18 bill me for three hours. I said that's not 19 going to happen again. 20 Q. Were you retained by any other 21 companies or individuals or law firms with 22 respect to East Palestine related matters? 23 A. Sure. Originally, yeah, I was 24 retained as the exposure expert, I guess, by 25 Simmons, Hanly, Conroy.	Page 25 1 of 2026? 2 A. It was. It was. 3 Q. Okay. It was in 2023; is that 4 right? 5 A. Very good, yeah. 6 Q. And you considered and relied on 7 that data in forming your opinions that are set 8 forth in your report that we're talking about 9 here today, right? 10 A. In part, yes. 11 Q. And you say in part because you 12 also considered data collected by others? 13 A. By three other groups, yes. 14 Q. Who are those three other groups? 15 A. The -- I would describe those as -- 16 our data as Dataset 1, Dataset 2, Dataset 3, 17 and Dataset 4. 18 Dataset 1 was the Plaintiff data 19 collected by people other than Petty. Dataset 20 2 is data collected by Petty. Dataset 3 was 21 data collected by a group called GEL, G-E-L, 22 and Dataset 4 was collected by a gentleman by 23 the name of Scott Smith. 24 Q. Okay. And when you say for Dataset 25 1, Plaintiffs' data collected by people other

Page 26 1 than Petty, what Plaintiffs are you referring 2 to? 3 A. The class Plaintiffs. The -- I'm 4 talking about the Plaintiffs represented -- the 5 individuals represented by the class, by the 6 Plaintiffs. 7 In other words, there were multiple 8 sets of law firms involved in -- on the 9 Plaintiffs' side, involved in that original 10 case, and they also retained their own sampling 11 experts. I don't know if they're experts, but 12 samplers, and so I had access to all of that 13 data, plus my own data, plus the other two 14 datasets. 15 Q. And do you know about how much in 16 total you've billed for your work on this case 17 to Cory Watson? 18 A. I don't, but you could add the 19 numbers up there. I don't do the accounting. 20 I'm not trying to be snotty or anything like 21 that, but my office people -- I fill out the 22 timecard. They do the billing on a monthly 23 basis. 24 Q. Okay. So prior to the deposition, 25 your counsel provided me with a couple of	Page 28 1 any file and reliance materials not previously 2 produced in this case. 3 Do you see that? 4 A. I do. 5 Q. Did you bring any file or reliance 6 materials that you hadn't previously produced? 7 A. I don't believe so. 8 Q. And I see you have a couple of 9 binders in front of you. Oh, I'm sorry -- 10 MR. CONLIN: With the exception of 11 the invoices. 12 MR. RHEINHEIMER: Okay. Fair 13 enough. 14 A. Counsel is correct, yeah, I did 15 bring invoices, which I hadn't provided 16 earlier. 17 Q. Okay. And I see you have a couple 18 of binders in front of you? 19 A. Yes. 20 Q. Can you tell me what those are? 21 A. One is the April 6th report that I 22 prepared. I've got a handful of typos that I 23 would like to get on the record at some point, 24 and then similarly, the May 29th rebuttal 25 report that I prepared for this as well. Same
Page 27 1 invoices, which we will mark so that we have 2 them in the record later, but those invoices 3 are the sum total of your billings to the Cory 4 Watson firm; is that right? 5 A. So far, yes. 6 MR. RHEINHEIMER: We're going to 7 mark this as Petty Exhibit 1. 8 - - - - - 9 (Thereupon, Deposition Petty Exhibit 10 1, Notice, was marked for purposes 11 of identification.) 12 - - - - - 13 Q. So take a second and look through 14 what we've marked as Petty Exhibit 1, which is 15 a notice of the videotaped deposition of 16 Stephen Petty, and my question is going to be 17 -- excuse me -- is this document familiar to 18 you? 19 A. Yes. 20 Q. And you recognize that this is the 21 notice by which you are here to testify today? 22 A. Correct. 23 Q. And there was a request that the 24 deponent -- we're looking on Page 2, top line 25 -- the deponent is requested to bring with him	Page 29 1 thing, I've got four typos or something. 2 Q. Are any of those typos substantive 3 in your view? 4 A. I think one would be. 5 Q. Can we -- can you identify that one 6 -- well, I haven't marked that for the record. 7 Let's mark -- is it in the opening report or 8 the rebuttal? 9 A. I would have to look. I would say 10 it would be in the rebuttal report, which is 11 the May 29th report. 12 Q. Okay. So just because it's going 13 to make me go loopy if we go out of order, I'm 14 going to mark -- we're going to mark your 15 opening report as Petty Exhibit 2. 16 A. Okay. 17 Q. And your rebuttal report as Petty 18 Exhibit 3, and then I would like you to tell me 19 where in Petty Exhibit 3 you have a substantive 20 typo correction. 21 (Discussion held off record.) 22 - - - - - 23 (Thereupon, Deposition Petty Exhibit 24 2, Report, was marked for purposes 25 of identification.)

Page 30 1 - - - - - 2 - - - - - 3 (Thereupon, Deposition Petty Exhibit 4 3, Rebuttal Report, was marked for 5 purposes of identification.) 6 - - - - - 7 Q. And, Mr. Petty, I'm perfectly happy 8 if you want to use your much more conveniently 9 formatted binders, rather than the rubber 10 banded stack for Exhibit 2 or Exhibit 3. I 11 just -- at a break, we'll flip through those 12 binders and make sure that we agree that it's 13 the same and no changes and whatever, and that 14 -- and you can as well, but I'm happy for you 15 to use whichever one is more convenient for 16 you. 17 So take a look at the reports. 18 We'll come back to both of these many times, 19 but the initial question is what is the 20 substantive typo edit that you had in Exhibit 21 3? 22 A. Are we going to cover all of them 23 at the same time or just the one? 24 Q. Whatever is substantive. We can 25 come back to the non-substantive ones later.	Page 32 1 A. I am there, yes. 2 Q. Okay. And the scope of work 3 includes four elements; is that right? 4 A. Correct. 5 Q. And how did you determine that 6 these four elements would be your scope of 7 work? 8 A. I think they were done in 9 collaboration with counsel on what they were 10 asking me to do and with my input. I think 11 that's how it came about. 12 Q. And when you say with your input, 13 what do you mean by that? 14 MR. CONLIN: Objection; form. 15 A. I had strong feelings about wanting 16 to collect all available information with 17 respect to sampling, and as part of my scope of 18 work, I wanted to be able to do a very detailed 19 rigorous QA/QC of all of that data and then do 20 analysis of that data and plots, and -- 21 including Scott Smith's data, and counsel 22 agreed with that scope of work, for example. 23 Q. And why was it important to you to 24 do an analysis of all available data? 25 A. I was of the opinion that I never
Page 31 1 A. Okay. There's only one that I can 2 think of, and it's on Page 5 of the -- Exhibit 3 3. So on the -- there's three columns in these 4 tables, and on the title -- the very bottom 5 row, it's titled Page 1, Section 3.1.1., on the 6 third column with my comments, on the last 7 paragraph, after the word -- or designation 8 7-24, instead of the word "shows," it should 9 say, "doesn't show." 10 Q. Okay. 11 A. I think that's it. 12 Q. All right. So let's go to your 13 opening report, which we've marked as Exhibit 14 2. And if we look at Page 6 to 7. 15 A. I'm there. 16 Q. And this section sets forth your 17 scope of work; is that right? If we look at 18 Section 2.0? 19 A. I'm there, on 7 -- Page 7, you're 20 on? 21 Q. Yeah. I'm on the bottom of Page 6 22 and the top of Page 7. 23 A. I'm there. 24 Q. Section 2.1, Scope of Work. Do you 25 see that?	Page 33 1 got the opportunity to present the data I had 2 and the analysis I had initially that showed, 3 in some areas, massive contamination of soils 4 and subsurface waters. 5 And I wanted the opportunity to 6 rigorously go through that data and other data, 7 which I did not have, and present that for the 8 world to see what the contamination actually 9 was, and I just felt very strongly that -- that 10 that information needs to be out there for the 11 public to review and agree or disagree with. 12 And -- but I wanted to go through 13 it in a very rigorous manner, in terms of 14 ensuring we had Level 4 reports, which are the 15 highest QA/QC reports from the labs. 16 And then also have a third party do 17 what I call curing, which is to look at any and 18 all flaws with the data and interact with the 19 lab to see if they can be resolved or not, as 20 well as clear flags, DNI flags, so that I was 21 left with just JU or no flags, so I could then 22 use the data to do calculations on 23 benzo(a)pyrene equivalent or TEQ and then plot 24 that information. 25 So I was adamant about having a

Page 34 1 thorough vetting of those four datasets before 2 I did any analysis, and counsel was willing to 3 do that. 4 Q. And were you able to review all of 5 the site data in coming to your opinions? 6 A. To my knowledge, I was. I was -- 7 well, when you say all the site data, with 8 respect to anybody that took the data, or with 9 respect to the four datasets I'm referring to? 10 I guess I've got to be careful in answering 11 that question. 12 Q. I was asking with respect to 13 anybody who you knew of who collected data at 14 the site. 15 A. Well, I don't know all the people 16 on the Norfolk Southern side. In fact, that's 17 one of my big issues, is that we don't even 18 know who those people are in the cases. They 19 didn't list the samplers. 20 You know, as you know in reading my 21 report, I'm very critical of the data 22 collection process of Arcadis and Norfolk 23 Southern, but when I answer that question, I'm 24 referring to data that Plaintiffs took or -- 25 Plaintiffs took or Scott Smith's data. In	Page 36 1 rebuttal report. 2 Other than that, all the original 3 data that I was aware of and I verified with 4 Scott Smith, he's provided all his data and the 5 others, GEL, et cetera, that were in my Exhibit 6 81, which is very well organized by -- that's 7 all the raw data files, Dataset 1, 2, 3, 4. 8 And, initially, I don't think that 9 dataset has changed with respect to the 10 available data. What's happened is that it's 11 been enhanced by -- in some cases, we only had 12 Level 2 reports, because the process of 13 generating Level 4 reports is extremely time 14 consuming and -- as well as doing what I call 15 the curing. 16 And so between the two reports, 17 what you'll find is, I believe Exhibit 81 has 18 not only the original data, which you folks or 19 anybody else can do the same thing I did, which 20 was create a Level 4 report and create -- and 21 review all the data through a curing lab, 22 independent third party. 23 So what I did in the rebuttal 24 report, on Exhibit 81, you'll find that -- I 25 think in all -- I believe in every case, we
Page 35 1 other words, the non-defense related data. 2 And I just -- I wanted to see if I 3 could get access to all of it and then do very 4 rigorous QA/QCs, and then do analysis of 5 calculations and plots of that data, and then 6 just let it show whatever it shows. 7 And then beyond that, there was two 8 additional samples taken between the initial 9 report and the final report, one at Ceramfab 10 and one at WYG, to sample the soils for both 11 PAHs and dioxins to see what remains three 12 years later. 13 I was critical in my report of 14 having, you know, the Defense have the same 15 opportunity and sample the air, which I think 16 was ridiculous because you're not going to find 17 anything in the air three years later, really. 18 The chemicals of concern that 19 you're most likely going to find are the 20 low-volatile compounds that are in the soils or 21 the surface waters or shallow groundwaters. 22 So to answer your question, the 23 data that I looked at beyond what we've just 24 described would be the two samples that were 25 taken in between the April report and the	Page 37 1 have a Level 4 report. I could be wrong, but 2 I'm pretty sure that's the case. I spent many 3 hours trying to ensure that was the case. 4 Q. And did your analysis -- or did you 5 perform an analysis of any of the data 6 collected by EPA or EPA's contractors? 7 MR. CONLIN: Objection to form. 8 A. Indirectly, I looked at -- I guess 9 the answer is yes. I could just say yes, and 10 then there's areas throughout my reports where 11 I comment on that, yes. 12 Q. Where you comment on the way the 13 samples were collected or where you include 14 EPA's data in your analysis of the site? 15 MR. CONLIN: Objection to form. 16 A. Both, I think. If you read the 17 report, both. 18 Q. Okay. And did you include any 19 analysis of the data collected by Norfolk 20 Southern's contractors at the site in your 21 report? 22 A. Well, certainly with respect to the 23 delineation report, I did. In fact, I was 24 critical of the fact they didn't calculate the 25 TEQs and I did that for them. But, yes, I

Page 38 1 spent a lot -- that's a very big report, and I 2 spent a lot of time on that report. 3 In fact, one of your experts 4 indicated that I hadn't reviewed the report, 5 which I thought was curious, given that I spent 6 perhaps 50 percent of my initial report 7 reviewing that data. 8 Q. And is it your belief that your 9 report includes an analysis of all the data 10 collected by EPA and its contractors at the 11 site? 12 MR. CONLIN: Objection to form. 13 A. I have no possible way of answering 14 an all question. In every deposition I've ever 15 been in, I just don't have a way of knowing 16 what all means. 17 Q. You know that EPA has published 18 their data online for anyone to see, right? 19 MR. CONLIN: Objection to form. 20 A. It got published -- I guess that's 21 a tough question. Yes, some of it got delayed 22 published. Some of it was published online, 23 like the air -- I cited some of that, right, in 24 my Appendix B, cites, I think as of March of 25 2023, the totality of the EPA data that was	Page 40 1 considered is identified in your report or the 2 appendices, right? 3 MR. CONLIN: Objection to form. 4 A. Again, I'm not sure how to answer 5 that question. The EPA data has been 6 continuously -- it was continuously updated for 7 a long time. Whether I've referenced all of 8 that data in the report or not, I don't know, 9 but I've certainly looked at it with time. 10 Q. Okay. And what about the data 11 collected by Norfolk Southern's contractors? 12 Did you consider all of that data in preparing 13 your report? 14 MR. CONLIN: Objection to form. 15 Asked and answered. 16 A. Yeah, I'm not sure how to answer 17 that question. The -- it's almost an 18 impossibility for an expert to say for certain 19 that they've looked at all -- as soon as you 20 use that adjective, I think anybody that tries 21 to answer that question and says they have is 22 speculating a bit, because I don't know for 23 sure that all of the data has been published or 24 that all of the data is available to me. I 25 just don't know.
Page 39 1 published, because I was most interested in 2 what they were seeing in the air, because you 3 see that right away. 4 And then later on, you're not going 5 to see much in the air in general, so -- other 6 than if you're indoors. But, yeah, I was 7 following that data. 8 Q. What about post-March 2023, did you 9 include any analysis of EPA or its contractors 10 data post-March 2023? 11 MR. CONLIN: Objection to form. 12 A. That's such a broad question. In 13 part, yes. To the extent it's in the report, I 14 did. 15 Q. And if it's not in your report, you 16 didn't, right? 17 MR. CONLIN: Objection to form. 18 A. Well, I can't say that because 19 whether I looked at the data and didn't write 20 anything about it is different than whether I 21 considered it. I mean, if I considered it, it 22 doesn't mean necessarily that I didn't look at 23 the data as opposed to writing about it in the 24 report itself. 25 Q. But all the data that you	Page 41 1 To the extent that I had data I 2 could evaluate, I did look at it, especially 3 with respect to the delineation report. 4 Q. And you identified all of the data 5 from Norfolk Southern's contractors that you 6 considered in your report with the appendices 7 or the materials relied on; is that correct? 8 MR. CONLIN: Objection to form. 9 A. I mean, yes and no. For instance, 10 I cited reference to the Ohio, Pennsylvania 11 work that references data, so I guess directly 12 or indirectly, I've tried to do that, but 13 whether it's all the data or not, I don't know 14 how I would answer that question. I don't know 15 how anybody would. It's the word "all" that's 16 the problem. 17 Q. Well, you used all with respect to 18 Scott Smith's data, right? 19 A. I did. 20 Q. So it's not always a problem? 21 MR. CONLIN: Objection; form, 22 misstates previous testimony. 23 A. Well, I mean, that's -- I would 24 disagree with your statement. I'll just leave 25 it at that.

Page 42 1 Q. Is there any data relating to the 2 site in East Palestine that you've considered 3 that isn't identified or discussed or listed 4 somewhere in your report or its appendices? 5 MR. CONLIN: Objection; form. 6 A. I've answered that question. I 7 mean, do you just want me to keep answering the 8 same question over and over again? 9 Q. I want you to answer my question. 10 A. Again? 11 MR. CONLIN: Objection; form, asked 12 and answered. 13 A. Are you asking me to answer the 14 question again? 15 Q. I'm asking you to answer my 16 question. Your counsel has objected. The 17 court reporter has noted it. Please answer the 18 question. 19 A. I mean, the transcript will clearly 20 show -- I mean, if we want to go back and -- we 21 can go back -- 22 Q. I don't want to. I want you to 23 answer the question. That's it. 24 MR. CONLIN: Objection; form, asked 25 and answered, and now badgering the witness.	Page 44 1 misstates previous testimony. 2 A. I think I have identified that the 3 EPA had a website where they were producing 4 data. What I produced in the report was data 5 as of a certain date, but I've certainly looked 6 at the data since then. That's the nuance. 7 Q. You just didn't identify it in your 8 report? 9 MR. CONLIN: Objection; form. 10 A. I don't think that that's the case. 11 I've identified that database. It's just a 12 question of did I identify it multiple times, 13 multiple dates. 14 Q. Okay. Let's turn to Page 7 of 15 Exhibit 2. In Section 2.2, you list your 16 overall opinions. Do you see that? 17 A. I do. 18 Q. And you have seven opinions; is 19 that right? 20 A. In terms of summary opinions, yes. 21 Q. Okay. Can you read your first 22 opinion for the record? 23 A. Sure. A significant number of 24 hazardous chemicals were released from the 25 February 3rd, 2023, Norfolk Southern train
Page 43 1 A. Yeah, we'll get along a lot better 2 if you act professionally. I've been doing 3 this a long time, more than you've probably 4 been born. 5 Q. Answer the question. You can feel 6 and your counsel can feel that it's asked and 7 answered. You still have to answer the 8 question. 9 MR. CONLIN: It's the last time I'm 10 going to let you ask the question before I 11 instruct him not to answer because you're 12 badgering him. 13 You can answer if you can, Steve. 14 A. The answer is that I can't possibly 15 know what all of the data are, and I answered 16 the question by saying there's data that I've 17 looked at on the EPA side that I have not 18 necessarily written about in the report itself. 19 So I've tried to answer that question now at 20 least twice. 21 Q. So your testimony here today is 22 that you considered data relating to the East 23 Palestine area that you did not identify in 24 your report or its appendices? 25 MR. CONLIN: Objection; form,	Page 45 1 derailment event in East Palestine, and the 2 subsequent decision to blow up, quote, vent and 3 burn, contents in five derailed vinyl chloride 4 tank cars on February 6th, 2023. 5 Q. Okay. And what are the basis for 6 this opinion? Can we refer to this as Opinion 7 1? 8 A. Sure. 9 Q. What are the bases for your Opinion 10 1? 11 A. Well, it's outlined in the next 12 part of my report. 13 Q. Okay. But can you, sitting here 14 today, just tell us the bases for that opinion? 15 MR. CONLIN: Objection to form. 16 A. The basis of the opinion is 17 information related to the tank car contents 18 and the derailed train, as well as an 19 understanding of the combustion characteristics 20 of combusting PVC, as well as vinyl chloride, 21 from a chemical engineering standpoint. 22 Q. And were you instructed to make any 23 assumptions with respect to this Opinion No. 1? 24 MR. CONLIN: Objection; form. 25 A. No; I'm never -- I don't work that

Page 46 1 way. I don't work for people that tell me what 2 to write. 3 Q. And what documents did you rely on 4 in reaching Opinion No. 1? 5 MR. CONLIN: Objection to form. 6 A. Well, they're outlined in the 7 report. Do you want to go through that one by 8 one, I guess? 9 Q. I was more thinking -- or more 10 asking about this particular opinion. 11 A. Right. 12 Q. Which documents that form the basis 13 of this opinion? 14 MR. CONLIN: Objection to form. 15 Q. If there's specific pages in your 16 report that you want to refer to, that's fine, 17 too. 18 A. I think it's Section 4.1, beginning 19 on Page 10. 20 Q. Okay. 21 A. Extending through Page 21. 22 Q. Ending -- 23 A. And that also does not include a 24 significant discussion on, I'll call it, 25 differential diagnosis of the source of benzene	Page 48 1 A. Which opinion are you referring to 2 now? 7 -- sorry; I think you jumped around on 3 me. 4 Q. Yeah, it's No. 4. 5 A. No. 4. Yeah, I mean, the -- you 6 cannot possibly do delineations with a single 7 sample at one of the two sites. I mean, if you 8 want to know north, south, east and west, just 9 simply four directions, what the concentrations 10 are, then you have to sample at least in four 11 directions, and then probably out a ways to 12 find a point where it's clean, quote, unquote. 13 So the -- there's clearly no delineation. 14 The argument that -- the argument 15 is so spurious that while we delineated on 16 three sides of the Ceramfab building, so -- and 17 remediated, so that means that the Ceramfab 18 property is delineated. Well, that's crazy 19 stuff. It's nonscientific. 20 We've only taken one sample, which 21 was a composite from one side, and there was no 22 remediation of the surface soils, subsurface 23 soils, groundwater, et cetera. So the 24 statement that the sites were fully delineated 25 is complete rubbish.
Page 47 1 found in proximity to the Ceramfab building and 2 then ruling out other sources, like USTs. 3 So there's a whole section in my 4 report related to the issue of benzene, because 5 there's considerable work in Defendant's 6 reports regarding benzene and pointing to empty 7 chairs. 8 And -- so I dedicated a whole 9 section to all the work that I did, including, 10 not only reviewing the BUSTR database for USTs, 11 but actually contacting them in writing, 12 because some of the sites were not on site, so 13 I actually wrote them and got reports. 14 And then I summarized all that work 15 and showed that the UST of most interest was -- 16 one, there was no reported release of benzene; 17 two, there was no indication of MTBE around the 18 sites of interest; and, three, that the USTs 19 were embedded in clay, which is not known for 20 being a geology that allows for transport of 21 materials. 22 Q. And that opinion regarding the 23 delineation report, that's another one of your 24 overall opinions that you describe, correct? 25 MR. CONLIN: Object to form.	Page 49 1 Q. Okay. So turning back to your 2 first opinion, you've identified -- it's pages 3 -- is it ten through 21? 4 A. Yes. 5 Q. And that identifies all of the 6 documents that you relied on in forming the 7 opinion regarding the hazardous chemicals 8 released from the train derailment, right? 9 MR. CONLIN: Objection to form, 10 misstates previous testimony. 11 A. No. 12 Q. Okay. What other documents? 13 A. I just got done discussing the 14 whole benzene issue at length. 15 Q. Understood. You have a separate 16 opinion -- 17 A. No, it's not a separate opinion. 18 That's defining one of the substances that I 19 think was released, which was benzene from the 20 two benzene railcars. 21 Q. Why do you think that benzene was 22 released from the two benzene railcars? 23 A. By doing a differential diagnosis 24 and concluding, it's the only option left. 25 Q. Do you have any direct evidence

Page 50 1 that benzene was released from the two railcars 2 as part of the derailment? 3 MR. CONLIN: Objection to form. 4 A. I have the soil sampling and water 5 sampling at the point where those railcars were 6 and nowhere else. 7 Q. What do you mean by at the point 8 where those railcars were and nowhere else? 9 A. Well, if you look at the plots of 10 the benzene that we found from our sampling and 11 you look and you plot those, you find that most 12 of them are located right near, almost all of 13 them, in fact. I can go -- let me go to an 14 actual plot to illustrate that. 15 I'm on Exhibit 3, just for the 16 court reporter. Maybe I led you wrong. 17 Where I'm at is actually on Exhibit 18 2, I guess, would be the original report, 19 starting on Page 62, and it extends -- that 20 table extends -- 21 Q. And this is Table 7-3? 22 A. Correct. 23 Q. Okay. 24 A. And I'm just reading down the 25 benzene -- under the VOCs, there's a number of	Page 52 1 differential diagnosis, I looked at MTBE. I 2 looked at the benzene content of the, quote, 3 unquote, products inside the Ceramfab building. 4 I looked at the difference between 5 levels of benzene in the soil versus the air. 6 All of those things point to -- and then I 7 looked at the groundwater flow, which is to the 8 west/southwest under the -- towards or under 9 the building, the Ceramfab building, from the 10 derailment site. 11 And when you do that complete 12 analysis, you conclude that that -- complete 13 the differential analysis, you conclude that 14 the most likely -- more likely than not, with a 15 reasonable degree of scientific certainty, was 16 from the derailment of the benzene cars. 17 Q. And did you see any notations in 18 the file about whether or not the benzene cars 19 had a release? 20 MR. CONLIN: Objection to form. 21 Q. Or a leak? 22 MR. CONLIN: Same objection. 23 A. I've seen statements that they -- 24 I've seen statements from the experts that they 25 didn't leak, but I have not seen supporting --
Page 51 1 constituents listed. 2 The first one is benzene, and where 3 we had reported results -- and we didn't find 4 it everywhere, but where we found it was at or 5 near the derailment location or the stockpiles 6 of soil taken from the derailment. And you'll 7 see the values that are listed there, in terms 8 of micrograms per milligram or micrograms per 9 liter, depending on whether it was soil or 10 waters. 11 Q. Do you have an estimate of how much 12 benzene was released as part of the derailment? 13 A. I haven't done the calculation. I 14 cite the work that -- there's one reference in 15 my report that cites the fact that although the 16 tanks were not full, not containing, or not 17 transporting benzene, per se, that they -- it 18 didn't mean that they were necessarily empty. 19 In other words, there was residual 20 benzene in them, and that's because you can't 21 get it all out. 22 But the real basis for my ultimate 23 opinion is the differential diagnosis and then 24 the spacial look at where we found benzene on 25 the site, coupled, like I said, with the	Page 53 1 to suggest that, and I have not seen the same 2 differential analysis I performed. 3 In fact, I'm super critical of 4 doing things like suggesting that hydraulic oil 5 and motor oils and things like that contain 6 benzene. I mean, I've got 10,000 MSDSs on the 7 benzene -- I've got 10,000 files on benzene 8 itself, and I've been involved in like 200 9 benzene or benzene-related cases. I've never 10 seen a document suggesting there's benzene in 11 those products. 12 And what's really troubling is that 13 the minimum requirement really in my mind for 14 your experts would have been to at least read 15 the labels for the contents and/or get the SDSs 16 or MSDSs for those products and see if there 17 was any benzene in them, for example. 18 That wasn't done, and we know that 19 because they -- they claimed in their 20 depositions that it might have been done, but 21 if they had it, they would have given it to 22 Norfolk Southern attorneys. 23 And the attorneys have written 24 counsel and indicated that they never received 25 any such information. It calls into question

Page 54 1 whether it even exists. 2 Q. Have you seen any information from 3 the NTSB regarding its conclusion as to whether 4 or not there were releases from the benzene 5 cars? 6 A. I don't specifically recall that 7 one way or the other. 8 Q. Would that be relevant to your 9 analysis? 10 A. Yes and no. I mean, everything is 11 relevant, but you still go through the 12 differential diagnosis, and so it's sort of a 13 yes or no answer. You never want to exclude 14 any information in doing your analysis, but I 15 don't know that anybody has done as rigorous of 16 a differential diagnosis of all of these 17 scenarios. 18 USTs, which was claimed, products 19 inside the building, the statement that benzene 20 in the building wasn't from the subsurface, 21 even though the subsurface concentrations are 22 up to 26 times higher than the inside air. 23 The direction of the groundwater, 24 the contamination of where we were actually 25 finding benzene in the soils or waters, when	Page 56 1 A. Did I -- well, I certainly reported 2 on those results, yes, but the one that I'm 3 paying the most attention to is MTBE. 4 And, of course, the problem with 5 the USTs was that there's no indication that 6 they wrote BUSTR and asked for the files, which 7 I did, and then read the files, which I did, 8 and analyzed the files, which I did, and showed 9 that the UST of most concern is buried in 10 yellow clay. 11 And the results from the sample 12 analysis of that UST all showed detection limit 13 values. 14 THE REPORTER: Showed what? 15 A. Detection limit values. 16 Q. And did you do an analysis of 17 benzene at the WYG building? 18 A. Did I do an analysis? I did an 19 analysis of whatever we had in the same way. 20 We had much less information than at Ceramfab. 21 Q. Do you recall any benzene 22 detections at the WYG property? 23 A. I don't recall that we did. I 24 think most of the benzene is associated with 25 the Ceramfab facility. In fact, it all may be.
Page 55 1 you do that complete analysis, the logical 2 conclusion is the conclusion I arrived at. 3 Q. And did you do any analysis of 4 whether the other BTEX compounds were colocated 5 with the benzene found near around Ceramfab? 6 A. I did with respect to MTBE, which 7 would be -- you would expect that MTBE, Methyl 8 tert-Butyl Ether -- I did my senior thesis on 9 it in 1978, so that tells you how old I am. 10 So it was generated beginning in 11 1980, '80s or so, and then pulled because it 12 was found to -- at least for the USTs, it was 13 found to be very soluble in groundwater, and so 14 it was a very early indicator of a leak from a 15 UST. 16 So that's a signature compound in 17 Methyl tert-Butyl Ether that you look for to 18 show indications that you have a UST leak. 19 So as a surrogate, MTBE is an 20 excellent surrogate. 21 Q. And did you do the analysis of the 22 other BTEX compounds and whether they're 23 colocated with the benzene? 24 MR. CONLIN: Objection; asked and 25 answered.	Page 57 1 Q. I asked earlier whether you had 2 done an analysis of the amount of benzene 3 released from the derailment, and I believe 4 your answer was no, you did not do that 5 analysis. 6 Did you do an analysis of the 7 volume of release for any chemicals or chemical 8 classes with respect to the derailment? 9 MR. CONLIN: Objection; form. 10 A. Volume of releases? Well, I've 11 reported on the volumes of releases like for 12 vinyl chloride. They've been reported 13 publicly, and I've reported on those. So, 14 yeah, just some I did and some I did not. 15 Q. You identified some volumes of 16 releases that NTSB, for example, identified 17 with respect to the derailment, but you didn't 18 do any of your own calculations, the volume of 19 PAH, or dioxins, or other chemicals released? 20 MR. CONLIN: Objection to form. 21 A. The volume? Well, I think your 22 predicate is false. I mean, I certainly looked 23 at the -- one of the very first things I did 24 was look at manifest, because I was trying to 25 figure out what to sample for. When I first

15 (Pages 54 - 57)

Page 58 1 got there, nobody -- Norfolk Southern didn't 2 walk up to me and say, Steve, sample for these 3 chemical compounds. It was up to me. 4 The Plaintiffs' attorneys asked me 5 what are we sampling for, so I was trying to 6 figure that out. I knew from the early 7 manifest information released what the tank 8 cars were that released, what was in them, and 9 what their volumes were. 10 So -- and then I made a request on 11 -- I got there on the 20th, and I think I made 12 the request of counsel at that time, I want to 13 sample for dioxins, and they gave me approval 14 to do so. 15 And I was critiqued in the press by 16 EPA initially for sampling for dioxins, and I 17 said, well, read Times Beach, Missouri, 1980s. 18 I said I hope we don't find it, but 19 it's toxic at such a low level, and it's a 20 product of burning chlorinated hydrocarbons. 21 We've got to look for it. I hope we don't find 22 it, but if we find it, it's a problem. 23 Q. Now, let's talk about dioxins. Did 24 you do an analysis of the amount, volume, or 25 mass of dioxins released during the derailment	Page 60 1 can then calculate -- I didn't do that 2 calculation, but certainly one can take the 3 concentration times the total volume and figure 4 out what portion of that was likely dioxins. 5 I was more interested in the 6 concentrations of substances -- by the time I 7 got there, and I wasn't the only one that felt 8 that way. Gillette from EPA felt that way. 9 The odds after three rain events and two and a 10 half weeks passing of me finding stuff in the 11 air was going to be very low. 12 So it was -- it was -- and I had 13 been involved in other situations like this. I 14 was involved in the release of Tarco oils in 15 the Parkersburg, West Virginia case, and 16 ultimately into the Ohio River. 17 And the -- what typically happens 18 is the EPA tells the polluter to sample ASAP, 19 and they run around and they sampled PIDs, 20 which is -- they're the first ones in -- in 21 order -- PID is photoionization detectors, are 22 a crude -- relatively crude instruments for 23 what we're talking about here, measuring in 24 parts per million, typically. 25 And they don't measure a specific
Page 59 1 or vent and burn? 2 MR. CONLIN: Objection to form. 3 A. It's kind of a yes or a no. I 4 think in the report, I actually did some of the 5 chemistry, right. 6 Q. If you can point me to it, I'll 7 take a look. 8 A. I think it's on Page 21, but let me 9 make sure. I'm wrong. It's on Page 20. So I 10 was looking for -- if you take the molecule of 11 vinyl chloride, this is Figure 5.1, and this is 12 when I was trying to figure out early on what 13 comes when you combust, in other words, mix it 14 with air or oxygen, what products do you get. 15 The first -- the biggest thing you 16 get is HCL, which forms hydrochloric acid with 17 the vents in the air. You get co2, if you get 18 good combustion, CO, if you get poor 19 combustion. We had very poor combustion. 20 You get some Phosgene, 40 parts per 21 million, and then you get dioxins and furans at 22 parts per billion, parts per trillion. 23 So given the total volume of vinyl 24 chloride and PVC, we had two pellet cars of 25 PVC, one of which burned, I believe, and one	Page 61 1 hydrocarbon. They measure total hydrocarbons, 2 which doesn't tell you anything, really. You 3 want to know the individual constituents. 4 In other words, if I have a hundred 5 parts per million of total hydrocarbons, but 6 one part per million is benzene, I have a 7 problem. 8 So what you should be sampling is 9 using either an FID with specific sensors -- in 10 fact, I was asked -- you know, even though it 11 wasn't my job to tell them what to do, I gave 12 recommendations in the rebuttal report as to 13 instrumentation one could use in realtime to 14 figure out what's going on. 15 But my conclusion was that -- and I 16 write that in my report, that I was most likely 17 to find any residual contamination in the 18 surface soil, surface waters, and shallow 19 groundwaters, and those would be constituents 20 that were, in general, either VOCs that bound, 21 or SVOCs and dioxins that are not -- relatively 22 not volatile. 23 Q. Okay. And did you do an analysis 24 of the mass or volume or amount of PAHs that 25 were released as part of the derailment or vent

Page 62 1 and burn? 2 MR. CONLIN: Objection to form. 3 A. Mass of -- well, first of all, I 4 mean, it's -- you would have to first define 5 all the PAHs and know all their concentrations 6 in an incomplete combustion scenario, because 7 PAH is formed basically from combustion. If 8 you read the definition of polyaromatic 9 hydrocarbons, they're generally formed from 10 combust- -- incomplete combustion. 11 You would have to know all the 12 volumes to start with and then the relative 13 combustion chemistry to do that. 14 That wasn't my scope of work. My 15 scope of work was to say, okay, regardless of 16 how that happened and how efficient or 17 inefficient those combustion reactions were, 18 what was left behind, and are those most likely 19 related to the -- either the release initially 20 of contaminants, like two ethylhexyl acrylate, 21 or butyl acetate, or the combustion products, 22 and the one that seemed to me to be of most 23 concern, because it's a prominent parts per 24 trillion, is dioxin furans, so that's where I 25 focused.	Page 64 1 of crude oil and water in 1982, and I was 2 responsible for doing work for the U.S. Coast 3 Guard and the Department of Energy, doing the 4 largest burns of crude oil ever done to that 5 point. And they were done here in Columbus, as 6 well, in Oklahoma. And so I knew what to look 7 for -- 8 Q. I think you've answered the 9 question. 10 MR. CONLIN: You can complete -- 11 you can complete your answer. 12 A. So the answer is what I was looking 13 for was I don't know that anybody knows the 14 exact efficiency of the combustion chemistry, 15 and that's what you have to know. 16 Because you had a very -- what I'm 17 trying to lead to is you had -- to do those 18 calculations, and believe me, I can do that, 19 you would have to know very precisely how 20 effective that combustion process was. I don't 21 know that anybody did that measurement in order 22 to do the numbers you're calculating -- you're 23 asking for. 24 On the other hand, one can look for 25 the consequences of that incomplete combustion,
Page 63 1 I focused on -- as I said before, I 2 said publicly -- I was in two townhalls in 3 February, one in Pennsylvania, one in Ohio, and 4 people asked me, well, what is the constituent 5 that troubles you the most? And I said dioxin 6 furans, primarily, because it's toxic. 7 It's the toxic ingredient in Agent 8 Orange, and I said it -- it is the constituent 9 that, at very low levels, is a problem, and we 10 hope we don't find it, but if you combust 11 chlorinated hydrocarbons, the chemistry says 12 that you can form some of it, especially when 13 you have poor combustion characteristics. 14 And they asked me what do you mean 15 by poor combustion? I said, well, this dates 16 me, but in the old days, if you saw black smoke 17 coming out of your car exhaust, that meant that 18 you had too much fuel and not enough air. The 19 air/fuel ratio was bad, so you needed either 20 less fuel or more air. 21 So any time you see soot or black 22 smoke, in general, that means you have 23 incomplete combustion. 24 And the reason I know that is I 25 wrote one of the Seminole papers on combustion	Page 65 1 with respect to dioxins, and see whether or not 2 they are present and the degree to which they 3 are present. 4 MR. RHEINHEIMER: Okay. The court 5 reporter would like a break, so let's take a 6 break. 7 THE VIDEOGRAPHER: We're off the 8 record. 9 (Recess is taken.) 10 THE VIDEOGRAPHER: We're on the 11 record. 12 Q. Okay. Let's move on to your second 13 overall opinion, if you look back at Page 7 of 14 Exhibit 2. 15 A. I'm there. 16 Q. Can you read the second opinion for 17 the record? 18 A. Sure. The Arcadis -- sorry -- 19 The Norfolk Southern/Arcadis 20 sampling plans were inherently flawed and not 21 designed to determine actual contaminants at 22 the time of the release and at locations where 23 they were likely deposited. 24 Q. Okay. Were you instructed to make 25 any assumptions with respect to forming this

Page 66 1 opinion? 2 A. No. 3 Q. And what are the basis for this 4 opinion? 5 A. I guess the primary basis would be 6 my Chapter 6, which begins on Page 26 and 7 continues on to Page 45. 8 Q. And that's Chapter 6 of your 9 report? 10 A. Correct. And then, of course, I've 11 added to that in my rebuttal report, and really 12 that's contained within Tables 2.1, which begin 13 on Page 4 of Exhibit 3, to -- really continues 14 on to Page 41 through Table 2.3. 15 Q. Okay. And are the documents that 16 you relied on in forming that opinion also 17 identified in Chapter 6 of Exhibit 2 and Pages 18 4 -- or 41 of Exhibit 3? 19 A. I think it's more than -- this 20 table is 41- -- to 43 and Pages 4 through -- I 21 forget the last page number. Whatever it was. 22 I just want to check something. 23 There would be elements of that 24 also in the criticisms of the Arcadis' 25 delineation report, which is Chapter 7 of my	Page 68 1 descriptions for me to fully answer that 2 question, but just to give you some topical 3 points, I guess, to try to answer your 4 question, I assume we're going to get into it 5 in more depth. 6 I'm very critical of what I think 7 is probably a lack of chain of custody. There 8 are three scenarios that I think I can 9 summarize. Their sampling plans obviously 10 requires them to do a chain of custody, but 11 they didn't. 12 They -- in one case, they put 13 samples in plastic bags that doesn't show up on 14 the chain of custody. In the other case, they 15 don't indicate the sampler at all, which is a 16 break in the chain of custody. 17 And in the third case, the sampler 18 is identified, but it's not the first -- he or 19 she is not the first person in the chain of 20 custody. 21 I'm super critical of the sampling 22 plan with respect to where they sampled, in 23 terms of primary sampling to the southeast of 24 the derailment and where they sampled for 25 background. And I've been critical of that for
Page 67 1 report that -- Exhibit 2, which begins on Page 2 45 and ends on Page 1- -- 105. 3 So that would also be -- and then 4 also I would be criticizing the screening 5 levels that Arcadis used when I compare them 6 with EPA and Norfolk Southern's streaming 7 levels in Section 8. 8 And then I also -- I may have 9 missed something, but I think that's basically 10 the materials that would cover supporting my 11 second opinion on Page 7. 12 Q. And when you say NS/Arcadis 13 sampling plans, you're referring to the Arcadis 14 sampling plans. And Arcadis was retained by 15 Norfolk Southern, or is there a separate 16 Norfolk Southern plan that you're talking 17 about? 18 A. My understanding is Norfolk 19 Southern retained Arcadis on their behalf. 20 Q. Were there any specific sampling 21 plans that you considered to be inherently 22 flawed, or was it all of them? 23 MR. CONLIN: Objection to form. 24 A. Well, there were elements in -- we 25 would have to go through the individual	Page 69 1 a long time. 2 In fact, I -- we'll probably get to 3 that, too. I wrote a declaration for 4 Government Accountability criticizing the plan. 5 And one of the responses from your 6 -- not you personally, but your experts was 7 that, well, we -- the EPA released a wind 8 direction map and the -- the sampling plans 9 considered that. 10 And I'm like, well, we have an 11 issue with respect to timing. The initial 12 sampling plans were -- by Arcadis were 13 initially on or around early March. Then they 14 were updated in April. 15 The initial sampling reports were 16 on March 19th. The initial wind pattern 17 results were published by EPA or their 18 contractor on May 31st, which was after the 19 fact. 20 And then more importantly, if you 21 look at where they actually sampled, they 22 continued to basically follow the early work, 23 which is predominantly sampled to the 24 southeast, and continued to call out 25 background, being basically an arc from the

Page 70 1 west to the northeast, which is where a large 2 portion of the plume actually went. 3 And so the background was not 4 actually background. And to my -- my position 5 is that was never corrected, and we know it 6 because we can look at what they claim was 7 background, dioxins of 51, and we know that the 8 Ohio EPA around Columbus had values between 1.2 9 and two, and we had values of -- in the low 2s. 10 And then you can look at one of my 11 exhibits, where all the EPA lists backgrounds. 12 They're all in the -- around two or so in 13 general. 14 And even -- I believe -- I think it 15 was Love or one of the experts cited Gullett's 16 work in the Gulf of Mexico and burning crude 17 oil from the crude oil spill and said that the 18 values -- he reported the values that were like 19 in the 2s for dioxin. 20 And I said, well, of course, they 21 were in the 2s because crude oil doesn't have 22 chlorine, and so you burn a hydrocarbon without 23 chlorine, you're not going to get dioxin, so 24 it's lack of background. 25 So when they were using values of	Page 72 1 meant the plume would be either just sort of 2 stagnant, or it would move slightly to the 3 west, northwest, northeast. 4 And it was just stunning to me that 5 this wasn't recognized. I made this statement 6 in my declaration, I've made this statement in 7 townhall meetings, and yet Norfolk and their 8 contractors continued to place the most 9 emphasis to the southeast. 10 And, of course, my biggest 11 criticism was they should have -- if I were the 12 incident commander, I would have never done the 13 ignition period because I evacuated in the 14 wrong direction. 15 And so the plan is -- is inherently 16 flawed and continued to be flawed as it was 17 updated, because the predominant area of 18 emphasis for sampling was in the wrong 19 direction, and the background samples were in 20 the wrong direction in general, and that was 21 never corrected. 22 And the overwhelming summary of 23 data, as you will see in my reports, all 24 confirms this, and -- and so the plans never 25 got corrected in that dimension with respect to
Page 71 1 51, I was like, well, that's clearly a result 2 of actually sampling where the plume went. 3 And I was just stunned that little 4 ole me, with two people, could figure that out 5 by April of 2023, and it wasn't until late May 6 that the EPA apparently had some modeling, but 7 nobody at Arcadis or Norfolk Southern could 8 figure that out. 9 And all I had to do was talk to 10 people where I was sampling. People to the 11 west would say no, that plume came over us. 12 I'm like, really? 13 So after two weeks, I went home and 14 I looked up the hour-by-hour data for 15 Pittsburgh and for Youngstown, which are the 16 closest stations with hour-by-hour data, and 17 they were pretty similar. 18 By noon, the winds went west -- 19 came from the north -- they came from the 20 northwest, and they stopped, and it was almost 21 calm. And then they sort of -- if they came 22 from any direction -- so about half the time, 23 they were calm from, say, 1:00 through the burn 24 period on the 6th, to somewhat coming from the 25 southeast, towards the southwest. So that	Page 73 1 winds. 2 I've already commented that I think 3 I looked at five different plans with respect 4 to cleaning tools, and it depends on the 5 compound they're looking at, but except for 6 PFAS, I think they all say we can use tap 7 water. And I'm like, no, we don't use tap 8 water to clean tools, because we don't know 9 what's in the tap water. 10 I mean, especially when you're 11 trying to measure dioxins in parts per 12 trillion, which is like a million times less 13 than a part per million, and I said, no, it's 14 got to be distilled water. 15 So I was like why would you -- and 16 the only way to do that would be to know what's 17 in the tap water and subtract that out. 18 And then, of course, I'm super 19 critical of the plans where they use plastic 20 bags to first put the samples in plastic and 21 then put it in glass jars. There's a chain of 22 custody issue there, but there's a spoilization 23 issue with the samples as well, as I cite in 24 the literature. And the EPA, even -- I mean, 25 Gullett or somebody says, no, you don't put

Page 74 1 them in plastic. 2 And I commented that may be a 3 holdover from UST work for VOCs, because that's 4 the only time I would have used plastic, but 5 for semi-volatiles and for dioxins, you clearly 6 don't want to take the chance of contaminating 7 the samples. 8 Now, the plans, it's not -- some of 9 the plans indicate that they can use plastic, 10 and some are a little more silent on it, and 11 some of them are conflicted, as I point out. 12 So I know it's been a long answer, 13 but there's pages and pages where I comment on 14 those plans and some of the details in those 15 plans. And by and large, I find them to be 16 defective. 17 Q. And one of the things you say in 18 your summary of your opinion is that plans were 19 not designed to determine actual contaminants 20 at the time of their release? 21 A. Sure. 22 Q. What does that mean? 23 A. That means if for air sampling, 24 using PIDs, the only way you're going to really 25 measure significant quantities in the outdoor	Page 76 1 7, the third overall opinion, can you read that 2 for the record? 3 A. Sure. The Norfolk Southern Arcadis 4 sampling plans were inherently flawed and not 5 designed to determine -- 6 Q. Sorry; the next one. 7 A. Oh, I'm sorry. I misspoke. 8 Actual remediation methods were 9 also inherently flawed and likely to lead to 10 ongoing exposures. 11 Q. Were you instructed to make any 12 assumptions with respect to this opinion? 13 A. No; it's an opinion I had being on 14 site. 15 Q. And what are the bases for this 16 opinion? 17 A. It's in the report, but one of the 18 bases is the best way to -- what I was talking 19 about here was, first of all, where Norfolk 20 Southern removed the debris, the -- the rails, 21 the ties, and the ballast, and then put it all 22 back within two days, but they left the 23 contaminated soil below. So when they came 24 back in April, they first then removed 25 everything from the north tracks, the tracks,
Page 75 1 air from like an uncontrolled burn, like 2 occurred, or even from the burning of various 3 constituents from the third on, is you've got 4 to sample right away. I mean, like within 5 days. 6 Because by the time I got there -- 7 I remember looking it up. There had been three 8 days of rain by the time I started sampling on 9 February 21st, and you're going to wash out a 10 lot of that material, or it's going to 11 dissipate and be diluted. 12 So, first of all, you've got to 13 measure right away, but, secondly, you've got 14 to measure with instrumentation that will 15 measure those contaminants of concern, the 16 actual contaminants, and at a level which would 17 be parts per trillion -- parts per billion to 18 parts per trillion. 19 And when you're using a PID that's 20 not chemical specific and doesn't measure to, 21 at best, maybe a hundred parts per billion, 22 it's really a parts per million device, you 23 can't possibly measure anything of 24 significance. 25 Q. Your next -- if we go back to Page	Page 77 1 the rails, the ballast, and the soil, down to 2 the clay layer, which was like ten feet below 3 the confining clay layer. 4 And my comment right away was, 5 let's imagine that the summary of this is like 6 this long table and you've got a bathtub, 7 basically, because it's confined at the bottom 8 by the clay. Nobody disagrees with that. 9 And then on the sides, obviously, 10 you could have, you know, stuff coming in from 11 the sides, but the point was that you still had 12 all the contaminated soil on -- under the south 13 tracks. So when you just remediated the north 14 tracks, whatever local water and leachate was 15 present from the contamination under those 16 south tracks was going to recontaminate the 17 clean soil you put back down. 18 And I knew that because I noticed 19 that the sampling that was being done on the 20 west end of the north tracks when I was there 21 was there, was they were digging little gopher 22 holes down in the clay and sampling, you know, 23 six inches into the clay, and I'm like, well, 24 they're not going to find anything there. It's 25 clay.

Page 78 1 But I said, but there's a bunch of 2 surface water ponded over there in the corner, 3 so I'm going to sample that, see what's in it. 4 It was contaminated as hell. 5 So I said so they're going to put 6 clean materials onto that contaminated -- and 7 so that was the basis, and I actually took a 8 sample of that water and reported it in these 9 reports. 10 Q. And did you see any post-removal -- 11 post-soil removal testing from Arcadis in the 12 track area? Did you review any of this? 13 A. Post-soil or the clay? 14 Q. Either one. 15 A. What I noticed was most of the 16 material that was removed was stockpiled, and 17 so there were stockpile samples of the removed 18 material, but the sampling I observed, and 19 there was a lot of people sampling. 20 I mean, I'll bet -- I don't know if 21 it was EPA and Arcadis or who all was in the 22 pit, but it had to be 10 to 20 people, and they 23 were sampling -- they were sampling the banks 24 on the north side. 25 That's fine, but they were also	Page 80 1 The right way to do is it to 2 remediate the entire trench at once. It wasn't 3 done that way. 4 Q. Did you see any data from sampling 5 of the fill material that eventually went in 6 below the tracks after the removal process was 7 done? 8 A. I don't know that I've seen the 9 fill material, but it would take time to 10 recontaminate that, and the question is where 11 are they sampling. 12 You know, one of the interesting 13 things was when they were doing the 14 remediation, I literally had an Arcadis person 15 tell me -- because I went down into the pit on 16 the north end -- he said, "He's not going to 17 find anything there. It's clay." 18 And then he saw me find a little 19 lens of soil, brown soil above the gray clay, 20 and he goes, "Oh, crap." 21 So I've been doing this for 30 22 years, and it's unusual to have -- I mean, I'm 23 expensive, right, a little bit. It's unusual 24 to have a senior research scientist, somebody 25 who's been around for almost 50 years, doing
Page 79 1 sampling -- I've got pictures of -- I call them 2 gopher holes, where they were sampling down 3 into the clay, and I provided those 4 photographs, but they were associated with my 5 Sample 70. 6 But I'm like, well, that's designed 7 not to find anything because the clay is the 8 confining layer. Even Love says it's the 9 confining layer. I agree. And the boring log 10 shows that it's a confining layer. It's clay. 11 It goes for a long ways. 12 So whatever waters, we'll call them 13 surface waters, or shallow groundwaters, or 14 perch water -- there's various terms -- those 15 waters are -- if you've got this long bathtub 16 and it's like a quarter of a mile long, and you 17 clean up half of it and you leave -- you allow 18 then any new material you put down to be 19 recontaminated by either the water sitting on 20 the clay or leeching towards the clay, plus any 21 of the unremediated material. 22 I mean, the right way to do it -- 23 and I know why it wasn't done; because you 24 would have to shut down both tracks, and that 25 would be economically expensive.	Page 81 1 sampling. I mean, the people shadowing me from 2 Arcadis were very young, and they kept asking 3 me, what are you doing? What are you sampling 4 for? 5 And so the answer to your question 6 is not if you sampled the -- all the soil 7 material. And one of the big problems that I 8 -- one of the criticisms I have is the 9 composting of samples. 10 We can talk about the zero to six 11 inches at some point, I hope, but the question 12 is if you really wanted to know if you had 13 recontamination, go down and sample, do a 14 shallow well and sample the water sitting on 15 the clay below the new soil. That will tell 16 you whether you're getting recontamination or 17 not. 18 Q. Okay. 19 A. And I never saw any evidence of 20 that occurring. 21 Q. And your opinion that the actual 22 remediation methods were inherently flawed, is 23 that about anything other than the remediation 24 under the tracks? 25 A. Well, I guess, yeah, that's a

Page 82 1 broader question. Now, I have other opinions 2 about that. Early on when I was there, the 3 trucks that were hauling away the -- there were 4 several concerns I had. 5 First of all, I saw some of the 6 initial sampling results from Indiana, where 7 some of the soils were being taken to a 8 landfill, and there was one or two dioxin 9 samples, I think. 10 And my concern was that that was a 11 composite, because when you excavate a lot of 12 soil from an area, inherently, a lot of that 13 soil is likely not to be contaminated, so what 14 you're doing is diluting the surface layer, 15 because as Gullett and others said, this stuff 16 is insoluble, and even with rain, you're not 17 going to see it leech down very far. 18 I was okay with them doing a little 19 bit of sampling from one to six inches or 20 whatever, but I thought they would do it in 21 layers, right, so you could see the profile as 22 to how far down it went. 23 But what they did is when they 24 sampled the six inches, they just did a big 25 composite, so you can't get any information	Page 84 1 removed. It's a precious few, and so I was 2 always critical of that because you had a 3 delusion effect. 4 And I was also critical of the fact 5 that a lot of this material was either being 6 deposited in the community through mud and then 7 would dry out at times and there was dust. 8 And if you were there, you saw it, 9 and I just -- early on, there was such a rush 10 to get all that material moved that -- and then 11 we had leakage from one of the water storage 12 tanks. 13 I show pictures of that, where it's 14 running across the ground and you see machines, 15 so there -- and then there were pumps that were 16 pumping stuff that were leaking. 17 And the EPA was writing Norfolk 18 Southern all the time about some issues they 19 were finding, and I recited some of those. So 20 that whole remediation process was a bit sloppy 21 in my opinion. 22 Q. Okay. Let's go to the next summary 23 opinion on Page 7. 24 A. We're at No. 4, sir -- counsel? 25 Q. Yes. And we've talked about this a
Page 83 1 about how -- how much contamination, depending 2 on the contaminants, existed at different 3 levels. 4 And the same issue -- so you get a 5 dissolution effect, and, you know, it could be 6 a factor of ten or more. 7 And so the big criticism I had was, 8 initially, they were rolling this stuff out 9 through trucks that were not covered. There 10 was mud and dust everywhere in town. I mean, 11 the roads were covered with mud. I mean, your 12 vehicle -- I had to run my vehicle through I 13 don't know how many car washes, because you 14 would run on the roads and there was stuff 15 everywhere. 16 And later on, the EPA forced, or 17 recommended -- I don't know if forced is the 18 right word -- that they have car washes, 19 rinses, and that they cover the trucks. 20 And then -- so in terms of the 21 remediation process, the fact that they -- how 22 they were sampling those vehicles -- I went 23 back one time and tried to check how many 24 samples were actually taken for the hundreds of 25 yards, maybe thousands of yards of soil	Page 85 1 little, but let's read this one for the record. 2 A. Sure. Norfolk Southern or 3 NS/Arcadis' delineation report blaming others 4 for contamination at or near the Plaintiffs' 5 properties is flawed and essentially pure 6 speculation. 7 Q. And we talked a little about this 8 in terms of benzene, right? 9 A. Sure. 10 Q. Are there any other chemicals that 11 you have in mind with respect to this opinion? 12 A. Yeah, the PAHs and dioxins. They 13 continuously blame coal, and I'm just stunned. 14 They show an old photograph from the early 15 1900s and say, see, there was coal around this 16 area, so that means there was coal that was the 17 source of contamination. 18 And I'm like -- when Arcadis and 19 their experts are writing this, and I'm like, 20 did you look at your boring logs down to 75 21 feet? 22 I mean, I used to do boring logs. 23 I used to write the geology of the boring logs, 24 and I'm like I don't see coal on any of your 25 boring logs.

Page 86 1 And then you see summaries of the 2 remediation plan for the railroad, and I threw 3 a couple of those in there, and they don't show 4 any coal. And I'm like how can you -- how -- 5 this is completely unscientific to have all 6 this data showing no coal and then blame coal. 7 I mean, I'm just stunned that all the PAHs are 8 from coal, and I'm like, where is the coal? 9 And then on the PFASs, whoever 10 wrote that section was either incompetent or 11 not -- didn't have the right background. 12 I mean, I've had the benefit of 13 being the expert on all four major PFAS forever 14 chemical cases, plus four C8 cases, which is 15 one of the PFASs. 16 So I put in a section for one of my 17 reports on the chemistry that they're saying, 18 well, because the only PFAS compound we found 19 was PFOA, it couldn't have come from the fire 20 extinguishing products because it only has 21 PFOA. 22 Well, first of all, they don't 23 understand the chemistry of PFASs, which is 24 very complex, and depending on whether DuPont 25 or 3M produced it, they can either be long	Page 88 1 any signature analysis to know whether it comes 2 from that or not. 3 And then we have footnotes I find 4 that say we used 40 gallons of PFOA foam, so it 5 was used there. 6 So I look at all of that, and I'm 7 like, this is nonsense. It's scientific 8 nonsense. There's -- the lack of degree of 9 rigors is stunning with respect to PFOS -- PFOA 10 and PFAs. 11 Now, maybe it's because I've been 12 an expert in four of these massive cases and 13 I'm a chemical engineer by training, 14 undergraduate and graduate, that this is all 15 common sense to me, but you can look at what 16 they've said, what the analytical shows, as 17 limited as it is, and then you can look at the 18 actual chemistry, which I've shared in one of 19 my reports with you all. And the conclusion 20 that it's not from firefighting foams is 21 completely unsupported. 22 Q. Okay. You've identified benzene, 23 PAHs, dioxin, PFAS. Are there any other 24 chemicals discussed in the delineation report 25 that you think the analysis is flawed?
Page 87 1 chained or linear molecules were branched. The 2 degree of branching depends on who produced it, 3 so that's a chemical methodology well 4 established to determine where it came from. 5 But also, the PFOA in firefighting 6 foams, the AFFF, are either from contamination 7 or degradation products, and there's many, many 8 others. 9 And what's curious is that their 10 own sampling data, as limited as it was, there 11 were many times where they said we're taking 12 samples, and then they dig through the report, 13 dig through the report at five locations. They 14 took samples at five locations and get one 15 analytical report. 16 But even there, because I'm 17 certainly an expert in PFAS, I was the expert 18 for the South Carolina PFAS case, in terms of 19 exposure warnings and standard of care; so I 20 really understood the chemistry, and I'm like, 21 well, look at your own analytical, you're 22 showing -- in one case, they show a PFOS, which 23 is a PFAS, and no PFOA, and I'm like you 24 haven't -- first of all, you don't understand 25 the chemistry, and, secondly, you haven't done	Page 89 1 MR. CONLIN: Objection to the form. 2 A. Well, I think the other key SVOCs 3 and VOCs, the vinyl chloride, the two 4 ethylhexyl acrylate, the two -- or the endotoxi 5 acetate, or -- the sampling clearly shows -- 6 and then the glycols. 7 My -- what I did was sort of 8 unusual. I added the -- when you send your 9 samples to the lab, you can say do the standard 10 VOC analysis, panel of analysis, do the 11 standard SVOCs. 12 What I did, which was different is 13 I said, well, I want to add to those lists, 14 things like vinyl chloride, two ethylhexyl 15 acrylate, and butyl acetate, et cetera, and I 16 want to do the glycols, polyethylene and 17 ethylene glycol. 18 And so when you look at the plots, 19 especially in the delineation report where I 20 had the Level 4 reports and I plotted the data, 21 you see -- spacially, you see that data just 22 sits right where the derailment is. 23 Q. Any other compounds that are 24 discussed in the delineation report that you 25 think are -- the discussion is flawed?

Page 90 1 MR. CONLIN: Objection to form. 2 A. I'm trying to see if I've covered 3 everything. If we include the VOCs, SVOCs, 4 glycols and dioxin furans, then that would 5 cover the sets of chemicals that I commented on 6 as being flawed. It's a very broad question 7 you asked, so that's why it's hard to answer 8 exactly. 9 Q. Okay. And were you instructed to 10 make any assumptions in forming this opinion? 11 A. No; that's not -- I don't think 12 you've deposed me before, but that's not my 13 style. I'm not -- I would not work for 14 somebody if they told me -- I would immediately 15 quit if somebody told me I had to give an 16 opinion I didn't agree with. 17 Q. But to be fair, that's not the 18 question. Just asking whether you were 19 instructed to make assumptions? 20 A. The answer is no. 21 Q. Let's go to -- back to Page 7, to 22 the next overall opinion, and if you could read 23 it for the record. It's number five, a Review 24 of Data. 25 A. Yes. Thank you. A review of data	Page 92 1 I mean, if you say everything is 2 great, and I'm like, well, what's the threshold 3 that means it's great or not great? I need to 4 know. 5 Q. Anything else, other than the four 6 sets of data, and then the delineation report, 7 and the data included in there? 8 MR. CONLIN: Objection to form; 9 asked and answered. 10 A. Well, we have, towards the very end 11 in the rebuttal report, for example, we were 12 given -- through counsel, I was given a report 13 that took ten samples of benzene in the air at 14 Ceramfab, and nine of the ten showed the 15 presence of benzene, and the tenth, they said 16 didn't show it, but then you read the chain of 17 custody, and it said, well, the sample was 18 invalid because the equipment failed. 19 Well, it wasn't -- it really was 20 nine out of nine, because the tenth sample is 21 not a real sample, right. The equipment didn't 22 work. 23 So we find benzene in nine out of 24 nine samples above background, significantly 25 above background levels, and -- so there's that
Page 91 1 collected at and around the Plaintiff's 2 property shows substantial contamination of the 3 facility's surface soil and surface waters at 4 or near the Plaintiff's properties. 5 Q. And is it correct that the basis 6 for this opinion is, in part, four sets of data 7 that we talked about earlier? 8 A. That's correct, in part. 9 Q. Anything else that helps form the 10 basis of this opinion? 11 MR. CONLIN: Objection; form, asked 12 and answered. 13 A. Well, I mean, I go at length 14 through the delineation report. I go to the 15 actual dioxin results they presented. I go 16 through the PFAS results they presented, and in 17 my mind, they show significant contamination. 18 I'm critical of them for not doing 19 the TEQ calculations, but I did them for them, 20 even though they're Level 2 reports and -- just 21 to try to see what they were. 22 So I was critical because I'm like, 23 well, how do you know if it exceeded whatever 24 criteria you're going to use if we didn't 25 calculate the TEQ in dioxins?	Page 93 1 information. 2 There's a series of comments about 3 the fact that they follow protocols approved by 4 the EPA, et cetera, et cetera, by Love, and I 5 forgot the other gentleman's name, and I 6 systematically refute those in Exhibit 3, so 7 that information would be relied on as well. 8 MR. CONLIN: For the record, that 9 ten samples he references were ones that 10 Norfolk Southern took in -- March 30th, 11 whenever they came out. 12 MR. RHEINHEIMER: Haley & Aldrich. 13 MR. CONLIN: Right. 14 THE WITNESS: Yes. 15 MR. CONLIN: The results of those 16 samples. 17 A. They showed on the sample report 18 that we received between the time I wrote the 19 April 6th report and the time I wrote the May 20 29th report, so I cited that work. 21 Q. And did you compare any of the 22 benzene reports from the Haley & Aldrich 23 testing to any industrial, residential, or 24 whatever standards? 25 MR. CONLIN: Objection to form.

Page 94 1 A. Did I compare to -- I know most of 2 them by heart. I mean, the problem is that the 3 standards, like OSHA standard 8RT PEL is one 4 part per million, and ACGI has just changed 5 theirs from .5 to .02, so it's a factor of 50 6 less than OSHA. 7 And I've testified over and over, 8 again, from an industrial hygiene standpoint, 9 two things. One, read the preambles to ACGIH 10 TLVs or the OSHA PELs. They all say these are 11 not safe levels. 12 The other point I make over and 13 over again is we have a trade magazine called 14 Synergists in industrial hygiene, and the 15 number one request from industrial 16 hygienists -- and I've got, I don't know how 17 many copies of articles, over the last ten 18 years, has been please update the PELs. 19 And OSHA even says on the PELs -- 20 I've got a statement from them that says 21 consider using other values, the California 22 values, the German values, European values, 23 because we haven't been able to get these 24 updated. 25 And to give you a point of	Page 96 1 of one that's ever gone up. They've always 2 gone down when they get a chance to be 3 revisited. 4 But the problem with the PELs is 5 because of -- I talked to the assistant 6 Secretary of Labor one time about this. I said 7 why are you dropping these values, and they 8 said it's always a political compromise, and 9 there are economic drivers for setting the OSHA 10 standards, and there are -- there's a lot of 11 politics associated with it. 12 But I'm here to tell you that from 13 an industrial hygiene standpoint, me and OSHA 14 would always like to see those updated, and 15 more importantly, OSHA tells us go look at 16 other people's values because ours are old. 17 They're antique. They're 40 years old or 18 older. 19 Q. Okay. 20 A. So, yes, I know those like the back 21 of my hand. I use them all the time, but 22 they're not levels that we drive. I mean, if 23 I'm your industrial hygienist and I'm going 24 into your home or your workplace, I'm not going 25 to live with those levels. That's something
Page 95 1 reference that dates me, the OSHA PEL was set 2 ultimately as a result of litigation from 1977 3 to 1987 on the benzene standard and resulted in 4 a compromised value of one PPM for the PEL and 5 .5 for the action level. And that's 40 years 6 ago, and the data it relied on is older than 7 that. 8 To give you an idea of -- just to 9 make it pragmatic, the level that was set by 10 industry in about 1945 was around a hundred 11 parts per million for benzene in the air. 12 By 1950s, it dropped to around ten, 13 and then by 1970s and '80s, we dropped to one. 14 So in that period of 40 years, we went from a 15 hundred to one, and from the next 40 years, 16 we've gone from one to one. 17 Now, ACGIH has gone from basically 18 one, or .5, to .02, so it's -- right now, that 19 level is 50 times lower, but the thing to 20 remember constantly is Drinker's statement in 21 1945, there is no safe level. There is no safe 22 level for benzene in the air. 23 So my experience, again, that being 24 old, is, to my knowledge, and looking at the 25 PELs over the last 40 years, I can only think	Page 97 1 I'm going to protect you from. I'm going to 2 try to do as much I can to eliminate them, 3 especially benzene, which is one of the few 4 known human carcinogens. 5 Q. Anything else? So you've 6 identified the four datasets, the delineation 7 report, the Haley & Aldrich report. Anything 8 else that is data collected at or around the 9 Plaintiffs' properties that shows substantial 10 contamination? 11 MR. CONLIN: Objection; form. 12 A. Well, there's several reports that 13 I've cited in here. There's the report that 14 took almost a year to issue, which was an EPA 15 report on, I want to say it's the Phase 1 16 sampling report, so that would be another 17 report that I've cited in my work, and I would 18 have to go through the report to give you every 19 last citation, but to the extent that I've 20 tried to cite things that I relied on outside 21 of just my general knowledge, I've tried to 22 indicate those in the report itself. 23 Q. Okay. 24 A. I -- just by way of reference, if 25 it's generally available, I list it as a

Page 98 1 reference. If it's more difficult to obtain, 2 then I list it as an exhibit. 3 And so you'll find that wherever I 4 cite something from an exhibit, I'll give you 5 the exhibit number or the page number so you 6 can go back and check to see if you agree or 7 disagree. 8 Q. Okay. And let's go to the next 9 summary opinion on Page 7, which is the second 10 to last one. 11 A. The one that starts with based? 12 Q. That's correct. Can you read that 13 one for the record? 14 A. Yes. Based on the sampling data 15 reviewed and the contaminants released from the 16 Norfolk Southern derailment and vent and burn 17 activities, Plaintiffs' properties were 18 contaminated. 19 Q. And is it fair that that summary -- 20 that that opinion is kind of built on the 21 opinions we've already talked about so far? 22 MR. CONLIN: Objection to form. 23 A. In part. 24 Q. Okay. And what's the new part from 25 that -- this second-to-last overall opinion?	Page 100 1 to clear flags on, I would say, maybe a third 2 of Scott Smith's data. 3 So two-thirds of his data have -- 4 are in -- all the first three datasets are in 5 the rebuttal report, and two-thirds -- I would 6 say about two-thirds of Scott Smith's data are 7 calculated and plotted in the rebuttal report. 8 Anybody can go back and take the 9 raw data and do what we're doing. It just 10 takes time, so there's nothing new about the 11 data. It's just are we through the process 12 that I'm insisting on in order to do the 13 calculations and the plot. 14 Q. What's the difference between a 15 Level 4 report and a Level 2 report? 16 A. Well, that's a huge question. In 17 the simplest sense, it's probably going from a 18 report that's a hundred pages to a thousand 19 pages, but some of the details would be that 20 the laboratory has to issue all of its 21 underlying QA/QC information regarding the 22 instrumentation that they used to do the 23 analytical, including calibrations. 24 And the other thing is that it does 25 allow us ultimately to use actual values
Page 99 1 MR. CONLIN: Objection to form. 2 A. Well, the new part is the ongoing 3 effort to cure and QA/QC, all the datasets to 4 Level 4 reports, and then do -- have Lab Corp. 5 out of California cure and then clear flags and 6 do QA/QC reports on the data. 7 I was not willing to do any 8 calculations or have any calculations of plots 9 done until we've gone through that rigorous 10 process, which was extremely time-consuming, 11 because I wanted to make sure that the data I 12 was working with were approved at least at two 13 levels before I did any calculations or any 14 plots, and that process is ongoing. 15 It's not to say that you didn't 16 have the original Level 2 reports, all the 17 data, because the Level 2 reports and Level 4 18 reports have the data, but you have all of the 19 data I've been relying on since April 6. 20 The difference is that we are in an 21 ongoing process, even to this day, to continue 22 to -- not for Level 4 reports. I think we have 23 all Level 4 reports by the May 29th issue. I'm 24 pretty sure of that, but we're still going 25 through with Laboratory Data, Inc. to cure and	Page 101 1 between the MDL and the RL, and that's helpful. 2 And you'll see that when you see 3 the Level 4 and then the Laboratory Data 4 Corp. -- I'll call them the cured EDD files. 5 Those are like exhibits. 6 So Exhibit 81 is all the raw data 7 files, and my Exhibits 161 through 164, are the 8 EDD and QA/QC files from Laboratory Data, Inc. 9 I know that's -- I mean, there's 10 probably a lot more involved in that than I've 11 articulated, but, by and large, it's a much 12 more robust QA/QC effort on the part of the 13 lab. It takes a lot of time for them to do it. 14 They've got to report all the equipment they 15 used, the calibrations they used, the sources 16 of the ultimate calibrations. It's a very 17 rigorous process. 18 Q. And you said -- you referred to the 19 MDL and an RL. What are those? 20 A. Reporting limit and minimum 21 detection limit. 22 Q. And what's the difference between a 23 minimum detection limit and a reporting limit? 24 A. That's an interesting question, and 25 I've had it explained many times. I come from

Page 102 1 the old days -- when I first started doing 2 analytical chemistry in 1979, at GCNS, at the 3 national lab in the Toniworks [sic]. We only 4 had an MDL. It was can the instrument see it 5 or not. 6 And in the last -- I've been told 7 in the last ten years, some of the labs have 8 come up with this concept of RL, which is like 9 a super duper -- my view; this is lay terms, as 10 opposed to technical terms. It's like a super 11 duper, highly-statistic reporting. 12 In fact, we're like 95 percent -- 13 we're 95 percent sure it's there. I could be 14 off on the number, but it's what I call a super 15 duper reporting limit, as opposed to an MDL, 16 which is we're not sure it's there or not. 17 And when you go through the -- when 18 you go through the curing process, the question 19 is if you have -- if you have values that could 20 fall in three pits. Either it's below the MDL. 21 What do you do with it if it's below the MDL? 22 The convention has been for decades to use 50 23 percent of that. 24 Now, I was super conservative in my 25 analysis. I used 50 percent and zero percent,	Page 104 1 of 13, it's Laboratory Data, I want to say, 2 Inc., but you have their label there on the 13 3 invoices. 4 Q. Okay. And what is the process -- 5 well, let me ask this: Is curing the data 6 different from clearing flags? 7 A. Oh, a hundred percent. 8 Q. Okay. So what is the process of 9 curing the data? 10 A. Curing the data is where they will 11 look at -- at all of the QA/QC provided in 12 Level 4 report, they'll look at any comments -- 13 what happens to you when you sample is the lab 14 on the intake, in this case, Arcadis, except 15 for the GEL data, will give you feedback if you 16 messed up, right? Like samples are too warm, 17 or you didn't fill the container all the way 18 full on a VOC sample, or -- and they will give 19 you feedback. 20 And so they'll look -- and then 21 there are a host of other issues related to the 22 lab itself, and this organization goes through 23 all of that material and determines -- writes a 24 QA/QC report to see whether or not any of those 25 things are sufficient ultimately to say the
Page 103 1 which is about as conservative as you can be. 2 I said anything that's below the MDL I would 3 say has zero contribution to the TEQ or the BEP 4 equivalent -- BaP, I should say. 5 And if the values -- the value 6 could also be between the RL and the MDL. What 7 do you do with that? And then the value could 8 be above the RL, which is unflagged, right, 9 unless there's some other reason to flag it. 10 So it doesn't have any flags -- you just use 11 the value. 12 So the question is if the value is 13 between the RL and the MDL, what value do you 14 use? And if you're at the R- -- if you're at 15 the Level 2 level, what -- what EPA and Arcadis 16 has done is used the reporting limit value, but 17 if you go through this QA/QC process, if it's 18 in between the levels, you can actually use the 19 actual value. That's the bottom line of what 20 happens. 21 Q. Okay. And you mentioned a couple 22 of times the process of curing the data and 23 clearing flags. What company was doing that? 24 I think you mentioned -- 25 A. Well, you have there in that list	Page 105 1 data are not able to be used. 2 So it's -- do I know exactly what 3 they do? No, that's why I hired them, but it's 4 -- it's a super time-consuming, complicated 5 process, because each one of these samples has 6 a thousand-page report or more that somebody 7 has got to go through. 8 And so it's -- that's why we're 9 still undergoing it on some of Scott Smith's 10 work to this day, in terms of getting data that 11 I could calculate in the plot. Not that we 12 don't have the data, the raw data. It's just 13 I'm not going to use that raw data until it's 14 cured and the flags are cleared. I'm not going 15 to do those calculations twice. I'm going to 16 make sure that I'm assured the data is good 17 data. 18 Q. And then what is clearing flags? 19 A. Clearing flags is, if you look at 20 any sample result, whether it be Arcadis or 21 ourselves, myself or others, there will be a 22 series of flags. J flags, U flags, UJ flags, B 23 flags, I flags, and they're basically asterisks 24 after the sample results that draw you to the 25 bottom of the page or to an index saying,

Page 106 1 here's some additional information regarding 2 that sample. 3 Now, a U flag means it's below the 4 MDL. The J flag means it's between the RL and 5 the MDL. The B flag means there's been some 6 material found in the surrogate, I think, of 7 compliance. Anyway, there's a whole series of 8 flags. 9 And what I wanted them to do was -- 10 and you can run a series of calculations to 11 clear the flags, with the exception really of U 12 and J flags. 13 Now, some samples won't have any 14 flags, so it doesn't matter, but I wanted to 15 know if I have a sample with a B flag or an I 16 flag, how do I handle that result. 17 In other words, if it's also got a 18 U or a J, can I treat it as a U or J, or do I 19 have to do something else? 20 Well, there are methodologies that 21 can be used to account for those other flags 22 and leave you with just no flag, a U flag, or a 23 J flag, or sometimes they'll give you a UJ 24 flag, which is the same as a U flag, meaning 25 that you've got to treat it as below the	Page 108 1 A. Yes. The contamination found on 2 the Plaintiffs' properties was a direct and 3 proximate result of Norfolk Southern's 4 derailment and vent and burn activities. 5 Q. And is it fair to read this final 6 opinion as a summation of all the work you did 7 for the other opinions? 8 A. Well, it includes those, but I'm 9 drawing a final conclusion that, more likely 10 than not, the contamination is from either the 11 release or the burning and the subsequent 12 products that were released. The materials we 13 find on site are from that, and I -- we have 14 talked about some of it, like the whole benzene 15 issue, as to why I've come to that opinion with 16 regard to benzene. 17 But, also, if you just look at all 18 the plots that I've provided, both in the 19 original and in the rebuttal reports, and you 20 look at the spacial plotting of the data, and 21 then you combine it with Paul Rosenthal's work 22 on modeling, you can see that the -- you know, 23 not every sample shows exceedances, and you 24 wouldn't expect that. 25 But when you look at where the
Page 107 1 detection limit. 2 Because what I'm doing in the BaP 3 equivalent, or the TEQ equivalent, is I'm 4 taking those individual results and then I'm 5 multiplying them by factors to then come up 6 with cumulative numbers. And I want to make 7 sure that the numbers that I start with are the 8 numbers that I can rely on, so that's why I go 9 through the process I go through, very rigorous 10 process. 11 Q. And Laboratory Data, Inc. is the 12 entity that does the curing of the data and the 13 curing of the flags? 14 A. Right. Not unlike -- I think 15 Montrose did Arcadis' Level 2 clearing, which 16 is a whole different animal, because it's a 17 Level 2 clearing, as opposed to Level 4. 18 Q. And when you say Plaintiffs' 19 properties were contaminated, you're referring 20 to both the Ceramfab and the WYG properties? 21 A. Correct. 22 Q. Okay. Let's look at the next and 23 last one -- the last of your overall opinions 24 in Section 2.2. If you could read that for the 25 record?	Page 109 1 exceedances are, in terms of geographic 2 location, and when you look at the levels, 3 higher levels being obviously closer to the 4 source than you would expect, you conclude, 5 based on the modeling, based on the sampling, 6 and then based on all my analysis, that it's 7 more likely than not that the contamination 8 came from the derailment and its subsequent 9 burn activities. That's my conclusion. 10 Q. And what do you mean there by 11 exceedances? 12 A. Exceedances of the -- for instance, 13 on the dioxins, I'm using the cancer screening 14 level and then the noncancer screening level, 15 4.8 and 5 -- 51, I think. 16 And then on the BEP equivalent, I 17 do a calculation, I think it's like 110. I 18 forget the units exactly, but I can look it up 19 for you. I derive that value. It's in -- 20 actually, it's from the EPA, but I derive that 21 value as well, just to show where it comes 22 from. 23 Q. Were you instructed to make any -- 24 excuse me -- any assumptions with respect to 25 this opinion?

Page 110 1 A. No. 2 Q. More broadly, I'm not limiting you 3 to just this opinion that we talked about -- 4 just went over, but are you opining that any of 5 the contamination that you contend is from the 6 Norfolk Southern derailment or vent and burn 7 has created a human health risk at the Ceramfab 8 property? 9 MR. CONLIN: Objection; form. 10 A. I have not made those calculations 11 yet, so I don't -- I would -- they certainly -- 12 this is an environmental contamination level, 13 so that's why I was describing here Phase 1, 14 Phase 2, Phase 3, because if you have 15 exceedances of screening levels, it pushes you 16 to Phase 2 and Phase 3, which is costly. 17 It's also the reason I would like 18 to see the data released because I think the 19 academics will start to look at synergistic 20 toxicity, et cetera, and they'll have a very 21 good clean dataset, set of data, and then we'll 22 let the world decide whether it's an issue with 23 respect to individuals or not. 24 But they certainly have a basis for 25 being concerned, but this is not a personal	Page 112 1 Q. And we're going to talk about that, 2 but have you -- other than your rebuttal 3 report, have you updated your opinions based on 4 any additional information you've reviewed? 5 A. No, not so far. 6 THE REPORTER: I'm sorry, no, not 7 what? 8 A. Not so far. I mean, I get it. If 9 I do, then you'll want to talk to me again. 10 Q. That's correct. 11 A. But I know that's where you're 12 going. 13 Q. As of today, you have not? 14 A. No. 15 Q. Okay. Let's turn to Page 18. 16 A. All right. 17 Q. And it's the first paragraph before 18 the indented paragraph, starting with, "Later." 19 Do you see that? 20 A. Yes. 21 Q. And in that paragraph, you write: 22 Later, the NTSB, consistent with my opinions in 23 February of 2023 as a chemical engineer 24 conclusively determined the burns were not 25 necessary and instead was based on faulty and
Page 111 1 injury case, per se, so I -- I haven't done 2 that analysis to say, look, you've got X amount 3 of exposure, cumulative exposure to the 4 equivalent, or dioxins, or whatever. You know, 5 I do those analysis, but I haven't done them 6 for this case. 7 Q. And I asked that question 8 specifically about Ceramfab. Same answer for 9 WYG property? 10 A. It would be the same answer. 11 Q. Okay. Let's take a look at Page 12 10. 13 A. We're making progress. 14 Q. Slowly but surely. 15 A. I'm there. 16 Q. Okay. The last sentence before 17 Section 4.0, you write: I reserve the right to 18 update my opinions based on additional 19 information reviewed or received, e.g., 20 depositions for review. 21 Do you see that? 22 A. I do. 23 Q. And I know that you have written a 24 rebuttal report, right? 25 A. Correct.	Page 113 1 incomplete recommendations provided by NS. 2 Do you see that? 3 A. Yes. 4 Q. And when you're talking about the 5 burn there, you're referring to the vent and 6 burn? 7 A. The decision to detonate the tanks 8 and throw flares in and burn the vinyl chloride 9 residual, yes. 10 Q. Okay. And are you offering an 11 opinion in this case as to whether the vent and 12 burn was necessary and appropriate? 13 A. I think, in general, I would defer 14 -- we have other experts that are doing that. 15 The reason that that's -- this is here is 16 because I did a whole lot of process safety 17 management work and risk management work. 18 In fact, the so called most 19 credible events where -- I call them the kill 20 zones, where how far out -- I've done them for 21 Nestle. It's 12 miles up in Cleveland. 22 And so I was intimately aware of 23 process safety management, and there was 24 concerns early on about it being a bloody 25 condition, which is blowing liquid evaporation

Page 114 1 explosion, and I'm intimately familiar with 2 that as a chemical engineer, and almost all 3 those cases that I'm aware of are related to 4 propane. 5 Particularly, there was a classic 6 case in Henderson, Nevada. The fact that these 7 tanks -- that these cars were heated and they 8 were venting for three days, bloodies usually 9 happen very fast, within hours. 10 But, anyway, I had some very early 11 opinions about that, and they were stated 12 publicly, and so I -- I would stand by that if 13 asked, but I don't intend to be the expert in 14 this case for those opinions or have people 15 that have been dedicated to those causes, but I 16 certainly have the background to comment on it, 17 but that's not my focus in these reports. 18 Q. You also referred to the NTSB 19 making a conclusive determination. 20 Do you see that? 21 A. Yes. 22 Q. Who is the -- what is the NTSB? 23 A. I don't know what -- it stands for 24 National Transportation Safety Board, so I 25 mean, as part of this work -- I mean, with the	Page 116 1 host of reasons. A lot of it would have to do 2 with my background in chemical engineering and 3 doing process safety management outside of 4 litigation for a long time. 5 And so -- but, again, I'm not going 6 to serve as the expert here. I'm not going to 7 rely on the conclusions themselves of the 8 underlying documents, and it's just consistent 9 with my opinion from early on, based on my 10 background. 11 But, again, I do not intend, unless 12 for some reason across, you guys are going to 13 ask me about this, and I may or may not choose 14 to respond to it, but I'm not retained here as 15 the expert on whether or not the detonation was 16 appropriate or not. 17 Q. Let's turn to Page 276 of Exhibit 18 2. 19 A. 276? 20 Q. Yes. 21 A. I'm there. 22 Q. If we look at the second paragraph 23 under the section closing, it says: All 24 opinions provided in this report are made to a 25 reasonable degree of scientific certainty.
Page 115 1 settlement in April of '23, my work was shut 2 down. 3 MR. CONLIN: '24. 4 A. '24, I'm sorry. And I was never 5 disclosed and my work wasn't completed, but I 6 continue to follow and accumulate literature, 7 just out of -- I mean, I read like eight to ten 8 technical papers a night, so that tells you I'm 9 kind of nerdy, I guess. 10 But -- so I was certainly following 11 what was being put out there, but I would -- 12 again, I'm not going to be the expert in this 13 area, but I was following the documents that 14 they were producing and the basis for some of 15 the comments they made and it -- for a whole 16 host of reasons, not the least of which was 17 that the wind changed direction. 18 And I thought that -- if I'm an 19 incident commander and the wind changes 20 direction, if I'm evacuating everybody in this 21 direction and also the wind comes from this 22 direction, I'm like, well, wait a second, I 23 better put a timeout on this, and -- before I 24 have a detonation. 25 And so I was critical for a whole	Page 117 1 Do you see that? 2 A. I do. 3 Q. What does that mean in your mind? 4 MR. CONLIN: Objection to form. 5 A. Well, you can read my textbook. I 6 have a section on what various levels of 7 probability and possibility, I define, which is 8 consistent with legal standards, I believe, 9 that there's zero probability that it will 10 occur, then it's not going to happen. 11 If it's probable, then the 12 percentage is -- or if it's possible, the 13 percentage is above zero. If it's probable, 14 it's greater than 50 percent, and I define the 15 term likely in my textbook is greater than 75 16 percent, like a super probability, in Chapter 1 17 of my textbooks. 18 So my view is that it's more likely 19 than not or greater than 50 percent means it's 20 not random. Too many years of statistics in 21 graduate school. 22 Q. So when you write reasonable degree 23 of scientific certainty, that is, in your mind, 24 more likely than not, greater than 50 percent? 25 A. Correct.

Page 118 1 Q. Let's look at Appendix A, which is 2 Page 290, and it's titled List of Exhibits. 3 A. I'm there. 4 Q. And there are 179 listed in the -- 5 Exhibit N in your opening report and you have a 6 few more listed in your rebuttal, right? 7 A. Correct. 8 Q. And did you review the entirety of 9 all the exhibits or portions of them? 10 A. I'm pretty certain I read them all. 11 In fact, many of these early ones I wrote, 12 so -- 13 Q. We can set aside the ones you 14 wrote. Those I trust that you have -- 15 A. But, yeah, usually I'll read them 16 twice. I read them once just to see what's 17 there, and then I'll read them twice just to do 18 what I call extractions, which is to pull 19 information out of them and put them in a 20 report. So I always typically read an exhibit 21 twice. 22 Q. And did you obtain -- or how -- 23 strike that. 24 Did you obtain any of the documents 25 through counsel?	Page 120 1 interestingly enough, Data Laboratory, Inc. 2 The GEL samples, I think there was 3 some interaction with counsel when I wanted 4 Level 4 reports, to go back to them and say, 5 hey, go back to your lab and get Level 4 6 reports, but, ultimately, that data came from 7 GEL. 8 Now, whether it was sent to me 9 directly or in -- I had communications directly 10 with GEL, the GEL folks, but what portion of it 11 came from counsel and what portion came from 12 them directly, I couldn't tell you. 13 The Smith data, all of that came 14 directly to me. Many, many hours of ensuring 15 that I had all of his data, and that I had it 16 -- he was responsible for getting Level 4 17 reports and having him get that done. 18 Q. So you've had -- strike that. 19 Have you had communications with 20 Mr. Smith about the data or the site? 21 A. Oh, yes. 22 MR. CONLIN: Objection; form. 23 A. Not about the site but about the 24 data. 25 Q. Okay. Were those discussions oral,
Page 119 1 A. Very few, but I know one I did, 2 which is the one we just talked about, which is 3 the recent benzene sampling report. I think 4 it's in the rebuttal report as the last 5 exhibit, but I could be wrong. That's the one 6 I remember getting from counsel. 7 In this particular case -- no, I'm 8 wrong on that date. The -- 9 MR. CONLIN: Also, for the record, 10 we did provide the transcripts that are cited 11 in there. I don't know whether these are 12 depositions or trials and stuff -- 13 A. There weren't a lot of things I 14 received from counsel, but there were 15 transcripts, and that one report on sampling 16 for benzene, I certainly received from counsel. 17 Q. What about the datasets? Did any 18 of the datasets come from counsel? 19 A. Well, my dataset, Dataset 2, came 20 from me. Dataset 1 ultimately came from 21 Laboratory Data. They were providing Level 4 22 reports, and I was responsible for the curing 23 and the clearing of flags, and then doing the 24 calculations. 25 So those ultimately came from,	Page 121 1 in writing, or both? 2 A. Both. 3 Q. And was counsel present for all of 4 the oral discussions? 5 A. No. 6 Q. And was counsel copied on all of 7 the written communications? 8 A. No. 9 MR. CONLIN: I think we might have 10 been. 11 THE WITNESS: On all of them? 12 MR. CONLIN: Your question earlier 13 about all -- 14 THE WITNESS: I don't -- yeah, you 15 were copied on some, but I don't believe all. 16 I had lots of conversations with Mr. Smith. 17 MR. CONLIN: Talking about during 18 the retention period -- 19 A. No. I can assuredly tell you that 20 you were not copied on all of them. I can say 21 that for the record. 22 Q. Okay. Why don't we go off the 23 record for just a second. 24 THE VIDEOGRAPHER: We're off the 25 record.

Page 122 1 (Recess is taken.) 2 THE VIDEOGRAPHER: We're on the 3 record. 4 Q. Okay. Did you have any substantive 5 discussions about the case or your deposition 6 during the break? 7 A. No. 8 Q. Can you take a look at what we've 9 marked as Exhibit 3, which is your rebuttal 10 report? 11 A. Sure. I'm there. 12 Q. Perfect. Excuse me. Are there any 13 new opinions in your rebuttal report that were 14 not in your opening report? 15 MR. CONLIN: Objection; form. 16 Q. And just to clarify, I'm not asking 17 if you expanded on or explained or gave more 18 detail to your opening report or opinions, just 19 whether there were wholly new ones. 20 MR. CONLIN: Same objection. 21 A. I'm trying to figure out how best 22 to answer this. I think there are -- the 23 rebuttal report contains a lot of additional 24 sub-opinions that probably do fall under the 25 seven general opinions in the initial report.	Page 124 1 So what happened in the 2 supplemental report is, by that time, we had 3 all the Level 4 reports for all of his data, 4 which was provided under Exhibit 81, as well as 5 now I had probably another third or two-thirds 6 of the total data that he had both in Level 4 7 reports, as well as QA/QC, and then run through 8 the calculations and the plotting. 9 So the opinions would be augmented 10 by the fact that we had additional data on 11 site, as well as additional data around the 12 site to -- so that's why I called it sort of 13 sub-opinions, except for the fact that the 14 contamination data -- we now had actual 2026 15 data for soil contamination with respect to 16 PAHs and dioxin furans on both sites. 17 Q. And when you said you had double 18 the amount of data from Smith, was it the same 19 amount of data but double the Level 4 reports, 20 or is there a -- 21 A. Yeah. 22 Q. Or are you saying there's double 23 data? 24 MR. CONLIN: Objection; form. 25 A. Yeah, I can understand why there
Page 123 1 Q. Okay. 2 A. The other thing that would be new 3 would be that I would have -- I should correct 4 that because I would have new opinions related 5 to the actual contamination on site because 6 this is the first report where I report the 7 Plaintiffs' sampling on the two Plaintiffs' 8 sites, so I would have confirmation that those 9 site were contaminated. 10 And then I've also been able to 11 essentially double the amount of data that -- 12 from Scott Smith -- there was about a third of 13 Scott Smith's data. We produced it all as 14 Level 2 reports and some Level 4, along with 15 the raw EDD files. 16 But in the first April report, I 17 would say that maybe a third of that data, 18 nearest to the sites mostly, was both converted 19 to level -- we got the Level 4 reports done and 20 we were able to go through the curing QA/QC 21 process with LDC. 22 And then those, along with the 23 other three datasets, from our total amount of 24 data were we did the calculations on those and 25 the plots.	Page 125 1 might be some confusion in my answer. I think 2 the best way to describe it is the process 3 again that I went through was to take from all 4 the datasets, generally, Level 2 reports. 5 Except for the initial dataset, I 6 had Level 4 reports because I did that back in 7 2023, '24. So the process was to work with the 8 labs and the individuals and get all Level 4 9 reports for the other three datasets, including 10 my own. 11 And the only -- by the time I 12 issued the April 6th report, we probably had 13 about probably -- I'm grabbing a number -- 14 maybe two-thirds of Smith's data was now -- we 15 always had all of his data provided, but it 16 wasn't all in Level 4, the process that I 17 talked about, converting everything to Level 4 18 for the QA/QC aspect, because that's what LDC 19 wants before they start -- they can do it the 20 other way, but they said it's really not -- we 21 would have to do it twice if we had Level 2 and 22 then Level 4. I said, well, we don't want to 23 do it that way. 24 So by April 6th, I had probably 25 two-thirds -- everything was Level 4, except

Page 126 1 for Scott Smith's work. About a third of it 2 was not. Don't quote me on the number, but it 3 was like about that, and only about a third of 4 it had gone through the LDC curing/QA/QC 5 process for -- for instance, clearing flags. 6 So only about a third of his data 7 and all the rest of the data were involved in 8 calculations and plots in the April report. 9 By the time the rebuttal report 10 came along, instead of two-thirds of his data 11 being only Level 4 reports, to my knowledge, 12 all of it was now Level 4 reports. 13 And moreover, we got another third 14 of it, so about two-thirds of it now got 15 through the LDC process, so we could do the 16 calculations and the plotting now with 17 two-thirds of his data, not a third. 18 And we're continuing to cure -- now 19 we're -- the last little bit is to cure the 20 last third with LDC, and we're continuing to do 21 that. 22 It doesn't change the base data at 23 all. It just changes my ability to ensure that 24 I have done a full QA/QC curing process before 25 I do calculations. So I hope that explains it	Page 128 1 can you get the data to a point where I have no 2 flags, a U flag, or a J flag, because -- then I 3 can manipulate, not in a negative way, but I 4 can then do calculations. 5 I can do -- on the J flag, I use 6 the value; no flag, I use the value; and on the 7 U flag, I just use 50 percent of the value or 8 zero percent of the value. 9 And I did the calculations both 10 ways because I was interested in knowing if I 11 don't use the conventional 50 percent values, 12 how does it impact the results. 13 I started doing that back in 2024, 14 and it turns out there are some examples where 15 it does affect it, but I could give you sheet 16 after sheet in here where there's basically no 17 difference, because it turns out that the 18 contribution from the constituents, the 19 chemicals that are U flagged end up being small 20 contributors to the overall TEQ, very small. 21 Not always, but in general. 22 Q. And then -- so where you compared 23 those two EDD files and you see flags have been 24 removed, how do you tell how the flags -- like 25 on what basis the flags were removed?
Page 127 1 a little bit. 2 Q. Yeah. So back -- on the LDC 3 process, that's the flag -- on the flag removal 4 portion -- 5 A. Sure. 6 Q. -- is there a way in the data to 7 see where the flags had been removed? 8 A. Sure. 9 Q. And is there a way to see why they 10 had been removed? 11 A. Sure. I believe so. You would 12 have the raw EDD files from the labs, and then 13 you would have the QA/QC, I'll call them the 14 LDC EDD files, and if you compared those to 15 each other, you could see the differences. 16 Q. Okay. So you would be able to see 17 the raw data had a flag, the LDC files don't 18 have a flag? You could compare and see that? 19 A. In general, that's not the way it 20 was. In general, you had -- for data that had 21 flags, you would have four or five flags and 22 now with the LDC data, it only has one or two. 23 Generally, the flags that got 24 cleared, as I said earlier, were the B and the 25 I flags, but if it had -- what I was after was	Page 129 1 A. They'll have -- they have a comment 2 section that will say what they did for that 3 data point or for that individual constituent. 4 Say, for example, for a given 5 sample, so they'll have comments and then they 6 write a PDF QA/QC file. That's also provided. 7 So the output from L- -- LDCI -- I 8 don't want to say core -- but I think it's 9 Laboratory Data, Inc., Corporation, is that I 10 end up receiving two files back. 11 One is a -- I'll call it a 12 finalized EDD file, or we call it an LDC EDD 13 file, as opposed to the raw EDD file from the 14 lab, which is just an Excel spreadsheet, 15 basically, or spreadsheets. 16 And then we also get from the lab a 17 PDF file that's a QA/QC report for all the 18 issues, if there are any, with respect to what 19 they got from the lab, how they resolved them 20 or didn't resolve them, as well as other 21 explanations of the things they found and 22 either corrected or worked with the lab or 23 whatever. 24 So those QA/QC reports are -- so, 25 again, we get -- now, sometimes they aggregate

Page 130 1 data, so you may have a QA/QC report that 2 accounts for several samples. 3 Q. Okay. Are there any opinions that 4 you considered but did not include in either 5 your opening or rebuttal report? 6 MR. CONLIN: Objection; form. 7 A. Considered but did not include? I 8 would have to think about that. And the reason 9 I say that is because I had two eras. I had an 10 era where I was undisclosed and I had a 11 different scope of work, and then I've got this 12 era. I can't think of any. The scope of work 13 pretty much dictated where I would form 14 opinions. 15 I mean, I think the only area that 16 I talked about a little bit was the whole issue 17 of whether the burn was necessary or not, but 18 I'm not -- the problem with that is I've been 19 open about that, but I'm not here to be that 20 expert, even though I do have opinions about 21 it, unless you ask me on cross, and for some 22 reason I answer, I don't expect in direct to be 23 asked opinions about whether the burn was 24 necessary or not. There are other experts who 25 would opine on that.	Page 132 1 A. And there's a NOAA hypersplit 2 model, I guess towards the end. Anyway, when 3 you say Exhibit Petty 4, I just want to know 4 what it is we're referencing. 5 Q. Take a look at Page -- it's Page 8. 6 A. Okay. 7 Q. It's not numbered, but Page 7 is. 8 A. Okay. I'm there. 9 Q. Okay. It's the declaration of 10 Stephen Petty index of exhibits? 11 A. Okay. 12 Q. Exhibits 1 through 7? 13 A. Okay. 14 Q. And are those the exhibits that 15 you're referencing that are attached to the 16 back? 17 A. They are. 18 Q. I think the only thing that's not 19 there is the declaration of Scott Smith, which 20 we pulled out separately. 21 A. Yeah, and the -- the NOAA 22 hypersplit model is there, I guess. Okay. Go 23 ahead and start asking questions. 24 Q. Is this a declaration that you 25 prepared in --
Page 131 1 Q. Okay. Let's mark Tab 4. 2 - - - - - 3 (Thereupon, Deposition Petty Exhibit 4 4, Declaration, was marked for 5 purposes of identification.) 6 - - - - - 7 Q. So we've marked as Exhibit 3 [sic] 8 a declaration of Stephen Petty. Take a second, 9 take a look, and my first question is just do 10 you recognize this document? Sorry, Exhibit 4. 11 Sorry. 12 A. It looks like there's multiple 13 things here right? It looks like there's -- 14 there's some exhibits attached to it, like my 15 bio. I just want to make sure I'm accurate as 16 to what this represents. 17 Q. Yeah, please. 18 A. It looks to me like there's many 19 documents attached to this. Like Exhibit 4 is 20 -- it's not page numbered, but it's some wind 21 speed stuff from me, and then the next Exhibit 22 5 is a document from Luster. I just want to 23 make sure I'm representing what it is you're 24 asking me about. 25 Q. So --	Page 133 1 A. The first seven pages certainly are 2 the declaration. 3 Q. And are the exhibits attached to it 4 exhibits that you compiled as part of your 5 declaration? 6 A. I believe that the first four were 7 ones that I compiled in the last -- obviously, 8 I didn't do Scott Smith's declaration, and I 9 don't recall providing either Exhibit 5 or 6 as 10 part of this declaration. 11 Q. Okay. 12 A. It may have been provided -- I 13 think Government Accountability did it. I 14 would have to cross-check and see if I 15 reference those in my declarations. That's 16 what I'm looking for. I only see it 17 referencing through Exhibit 4 in my actual 18 written declaration. 19 Q. That's all I see as well, and my 20 question was going to be did you compile 21 Exhibits 5, 6 and 7, or were those added by 22 someone else? 23 A. Those would have been added by 24 somebody else. 25 Q. Okay.

Page 134 1 A. I mean, I have, for example, 2 Exhibit 5. It's my report as an exhibit, but I 3 think my declaration shows pretty clearly that 4 I was referencing the first four exhibits. 5 Q. I agree. And then if we turn to 6 Page 7, you've got a signature line for Stephen 7 Petty. Do you confirm that that's your 8 signature? 9 A. Correct. 10 Q. And you signed this on September 11 21st, 2024? 12 A. Correct. 13 Q. What is the purpose of this 14 declaration? 15 MR. CONLIN: Objection to form. 16 A. Well, there were -- I think the 17 purpose -- I define it here on Page 2, so I'll 18 refer to that. I think -- I think the 19 Paragraphs 7, 8 or 9 -- I mean, I can't write 20 it any better than that. 21 Q. Okay. And were you retained by any 22 law firm or party to prepare this declaration? 23 A. There was no money that exchanged 24 if that's what you're asking. I wasn't paid. 25 I was -- I signed a witness protection order,	Page 136 1 Q. And what was your -- strike that. 2 In Paragraph 9, you reference 3 toxicologist Dr. Arch Chip Carson. Do you see 4 that? 5 A. I do. 6 Q. And you say he was hired by 7 Plaintiffs' attorneys. Which Plaintiffs? 8 A. The class. I mean, I don't know 9 who he had a contract with, but he was 10 representing the class, the Plaintiffs' class, 11 is my understanding. I just saw his video that 12 was online, like on YouTube. 13 Q. And in his video, he said something 14 to the effect of that class members can expect 15 no long-term health impact due to the 16 derailment? 17 MR. CONLIN: Objection; form. 18 A. Correct. Well, that was some it -- 19 that was some of what he said. 20 Q. Sure. I'm not saying that's 21 everything he said. 22 A. I just wanted to clarify that 23 before -- yeah. In my opinion, he -- my view 24 was because I was still a consulting expert on 25 the earlier work, that my work was just coming
Page 135 1 I think, with Government Accountability, where 2 they would defend me or something if litigation 3 came up, but, no, there was never any -- I 4 mean, I volunteered to write this and do it on 5 my own. 6 Q. So you're not a retained expert by 7 the Government Accountability office? 8 A. I don't think so. The only 9 agreement that I have with them is a 10 representation agreement, I guess that's the 11 better way of putting it. 12 Q. But if you're sued for the work 13 that you're doing, they'll agree to defend you? 14 Is that what you're referring to? 15 A. I guess any litigation that would 16 occur as a result of my working with them, they 17 would defend me and I guess -- I'm not sure 18 about all of that, but, yeah, that was -- that 19 was the only agreement. 20 I never -- I mean, I'm -- I'm 21 called upon from them all the time to add to 22 that, but I mean, it's -- they'll be publishing 23 something and they'll ask my comments or 24 something, but -- almost as a reviewer, more 25 than anything else.	Page 137 1 to a close, literally, and -- but it wasn't 2 disclosed because the settlement occurred, and 3 my concern -- it was the first time I've ever 4 really -- on the Plaintiffs' side I've gone 5 against my own side, if you will. 6 I said -- when Carson -- I've 7 actually talked to him, and I said did you see 8 my data, and he said, I've seen all the data, 9 and I'm like, okay. 10 And I just -- it's been my opinion 11 for some time that there is significant -- not 12 everywhere, but there is significant 13 contamination of the site. 14 And a lot of the work, as I've said 15 before, that was done by Norfolk and the EPA is 16 not reflecting true wind directions that 17 occurred during the -- especially the 18 detonation of the vinyl chloride tanks, and 19 that there is a complete bastardization of 20 background and foreground sampling results. 21 And I had always wanted to get that 22 information out, but I was on a knife edge 23 because I was under confidentiality with the 24 Plaintiffs, so I couldn't say anything and I 25 didn't. I didn't say anything about what I

Page 138 1 knew with respect to my own work. 2 Q. And Dr. Carson had seen -- or told 3 you that he had seen all the data? 4 MR. CONLIN: Objection to form. 5 A. He claimed -- I believe he said 6 that. I'm just -- but more importantly, what 7 he was saying publicly concerned me, because 8 I'm the guy in toxic tort. This isn't a toxic 9 tort case, in my opinion, other than people 10 have a right to be worried about the 11 contamination. 12 I'm the one that does the exposure 13 assessments. I've done hundreds of them, and I 14 knew it hadn't been done yet. We had just 15 finished, at least with one dataset, figuring 16 out the extent of, and levels of, and locations 17 of contaminations and contaminants. And the 18 next step is to do a cumulative exposure 19 assessment, and that hadn't been done. 20 And so my view was to make a 21 statement about future harms to people was 22 premature. It was premature. It could be that 23 it's true there were no harms, or it could be 24 that there were, but the truth of the matter is 25 nobody knew yet. That was my opinion.	Page 140 1 exposure assessment for this case? 2 A. No, because I wasn't -- this wasn't 3 a toxic -- this wasn't a personal injury case. 4 Now, the people certainly have the 5 right to be concerned, in my opinion, about 6 that potential, but I have not done -- nor is 7 this case about personal injury, as far as I 8 know. 9 Could I do it? Of course, but I 10 have not been asked to do that. 11 Q. And would you say it is still too 12 early to declare no long-term health impacts? 13 MR. CONLIN: Object to the form. 14 A. I believe -- I have yet to see a 15 cumulative exposure assessment. There are lots 16 of antidotal comments about people having 17 health effects, but I come from the litigation 18 world where if I were going to form a general 19 causation opinion, I would want to do an 20 exposure assessment before I formed an opinion 21 on that. That's just the way I work. 22 Q. And if we look at Page 3, Paragraph 23 12, you write: As far as the comments on 24 personal injury by Dr. Carson are concerned, 25 his assurances are in my opinion premature and
Page 139 1 Q. And did Dr. Carson explain to you 2 why he disagreed? 3 A. No. I never heard why -- I never 4 heard why he disagreed. I was actually sitting 5 in on a call with another toxicologist. I 6 forgot who it was, so I was just kind of 7 listening. 8 Q. And towards the bottom of Page 2, 9 you have a heading: Too early to declare no 10 long-term health impact. 11 Do you see that? 12 A. Where are you at? I'm sorry. 13 Q. It's a heading on Page 2, towards 14 the bottom. 15 A. Page 2, towards the bottom, above 16 Scott Smith? Oh, yeah. Yeah. I see the 17 title, correct. 18 That's always been my opinion, is 19 that I -- I've never seen a -- I've seen people 20 compare values to screening levels and things 21 like that, but I've never seen a cumulative 22 exposure assessment by any party. I'm not 23 saying it doesn't exist, but I've never seen 24 it, and that's what I do for a living. 25 Q. Did you perform a cumulative	Page 141 1 unsupported by any cited cumulative exposure 2 analysis. 3 Is that the point that you just 4 made -- 5 A. I guess I preempted -- my answer 6 preempts the next question. I think the answer 7 is yes. 8 Q. And can you just briefly explain 9 what a cumulative exposure assessment is? 10 A. First of all, you have to determine 11 the chemical of concern, or chemicals, and then 12 what you're looking at is people can be exposed 13 three ways, either by ingestion, eating or 14 drinking; inhalation, breathing it; or dermal, 15 through the skin. 16 There's a fourth pathway, 17 injection, but that doesn't really apply to 18 environmental cases typically or even toxic 19 tort. 20 And so what one does is -- and my 21 expertise, I guess national expertise, is on 22 dermal, and I wrote a paper with Mark Nicus in 23 2011. It's kind of the pre-eminent paper on 24 benzene dermal exposure. 25 The -- but what you would do is,

Page 142 1 given the chemical of concern, then you use 2 levels of exposure, either through eating, or 3 breathing dust, or ingestion, with the 4 contaminant of concern, you look at breathing 5 that. You look at getting it on your skin, and 6 then you integrate that -- I guess that's the 7 best word -- you integrate that with time to 8 develop cumulative exposure of that individual 9 over time. 10 And then an epidemiologist will 11 look at that number and say, yeah, that's 12 causal, or, no, it's not. That's how it plays 13 out in my experience, where a bunch of people 14 debate about it. 15 Q. Do you think there's enough data 16 out there that one could perform a cumulative 17 exposure assessment based on existing data? 18 MR. CONLIN: Objection to form. 19 A. Well, the simple answer is more is 20 always better, but it's my opinion that based 21 on what I now know about the four datasets and 22 how well they've been cured and then analyzed, 23 calculated, plotted, I believe -- that's why 24 I've been very much encouraging everyone to 25 release our data to the world, release my	Page 144 1 substances? 2 And when you asked me the question 3 is this -- the information there, I think it 4 is, but I think there's also going to take some 5 time for people to assimilate the data and look 6 at the issues, particularly like synergistic 7 toxicity, and then do the analysis. That's the 8 one part I think is missing, and that's why I 9 would like to see the data out there. 10 There's nothing proprietary about 11 our data, other than it's paid for by 12 Plaintiffs' attorneys, but I would like to see 13 the information released and let the world beat 14 it up, good or bad, and let's see what people 15 say about it. 16 I think the other factor to be 17 added is when you look at the total surface 18 soil, sediments, data with time, groundwater, 19 surface water, we probably have almost as much 20 data as anyone else, because there's very few 21 -- you can go to Luster's report, there's very 22 little actual dioxin testing by Norfolk 23 Southern and Arcadis. 24 There's lots of total sampling, 25 like air sampling, 20/40,000 sampling points,
Page 143 1 reports, release the data behind them, and let 2 people pick at it, good or bad. 3 Because I think what's going to 4 happen is you're going to have some university 5 types, based on my experience. It's not just 6 the cumulative exposure, but there's an issue 7 of synergistic toxicity, and that's a 8 complicated topic. It kind of goes like this. 9 If the toxicity of two substances 10 can be multiplicative rather than additive, and 11 the classic example given in toxicology is 12 cigarette smoking and asbestos. 13 And I don't know the exact factors, 14 but let's assume that one has a factor of four 15 increased risk and the other one has a factor 16 of five. I don't know what the real numbers 17 are off the top of my head. 18 One might say, well, the cumulative 19 factor would be four, plus five or nine. And 20 it turns out that for cigarette smoking and 21 asbestos, the synergistic toxicology is four 22 times five or 20, not nine, in that example. 23 And so the question on the table 24 is, is there synergistic toxicity associated 25 with dioxins and PAHs and any of the other	Page 145 1 but there's less than a thousand, I think, of 2 surface soils and surface waters. 3 So we have a significant dataset in 4 context with what's been taken by the other 5 side. I'm perfectly fine with having that 6 dataset up there and our dataset up there and 7 let people go at it. 8 Q. In Paragraph 23, on Page 4, you say 9 that EPA -- what the EPA appears to have done 10 is combine or commingle two categories of data 11 into a single category, which misleads the 12 reader by obfuscating known additional 13 information. 14 A. Correct. 15 Q. Can you unpack that and explain 16 what you're saying there? 17 A. It is complicated. What -- what 18 the EPA reported -- remember I talked earlier 19 about that there's two detection limit values 20 now, the reporting limit and the MDL, 21 typically, and that's always -- if you get the 22 raw data reports from Arcadis, you always see 23 those two values for a given analyte and a 24 given sample. 25 And EPA only reported the reporting

Page 146 1 limit, and I'm like, well, that's really 2 strange. Where's the MDL? And it turned out 3 we had parallel data from Tetra Tech, I think. 4 Same samples, same results, except for there 5 was MDLs listed. 6 I felt that was very misleading 7 because the reporting limit is always -- as 8 much as an order of magnitude higher sometimes 9 than the MDL, and it gives the impression that 10 the data are all below a detection limit, but 11 the RL is sort of, in my view, kind of a super 12 detection limit, but it's -- it's almost 13 guaranteed it's there at that level, whereas 14 the MDL, we can't see it. 15 And I come from 40 years of 16 analytical chemistry, and I either -- the 17 instrumentation sees it or doesn't see it, and 18 that's what the MDL is. 19 So when the EPA didn't report the 20 MDL, it gave the impression that all the 21 results were below the detection limit, and as 22 I said before, those values below the RL and 23 the MDL are the interesting values because are 24 they actually the values that are reporting or 25 -- if you just assumed --	Page 148 1 the RL, or it's above the RL. But just 2 reporting it as either above or below the RL 3 was, in fact, compressing the information. I 4 thought that was misleading. 5 Q. Did you ask anyone at the EPA why 6 it was reported that way? 7 A. No; I wouldn't even have known who 8 to ask. 9 Q. Did you see anything online 10 explaining why EPA chose to report the data 11 that way? 12 A. I don't know the answer to that. 13 Q. Have you ever been retained by the 14 lawyers from Cory Watson firm prior to this 15 case? 16 A. I think the answer is no, but they 17 were part of the Plaintiffs' class for the C8. 18 I didn't work for Cory Watson directly. I 19 worked for Levin Pap of Pensacola, but they 20 were -- so I was reporting directly to them, 21 and a little bit to Douglas, out in New York 22 City. 23 Q. You say the Plaintiffs' class for 24 CA. What is that? 25 A. C8.
Page 147 1 If you took the EPA data by itself 2 and said, well, that's a detection limit, then 3 your natural inclination is to either say, 4 well, it could be zero, or it could be anything 5 up to that value and then convention is to use 6 half the value, right, like class and others. 7 All the risk assessment documents back in the 8 day always used points -- half the detection 9 limit value counts. So I just felt why did you 10 report the data like it comes straight out of 11 the lab? 12 In other words, let it come out of 13 the lab, and we knew that there was something 14 funny about it because we had the same samples 15 from Tetra Tech, somehow or another, so we 16 could see how it was reported originally, and 17 then we could see how it was reported by the 18 EPA. 19 And I just thought why are you 20 squishing the data between the -- in other 21 words, they're saying it's below the RL or it's 22 above the RL. Well, that's not how the data 23 gets reported. 24 The data gets reported -- it's 25 either below the MDL, it's between the MDL and	Page 149 1 Q. C8? 2 MR. CONLIN: For the record, he's 3 referencing the C8 NDL, the Southern District 4 of Ohio, in which we were -- on the NDL for the 5 Plaintiffs. 6 A. C8 is an acronym that stands really 7 for PFOA, which is the -- one of the PFASs, and 8 it was released for years by DuPont -- works 9 and partners for West Virginia, and 10 contaminated the Ohio River Valley. 11 And I was retained -- ultimately, I 12 was in four trials, 12 dozen of those stand in 13 federal court in Columbus here, but Cory Watson 14 was one of the lead Plaintiffs' firms, but I 15 didn't work -- I didn't work directly for them, 16 if that makes any sense. 17 My interface and my billings went 18 to Levin Pap, even though, obviously, they were 19 sharing the costs with the entire Plaintiffs' 20 class. 21 So when you ask that question, I 22 can say I guess, technically, I might have 23 worked for them, but I didn't know -- I didn't 24 really know it at the time. 25 Q. Fair enough. Do you know who Mindy

Page 150 1 Bish is? 2 A. I know the name. 3 Q. Who is Mindy Bish? 4 A. She's somebody that Scott Smith 5 interfaces with. That's all I know. 6 Q. Have you ever spoken with Ms. Bish? 7 A. I have. 8 Q. When was that? 9 A. I don't know. A couple, three 10 weeks maybe. Three or four weeks ago. 11 Q. And what did you speak about 12 with Ms. Bish? 13 A. She wanted to retain me and I -- 14 MR. CONLIN: I'm going to instruct 15 you not to answer any communications you had 16 with other counsel. 17 THE WITNESS: Oh, okay. 18 Q. But you testified earlier that you 19 were not retained by Ms. Bish's firm as part of 20 the intervener's motion; is that right? 21 MR. CONLIN: Objection; form. 22 Q. With respect to the declaration 23 that you submitted -- 24 A. Yeah. 25 Q. -- as Exhibit 4, you said that you	Page 152 1 communications you had with any lawyer. 2 A. Okay. Well, I guess I'm not going 3 to answer the question. 4 MR. RHEINHEIMER: Well, as a yes or 5 no, can he answer -- 6 MR. CONLIN: I mean, he already -- 7 he probably already answered more than he needs 8 to. We can discuss this off the record. I'm 9 not going to step on somebody else -- any 10 attorney work product issues here. Right. I 11 think he's been very open with you so far. 12 He's not retained, right, and -- 13 THE WITNESS: So I haven't been 14 disclosed. 15 MR. CONLIN: So to the extent that 16 any other communications he had with counsel, I 17 think that's out of bounds, any lawyer. 18 MR. RHEINHEIMER: Whether for the 19 purposes of retention or not? 20 MR. CONLIN: I'll stick with my 21 objection. It's a slippery slope. 22 MR. RHEINHEIMER: Such is life. 23 MR. CONLIN: It is. Such is life. 24 We can certainly call up a bunch of lawyers and 25 have them enter an appearance for the purpose
Page 151 1 were not retained. Did you subsequently become 2 retained? 3 A. No. That work was all pro bono for 4 Government Accountability. 5 Q. Okay. And have you become retained 6 by Ms. Bish's firm for any reason as an expert? 7 Just a yes or a no? 8 A. Can I answer that question? 9 MR. CONLIN: If you haven't, you 10 can say no. If you have -- 11 A. I have not been retained by her 12 firm. 13 Q. Okay. So you said you spoke 14 with Ms. Bish three or four weeks ago? 15 A. Yes. 16 Q. About what? 17 MR. CONLIN: Objection. I'm going 18 to instruct the witness not to answer 19 privileged communications he had with counsel, 20 even if it was in a pre-retention consulting 21 role or a potential retention role. 22 Q. Did you speak with Ms. Bish about a 23 potential retention? 24 MR. CONLIN: Again, I'm going to 25 instruct the witness not to discuss any	Page 153 1 of objecting if they want to. I just don't 2 think -- I think it's a red herring. 3 MR. RHEINHEIMER: I mean, I was 4 limiting my question to the predicate of 5 whether there was an issue, which I don't think 6 we've established. 7 MR. CONLIN: Yeah, but I mean, I 8 think -- I let him answer that he wasn't 9 retained, and you asked him questions about his 10 declaration for the GA -- I think that covers 11 all that. 12 MR. RHEINHEIMER: We'll see. 13 MR. CONLIN: And it's certainly 14 discussed out of the scope of his work in this 15 case in any capacity. 16 MR. RHEINHEIMER: That, I would 17 disagree with, but that doesn't become relevant 18 unless I can ask the questions. 19 Q. Okay. If we turn back to your 20 declaration, which is Exhibit 4, did you 21 exchange drafts of a nonfinal declaration with 22 anyone? 23 A. I'm sure that I did with Government 24 Accountability. That would be it. 25 Q. And who is Government

Page 154 1 Accountability, just in general, your 2 understanding? 3 A. They're -- I don't know if I know 4 fully what their role is. They tend to 5 represent whistleblowers. They're centered out 6 of Washington D.C., but they have offices all 7 over the country. I never considered myself a 8 whistleblower, actually. I just considered 9 myself a commenter. 10 I wasn't whistleblowing anything. 11 I wasn't disclosing anything that I held 12 privately with Plaintiffs' attorneys, so I was 13 just commenting on publicly available 14 information, as well as I had a chance to look 15 at Scott Smith's data, so I was commenting on 16 it. 17 So I -- you know, they tend to 18 represent whistleblowers and protect them and 19 then get their information out into the public, 20 is my understanding. I was just there to 21 comment on the things that I wrote on those 22 three paragraphs that we were going to comment 23 on. In no way was I going to breach my 24 confidentiality with Plaintiffs' attorneys. 25 Q. And by that, you mean you didn't	Page 156 1 I've done in the last month is I was asked pro 2 bono to prepare testimony before the Ohio House 3 and Senate on data centers, and I did so. 4 Q. And did that testimony relate to 5 the opinions that you've given in this case? 6 A. No. 7 Q. And if we go back to Page 5 of your 8 report, Exhibit 2. 9 A. We're going backwards, Counselor. 10 MR. CONLIN: I'm sorry, what page 11 did you say? 12 MR. RHEINHEIMER: Five. 13 A. I am there. 14 Q. Okay. And that is Section 1.0, and 15 it lists out your qualifications, right? Page 16 5 and 6. 17 A. It's a summary of them, yes. 18 Q. Okay. Good clarification. A 19 summary of your qualifications. And you 20 intended that to be -- to include all of the 21 key parts of your training and background as 22 applied to your work on this case, right? 23 MR. CONLIN: Objection to form. 24 A. No, I don't know that that's the 25 case. I mean, I've worked on the space
Page 155 1 discuss your data in this declaration? 2 A. My data or any data that I was 3 reviewing as part of work product of my 4 undisclosed work. I obviously knew a lot, but 5 that, I had to be careful to comment on. 6 Q. All right. Let's turn back to your 7 opening report we've marked as Tab 2 -- as 8 Exhibit 2. Excuse me. 9 A. I'm there. 10 Q. And if you look at Page 360. 11 A. I am there. 12 Q. And this is your CV and case list, 13 correct? 14 A. Correct. 15 Q. And we talked earlier about how it 16 was up to date as to deposition and trial 17 testimony, so my question now will be limited 18 to the CV itself and whether there are any 19 updates, relevant updates to your CV since you 20 submitted this in April. 21 A. I've always been challenged in 22 writing a CV. I've always thought they were 23 obnoxious in just being super long, and I've 24 been involved in 10,000 projects, so it's like 25 -- but I would say the only significant thing	Page 157 1 shuttle. I've worked on nerve agents. I've 2 designed combustion facilities for nerve agents 3 that were implemented and used. I've got nine 4 patents on HVAC heat pumps. 5 Whether or not that background is 6 relevant or not -- like, for instance, you 7 asked earlier about CERCLA and all that, and I 8 was trying to think back of all of the Battelle 9 stuff that I did, beginning with National 10 Priorities List in '79, and there's got to be 11 somewhere, because I was -- I was one of the 12 chiefs -- I was the senior research scientist 13 on the -- on the nuclear waste repository site 14 in Hereford, Texas. 15 So I've been involved in a lot of 16 -- I did design work on nerve agents. I have a 17 nerve agent handbook to this day. I worked on 18 the space shuttle, solid rocket boosters for -- 19 that's when I first learned how to do -- 20 process safety management and failure of 21 effects analysis after Challenger. 22 And, you know, it sounds like 23 you're a big shot, I guess, in these projects, 24 but you're one of hundreds of engineers and 25 scientists that work on these projects, so you

Page 158 1 don't always know the totality of the project 2 and who all is involved, but I've worked on 3 dozens, if not hundreds, of projects like that 4 over 50 years. 5 And there's no way to summarize all 6 that, and I would think it would be obnoxious 7 to do. So what I just tried to do here was to 8 give a very topical overview of my background 9 with respect to forensics, with respect to the 10 fact that I'm a professional engineer in six 11 states. 12 I'm a health and safety expert, as 13 a CIH, I'm an OSHA expert, as a CSP. I have my 14 asbestos certificate in Ohio, so I'm allowed to 15 sample for asbestos. 16 And then I've been -- I've been 17 involved in expert witness cases that cover the 18 waterfront on terms of chemicals and biologics, 19 as well as the classic slips, trips, falls, 20 HVAC, building envelope, amputations. 21 I've done a case where a guy was 22 sitting at the bottom of a tower and they were 23 building, and a piece of angle iron ID fell 24 down and chopped his arm off, so little stuff 25 like that.	Page 160 1 say, oh, yeah, I am. Absolutely, I am. And 40 2 percent of the CIH exam is toxicology. 3 So -- and that's what was a little 4 bit odd to me when one of Norfolk Southern's 5 experts said, well, he has no expertise in 6 toxicology and epidemiology, and I was like did 7 you read Page 6 of my report? Come on already. 8 Q. Do you hold a degree in toxicology? 9 A. No, of course not. I would have 10 listed it if I did. 11 Q. Do you hold a degree in 12 epidemiology? 13 A. No; that doesn't mean I'm not an 14 expert in both. 15 Q. Are you board certified as a 16 toxicologist by the American Board of 17 Toxicology? 18 A. No. That doesn't mean I'm not an 19 expert in toxicology. 20 Q. Are you a member of the Society of 21 Toxicology? 22 A. I am not. 23 Q. Have you published any original 24 research in toxicology in a peer-reviewed 25 journal?
Page 159 1 But I was just trying to give a 2 flavor for that, and then there's generally a 3 misunderstanding about who a CIH is, so I 4 wanted to show the definitions of it. 5 And then on Page 6, I always put in 6 that the reason that I went after it -- because 7 I was an engineer by training and I didn't come 8 from the health and safety field originally, 9 so, getting into the health and safety field 10 was a bit of a challenge because it covered 11 rubrics or dimensions that I wasn't necessarily 12 spent my first 20 years doing. 13 And I list those 18 areas, which 14 include toxicology and epidemiology, et cetera, 15 analytical chemistry. As by training, 16 experience, and examination, I'm certainly an 17 expert, because I've been cleared by 18 examination. And, of course, to take the 19 exams, I had to have so many years of 20 experience documented and training in order to 21 take those exams. 22 So I always put them in there 23 because, especially the rubrics on CIH, because 24 I'll have people say, well, you're not an 25 expert in epidemiology or toxicology, and I'll	Page 161 1 A. I believe so. 2 Q. And which -- what is that? 3 A. It was work that I did on -- well, 4 it's in my publications, but I published a 5 paper with Nicus and others on -- I want to say 6 it was vinyl chloride as a -- let me check for 7 the exact paper. Let me get this right, the 8 timeframe -- bear with me. 9 I published a paper with Nicus and 10 two others on the toxicity and the epidemiology 11 of -- and the exposure of workers to -- 12 especially hairdressers and barbers to vinyl 13 chloride as a propellant in hairsprays, 14 primarily in the -- that occurred primarily in 15 the '70s, so we -- 16 There's a very unique disease 17 associated with that exposure called 18 Angiosarcoma of the liver, and most people 19 really weren't familiar with where that would 20 come from. 21 And then I had a lot of the meeting 22 minutes from the industry, and so they were the 23 ones that said, hey, we've got to be watching 24 the hairdressers and the barbers because 25 they're the ones getting hammered with the

Page 162 1 vinyl chloride as a refrigerant. 2 And, of course, they increased the 3 price that people used fluorocarbons -- so that 4 was -- that paper cited a lot there. 5 My textbook has two sections that 6 include toxicology, indoor environmental 7 quality, and then the section on mold and 8 bacteria include Legionella. 9 And then I wrote a paper not long 10 ago -- well, I guess it would be now -- on 11 visible dust and asbestos and what it suggests 12 regarding asbestos exposures. Those are some 13 examples. 14 Q. Okay. And what about original 15 research in epidemiology that's been published 16 and peer-reviewed in the epidemiology journal, 17 other than those two you just mentioned also -- 18 A. Well, the work on -- that was -- 19 the work on vinyl chloride as a propellant is 20 certainly epidemiologically in the context, 21 because it was looking at exposures and 22 disease. So that would certainly be 23 epidemiological, to have that aspect of it as 24 well. 25 Q. Have you ever taken the diplomat of	Page 164 1 A. CIH. 2 Q. Anything else? 3 A. I don't believe so. This statement 4 covered a lot of topics, because it said I 5 wasn't -- disease causation. Well, I don't 6 think they read my resume that I was in a 7 Daubert hearing in West Virginia -- federal 8 court in West Virginia, being a general 9 causation expert, and the motion to say that I 10 wasn't was denied in Federal Court; so I've 11 testified as a causation expert many times. 12 Q. But you're not -- your role here is 13 not as a causation expert, right? 14 MR. CONLIN: Objection; form, 15 misstates previous testimony. 16 A. Well, I -- not with respect to 17 personal injury, but with respect to 18 environmental contamination, I certainly am a 19 causation expert. That's why I've got to be 20 careful with how you ask that question. 21 Q. And what certification do you hold 22 in epidemiology? 23 A. The CIH. Part of the exam is 24 epidemiological questions, and it also is based 25 on so much experience in that area and
Page 163 1 the American Board of Toxicology examination? 2 A. I have not. 3 Q. Do you know what the eligibility 4 requirements are? 5 A. I don't. I've never studied for 6 it. I know what the eligibility requirements 7 for the CIH, and I know what they are in PEs, 8 and I know what they are on CSP and asbestos. 9 Q. In your rebuttal report at Page 29 10 to 30 -- 11 A. I am there. 12 Q. -- you have a response to the last 13 row on Page 29 and the first row on Page 30. 14 It's your response to Dr. Findley's statement. 15 Do you see that? 16 A. Yes. 17 Q. And you say -- and you say this in 18 your report, too. You're a trained and 19 certified expert in both toxicology and 20 epidemiology, right? 21 A. According to the Board of 22 Industrial Hygiene and American Board of 23 Industrial Hygiene. 24 Q. But what certifications do you hold 25 in toxicology?	Page 165 1 education. I took coursework in that area. 2 Q. Coursework where? 3 A. Ohio State University. 4 Q. Undergraduate or graduate or both? 5 A. I don't know. It was part of -- it 6 was a quarter course. I taught mostly to 7 regulators. I was one of the few personal 8 people prior to the private industry people to 9 go to it. It was taught in the late 1990s on 10 getting people ready for risk assessment being 11 used in the environmental world. 12 So part of that was a whole section 13 on epidemiology, as well as toxicology. I 14 think it was jointly taught by the University 15 of Cincinnati as well. 16 Q. Okay. Now, you've mentioned a 17 couple of times, I think, that one of the 18 issues that you have with the Arcadis work was 19 the use of plastic bags in some of their 20 sampling; is that right? 21 MR. CONLIN: Objection to form. 22 A. I'm not sure about the some. It 23 looks like that was the protocol for the soil 24 sampling. 25 Q. Okay. For all of the soil sampling

Page 166 1 at the site? 2 A. Well, I mean, that's -- you can 3 read my report about there's conflicting 4 language -- we can go to the specific language, 5 but there's conflicting language. It says put 6 them in plastic in one sentence, and in the 7 same paragraph, it says: Use the supply 8 containers, in the other paragraph. 9 So there's -- there's conflicting 10 language within the protocols, and I point that 11 out. 12 Q. And is that a -- is the use of 13 plastic bags a problem for all constituents 14 being sampled for, or are there certain 15 constituents for which the use of a plastic bag 16 is particularly problematic? 17 MR. CONLIN: Objection to form. 18 A. Well, I mean, I cite literature, 19 and the EPA also puts literature out that say 20 that certainly plastic bags are not acceptable 21 as a storage medium for dioxins, for example. 22 So my view in general is that based 23 on my experience, glass is always used for 24 SVOCs and dioxins. 25 Plastic bags are used in UST work	Page 168 1 of the plastic material and plastocyanin is 2 impacting the results. 3 Because dioxins, you're trying to 4 measure down at parts per trillion, and if you 5 have anything that's much higher than that, 6 you'll overwhelm the instrumentation, so you 7 can't get the detection limits you would like. 8 So -- that's probably more than you wanted to 9 know. 10 Q. Did you see any -- in the file, any 11 field change requests or requests for approval 12 of the use of plastic bags or sampling that EPA 13 reviewed? 14 MR. CONLIN: Objection to form. 15 A. I don't recall seeing any, that EPA 16 granted that, and like I said, the other 17 problem with the plastic bags, aside from that, 18 was the chain of custody issue, which we've 19 talked about. 20 But more importantly, I thought the 21 reason to sample from zero to six inches was to 22 do -- kind of like asbestos where you do 23 layers, and I thought the idea was, well, we'll 24 do zero to one inch, one to two inch, two to 25 three, et cetera, and see on a few samples --
Page 167 1 for VOCs, and the reason is -- if you want me 2 to explain, the reason is that when you do -- 3 when you drill a well for either soil boring or 4 for -- ultimately, for a water well, 5 groundwater well, that usually you take -- you 6 split samples every two feet, you get the 7 boring log out. You log it -- what the geology 8 is, and then you take a sample of that and you 9 put it in a plastic bag every two feet, and you 10 put -- and seal it. 11 And you put all of those bags in 12 front of your -- on your windshield or 13 somewhere, especially in the Northern climate 14 because it's cold. And then at the very end of 15 the process, you take a PID. You open the bags 16 and you take PID readings, and the values in 17 general, the values of the two highest. Say if 18 you had 20 feet and you had ten samples, the 19 values with the two highest PID readings, you 20 submit for BTEX analysis. 21 That's done in UST work for 22 volatile organic compounds, but it's not done 23 for semi-volatiles or dioxins, mainly because 24 of -- the real concern you have is 25 contamination, either absorption or desorption	Page 169 1 see if this material -- how far down it's 2 penetrated. 3 But that's not what was done. What 4 was done is they just took composites, so they 5 sampled zero to six inches, threw it in the 6 bag, stir it up, and put it in. 7 Well, I cite some literature and 8 others cite some literature saying that, most 9 likely, this is in the first couple of 10 centimeters, first inch or so, since 2.54 11 centimeters is an inch, and you wouldn't 12 expect, because of the insolubility, for it to 13 move much. 14 So you have the real effect of 15 diluting your values from the service. All of 16 the materials is zero to one inch, and you 17 sample zero to six inches, you've got a 18 glitching factor of six. That's a big deal. 19 So I wouldn't have had a problem, 20 as I say in my report, of sampling some samples 21 zero to six, just to see what the degree of 22 penetration of the soil was on spot checking, 23 but even there, they didn't do that, and they 24 just took a big graph composite. 25 So there are multiple issues with

Page 170 1 the plastic bags in my opinion. I've tried to 2 summarize them as best as I can. 3 Q. Okay. You also identified an issue 4 that you saw with respect to chain of custody 5 forms? 6 A. Multiple issues. 7 Q. One of the issues is where you 8 identified an example of a chain of custody 9 form that wasn't signed? 10 A. No. There was -- I believe I cited 11 one where the sampler was not listed. 12 Q. Where the sampler was not listed? 13 A. Right. 14 Q. What is the import of that in your 15 mind? 16 MR. CONLIN: Objection to form. 17 A. The import is that the idea between 18 a chain of custody is that you have full 19 knowledge and access to the people that handled 20 the sample the entire time it was handled. 21 So in a soil sample you have 22 somebody who extracts it from the ground and 23 puts it in a container. That's the first 24 person that should be on the list. 25 Then you have somebody that might	Page 172 1 have any indication in the chain of custody of 2 that interval. So it comes out of the ground, 3 goes into the plastic bag. That's one chain of 4 custody. 5 And then it goes out of the plastic 6 bag into a jar. That's the second chain of 7 custody event. 8 The real problem with that is that 9 the lab looks at that chain of custody when it 10 comes in and they will report back to you -- 11 pardon my French -- if you screwed up, and so 12 it's a way to get feedback in the process. 13 But if they never see the plastic 14 bag in the chain of custody, they have no 15 ability to tell the sampler, hey, don't do 16 that. So it's not just that you don't have a 17 complete chain of custody, but you've killed 18 the feedback mechanism with the lab. 19 And then the third case is where 20 the sampler is listed, but they're not the 21 first person on the chain of custody below the 22 signature date, sign -- where it's signed, 23 dated and time. 24 So, again, you don't know -- you 25 know who the sampler is this time, but you
Page 171 1 -- like in my case, it was straightforward. 2 Then I handed it off to FedEx, so I had them 3 sign off on it. 4 When the lab gets it from FedEx, 5 they sign off because they got it. So that the 6 sample -- the entire -- and it's signed, dated 7 and time signed -- stamped, so you know -- the 8 ideal case is you know ideally where that 9 sample was from the time it was taken out of 10 the ground if it's a soil sample, to the time 11 it shows up at the lab. 12 The problem when you don't know who 13 the sampler is, is multifold. First of all, 14 you don't know for certain where that sample 15 was from the time, and for how long it was 16 somewhere, and what was done with it from the 17 time it came out of the ground, to the time the 18 first person signs off on it. 19 And, more importantly, if they're 20 not listed, you have no ability to go back and 21 ask them questions about what they did, and 22 where it was, and how it was handled. 23 Now, there were two other issues 24 with regards to the chain of custody. I've 25 already talked about the plastic bag. We don't	Page 173 1 don't know when they took the sample and when 2 they released it, and where it was in between. 3 And so in almost all cases, you 4 have incomplete chain of custodies. To me, 5 that's fatal. 6 Q. So when there's a break in the 7 chain of custody or an incomplete chain of 8 custody, the data can't be used? 9 MR. CONLIN: Objection to form. 10 A. I mean, some other people are going 11 to make that decision, other than me. I think 12 as a professional, having sampled for over 40 13 years, that an incomplete chain of custody, if 14 the roles were reversed, you would have serious 15 concerns about the validity of my data, and 16 legitimately so, because you don't know for 17 sure who had it when, and where, and what 18 happened to it in between and -- 19 Now, whether it gets thrown out or 20 not, I think is a legal question, not a 21 technical question. 22 Q. As a technical matter for -- in 23 your view, should you use data that's been 24 collected with the chain of custody that is 25 broken or incomplete?

Page 174 1 A. My opinion would be you should not. 2 Q. Okay. If you look at Page 42. 3 A. We're on Exhibit 3 again? 4 Q. Yes. 5 A. Thank you. 42. Okay. I'm there. 6 Q. This is a discussion of the 7 additional testing that Scott Smith did at the 8 WYG and Ceramfab properties, right? 9 A. Correct. 10 Q. And he analyzed for PAHs and 11 dioxins and furans? 12 A. Correct. 13 Q. And then you have tables and 14 figures relating to that testing, right? 15 A. And GPS coordinates, yes. 16 Q. And so that was -- that was one 17 sample on each of the properties? 18 A. Technically, two samples because 19 you're sampling -- one set of samples is for 20 dioxins and one is for PAHs. 21 Q. Were those samples taken from the 22 same place? 23 A. Yes. 24 Q. And I think we can see that 25 location maybe on the picture on Page 45. Is	Page 176 1 Q. And if we look at the picture on 2 Page 45, it looks like it's the southwest 3 corner of the property next to a street. Is 4 that -- 5 A. I would say it's south central, 6 actually. 7 Q. Okay. 8 A. But I'm not trying to quibble with 9 you. 10 Q. No, you're right. You're right on 11 that one. 12 Okay. And then on the WYG 13 property, which is the one to the left in the 14 picture, right? 15 A. Yes. 16 Q. The sample was taken southerly? 17 A. Southwest quadrant. 18 Q. Yeah, adjacent to the street again? 19 MR. CONLIN: Objection to form. 20 A. I don't know if it was adjacent to 21 the street, but it was taken on the property. 22 I mean, I wouldn't know how to describe 23 adjacent to the street. I don't think there 24 was any intent to take it where it would be 25 associated with impacts from the street itself.
Page 175 1 that a good picture of the location? 2 A. Correct. That's -- I hope it's 3 right. That's what the GPS coordinates say. 4 Now, that's just for the TEQ -- 5 there's a similar plot on the next page for 6 TEQs for dioxins. 7 Q. Same location for both, but just 8 representing the results for dioxins versus 9 PAHs, right? 10 A. They're probably taken just 11 adjacent to each other, yeah. 12 Q. Do you know how Mr. Smith selected 13 the location on the site to take these samples? 14 A. Not specifically. All I know is he 15 was instructed to take them on site within the 16 constraints of the property boundaries. 17 Q. And was the Ceramfab sample taken 18 outside of Ceramfab? Sorry, outside of the 19 building footprint? 20 A. You mean like wasn't taken under 21 the slab or something? 22 Q. Was it taken outside versus inside 23 or under the slab? 24 A. Yeah. It was taken outside -- 25 outdoors.	Page 177 1 I mean, we were cognizant of that 2 issue. We had -- obviously, we had the 3 experience of the reports from the delineation 4 report where they talk about taking samples on 5 the street or away from the street. 6 Q. And what are -- you say you're 7 cognizant -- well, strike that. 8 You said you didn't intend to take 9 it where it would be associated with impact 10 from the street itself. What do you mean by 11 impact from the street itself? 12 A. If you have an asphalt street and 13 you -- if you sample asphalt, there's PAHs in 14 asphalt, so you don't want to sample where you 15 have asphalt residual. I know that, having 16 done it in the past. You can get really good, 17 high results if you do that. 18 Q. And then are there PAH or dioxins 19 released in automobile exhaust? 20 MR. CONLIN: Objection to form. 21 A. I guess it has a -- PAH -- I guess 22 it has kind of a yes and a no answer. I think 23 technically, yes, but typically, those 24 concentrations are -- I don't know about 25 dioxins. Did you say dioxins and PAHs or just

45 (Pages 174 - 177)

Page 178 1 dioxins? 2 Q. Or, either one. 3 A. Oh, or. I have to be careful how I 4 answer that. 5 MR. CONLIN: Same objection. 6 A. There's certainly some PAHs, 7 because PAH is associated with combustion. 8 There's certainly PAHs associated with exhaust 9 products. I'm not aware of dioxins coming from 10 vehicle exhaust. Theoretically, but I'm not 11 familiar with that, mainly, because remember -- 12 and the reason I say that is -- this is the 13 chemical engineer coming out of me. 14 The hydrocarbons that are burned in 15 an engine are gasoline or diesel, and they're 16 not chlorinated hydrocarbons, so you wouldn't 17 expect that you would have a chlorinated 18 byproduct like a dioxin exhausted. 19 And, in fact, Gullett's work cited 20 in the Gulf of Mexico illustrates that, cited 21 by your experts, or expert. 22 And so on the dioxins, I would say 23 no, probably not. The PAH side, potentially, 24 but the levels would be relatively low, unless 25 you had really, really bad performing engines,	Page 180 1 So -- and, more importantly, 2 associated with incomplete combustion of 3 hydrocarbons. And what do I mean by that? 4 In an ideal combustion process, you 5 take fuel, carbon hydrogen source, you mix it 6 with oxygen, and you produce water and CO2, and 7 so the carbon is converted to carbon dioxide. 8 What happens in the real world is, 9 to some degree, some of that carbon is 10 incompletely combusted. You get some CO, 11 carbon monoxide, and if some of the 12 hydrocarbons are sooted, you can produce 13 multi-ringed PAH output. 14 But it's really associated 15 primarily with poor, incomplete combustion of 16 non-chlorinated hydrocarbons. 17 Q. And what are some of the common 18 sources of dioxins and furans in the 19 environment? 20 MR. CONLIN: Objection; form. 21 A. The -- well, the classic one is the 22 -- when Monsanto made Agent Orange for the 23 Vietnam war. They knew dioxin was in it, but 24 they -- since it was just going to be displaced 25 over the jungle, they didn't really purify it
Page 179 1 but the performance of engines anymore is -- I 2 mean, there's so much work being done on -- and 3 I worked on it for years, on lowering engine 4 emissions. 5 So it's a theoretical thing that, 6 yeah, there's going to be the potential for 7 something to be released, but I don't think 8 it's going to wag the dog, as we say. 9 Q. What are some common sources of 10 PAHs in the environment? 11 MR. CONLIN: Objection; form. 12 A. Well, PAHs are, by definition, 13 ringed hydrocarbons, if that makes any sense, 14 multi-ringed hydrocarbons that are attached. 15 So -- I don't mean to be demeaning or anything 16 like that, but the simplest ring compound is 17 benzene, right, C6H6. 18 And then if you take two benzene 19 rings and combine them, you have -- multi-ring 20 or two-ring PAH. 21 So any thing of multi-rings, 22 benzene rings -- they don't always have to be 23 benzene rings, but those are, by definition, 24 PAHs, and they are in general associated with 25 combustion of hydrocarbons.	Page 181 1 to the degree they could have, so it ended up 2 with a relatively high dioxin count, which is 3 one of the deadliest compounds on the earth. 4 But as part of that process they 5 had -- and I don't know how it came about, but 6 there was waste oils that -- out of the 7 process, that were a waste stream. They didn't 8 know what to do with it, so they gave it to a 9 community in southwest Missouri to add to -- 10 they gave it to a contractor who used it to mix 11 with -- or to spread on dirt roads to keep the 12 dust out, and as a result, super contaminated 13 those areas. Times Beach, Missouri is the 14 classic case. So one of the sources is from 15 the production of Agent Orange, historically. 16 The other major production, the 17 classic is combustion of PVC, polyvinyl 18 chloride. And what polyvinyl chloride is, is a 19 hydrocarbon where some of the hydrogens are 20 replaced by chlorine. 21 And so in order to have a dioxin, 22 you have to have chlorine in the molecule to be 23 combusted, so -- and then vinyl chloride is 24 another example, as I've shown in my report, 25 and the chemistry of it where it's a

Page 182 1 hydrocarbon with a chlorine substitution for 2 the hydrogens. 3 So whenever you burn a chlorinated 4 hydrocarbon, you have the potential to create 5 some dioxin, and that was the point I made 6 about the Gullett papers being cited. 7 The one that was cited on just 8 using hydrocarbons, where they got personally 9 no dioxins, but he has another paper that I 10 cite where he's looking in the Gulf area where 11 they were burning chlorine and hydrocarbons, 12 and they got very high dioxin levels 13 relatively. And then he has two patents on how 14 to get rid of or strip out dioxins from 15 materials. 16 So I was interested in Gullett, and 17 he's supposedly EPA's dioxin expert. I wanted 18 to know more about him, and so we did a little 19 bit of homework on him. 20 But the bottom line is that if you 21 have a chlorinated hydrocarbon and it's burned 22 and it's burned in an inefficient, incomplete 23 way -- and always, you know, I was -- I was 24 Googled by somebody who didn't even know who I 25 was when I was sampling, and they stuck a mic	Page 184 1 guess I would have been called a researcher or 2 a scientist -- I didn't have a very big title 3 in those days. I was a newbie when I was 22 or 4 23. 5 But my very first big project was 6 combustion of crude oil and water, and we did 7 that for two and a half years. 8 So I understand the combustion 9 chemistry, and the key is you've got to have -- 10 you know, if you don't have the right air fuel 11 mixture, you're going to get incomplete 12 combustion, and that means you're going to form 13 things like dioxin, CO, soot, things like that. 14 MR. RHEINHEIMER: We can take a 15 break. 16 THE VIDEOGRAPHER: We're off the 17 record. 18 (Recess is taken.) 19 THE VIDEOGRAPHER: We're on the 20 record. 21 Q. Okay. Now, let's go to Page 25 of 22 Exhibit 2, which is your opening report. 23 A. I'm there. 24 Q. And there are a couple of figures, 25 Figure 5-5 and 5-6.
Page 183 1 in my phone and -- they didn't know who I was. 2 They thought I was president of EES, but I had 3 sold it to somebody else, so he got like 300 4 calls, and I was like thank God -- 5 And they asked me about what do you 6 think of the controlled burn, and I said what 7 do you mean controlled? It was uncontrolled by 8 definition, and then they -- it got -- I don't 9 know what the word is these days, but anyway, 10 it went out to four million people. 11 And then I said, of course it's 12 uncontrolled. Do you see all the soot? By 13 definition, soot is incomplete combustion. 14 It's not CO2 and water. 15 So anybody that -- and, of course, 16 I had worked for some of the best combustion 17 experts in the world at Battelle at the 18 beginning of 1982, because I wrote that 19 preeminent paper on combustion, crude oil, and 20 water, and as I said earlier, it was the 21 largest burns of crude oil in the world at that 22 time on oils from all over the world and -- 23 crude oils from all over the world. 24 And so I understood the combustion 25 of hydrocarbons when I was a very young -- I	Page 185 1 A. Yes. 2 Q. And they refer to NS Q& As? 3 A. Yes. 4 Q. Where did these come from? 5 A. I believe they came from Norfolk 6 Southern. There was a school there or a church 7 and a school, and they had a room in a 8 basement, and they had a lot of brochures and 9 handouts, so I just grabbed them from there. 10 Q. And do you remember about when you 11 grabbed these? 12 A. It would have been in February of 13 '23, late February. I didn't get there until 14 the 20th. 15 Q. And then if we go to the next page, 16 Page 26, Figure 5-8, where did that come from? 17 A. Same location. I was -- that 18 literature came -- the PID literature came from 19 individual homeowners, and this came from 20 literature that was available locally to the 21 public. You can see at the bottom of 5-A, that 22 said in February of '23. Confirms my earlier 23 answer. 24 Q. And these figures are all 25 screenshots from your phone, the portions of

Page 186 1 the brochures? 2 A. No. I actually had the brochures 3 and I took pictures of them, and then I cropped 4 them and then I photo enhanced them by adding 5 the boxes and things like that. 6 Q. Okay. And then Figure 5-8 looks a 7 little different. Is it the same process, or 8 is that from a different source? 9 A. The best I can recall, it's the 10 same process. It's been a while. All that was 11 done over three years ago. 12 Q. Okay. Okay. Let's turn to Page 13 185 of Exhibit 2. 14 A. I am there. 15 Q. And it lists the four datasets that 16 you had access to for purposes of your report, 17 right? Excuse me. 18 A. Well, no. I had access to EPA 19 datasets, and Norfolk Southern datasets, and I 20 had the Ohio Pennsylvania dataset, but as far 21 as the data that the Plaintiff -- I'll call 22 them the Plaintiffs' datasets, I guess -- well, 23 that's not even correct because Scott's wasn't 24 necessarily Plaintiff. However I described 25 them earlier, the four datasets I used for the	Page 188 1 taken. Then -- I can't even know how much I 2 should say about that dataset because it was 3 never disclosed. I guess it doesn't matter. 4 The intent of that dataset 5 initially was to tune the Plaintiffs' air 6 modeling. We had a certain air model, and we 7 were taking data out on a matrix to try to see 8 how well the soot reflected actual deposits of 9 dioxins and PAHs, so that was -- that was my 10 job, was to take that dataset and convert it, 11 get it QA'd/QC'd, get it calculated, and then 12 get it to the modelers, but that all got shut 13 down before it ever got finished. 14 Q. But then you did eventually go back 15 and finish the Level 4 reports? 16 A. No. Dataset 1 was always -- 17 Dataset 1 was, in essence, completed by me in 18 April of 2024. It just wasn't handed off to 19 the modelers because of the settlement, and so 20 I don't know all the details, but Plaintiffs' 21 counsel made a deal with the class to obtain 22 that information and my work product so that it 23 could be part of this analysis. 24 Q. And is it accurate to say that all 25 of the information, the document -- the
Page 187 1 purposes of this work. 2 Q. Okay. 3 A. I guess they're described at the 4 top of that page again. 5 Q. So Dataset No. 1, I believe you 6 said it was the data from other Plaintiffs' 7 experts from the class case; is that right? 8 A. Correct. 9 MR. CONLIN: Objection; form. 10 A. Well, it was from -- I don't know 11 if they were experts, but they were other 12 samplers from other attorneys who were part of 13 the Plaintiffs' class. 14 Q. And those samples were collected 15 July, August, and September of 2023? 16 A. Correct. 17 Q. And what background materials did 18 you have access to, like work plans, chain of 19 custodies, that type of thing. 20 MR. CONLIN: Objection to form. 21 A. I had the -- I had the chain of 22 custody, because I had the Level 4 reports. I 23 think I answered this question before. I had 24 the Level 4 reports from Laboratory Data, Inc., 25 and then I had the GPS coordinates that were	Page 189 1 documented information about the sampling for 2 Dataset 1 is included in those lengthy Level 4 3 reports? 4 A. I'm not sure how to answer that 5 question. We have the Level 4 reports. We 6 have the GPS coordinates. We have them -- 7 obviously, QA/QC to the Level 4, and then we 8 had the Laboratory Data Corp., interfaced with 9 Eurofins, to clear any issues, and then clear 10 flags and then issue a QA/QC report. 11 It took about three months, is my 12 recollection, January through March of '24. 13 Q. Okay. All right. The second 14 dataset is referred to as Petty February 15 through April 2023; is that right? 16 A. Correct. 17 Q. And that is data that you or your 18 staff collected? 19 A. I personally collected. 20 Q. You personally collected. Okay. 21 A. I mean, I had people with me. 22 Don't get me wrong. They would hand me a label 23 or hand me a jar. 24 Q. And that data was collected between 25 February and April of 2023?

Page 190 1 A. I think I said through April, 2 right, not to. 3 Q. Through. Did I say to? 4 A. I thought you said to. 5 Q. I meant through. 6 A. I don't know. I could be wrong in 7 what I heard. 8 I was there for two rounds of 9 sampling. I was there from February 20th into 10 March. Probably by the end of the first week 11 of March, I left, and then I was back in early 12 April for the removal of the north tracks and 13 sampling in and around the tracks and in the 14 excavation zones. 15 THE REPORTER: In the what? 16 A. Excavation zones. I probably don't 17 talk too well. 18 Q. And was that eventually reported in 19 Level 4 reports? 20 A. In the what? 21 Q. In the Level 4 reports. 22 A. Initially, it was Level 2 reports, 23 so as part of this work, I went back and got -- 24 I think with one exception, I have all Level 4 25 reports. There was half of a VOC report that	Page 192 1 labs to ensure that I had five different 2 locations of Eurofins, to ensure I had the 3 right methodologies for sample analysis, that I 4 had the right samples, container sizes, the 5 right sample media, the right number of 6 containers, and the right preservation, and 7 then where to send the samples. 8 So that was all done, you know, in 9 the first week or two of when I was on site. 10 And then -- it was earlier than that. It was 11 done within four or five days. 12 And then that was the process I 13 followed. I would take the samples. I -- as I 14 indicated before, I added to the list from what 15 would normally be standard methods, and that's 16 where I spent a lot of time interfacing with 17 the lab. Can you do this? Can you measure two 18 Ethylhexyl Acrylate measurements, and they had 19 to go look. 20 And I just wanted to see where that 21 listing is, because I go through quite a 22 process. I happened to be in Columbus that 23 Wednesday before doing my coin club meeting, 24 and they said, do you want to go to East 25 Palestine? I said, not really; it's February.
Page 191 1 didn't get to Level 4, but it wasn't really 2 used for the calculations or the -- because it 3 wasn't SVOCs or dioxins. 4 So all the dioxin SVOC data is -- 5 was originally Level 2, and then was -- as part 6 of this work, Eurofins was requested to convert 7 or to generate Level 4 reports for Dataset 2 by 8 myself. 9 Q. And the documentary evidence that 10 goes along with the reports, the chain of 11 custody work plans, all that would be included 12 in the Level 4 report; is that right? 13 A. I don't know if that's true, but 14 certainly -- I mean, it's a compound question, 15 but chain of custodies always are. I mean, 16 that's -- when I start doing an analysis of 17 other people's work, I want to see a chain of 18 custody. That's probably clear by this point. 19 I described kind of my process for 20 what I sampled and why early in the report. It 21 was an effort to determine the chemicals of 22 concern, including dioxins, which I was 23 criticized for early on, and then interfacing 24 with the lab -- in fact, when I interfaced with 25 Eurofins, I was interfacing with five different	Page 193 1 But by Sunday, I was there. 2 The -- I wanted to show -- yeah, so 3 if you go to Page 21, if you'll bear with me. 4 Q. This is your opening report? 5 A. Yes, please. The soil samples and 6 media, like, for instance, for VOC, see Table 7 5.1, the very entry -- the first row, for VOCs, 8 I requested the standard analysis, but then I 9 also asked for four -- five different analytes, 10 Acrolein, Butyl Acrylates, Ethylhexyl Acrylate, 11 Isobutylene, Phosgene, because those aren't in 12 the standard VOC protocol. 13 And they advised me at the time -- 14 that's why the feedback is important -- to use 15 these Terracore kits, rather than just straight 16 jars, and the reason they told me is that your 17 sampling wouldn't necessarily withstand 18 litigation in Pennsylvania. 19 So I said fine, I'll use Terracore. 20 And that's why Terracore was picked, because if 21 there was any litigation in Pennsylvania, they 22 would have -- supposedly, they would only honor 23 samples taken with Terracore. 24 So then on the next page, you'll 25 see for -- oh, and then I've actually cut you

Page 194 1 short. There were actually six analytes. I 2 added vinyl chloride to the VOCs. 3 And then with SVOCs, I used 4 four-ounce glass jars, and I also added 5 Ethylene Glycol Monobutyl Ether to the standard 6 SVOC analysis. 7 And then I decided to do gly- -- 8 and I'm then indicating the method -- the EPA 9 method number to the far right column. 10 And then -- and this is all for 11 soils. And then I used four-ounce jars again 12 for glycols. These are soil samples of 13 glycols, and then four-ounce jars for dioxin 14 furans. 15 And then below that, you'll see the 16 methodology, and the analytes, and the media, 17 and the methods for water sampling, and this 18 was all a result of interfacing with Eurofins. 19 And then it turned out I was 20 fortunate in that a major Eurofins media 21 storage center is located about five miles from 22 here, Busch Boulevard. So I loaded my car up 23 with 23 coolers of media and headed off to East 24 Palestine. 25 So -- but on the water side, it's a	Page 196 1 And so -- and then I was neared by 2 Arcadis people, as well as Norfolk Southern's 3 attorneys. And so it was kind of prescribed by 4 how far along they had done excavations and 5 where the stockpiles were, and I was just 6 trying to get as broad a summary of the 7 different locations, stockpiles, areas around 8 the burn that hadn't been excavated. 9 And then towards the very end, they 10 started doing removal of the north tracks, and 11 so I was -- like I've talked about before, I 12 sampled the water sitting on top of the clay 13 layer, and then I sampled the residual soil 14 sitting on the clay layer, for example. 15 So that was really a result of a 16 limited amount of time I could be on the 17 location because they had an active railroad. 18 And then taking a look around to 19 see what were the different -- based on 20 experience, what were different areas that I 21 thought would be indicative of what level or 22 contamination might be, and then trying to do 23 that efficiently and effectively because I had 24 limited time, like a matter of hours. 25 Q. And you said you came to the site
Page 195 1 little different. You need three 40 mili-vials 2 with HCL preservatives for VOCs, and then I 3 added six, like I did before for the soils. 4 For SVOCS, I have to use two 5 amperage Rs, and I added Ethylene Glycol 6 Monobutyl Ether as an analyte. 7 For the glycols, they wanted three 8 40 mili-vials, no preservatives; and then for 9 dioxin furans, they want two-liter amber jars 10 completely filled, so two, two-liter jars. 11 The lab was prescribing to me -- 12 what I told them what I wanted to analyze for, 13 they were prescribing to me the media to be 14 used, the method to be used, and how many 15 samples to collect. 16 Q. And how did you determine where to 17 take your examples for this Dataset 2? 18 MR. CONLIN: Objection to form. 19 A. It was a combination of wanting to 20 sample in all directions, and then the second 21 part of the sampling was somewhat prescribed to 22 me because it was on the railroad site. I was 23 one of the few non- -- it was as a result of an 24 agreement with Plaintiffs' counsel when I can 25 get on site and how much time I would have.	Page 197 1 twice to take the samples. Did you do the 2 sampling in all directions on the first visit 3 and the sampling on the railroad areas in the 4 second visit, or was it some of both each time? 5 MR. CONLIN: Objection; form. 6 A. Yeah, I know what you're asking. 7 The first time was just all around. The second 8 time, I think I spent one day. I've got it in 9 the reports that are attached as exhibits. 10 The second time I think there was 11 one or two days where I continued to sample 12 around, and then there was -- I want to say 13 there were two days I was allowed on the 14 derailment site, Norfolk Southern property. I 15 could be off on that, but it's something like 16 that. 17 Q. Okay. And then we go to Dataset 18 No. 3, which you called the GEL 2023 sampling 19 data. GEL is a lab; is that right? 20 A. Yeah, I believe that's true, 21 right. They -- this was, again, Plaintiff 22 sampling that was sent to GEL lab, rather than 23 Arcadis -- or rather to Eurofins; pardon me. 24 And they were samples primarily around the two 25 Plaintiffs' sites, as I recall, or near or

Page 198 1 close to them. 2 And my role was taking the Level 2 3 data and working with GEL to get Level 4 4 reports generated, and then, of course, moving 5 them on to the QA/QC lab. 6 Q. You say around the two Plaintiffs' 7 sites. What sites are those? 8 A. WYG and Ceramfab. I think if you 9 look at the plots of that data, because I 10 plotted the data by individual dataset, right, 11 so you can look and see, but they were at or 12 near those sites. 13 Q. And you didn't do the sampling for 14 this data, right? 15 A. Correct. 16 Q. Who did, if you know? 17 A. It's on the chain of custody, so I 18 don't recall off the top of my head, but it's 19 on the chain of custody sample. 20 Q. Do you recall when in 2023 the 21 samples were taken? 22 A. I might be able to look it up. 23 Bear with me for a second. I'm pretty sure 24 that I indicated that. Bear with me. 25 What I was looking at was on Page	Page 200 1 location as well. And then the others are on 2 Pleasant, Main Street, Market Street, right 3 around those sites. 4 Q. And the data was already in Level 4 5 reports when you started working on the matter 6 in 2026, or part of your job was updating it to 7 Level 4? 8 A. My job was to update it to Level 4, 9 to do the whole process that I did on all the 10 data, except for Dataset 1, which was already 11 Level 4, and had been cured and QA/QCd, just 12 not ever disclosed. 13 Q. Okay. And was it in Level 2 14 reports prior to your work on it? 15 A. Yes. I worked directly and 16 indirectly with the lab to get that done. 17 Q. And then there's Dataset 4, which 18 is Scott Smith, 2023 through 2025, sampling 19 data, right? 20 A. Correct. The page you're on again, 21 just so I can get back to it? 22 MR. CONLIN: 185. 23 A. 185? 24 MR. RHEINHEIMER: Thank you. 25 A. I'm back there. Thank you.
Page 199 1 245, but I don't see the dates, but they're on 2 the chain of custody. I know that for a fact, 3 because I remember looking at them. 4 Q. Okay. 5 A. But some of the data, I did put the 6 dates on. Some of them, I didn't. I would 7 refer you back to the chain of custodies in the 8 original. 9 If you look on Exhibit 81, Dataset 10 3, any of the samples for the chain of custody 11 will give -- the sample results themselves will 12 give the data sample -- 13 Q. And do you know how the sampler 14 chose the specific locations for the samples? 15 A. Sort of yes and no. The yes part 16 of it is that the goal was to take samples in 17 and near the two Plaintiffs' properties, 18 because I believe they knew they were opt outs. 19 Specifically why they picked that coordinate, I 20 wouldn't know. 21 I mean, you can see on Page 245, 22 you can see that this -- this sample addresses 23 her like the first seven samples were at the 24 Ceramfab property address. 25 And then there's one at the WYG	Page 201 1 Q. Okay. And then in addition to the 2 data identified here, Mr. Smith also took two 3 additional samples after your opening -- or I'm 4 sorry, four additional samples after your 5 opening report, before your rebuttal, right? 6 A. I don't think that's correct. 7 Q. Okay. 8 A. As I indicated here on Page 185, we 9 had all of Scott's data as of April 6, 2026. 10 What we didn't have is we didn't have it all on 11 Level 4 format, nor necessarily QA/QC. 12 So as I indicated on Page 185, what 13 we did have for purposes of my calculations -- 14 in other words, it went through my process, 15 which was the QA/Q- -- Level 4 reporting and 16 the QA/QC/flag removal, et cetera. 17 That whole process, I'll call it a 18 QA/QC process for Scott's data was completed at 19 35 locations. He had somewhere between 110 and 20 120, was my recollection. We had all the data 21 points in Level 2 reports or some in Level 4, 22 35 of them, on April 6th. 23 We were still working through my 24 process to go from Level 2 to data that I felt 25 I could use or potentially use.

Page 202 1 And so what transpired -- again, I 2 don't mean to be repetitive -- with the 3 rebuttal report is -- we can go check, but by 4 that point, we had taken additional two samples 5 each for dioxins, and four PAHs, one each on 6 the WYG and Ceramfab site, for soils. 7 We had that analyzed. We had it 8 Level 4 reported, and we had it QA/QC'd, and 9 then I had the calculation completed and the 10 data plotted as part of the rebuttal report, 11 and we looked at that already. 12 The other thing that happened was 13 that another third -- all the data that I 14 believe -- all the data by March -- no, May 15 29th -- these dates are wrong. 16 May 29th, for Scott Smith, the 17 Dataset 4, we had Level 4 reports, but what we 18 didn't have is -- it takes some time to take 19 those Level 4 reports and go through the 20 process at third-party QA/QC. 21 So we had about another third of 22 the data -- so we had a third initially, in 23 terms of all fully run through my process, 24 fully calculated, fully -- and then some 25 plotting in the April 6th report.	Page 204 1 MR. CONLIN: They were taken 2 roughly around the same time you guys took 3 yours. 4 THE WITNESS: Because I think that 5 was in March. 6 MR. CONLIN: Yeah, March -- March, 7 early April, yeah -- or end of February, March 8 -- 9 THE WITNESS: Counselor, I should 10 correct the record. I mean, the samples were 11 taken, but I didn't have them through my 12 process for that point. 13 MR. CONLIN: I think you produced 14 your ten samples sometime in mid-May. 15 MR. RHEINHEIMER: Okay. 16 Q. And it's your understanding that 17 you have all of Scott Smith's data that he 18 collected from East Palestine? Very large. 19 A. Yes, I had furnace filters and 20 stuff I didn't even use, but yes, that's my 21 understanding, and I've confirmed that with him 22 as late as last week. I said do I have all 23 your data? Yes. 24 Q. Okay. And do you know how 25 Mr. Smith chose the locations for his samples?
Page 203 1 By the May 29th report, I have 2 two-thirds of that fully QA/QC, all of it with 3 Level 4, but not all fully QA/QC, and then we 4 were able to use that for plots, and also 5 incorporate that into tuning, if you will, 6 Paul's models, because the data that I was 7 generating was going to be used to tune his 8 models, if that makes sense. 9 And so we still have about a third 10 of Scott's data that is being run through the 11 QA/QC process with LDC, but in terms of having 12 the data available, it's been there forever. 13 It just hasn't gone through my process. 14 Q. And that's what I really meant, 15 that all the Scott Smith data was available as 16 of the writing of your initial report, except 17 for those four samples he took at Ceramfab and 18 WYG after your report? 19 A. That is correct. 20 MR. CONLIN: Chris, just so the 21 record is clear, I think those four samples 22 were taken before the April 6 report, but they 23 hadn't got -- the results hadn't -- 24 THE WITNESS: Oh, that's a good 25 point.	Page 205 1 A. Yes and no. I know some of the 2 reasons why he selected what he did. He had -- 3 some locations were selected because he got 4 requests from the community where the 5 properties -- the people wanted their 6 properties sampled because they hadn't been 7 sampled by Plaintiffs, or Defendants, or the 8 EPA, and they just wanted to know. 9 He also sampled multiple 10 properties. A lot of them were near -- he 11 sampled multiple properties, multiple times, 12 which I think was unique. I didn't do that. I 13 don't know anybody who did that. 14 So sampled -- over the years, 15 sampled the same location to see if it's 16 changed with time, and that's why I wanted to 17 see his data, to see what it said. 18 And then he also sampled a lot 19 around -- in and around Sulphur Creek, 20 sediments, as well as the two banks. I don't 21 know anyone else who sampled the two banks, so 22 I was curious to see what that said. 23 So a lot of his sampling was 24 primarily for residents that were close to the 25 incident, but hadn't had their property

Page 206 1 sampled. That's my understanding. 2 And then, secondly, a lot of 3 sampling with time at those residences and also 4 sampling the creek, but not just the sediments 5 in the water, but the banks. 6 And then, of course, the last was a 7 request from us to sample the Ceramfab and WYG 8 soils for dioxins and furans. That specific 9 request came from us. 10 Q. And do you have any -- one thing 11 I've seen, and it's referenced in your 12 declaration, is that Mr. Smith has a number of 13 patents relating to environmental sampling. 14 Do you know if any of those patents 15 apply to the work that he did in East 16 Palestine? 17 MR. CONLIN: Objection to form. 18 A. Well, I think -- I don't know if 19 the right word is -- the predicate to your 20 question is incorrect, but maybe I can -- if 21 you'll bear with me, I'll correct the question 22 and you can agree or disagree to let me answer 23 that question. He doesn't have a number -- 24 MR. CONLIN: I usually instruct my 25 witnesses not to give the other side questions.	Page 208 1 documents -- documentation related to Mr. 2 Smith's sampling contained in the Level 4 3 reports, right? 4 A. Sure. 5 Q. Is there any other documentation 6 that you're aware of relating to Mr. Smith's 7 sampling that's not in the Level 4 reports? 8 MR. CONLIN: Objection; form. 9 A. Well, there would be based on the 10 questions I've asked him. 11 Q. What do you mean by that? 12 A. So I said did you ever use tap 13 water? He said no, I always used distilled 14 water, or he used at some point -- somebody 15 from EPA recommended he use isopropyl alcohol 16 and then distilled water. 17 I asked him if he had complete 18 chain of custodies. He said absolutely. I can 19 guarantee you that the samples never left my 20 hands until they got to the FedEx or the Postal 21 Service. 22 What else did I ask him? I asked 23 him about the -- where he sent the samples, 24 which was Eurofins, which I eventually knew. I 25 could tell from the chain of custodies the
Page 207 1 THE WITNESS: Oh, okay. 2 Q. Well, don't -- 3 MR. CONLIN: But you can answer 4 however you want -- 5 A. Well, because I know what his 6 patents -- I mean, I've reviewed some of his 7 patent work, and I have nine patents, and I was 8 responsible for IG for Columbia Gas so I know 9 this area well. 10 His patents don't -- are not with 11 respect to sampling. They are with respect to 12 cleaning up contaminated waters for both 13 contaminants -- chemical contaminants, as well 14 as biological contaminants. And it's basically 15 a media, filtration media, that also had -- can 16 be loaded up with things to help facilitate 17 collection of contaminants. 18 Could they be used up there? I 19 guess, but I've never seen any indication that 20 he's asked anybody or suggested that his 21 materials be used there. 22 In other words, I've never seen him 23 be involved in -- at that location for purposes 24 of trying to sell his products. 25 Q. And there's information and	Page 209 1 feedback he was getting from the labs, which 2 anybody can see. 3 And then he was using the same EPA 4 methods for SVOCs, VOCs and dioxins furans, 5 that all of us were using. 6 Q. You said you could see from the 7 COCs that he was getting feedback from the 8 labs. What feedback was that? 9 A. I think there -- I would have to go 10 back. I think there's -- of all the samples 11 that we've cured from Scott, only one was not 12 able to be used. And it wasn't -- it wasn't 13 anything Scott did. It was actually something 14 the lab screwed up. They held the sample 15 beyond the evaluation time by mistake. 16 So, technically, the analysis were 17 post -- the samples were held too long. It 18 wasn't his fault, but it did cause us not to be 19 able to use that dataset, and that was 20 discovered by the QA/QC lab, but it also -- 21 there was a commentary in the chain of custody 22 about that as well. 23 Q. And you went through a few 24 different questions you had asked Mr. Smith 25 about COCs and the like. Is there any written

Page 210 1 documentation from Mr. Smith that you have 2 relating to his sampling plans, COCs, anything 3 like that? 4 MR. CONLIN: Objection; form. 5 A. Well, if I did, no longer. I mean, 6 I have a corporate policy of 30 days, I delete 7 all e-mails; so I don't retain any of that 8 correspondence, so I'm really not able to 9 answer that question. 10 Q. Okay. But nothing you can think 11 of in your report, in terms of work plans, or 12 whatever, other than what's in those Level 4 13 reports for Mr. Smith's data? 14 MR. CONLIN: Objection; form. 15 A. Work plans? I mean, I went through 16 the whole process that he used for selecting 17 sites. I went through the analytical methods 18 he used. I actually visited him in Boston to 19 look at the stuff, to ensure that things looked 20 reasonable. 21 The -- we made the specific request 22 for the sampling on WYG and Ceramfab, so we 23 dictated the sampling plan there. 24 The sampling plan was unique in two 25 dimensions in my -- as I've said before,	Page 212 1 Q. Do you know if Mr. Smith collected 2 all of his own samples or if he had anyone 3 helping him? 4 MR. CONLIN: Objection to form. 5 A. My understanding in several 6 conversations with him, he collected all his 7 own samples. I think -- I forget how many 8 times he visited East Palestine, but I know it 9 was over 26, the last time I talked to him. 10 So he did that all on his own 11 volition. He doesn't have anybody to support 12 him that I'm aware of, with respect to 13 sampling, I mean. 14 Q. All right. Let's do the next 15 exhibit, Tab 6. 16 - - - - - 17 (Thereupon, Deposition Petty Exhibit 18 5, Smith Declaration, was marked for 19 purposes of identification.) 20 - - - - - 21 Q. I'll give you a chance to look 22 through what we've marked as Exhibit 5 and ask 23 if you recognize this document? 24 A. I think so. I think it's Scott 25 Smith's declaration for Government
Page 211 1 testified to before. One, he had sampling data 2 from the same location over the years. To my 3 knowledge, nobody else has that. And, 4 secondly -- with the soils and the waters. 5 And then, secondly, he sampled the 6 banks, as well as the sediments, which I 7 thought was unique. 8 So he was sharing with me -- over 9 the years, when I wasn't involved in 10 litigation, he would call me and ask me 11 questions the whole time. He said, well, 12 you're the GOAT. I said not really. 13 So I was giving him feedback from 14 2024 to 2026. And if he had questions about 15 analytical or sampling or what to do, I would 16 give him my free advice. 17 Q. And would those conversations be 18 over the phone? By e-mail? Both? 19 A. Both. 20 Q. And any of the e-mails pre-30 days 21 ago would be -- were consistent with your 22 policy, they would be deleted? 23 A. They would, unless I missed one, 24 but, no, that's been the policy since at least 25 2015.	Page 213 1 Accountability. I mean, that was from Scott 2 Smith, or at least Exhibit A is. Maybe I'm 3 wrong here. I don't -- the first -- I have not 4 ever seen the first -- they're not marked. 5 Well, they are on top, Pages 2 through -- 2 6 through 5. 7 I'm not sure I've ever seen these 8 pages. I know I've seen the declaration 9 because it came at the same time as mine. 10 Q. Okay. So the second declaration in 11 there as Exhibit A, that one looks familiar, 12 but the first one, the first few pages does 13 not? 14 A. Correct. 15 Q. Did you review a draft of Mr. 16 Smith's declaration that's been marked as 17 Exhibit A to this document? 18 A. I may have. 19 Q. Do you recall providing any 20 proposed edits or comments? 21 A. If I reviewed it, I'm sure I 22 provided comments, not to Scott, but to counsel 23 for Government Accountability. 24 Q. But those have been provided by 25 e-mail?

Page 214 1 MR. CONLIN: To the extent that you 2 had any communications with counsel in another 3 matter, I'm instructing you not to respond. 4 THE WITNESS: Okay. 5 MR. CONLIN: Until they have the 6 opportunity to assert whatever privilege may 7 exist. 8 A. Yeah; my interactions were with 9 Government Accountability. 10 Q. And you were never retained by 11 Government Accountability in any capacity, 12 right? 13 MR. CONLIN: Same objection. 14 A. I don't have an answer to that. I 15 was basically a free consultant under legal 16 protection from them. As a layperson, that's 17 the best way I can describe it. 18 MR. CONLIN: Based on that 19 representation, I'm going to instruct you not 20 to answer any more questions about 21 communications you had with counsel for GAP 22 until -- or if and until they have the 23 opportunity to assert a privilege for their own 24 communications. 25 Q. And are you going to follow that	Page 216 1 A. I would have no way of answering 2 that without taking the time to try to 3 understand what it means in the context with 4 what I did. 5 Q. In that paragraph, Mr. Smith refers 6 to the impacted zone. Do you see that? 7 A. Yes. 8 Q. Have you used that phrase, or has 9 he used that phrase in conversation with you 10 before? 11 A. I don't recall one way or the 12 other. I don't recall it being used, but he 13 could have. I don't know. 14 Q. Let's go to Paragraph 7. At the 15 bottom of Page 2, top of Page 3. 16 A. Okay. 17 Q. And he refers to a third of it. Do 18 you see that? 19 A. Yes, I do. 20 Q. And it appears he's defining the 21 third of that as the remediation of the most 22 contaminated soil and other impacted areas 23 after April 18 of 2023. 24 MR. CONLIN: Objection; form. 25 Q. Right?
Page 215 1 instruction? 2 A. I am. 3 MR. CONLIN: Again, Chris, not 4 trying to jam you up. I'm just not going to 5 blend into someone else's attorney work 6 product. The last thing I need is a lawyer to 7 yell at me. 8 Q. All right. Let's look at Page 2. 9 And I know this is -- this is part of the 10 declaration, so I'm not -- I'm asking you to 11 consider this as someone who hasn't read it 12 before. 13 A. That's easy to do because I 14 haven't. 15 Q. If you look at Page 2, Paragraph 5. 16 A. Okay. All right. Go ahead. 17 Q. Recent soil samples collected in 18 August of 2025 continue to show dioxin furans 19 and PAHs that far exceed background control 20 samples. 21 Do you -- having had the 22 opportunity to review and analyze Mr. Smith's 23 data, do you agree with his statement in 24 Paragraph 5? 25 MR. CONLIN: Objection to form.	Page 217 1 A. The words are what they are. I 2 think -- I think he's referring to the removal 3 of the fat -- the process of removing 4 contaminated soils, everything from creating 5 stockpiles with heavy equipment, to putting the 6 stockpiles in vehicles and having them 7 transported off site. 8 I think -- that's my understanding 9 in talking to him of what he meant by that. 10 Q. And that was -- you previewed my 11 next question. 12 Have you had discussions with 13 Mr. Smith about his concept of a third event? 14 MR. CONLIN: Objection; form, asked 15 and answered. 16 A. I guess, in part, I think it's his 17 belief that the -- as mine as well, that there 18 had to be some spreading of the contamination 19 associated with the activities, especially 20 early on before we did -- before EPA directed 21 the remediation contractors to run their trucks 22 through car washes to get the mud and dirt off 23 the tires and the sides, and then also to put 24 membranes over the top of the truck so it 25 didn't blow out.

Page 218 1 And then also to street wash the 2 streets. I'm not saying there wasn't some 3 after that, but early on, it was -- it was a 4 mess. I was there. It was a mess. 5 Q. And do you, having analyzed the 6 four sets of data, did -- in your opinion, do 7 you see evidence in the data that there was a 8 third event or spreading of contaminants during 9 the remediation process? 10 MR. CONLIN: Objection to form. 11 A. I see it differently than the way 12 you phrased the question. I see the fact that 13 we see -- with some limited data, we see the 14 values reported increasing with time, and so 15 then the question is, well, what could cause 16 that? And that's certainly one explanation. 17 Q. For Mr. Smith -- 18 A. I just wanted to add -- I apologize 19 for interrupting you. 20 Q. Go ahead. 21 A. I just wanted to add that that data 22 specifically is referenced in Page 272 of my 23 report, that we were talking about the 24 increases with time, April 6 report, Exhibit 2. 25 Sorry to interrupt. Go ahead.	Page 220 1 the creek, or the banks in the creek, or 2 towards the -- where the derailment occurred. 3 Obviously, he wasn't going to take 4 them in -- on asphalt or on the pads, concrete 5 pads, or things like that, so -- but he was 6 taking them where there was soil available, but 7 my understanding in conversations was, not in 8 all cases, but in general, was towards the 9 derailment, but in open areas. 10 Q. And are you able to determine from 11 his data the depth of soil that he collected 12 for his samples or soil samples? 13 A. It was always shallow. 14 Q. And what does shallow mean in terms 15 of centimeters or inches? 16 A. It depends on if you define it 17 EPA's way or my way, but EAP defines it as two 18 centimeters, which is .79 inches, and I just 19 say less than -- an inch or less. 20 Q. And what did Mr. Smith use for 21 his -- 22 A. An inch or less. That's what I 23 understand from talking to him. I did ask him 24 that question. 25 Q. And that was going to my follow-up.
Page 219 1 Q. No; very helpful. 2 For Mr. Smith's samples, the 3 sampling that he did on individuals' homes, 4 right. So we've talked about a couple of 5 different kinds that he did, for the sampling 6 that Mr. Smith did at individual's homes. Do 7 you know how he determined where on the 8 property to take the sampling? 9 MR. CONLIN: Objection to form. 10 A. In general, he would take the 11 samples in the direction of the derailment. 12 Now, you'll be able to see that in the plots. 13 We've been very transparent about that, because 14 I was adamant on GPS coordinates for each of 15 those samples. 16 So we had the addresses for each of 17 those homes. We have the GPS coordinates, so 18 it's -- I mean, there's not one universal 19 answer, but that answer could be easily 20 determined -- not easily determined. It could 21 be determined by simply taking the GPS 22 coordinates for each of those addresses and 23 seeing exactly where it was on site. 24 But in general, my understanding is 25 he took those samples in directions either in	Page 221 1 Do you understand that from the documentation 2 in the file or from discussions with Mr. Smith? 3 A. Multiple discussions with 4 Mr. Smith. 5 Q. And you mentioned before that 6 Mr. Smith did some sampling of the same 7 locations over time. Do you know how he 8 determined which locations to sample over time? 9 A. Well, I'm aware of only two 10 locations where that happened. It's on Page 11 272 of my report, the first report. And the 12 samples are on Brushville Supply, Taggart 13 Street, which is very close to the derailment 14 and very close to the Ceramfab facility, 15 actually. And then on Rebecca Street. 16 Now, why he specifically selected 17 those, I'm not exactly sure, but it does turn 18 out that both locations are in relatively close 19 proximity to the two Plaintiffs' facilities, as 20 I indicate on Page 272. 21 Q. Let's turn to Page 186 of Exhibit 22 2. 23 A. 186, I'm there. 24 Q. And this is the intro to your 25 discussion on potency equivalency factors or

Page 222 1 PEFs, right? 2 A. Yes. 3 Q. And can you describe what the PEF 4 is and what you're trying to analyze by using 5 it? 6 MR. CONLIN: Objection to form. 7 A. Well, I think the short answer to 8 that is to read the ATSDR 2022 paper that 9 establishes this methodology that I cite in the 10 back of my references at the bottom of the 11 Table 9-3. 12 In lay terms, because 13 benzo(a)pyrene is -- based on my experience, 14 when you're looking at sites on the PAH side, 15 benzo(a)pyrene is the one that tends to trigger 16 exceedances and risk assessment. 17 What ATSDR was attempting to do is 18 say, well, it's not the only PAH that can be a 19 problem, so how can we develop a methodology 20 where we look at some of the other PAHs that 21 are -- and compare their relative toxicity to 22 benzo(a)pyrene and then develop composite, if 23 you will, for these other listed PAHs to arrive 24 at a cumulative score that's equivalent to the 25 total -- equivalent to the -- all of it being	Page 224 1 composite score that reflects all the PAHs that 2 -- I want to say all the PAHs. All the PAHs 3 that they considered in this particular 4 methodology. 5 Q. Okay. And the tables on Page 187 6 are the PEF factors for various PAHs; is that 7 right? 8 A. They are, but -- yes, but they 9 really come -- just to make sure that I was 10 complete, I scanned in the PEF table from 11 ATSDR, so I'm hopeful that the numbers are the 12 same. 13 Q. And if it's -- if there's a PAH 14 that's not listed in the paper, it's assigned a 15 zero value, or I guess the way you say it 16 conservatively assumes to be zero? 17 A. You are correct. We'll turn him 18 into an engineer yet. 19 THE REPORTER: I'm sorry? 20 A. I said we'll turn him into an 21 engineer yet. He probably doesn't want to be 22 that. 23 Q. And are the PEF factors based on 24 cancer or non-cancer end points or something 25 else entirely?
Page 223 1 just benzo(a)pyrene. 2 And what's interesting about this 3 is it's actually quite limited because there's 4 a lot of PAHs and this only covers 15, but 5 nevertheless, it's a methodology. 6 And you'll see a lot of the factors 7 are actually zero, so -- in fact, Table 9-3, if 8 you had those -- have a concentration of those 9 and you're doing this calculation, you get no 10 contribution from those substances. 11 There's only a handful of 12 substances when you look at this that actually 13 do any contribution at all. It's like less 14 than like 80 percent. 15 But the idea is to basically -- 16 since benzo(a)pyrene is the one of most 17 concern, is to say, well, when you're looking 18 at a site, it's kind of like TEQ in a way. 19 When we're looking at a site, not for dioxins, 20 but for PAHs, and typically, benzo(a)pyrene is 21 the substance of -- it's always been the 22 substance of most concern where I've done risk 23 assessments for PAHs. 24 Can we equate other PAHs to that 25 relative toxicity and then come up with a	Page 225 1 MR. CONLIN: Objection to form. 2 A. Well, the basis is, at the bottom 3 of the table on Page 181 -- 188 -- I mean, they 4 talk about it, right. They say PEFs are based 5 on the ratio of OEHHHA's oral cancer slope 6 factor for BaP 1.7, and the OEHHHA's cancer 7 potency factors for each of PAHs. 8 So it's based on the cancer slope 9 factors of different materials, the ratio does. 10 Q. And then you have an example 11 calculation for one sample on Page 189; is that 12 correct? 13 A. Correct. Correct. 14 Q. And if we look over to the 15 third-to-last column, that's where you apply 16 the PEF factors for the various PAHs, right? 17 A. Correct. And then for the U 18 factors, I'm using either half the value or 19 zero. So if there's a zero for the factor, it 20 doesn't really matter, right? 21 Q. Right. 22 A. And so you can see the math. It's 23 pretty straightforward. But my view was I 24 wanted to look at 50 percent of zero, thinking 25 zero has got to be the most conservative value

Page 226 1 in the world. Like if you use -- 50 percent is 2 typically what one would use in environmental 3 work, but, nevertheless, I wanted to know -- I 4 was just curious intellectually as to what 5 impact that had, so I went ahead, since I was 6 doing the analysis, anyway, I just presented 7 it. That way, if you say I should have used 8 zero, I could say fine, there's the zero value. 9 Q. Now, on Page 190, you compare the 10 levels with the US EPA residential soil and 11 regional screening levels for BaP; is that 12 right? 13 A. What I was doing was trying to -- 14 there's literature that suggests what the 15 cancer target risk levels should be, and I 16 simply wanted to go through the exercise to 17 drive it, and so I showed the table where the 18 values are that I used in the narration, which 19 is .11 milligram for kilogram or 110 microgram 20 per kilogram. 21 By the way, there's a typo on that 22 page, since we're looking for typos. I am. 23 Q. What's the typo? 24 A. So where it says under carcinogenic 25 target risk in the middle of the page, you'll	Page 228 1 And if you see anything that may be 2 a problem, Phase 2 is where you actually go on 3 site and you either take samples and analyze or 4 you drill wells, drill soil samples, and take 5 samples, do Sanborn math evaluations, et 6 cetera, so that's a Phase 2. Phase 3 is 7 typically remediation. 8 So what I was looking at early on 9 was does -- if, in fact, you have exceedances 10 of screening levels, that then under the EPA 11 protocols requires you to do Phase 2 and maybe 12 Phase 3 work, which is going to incur costs, 13 which inherently devalues a property, because 14 either it's done or it's not done, and somebody 15 is not going to pay as much for the property. 16 Or it can be -- you know, there's 17 the -- what's called VAP. Have you heard of 18 VAP, voluntary action program, where you 19 basically put a deed restriction on the 20 property and say this property can no longer be 21 used for residential or residential commercial? 22 It always has to be industrial. 23 So there's all sorts of dynamics 24 that can play out, but the reason I was looking 25 at these screening levels was are we going to
Page 227 1 see it's a one half, 300. It should be one 2 over 2,300. Do you see that? 3 Q. Yes. 4 A. Somehow I didn't catch that. And 5 it kind of makes sense if you look at the 6 values up above. 7 Q. And did you end up using these 8 residential risk-based screening levels in the 9 PEF analysis or it's just a comparison for 10 information sake? 11 A. That's a complicated answer and 12 question. The answer is, from an environmental 13 standpoint, I spent a lot of time on the coming 14 up pages, talking about PRGs and why they're 15 used and how they're derived and what they 16 mean. 17 And on Page 192, I gave it -- I 18 wrote -- this is my little description of what 19 it means. And in environmental work, 20 typically, if it's a bank transaction or you're 21 going to buy a property, commercial property, 22 you do a Phase 1 to see if there's anything -- 23 it's kind of a drive-by/look-see to see if 24 there's anything that looks like it could be a 25 problem environmentally.	Page 229 1 hit a point on any of these locations or 2 samples where it pushes us into Phase 2 and 3 Phase 3, because that's going to incur costs. 4 Q. Phase 2 and Phase 3 meaning the 5 more full site investigation and then 6 remediation? 7 A. Correct. 8 Q. Okay. Why don't we take a break. 9 THE VIDEOGRAPHER: We're off the 10 record. 11 (Recess is taken.) 12 THE VIDEOGRAPHER: We're on the 13 record. 14 Q. Okay. In your PEF analysis, did 15 you take into account which PAHs were 16 potentially released from the derailment and 17 vent and burn? 18 THE REPORTER: Or released from 19 what? 20 MR. RHEINHEIMER: The derailment 21 and vent and burn. 22 A. That was the intent, yes. 23 Q. It was what? I'm sorry? 24 A. That was the intent, yes. 25 Q. Did you -- were there any PAHs that

Page 230 1 you located in the sampling that you thought 2 may have been from something other than the 3 derailment and vent and burn? 4 MR. CONLIN: Objection to form. 5 A. Well, I did background sampling, so 6 -- and I did a statistical analysis on my 7 dataset, both for PAHs and dioxins. I did a 8 statistical analysis of variance, which showed 9 clear statistical significance beyond 10 background. 11 So that's how I handled that issue, 12 was doing an analysis of variance. 13 Q. Looked at the data and the 14 statistics, compared the -- 15 A. Background. 16 Q. -- background, rather than looking 17 at each element of the PEF calculation and 18 determining whether certain PAHs weren't 19 released or were released? 20 MR. CONLIN: Objection to form. 21 A. I'm not aware of -- I'm not aware 22 of that being done, and I'm not sure how that 23 would be done. You would have many more 24 questions for me if I tried to assign which one 25 was from where.	Page 232 1 16 background samples. 2 And I did the BaP equivalent calcs, 3 assuming DLs were zero or DLs were 50 percent 4 for all 16. And then I did start running 5 statistics on those, which is on 214. 6 So total number of -- when you ask 7 what do you mean multiple, well, there's 16. 8 Q. Multiple background samples, but 9 did you calculate a background PEF, or are you 10 looking at all 16 samples as separate 11 background PEFs? 12 MR. CONLIN: Objection to form. 13 A. I looked at Plot 9-12 that's on 14 Page 215. So I looked at two samples roughly a 15 hundred miles out to the southwest, and then I 16 looked at the other ten -- 14 samples were just 17 northeast of Columbus. 18 The thought process being that, 19 based on what I felt were the least likely 20 direction for the plume to have gone, would 21 have been winds for out of the northeast, to 22 the west, southwest. 23 And so I looked at samples in 24 relatively close -- a hundred miles out, I did 25 samples, a couple hundred miles out, all in
Page 231 1 The reality is the way it's done is 2 you look at, in this case, the total BaP 3 equivalent and say does that -- is that 4 excessive regardless -- and I'm not denying 5 there's some background level. In fact, that's 6 why I want to find a background level, to see 7 how the levels compare to what we measured. 8 And you should note that if you 9 look at the plots, that not every dataset shows 10 exceedances. 11 What I'm looking for is where are 12 the exceedances -- to what extent they are, and 13 in what direction. I'm trying to determine how 14 many people might have been impacted. I knew 15 originally that was my goal. 16 Q. And then you did calculate a 17 background PEF, right? 18 A. Multiple background PEFs, yes. 19 Q. What do you mean by multiple 20 background PEFs? I think Page 214 is where I 21 noted the discussion, if that helps. 22 A. Let's see if I misspoke. Yeah, on 23 213, you'll see that I have -- yes, on Page 24 214, Table 9-11, you'll see the background 25 samples were LK-1 through LK-16, so there were	Page 233 1 Ohio. 2 And so you can see in that plot 3 that I've -- there is variability in the 4 results for those values, but they're 5 significantly less when I run statistics than 6 what we were finding in and around the 7 derailment. 8 Now, the plot on Page 215 is using 9 the non-detects to zero and the plots on 216 10 are assuming the non-detects are half the 11 detection on the bottom. 12 And then I go through a 13 sophisticated statistical analysis on 217 14 called ANOVA, and it's really asking the 15 question of the means between the background 16 and the non-background samples. Are they 17 different from each other statistically, and if 18 so, to what degree. 19 Traditionally, if the P value is 20 less than .05, meaning 95 percentile, then that 21 means that the hypothesis test that they're the 22 same as rejected, meaning they're not the same. 23 So I did that analysis with the 16. 24 You can see here on Page 217, I did that 25 analysis both -- with the zero -- using DL zero

Page 234 1 and using DL 50 percent. I did the analysis of 2 variance for both cases, and in both cases, 3 they were statistically significant. Seriously 4 significant, in that the background levels were 5 different than the values in and around the 6 derailment. 7 Q. How do you -- or what factors do 8 you consider when selecting background 9 locations? 10 A. I just covered that to some degree, 11 right? 12 So I was -- I want to get away from 13 the site, I want to be -- on benzo(a)pyrene, I 14 don't want to sample like pavement or things 15 that have known PAHs in them. 16 So we went to forested areas and 17 sampled in forested areas. If you actually 18 pull those locations, you'll see there are 19 forested areas, and ran a number of samples, 20 both near and far, to kind of see if there was 21 much of a difference. There was a little bit, 22 not a lot. 23 So what you want to do for 24 background is to sample an area as much as you 25 can determine does not have PAHs present, but	Page 236 1 they were all taken that 82 miles or so to the 2 southwest. There was not two areas, so I was 3 incorrect in my initial answer. 4 Q. And then you said you tried to find 5 areas -- this is for background. You tried to 6 find areas that are likely -- that aren't 7 likely to have PAHs in them. You don't go into 8 an industrial area and measure background, and 9 then you also go in a direction that's least 10 likely to be affected by the event? 11 A. Correct. 12 Q. So you wouldn't agree that the most 13 appropriate background for an industrial 14 location is another industrial location that 15 doesn't have exposure to the event at issue? 16 MR. CONLIN: Objection to form. 17 A. I don't consider Ceramfab, with 18 respect to PAHs, to be an industrial facility. 19 Q. Is it a forested wildlife area? 20 MR. CONLIN: Objection to form. 21 A. It's not a forested -- it's -- what 22 you're looking for is what is the background 23 level likely to be for a location where there 24 aren't -- there aren't PAHs expecting to be 25 present.
Page 235 1 in this case, also, it would be in the 2 direction that is most likely away from where 3 the plume went. 4 And in my opinion, the -- and I 5 think it's been validated in all of Rosenthal's 6 work, as well as my initial wind analysis, as 7 well as Schuhmann's, as well as the EPA's, that 8 the -- the plume didn't really appear to go to 9 the southwest. 10 So that was the basis for doing it, 11 is to try to find areas that are unlikely to 12 have PAHs in them, contaminated with PAHs. You 13 don't go to an industrial site and measure 14 background, and then also go in a direction 15 that's least likely to be where the plume went. 16 Q. So you've been referencing two 17 locations, but on Page 214, I'm trying to 18 reconcile this. It says: 16 background 19 samples were taken approximately 81 miles to 20 the west, southwest of Ceramfab's facility in 21 the Lower Killbuck Creek wildlife area. 22 And my understanding is that there 23 are 16 background samples? 24 A. Correct, and I may have misspoke. 25 The -- what you've got is a -- you are correct,	Page 237 1 Q. So you're comparing Ceramfab and 2 WYG industrial facilities to the PAH levels of 3 a forested wildlife area? 4 MR. CONLIN: Objection to form. 5 A. No; I'm -- those analysis are for 6 -- there are only two samples taken on 7 Ceramfab. The rest of them were taken in the 8 community. 9 Q. So you're comparing the community 10 of East Palestine with the PAH levels of a 11 forested wildlife area? 12 A. I am. I mean, it beats comparing 13 them to samples taken under the plume, which is 14 what you folks did. 15 Q. I didn't take any samples. 16 A. Well, the folks you represent. I'm 17 sorry; I'll take you out sometime -- 18 Q. I do have one -- 19 A. I'm sorry; I didn't mean to suggest 20 that you took them. You know what I was 21 referring to? 22 Q. I do. And for your ANOVA 23 calculations, you said those are on Page 217? 24 A. For benzo(a)pyrene equivalent. 25 Q. For the PEF values?

Page 238 1 A. Correct. And then I have separate 2 ANOVA calculations for dioxins. 3 Q. And the two variables that go into 4 the ANOVA calculation are the average PEF 5 calculations from the non-background set and 6 the average PEF calculation from the background 7 set; is that right? Or am I missing something? 8 A. And a number of observations for 9 each. 10 Q. And those variables go into the 11 ANOVA calculation, which has a whole host of 12 things that spit out an answer with those 13 variables? 14 A. It's complicated because you're -- 15 but, yes, ultimately, that's true. It was 16 something I learned in graduate school. 17 THE REPORTER: I'm sorry? 18 A. It was something I learned in 19 graduate school, to compare means. And the 20 thing that's interesting about that is that's 21 all of the samples in the community, some of 22 which we know are less or relatively low. 23 So I'm not taking a subset of the 24 East Palestine samples. That's the totality of 25 the samples that we had from Dataset 2.	Page 240 1 Q. Fair. And if the average -- but 2 using your Table 9-12, the ANOVA calculations 3 for -- 4 A. For DL equals zero, yeah. 5 Q. Uh-huh. If the non- -- the average 6 PEF and the non-background samples came down, 7 how would that affect the P value? 8 MR. CONLIN: Objection to form. 9 A. If they came down? 10 Q. Or lower. The average 11 non-background PEF was less than 1,153. 12 MR. CONLIN: Same objection. 13 A. Well, my view was I was already 14 conservative in including values outside of the 15 plume, but, obviously, if you -- the closer you 16 move the two values to each other, then the P 17 value is increased, but we're not close to .95. 18 Q. What is the F statistic? 19 A. It's called degrees of freedom. 20 Q. And what does that mean? 21 A. I would have to look it up to give 22 you an answer to that question. I'm pretty 23 sure it's the degrees of freedom -- 24 THE REPORTER: I'm pretty sure it's 25 what?
Page 239 1 Q. Did you -- that was -- so all of 2 the ANOVA calculations, the non-background 3 samples were from Dataset 2? 4 A. Correct. 5 Q. Did you run the calculations with 6 the samples from either -- for any of the other 7 datasets? 8 A. I have not done that yet, but I 9 just wanted you to know that it wasn't that I 10 carved out a subset of the samples in or around 11 East Palestine. I used the totality of the 12 Dataset 2 values -- 13 Q. And it would have been 14 scientifically improper to use a pre-selected 15 subset of the East Palestine samples instead of 16 the full dataset, right? 17 MR. CONLIN: Objection to form. 18 A. Not necessarily. I wouldn't agree 19 with that. You could theoretically subtract 20 out the samples that weren't in the area of the 21 plume. I didn't do that. It was more 22 complicated to try to do that, but it would be 23 scientifically rigorous to say, look, I'm not 24 going to include the areas where there was no 25 indication the plume occurred.	Page 241 1 A. The degrees of freedom, but I would 2 have to look it up to give you a hard answer. 3 I don't know off the top of my head. I don't 4 remember. 5 Q. And then if we look at Table 9-13, 6 which is the ANOVA calculations for PEFs using 7 50 percent of the DLs? 8 A. Yes. 9 Q. Do you have a table with the 10 results there, right? 11 A. Correct. 12 Q. And the P value comes in under .05? 13 A. Correct. 14 Q. Much closer to .05 than the DL 70, 15 right? 16 MR. CONLIN: Objection to form. 17 A. I mean, it's clearly greater than 18 the P value, with the assumption of DL equals 19 zero, but I remind you that the convention is 20 to use 50 percent. That's why I was so 21 surprised that one of your experts criticized 22 me for using the 50th percentile, and I said 23 did you read my report? I used both 50th and 24 zero. 25 And I said, not only that, the 50th

Page 242 1 is -- I gave three citations that's 2 conventional, but I did it -- I did it just 3 simply to say what -- in the best case 4 scenario, which is the DL zero, you know, in 5 terms of reducing the number for the PEF, the 6 cumulative PEF, what it would predict. 7 Q. And you also performed a similar 8 analysis of the dioxin data, right? 9 A. Correct. 10 Q. What datasets did you use to 11 analyze the dioxin data? 12 A. Let me get to that. I have that on 13 Pages -- Page 239, I believe, the same sample 14 numbers, but different analytes were taken at 15 the same location as the PAHs. 16 Q. And this would be from your Dataset 17 No. 2? 18 A. Correct. And, frankly, I thought 19 they were high. 20 Q. What does that mean, "they were 21 high"? 22 A. Because I had the EPA data from 23 Columbus taken not far away that was between 24 one and two. The mean was 1.2, so I wondered 25 whether or not there was still some impact from	Page 244 1 they made a couple of errors, but the errors 2 would have made the results bigger, so I went 3 ahead and just used the EPA 2010 values. 4 And what you do is for dioxins and 5 furans -- and I've got the whole derivation 6 beginning on -- I actually go through the 7 derivation of how you calculate these factors 8 and end up on Page 9-7 -- Table 9-7. 9 But you basically assign a value of 10 one for 2378 TCDD, as well as 12378 PECEE, and 11 then the other dioxins and furans are a 12 fraction of that. 13 And so you multiply the 14 concentration and the right units, times that 15 factor for that particular analyte, and you do 16 that for all the analytes where you have 17 factors, and you add those all up to derive 18 what they call a TEQ. 19 And so then I just did an 20 illustration of doing it on one sample on Pages 21 208 -- or 206 and 207, and I did it again for 22 -- I kind of actually did it for the Arcadis 23 TEF basis. I did it for the Norfolk Southern 24 TEF basis, based on 2010, World Health 25 Organization -- EPA, 2010; World Health
Page 243 1 the plume in that direction. 2 Q. For the background samples? 3 A. For the background, yes. But then 4 I also had data from Exhibit 185, where EPA 5 compares background at a whole host of places, 6 as well as we have the Gullett paper that -- 7 the data from burning hydrocarbon without 8 chlorine, which was 2.2. 9 So all that data was falling in the 10 one to two range for background. One to three, 11 we'll say. That's why I don't believe for a 12 minute that the background level is 51 in East 13 Palestine. 14 Q. And then you -- in order to analyze 15 dioxins and furans, you calculated a TEQ, 16 right? 17 A. Yes. 18 Q. What is a TEQ? 19 A. It's a total equivalent quantity, 20 and it's not unlike -- let's see where I gave 21 the basis for that. I think that's where we're 22 headed. It's on 202. 23 So the methodology I used actually 24 was I used the EPA 2010 factors, which was what 25 was in the Arcadis plan. The only problem was	Page 245 1 Organization, 2005. 2 And then I also looked at World 3 Health Organization, 2022. I was curious about 4 that because these factors have changed with 5 time, and I was curious to see, because it 6 turns out Arcadis, if you request it, will give 7 you the TEQ, and I was curious whether or not 8 -- I didn't present it here, other than this, 9 but I was curious whether or not that would 10 result in lower TEQs or increased TEQs. 11 And using the EPA 2010 through 2005 12 factors, results -- results and results -- 13 sounds bad -- results in TEQs, that when I 14 screened them were less than what Eurofins 15 was reporting. 16 So I would have actually had higher 17 values if I had used the Eurofins values, 18 because they're using the 2022, I believe, 19 factors. 20 Q. And then the background samples are 21 from the same location as the background 22 samples for PAHs; is that right? 23 A. Correct. That is correct. 24 Q. And then you run the same ANOVA 25 analysis using -- comparing East Palestine

Page 246 1 samples form your Dataset 2 with the background 2 samples, right? 3 A. Correct. For both DL is equal to 4 zero and DL is equal to two percent of -- where 5 the values were at detection limits, I used 6 either zero for that value or 50 percent of 7 that value, so I ran the analysis twice. 8 Q. And then if we go to Section 9.9, I 9 think it is. 10 A. Help me with the page. 11 MR. CONLIN: 257. 12 A. 9.2 is 272 -- oh, is that what -- 13 Q. Let me double-check. 14 MR. CONLIN: Let him figure out 15 what he's looking for. 16 Q. Yeah, 272, Page 272. You got it. 17 We have TEQ Trends Over Time, right? 18 A. Correct. 19 Q. And this is using this Scott Smith 20 data or using your Dataset No. 2? 21 A. Scott Smith data. I did not take 22 multiple samples at the same location over 23 time. 24 Q. Other than these two locations, 25 other than the samples collected at these two	Page 248 1 code them by dataset so that I can get a feel 2 for how they compare. 3 I think Scott Smith's data has 4 taken more out -- well, I took -- my first half 5 was out in the community, but I took a lot of 6 samples and I have stockpiles in and around the 7 railroad, so I would expect mine to be somewhat 8 higher. I don't know that for a fact because I 9 haven't done the analysis, but it wouldn't 10 surprise me. 11 But at some point, I may take 12 additional plots, just to see, to answer 13 questions like that, but it wouldn't be doing 14 anything new. It would just be taking the 15 existing table data and making different plots. 16 Q. And what was the rationale for 17 using only Dataset 2 in the ANOVA calculations 18 for PAHs and dioxins? 19 A. Well, the simplest rationale is 20 because I was associated with the data that I 21 took at least around the site, and it was also 22 associated with some initial analysis we did in 23 2024. 24 So I guess that's the basis for it. 25 Those analysis, those -- those particular
Page 247 1 locations, did you calculate TEQ values for any 2 other Scott Smith data? 3 MR. CONLIN: Objection to form. 4 A. I calculated TEQs for all of Scott 5 Smith's data that was run through the entirety 6 of the process. That -- the number of samples 7 where I did that doubled between the April 6th 8 report and the May 29th report. 9 So by the May 29th report, I have 10 about -- around 80 of Scott Smith's samples 11 incorporated, whereas, in the April 6th, it's 12 around 35. 13 Q. But you didn't use those Scott 14 Smith data for the comparison to background; is 15 that right? 16 A. I did run -- I've never run a 17 composite with all the datasets or other 18 individual datasets against my background 19 values, no. 20 Q. Have you run the ANOVA analysis 21 between Scott Smith's data and Dataset No. 2? 22 A. I have not done that analysis. One 23 thing that I would like to do and may do with 24 time is to plot all four dataset sets on one 25 figure for both TEQs and for dioxins and color	Page 249 1 calculations could be run on any of these 2 datasets or the composites. 3 THE REPORTER: I'm sorry? 4 A. They could be run on any of these 5 datasets individually or the composite. It's 6 just a matter of how many pages of calculations 7 do you want to run. 8 I was using it as an illustration. 9 It's just like how many figures would I plot? 10 I mean, I could plot hundreds of figures. I'm 11 just trying to illustrate things with figures, 12 but I've always produced the dataset in table 13 format so that anybody and everybody can take 14 that data and analyze it in any way that they 15 want to. 16 The key was getting it into the 17 form that I felt comfortable doing the 18 calculations, to make sure it was QA/QC, to the 19 highest level, and validated by a third party. 20 Q. Would you agree with the statement 21 that East Palestine is one of the most 22 extensively evaluated and tested disaster sites 23 in recent history? 24 MR. CONLIN: Objection to form. 25 A. I don't know if I have an opinion

Page 250 1 on that one way or the other. That's such a 2 general statement. I have no way to make that 3 comparison because I haven't done an evaluation 4 of other sites. I mean, Love Canal was heavily 5 evaluated. Three Mile Island. I mean, all 6 these things I worked on in the past. 7 I just -- I don't have any way to 8 answer a generic question like that. I mean, 9 somebody may have said that, and maybe they're 10 right, and maybe they're wrong, but I don't 11 have any way to independently validate that one 12 way or the other. 13 Q. Are you aware that there continues 14 to be environmental monitoring and sampling at 15 the site over three years after the derailment? 16 MR. CONLIN: Objection to form. 17 A. I think there's some air monitoring 18 going on. I'm not aware of significant soil, 19 and sediment, and surface water monitoring 20 going on. 21 Q. Earlier today, you testified about 22 some limitations in the amount of monitoring 23 for dioxins for your sampling for dioxins, for 24 example. 25 In your opinion, were there any	Page 252 1 of -- I think it's Luster, but -- yeah, it was 2 Luster's plot of how many dioxin samples were 3 taken with time. It was in one of these 4 exhibits you already produced. I recognize the 5 figure, and it's my Exhibit 191. It's in my 6 report. 7 But it plots the number of dioxin 8 samples per day collected by Norfolk Southern, 9 and at no time over a period of -- from March 10 through into mid-April of '23, were the number 11 of dioxin samples collected exceeding 21 or 23. 12 It depends on soil versus subsoil, 13 and you'll see that, by and large, except for 14 the first few days, the sam- -- the number of 15 samples collected were always less than five, 16 like two to three. 17 Q. What's the last date on that chart? 18 A. 4-7-23. 19 Q. Were any dioxin samples collected 20 by Norfolk Southern contractors after 4-7-2023? 21 A. There may have been, but remember, 22 a lot of that -- well, I'm sure there were 23 some. My point is that if you're out -- I 24 mean, we were taking that many samples and 25 we're -- we're not EPA. We're not Norfolk
Page 251 1 chemical compounds that you believe should have 2 been sampled for, but that were not? 3 MR. CONLIN: Objection to form. 4 Move to strike. 5 A. I think the essence of your 6 question is are there compounds that should 7 have been monitored that were not. Is that the 8 question? 9 Q. That's the question. 10 MR. CONLIN: Same objection. 11 A. It has a yes and a no component. 12 The no component is I think, at times, there 13 were all of the constituents that I've 14 identified -- that I've identified, I think at 15 some point in time were monitored. 16 The question is how thoroughly were 17 they monitored, both spacially, and with time. 18 We've lost the opportunity to do that in the 19 air because that would have had to happen right 20 away. And that's not just my opinion, that's 21 the opinion of the EPA, and it's also based on 22 my experience of doing other sites. 23 But with respect to dioxins, I 24 think you showed it earlier. It was applied in 25 -- one of those things that had Luster's plot	Page 253 1 Southern. 2 And if you're trying to determine 3 extent of contamination by doing a grid matrix 4 and saying, okay, every thousand feet we're 5 going to take a sample to see what's going on, 6 you've got to do a lot more than two to five a 7 day. 8 So I mean, I won't get into the 9 whole sampling plan, which was primarily to the 10 southeast. Saying the background was from the 11 west to the northeast, which is crazy, but -- 12 based on wind direction, actual wind direction, 13 and actual now modeling and actual now data 14 that we have. 15 But my point is simply that that's 16 just a precious few samples, and we can add on 17 to it whatever we want to add on to it beyond 18 that date, but it's not very many. 19 And as I said earlier, you could 20 look at my Appendix B, and while there was -- 21 up to that point, wherever I cut it off, there 22 was something like 20,000 samples, but way less 23 than a few hundred were associated with soil, 24 surface soils and surface waters. It was 25 almost all air samples.

Page 254 1 We took air samples here in March. 2 Norfolk Southern or the contractor did at both 3 sites. We took soil samples. The likelihood 4 of finding something in the air three years 5 later is -- outdoors, is really small. 6 We still found it indoors, samples 7 of benzene, that is, but why Arcadis, Norfolk 8 Southern, or whoever, didn't want to sample the 9 soils is beyond me. 10 Then you would have some data to 11 refute us or confirm, one of the two. You 12 almost assuredly know you're not going to find 13 it in the air. 14 Q. And why is that? 15 A. Because you've had years that have 16 passed. This stuff is not volatile. Do you 17 know what the boiling point of dioxins are? 18 450 to 800 degrees Fahrenheit. I mean -- 19 Q. And the dioxins in 2026 that were 20 tested for were outside, right? 21 A. No; they were in the soil. It was 22 bound. 23 Q. Outside, right? Outside the 24 buildings? 25 A. Yes. That's where you're going to	Page 256 1 issued -- not that long ago? 2 Q. It was lengthy, yes. 3 A. It's -- yeah, I did review it. 4 Q. Did you incorporate that data into 5 your analysis? 6 A. I did in the sense that I read the 7 report and I referenced it. I mean, that -- my 8 job was to -- my primary scope of work was to 9 take the four datasets that was taken by the 10 Plaintiff, QA/QC them, and see what they 11 suggested, and then also to critique the 12 delineation report where there was data 13 presented, and I did critique it. 14 Q. So I think in your report, you 15 criticized the IMAAC, I-M-A-A-C, plume 16 modeling? 17 A. I did not. 18 Q. Okay. What did you say about the 19 IMAAC plume modeling? 20 A. Let's go to my rebuttal report, 21 because I think that's the best way to respond 22 to this question. 23 So I'm on Page 30 of Exhibit 3, the 24 bottom complete row. 25 Q. Okay.
Page 255 1 find stuff because it's not going to evaporate. 2 It's bound. It's going to be in the close 3 subsurface, top -- two centimeters. 4 Q. Not inside the structures? 5 MR. CONLIN: Objection to form. 6 A. It could be. I don't know the 7 answer to that question. I didn't sample 8 inside the structures, but we did sample on the 9 soils to see if -- I mean, that's what we've 10 been doing all along, is sampling the soils, so 11 why would we deviate from that? 12 Q. You saw the deposition testimony 13 from some of the workers that they got sick 14 upon return to work, right? 15 A. I don't know if I've seen that 16 deposition testimony or not. 17 Q. Okay. 18 A. I know there are complaints, but I 19 don't know that I've seen the deposition 20 testimony -- that particular deposition 21 testimony. 22 Q. Did you review the full dataset 23 from Arcadis' Phase 1 ag com res sampler? 24 A. It's like a 20,000-page report? Is 25 that the one you're talking about? It was	Page 257 1 A. Page 101 to 102, Issue No. 3 in 2 response. Response to Issue No. 3: As 3 discussed in my reports, these assertions are 4 not supported by the comprehensive atmospheric 5 dispersion and deposition modeling conducted by 6 IMAAC. 7 And it's in response to, he says to 8 my statement that the claim the wind direction 9 was not considered before the vent and burn, 10 resulting in inaccurate background sampling 11 location. 12 So my response is over on the third 13 column, as I say in the second paragraph, a 14 review of the actual timing of events is 15 important to show that this modeling occurred 16 after the sampling occurred, and, therefore, 17 could not have been source materials for the 18 reliability of the MS Arcadis plan in advance. 19 See Section 6.1 of my report, Exhibit 180. 20 3-6-2023, Arcadis sampling plan, 21 Figure 6-1 of my report; 4-18-2023, Arcadis 22 revised sampling plan, Figure 6-5 of my report; 23 5-19-2023, Arcadis sampling results report, 24 Figure 6-7; 5-31-2023, IMAAC wind model monitor 25 -- modeling report issued first time.

Page 258 1 So my point was simply Norfolk 2 Southern made the response that the IMAAC wind 3 -- it wasn't criticizing the IMAAC wind 4 modeling report. It was suggesting that I was 5 criticizing the fact that the response that 6 they didn't consider the wind direction in 7 their sampling program was reflected by the 8 fact that the IMAAC results were after they had 9 actually issued reports on their sampling. 10 And then when you look at actual 11 figures in my report where the sampling 12 occurred, the actual sampling, not only in the 13 plans, but where it actually happened, there's 14 no indication, I mean, considering -- 15 considering a report after the fact is 16 different than considering a report before the 17 fact, and actually changing your plan, and, 18 therein, lies my criticisms. 19 Q. And are you aware of any earlier 20 versions of the IMAAC modeling report provided 21 to Arcadis? 22 A. I am not. I'm only aware of a 23 later one, a year later, a year or so later. I 24 think in my original report, I cite the two 25 dates where that report issued.	Page 260 1 going on, but not available yet from our side 2 back in 2020, late '23, early '24, but this is 3 in April of '24 -- '23, actually, March -- late 4 March of '23, and it might have -- no, I'll 5 correct myself again. 6 I came home on March 4th of 2023, 7 and I actually came home the weekend before and 8 I ran those analyses, because I had been told 9 by a number of individuals where I was sampling 10 out west, no, the plume came over us. And I 11 was concerned because I wanted to sample more 12 to the southeast, right. 13 Everybody was saying that's where 14 the plume is. That's where the evacuation is. 15 And when people started telling me where I was 16 sampling in other directions, "No, that came 17 over us. I saw it," I'm like, oh, I need to go 18 check some things out. 19 I can run these quick Rose models, 20 and I'm like holy mackerel, the wind totally 21 changed from the morning of the 6th to calm by 22 noon to -- 23 So almost 50 percent of the time, 24 from basically 1:00 til 9:00 p.m., was calm, 25 and then the rest of the time, it was out of
Page 259 1 Q. And the two weatherizations that 2 you relied on for your wind direction? 3 A. Preliminary efforts in April -- 4 Q. In Youngstown, Ohio, and in 5 Pittsburgh, Pennsylvania, right? 6 A. Right. 7 Q. Did you have any modeling of the 8 winds in East Palestine or have -- I'm sorry. 9 Do you have any data on the wind 10 conditions in East Palestine? 11 A. I was not able to find a weather 12 station in that timeframe that had had 13 hour-by-hour data recorded. 14 The other thing that you have to do 15 is you have to be able -- I would have to go 16 back and look. I think it's the Iowa State 17 University has a really neat program where they 18 tied in all the historic wind data, or weather 19 data in general, and you can create what they 20 call Rose patterns, R-O-S-E, which is direction 21 and strength with time for a given date or set 22 of dates. 23 So it's a source I've used in 24 forensics for years, and I simply wanted in 25 reflecting -- this was -- I knew modeling was	Page 261 1 direction from the southeast or southwest, 2 mostly south. 3 So I'm like wait a second. I've 4 got to think twice about wanting to sample 5 almost always in the southeast. I've got to be 6 looking to the north, and I've got to be 7 looking to the west, and I've got to be looking 8 to the northwest and northeast. 9 Now, there was much more 10 sophisticated work that went on later, both by 11 the EPA, by our folks, and now by Paul 12 Rosenthal -- Rosenthal, and that will be for 13 another discussion. I've seen his report. 14 It's based on our data, in part, and of actual 15 -- it's been tuned by the data -- the sets that 16 we have, and it pretty much confirms some of my 17 preliminary information from a -- well, 18 actually, it was late February of 2023, that 19 the direction of the winds, particularly during 20 the burn, which is where the dioxins -- well, 21 there would be some formed from the PVC as 22 well, but the assumption that all the materials 23 deposited to the southeast predominantly, and 24 that background would be to the other 25 directions, west through -- and to the

Page 262 1 northeast, is just flawed. 2 And it's clear when you look at all 3 the available background data that I could put 4 my arms around for what the TEQs would be, that 5 there's no way in the world that a background 6 of 51 should exist. 7 And it's explained simply by 8 saying, well, if you sample under the plume -- 9 and, in fact, not you personally, but the 10 Norfolk Southern experts admitted that they 11 sampled all around, had equal distance, and I'm 12 like -- for background, and I'm like, well, why 13 would you do equal distance, first of all? And 14 why would you sample all around the site for 15 background? You wouldn't want to sample for 16 background under the plume. 17 And I've shown plots where you can 18 see where the background samples are from 19 Arcadis. And if you overlay that with my plots 20 and then also with the plots from EPA, as well 21 as we had the -- there was a benefit of a plot 22 by Schuhmann who was indirectly working on the 23 modeling for the Plaintiffs at the time, and he 24 presented it in a 2024 -- I don't know if it 25 was an affidavit or declaration, but it's a	Page 264 1 definition of where the plume went. I don't 2 necessarily disagree with the -- the EPA model, 3 you've got to be a little bit careful because 4 you've got to look at the timeframe. They have 5 a broader timeframe. You've got to look at the 6 days and hours of the model because it matters. 7 In other words, there's a certain 8 interval where the plume went when they did the 9 detonation of the burn, and there's also some 10 time from February 3rd to February 6th, so it 11 just depends on the time interval you use for 12 that modeling will impact the results. 13 Q. Okay. Let's look at -- 14 A. I'm sorry. I want to just -- I was 15 searching for it to finish my answer. 16 On Page 29 of Exhibit 2, which is 17 the April 6th report. I present the -- it's a 18 snapshot of the Richard Schuhmann -- it was 19 during a hearing in front of the judge for 20 settlement, I believe. 21 He was a consultant to the 22 Plaintiffs, and he presents a snapshot of that 23 model in his declaration. I was surprised 24 because most of the stuff was not to be 25 produced, and so I put it in the reports since
Page 263 1 snapshot of that model, and it, too -- it's in 2 my report -- shows the wind direction. 3 There's a little bit to the south, 4 but are predominantly going to the north, the 5 north, which is right over the top of a lot of 6 the background samples. 7 So, you know, I've been a critic 8 publicly and professionally about the whole 9 sampling programs being done in such a way that 10 it corrupts the definitions of background and 11 foreground, and I think I'm right. 12 And I think the modeling that we've 13 now done is very attuned to a bunch more data, 14 is going to show that. 15 Q. Have you reviewed the EPA plume 16 reconstruction map? 17 A. I believe so. If it's part of that 18 report, I did. I mean, if I did, it would be 19 in my list of exhibits. 20 Q. And you disagree with the findings 21 of the EPA with respect to the deposition from 22 the plume? 23 MR. CONLIN: Objection to form. 24 A. I'm not sure I agree or disagree. 25 I think the -- I disagree with Arcadis'	Page 265 1 it was in a document that was publicly made 2 available. 3 Now, he's using a timeframe from 4 February 3rd at 9:00 p.m. to February 7th at 5 midnight. And his plume shows predominant 6 directions to the north and to the east, with 7 some -- some deposition to the south, but then 8 there's -- if you look at the shades of green, 9 then it's all over the place to some degree as 10 well. 11 But the problem you have is if 12 you're doing all your sampling thinking the 13 plume is -- it's not to even worry about the 14 evacuation of the people, but if you're 15 assuming it's all to the southeast, that 16 doesn't reflect well on this modeling, or in my 17 modeling, or the EPA's modeling, or now 18 Rosenthal's modeling. 19 So I think the cumulative evidence 20 will show pretty quickly that I was right in 21 February of '23. 22 Q. Let's look at Exhibit 2, Page 11, 23 and Table 4.1. 24 A. Are we on Exhibit 2? I'm sorry. 25 Q. Yes.

Page 266 1 A. And Page 11? 2 Q. The table starts on Page 10 -- 3 A. Yes. 4 Q. -- and goes over to Page 11. 5 A. I'm there. 6 Q. Okay. And if we look to the last 7 two railcars on the list, Railcar 59 and 60. 8 Do you see that? 9 A. I do. 10 Q. And they're the benzene residue 11 cars, right? 12 A. Correct. 13 Q. And the car damage summary product 14 loss section is the last column? 15 A. Correct. 16 Q. For the benzene residue Car No. 59, 17 what does the last column say? 18 A. No leak. Fire damage only, and 19 then no leak, fire damage only. 20 Q. And that's for the benzene residue 21 Car No. 60? 22 A. That's for this documentation at 23 that point in time. I would argue that the 24 differential diagnosis and -- that I did is 25 much more complete than this table and would	Page 268 1 And I'm just saying the 2 differential diagnosis, combined with the 3 plotting of actual benzene levels in the 4 ground, suggests otherwise. 5 Q. Okay. We've talked -- 6 MR. RHEINHEIMER: What time is it? 7 MR. CONLIN: About a quarter -- six 8 after. 9 MR. RHEINHEIMER: Why don't we take 10 a break. It's been almost an hour. 11 THE VIDEOGRAPHER: We're off the 12 record. 13 (Recess is taken.) 14 THE VIDEOGRAPHER: We're on the 15 record. 16 Q. Okay. If we turn to Page 36 of 17 Exhibit 2, your opening report. Looking at 18 Section 6.2. 19 A. I'm there. 20 Q. Under the Norfolk Southern and 21 Arcadis soil sampling program that you've 22 included as Exhibit 36, they would take two 23 samples at a site, right? One from zero to one 24 inches and one from zero to six inches; is that 25 right?
Page 267 1 contradict this finding. I don't think they 2 had the benefit at that point in time of the 3 analysis I completed. 4 Q. But they did have the benefit of 5 seeing the railcar? 6 MR. CONLIN: Objection to form. 7 A. Well, I saw the railcar. I saw it 8 in a railroad yard, you know, four days 9 afterwards, and I didn't see any leaks then, 10 but, I mean, who knows? It was 30, 40 miles 11 from the site. 12 So that's my point, is we were 13 given access to the two benzene cars, but at 14 the Pennsylvania rail yard, but it was like 15 late February of 2023. It was three weeks 16 after the incident. 17 Q. Did anyone else see the railcars at 18 the site? 19 A. I don't -- I don't have -- from 20 this document, you don't have first-hand 21 testimony as to what -- how that -- how that 22 definition was made. And just because the 23 person at the moment that they looked at it 24 didn't see a leak doesn't mean there was a leak 25 -- there wasn't a leak at some point in time.	Page 269 1 A. Well, there's conflicting 2 statements. That's the only issue. That's why 3 I was trying to go to the original document 4 with their decision tree to try to figure that 5 out. 6 I don't disagree that those words 7 are there. I'm just saying -- and then they 8 also said on Page 5 -- I'm not disagreeing that 9 those words are there, but they also say at the 10 beginning of the bottom of this page: Soil 11 samples to be collected in the following 12 intervals from a single shallow boring, surface 13 soil, superficial scrape or visually impacted 14 the materials, zero to one inch, and inches if 15 impacted materials are not observed. 16 Subsurface soil below impacted 17 materials to six inches or one inch to six 18 inches if there is no ash, not ash. 19 So they were using ash as a 20 surrogate to do shallow sampling, and then if 21 there wasn't ash present, they were taking a 22 composite, is the way I read it. 23 Q. Okay. You don't read it as taking 24 either a superficial scrape of visually 25 impacted materials or zero to one inches if

Page 270 1 impacted materials are not observed, and also 2 separately taking a subsurface soil sample of 3 below the visually impacted materials to six 4 inches or one to six inches if there is no ash? 5 MR. CONLIN: Objection to form. 6 A. The statement is -- the statement 7 that confuses one is the underlined, italicized 8 statement: If there is not ash. And that's 9 why I tried to go to the decision tree that 10 they have in this sampling plan to try to 11 figure that out. 12 And if you walk through that, it 13 says: Define/describe inspection area, city 14 block, field, parcel, et cetera. 15 Look for visual evidence of ash and 16 document observations on the inspection form. 17 So the first criteria is look for visual 18 evidence of ash, correct? 19 Then it says -- then there's three 20 decisions to be made, no ash observed. Collect 21 samples zero to one and zero to six at 20 22 percent of the impact area. 23 So in that scenario, they are 24 collecting, it appears to me, a zero to 25 one-inch sample, and a one to six-inch sample.	Page 272 1 A. I would think that would be the 2 most likely. 3 Q. And then if you looked at the soil 4 between one and six inches, you would see what 5 tends to be deposits there over time not 6 impacted by the derailment or vent and burn, 7 right? 8 MR. CONLIN: Objection to form. 9 A. I don't know because I didn't do 10 the profiling. 11 Q. What do you mean profiling? 12 A. I've just described it over and 13 over again, where you -- what they're doing is 14 they're making a big mix from one to six 15 inches, right? So what if the stuff is right 16 at the top of the six inches. 17 Q. But you said it's all in the top 18 inch? 19 A. Well, yeah, but you're sampling it 20 to one -- zero to one inch, and then one inch 21 to six inches, so what if you're right at that 22 interface. 23 So my point is simply this: Why 24 didn't they sample -- if they wanted to know -- 25 if your argument is true, that the zero to one
Page 271 1 I don't understand why they're 2 doing the one to six-inch sample. I've never 3 understood that, other than I would have done, 4 as I've said before, in testifying here, I 5 would have done -- sort of like you do in 6 asbestos for layers, I would have done zero to 7 one, one to two, two to three, just to kind of 8 see if there's a profile. 9 Because as the EPA says and others 10 stated, it's unlikely to be below two 11 centimeters -- 12 Q. Why is it unlikely to be below two 13 centimeters? 14 MR. CONLIN: Objection; asked and 15 answered. 16 A. Because, first of all, it's 17 insoluble. It doesn't dissolve into water. 18 And, secondly, it takes time to try to wash -- 19 even with rainfall events, if it's not going to 20 dissolve into the rain, then it has to be 21 physically pushed into lower levels. 22 Q. So the top approximately one inch 23 of soil would be where you find dioxins 24 deposited from the derailment and vent and 25 burn, right?	Page 273 1 inch is where it deposits and it doesn't 2 deposit below, then run a profile zero to one 3 inch to see what the level is. 4 Run one to two inches, two to three 5 inches, three to four inches, and five to six 6 inches. That's how you determine whether 7 there's a profile likely from surface 8 deposition. That's not what they did. 9 They just took a big glob from one 10 to six inches and how much of that -- we won't 11 even get into the plastic bags and all the rest 12 of it, but how good were they at making that 13 demarkation from zero to one inch and then one 14 to six inches. 15 Q. And if the one to six-inch dioxin 16 levels were similar or the same as the zero to 17 one-inch dioxin levels, what would you 18 interpret that to mean? 19 A. I don't know. I haven't done that 20 analysis. It would depend on where the samples 21 are. If you took them right next to a road, 22 then I would be concerned it came from the 23 road. 24 So it would just depend on the 25 sample and knowing more details about the

Page 274 1 sample itself. Knowing more about the chain of 2 custody. 3 Q. On Page 38, there's an e-mail from 4 Brian Gullett at EPA you've copied onto your 5 report. Do you see that? 6 A. I do, yes. 7 Q. Did you review any response to Mr. 8 Gullett from others at EPA or Norfolk Southern? 9 A. Well, it comes from an e-mail. 10 That's in my Exhibit 185, so it comes from an 11 e-mail chain, I mean, so I guess the answer is 12 yes. I mean, it's in a sequence of e-mails. 13 Q. In those responses, did you see the 14 explanation for why Arcadis was proposing to 15 sample zero to one inches and one to six inches 16 below surface? 17 A. I didn't see it in that series of 18 e-mails. 19 Q. Did you see it in any other 20 response to Mr. Gullett's position regarding 21 the surface sampling? 22 MR. CONLIN: Objection to form. 23 A. I can only look at what I have 24 access to, but I didn't see it in any materials 25 that I have access to, not that I recall. I've	Page 276 1 going to base your plan on ash as the surrogate 2 for all these other substances that are toxic, 3 then you better be able to show some literature 4 that says there is a correlation between those 5 two. Otherwise, it's speculation. 6 Q. And did they also sample soil at 7 locations where ash was not seen? 8 A. Well, certainly, they did, but 9 using ash as an indicator of surface deposition 10 by itself is flawed for the reasons I just 11 stated, because I don't have literature that 12 says ash -- ash from this particular type of 13 event is correlated to the presence of dioxins 14 or furans, or PAHs for that matter, other 15 things that would deposit. 16 That's all I'm saying here, is 17 where's the literature that says that's a 18 surrogate. I don't find it in the reports. 19 It's not my job to make that argument. It's 20 their argument -- it's their job to make the 21 argument that ash is a surrogate prototype, if 22 you're going to be doing a good scientific 23 sampling plan. 24 Q. Before I forget, let's mark these 25 invoices -- if it's okay, I'm going to mark all
Page 275 1 got this whole sequence of e-mails through -- 2 you know, in Exhibit 185. So you see the back 3 and forth. It's mainly between EPA people 4 themselves. 5 Q. And then if we go down to the 6 sentence starting with also, you say: Also the 7 use of visible ash is an indicator of surface 8 deposition seems flawed, as other contaminants 9 other than visible ash likely were deposited 10 during the burn event. 11 Do you see that? 12 A. Yes. 13 Q. What other contaminants other than 14 visible ash -- 15 A. The PAHs, the dioxins and furans, 16 any of the combustion products. 17 Q. And would those be associated with 18 ash in an incomplete combustion environment? 19 A. Well, that's the challenge. I 20 would argue that I know of no literature that 21 suggests the presence of ash is correlated to 22 the presence of dioxin, nor for BaP, 23 benzo(a)pyrene. 24 So if you're going to base your -- 25 that's why I say the plan is flawed. If you're	Page 277 1 of the invoices as one exhibit. 2 MR. CONLIN: The ones from him are 3 his direct invoices. The other ones from the 4 lab are the ones he forwarded to us. You could 5 put it in as one, but -- 6 MR. RHEINHEIMER: That's fine. So 7 we'll mark this as Exhibit 6 from EES Group, 8 and the invoices from LDC as Exhibit 7. 9 - - - - - 10 (Thereupon, Deposition Petty Exhibit 11 6, Invoices, was marked for purposes 12 of identification.) 13 - - - - - 14 - - - - - 15 (Thereupon, Deposition Petty Exhibit 16 7, Invoices, was marked for purposes 17 of identification.) 18 - - - - - 19 A. I could have paid them and then 20 asked for reimbursement -- 21 Q. Just to close the loop on the 22 exhibits -- or on the invoices, we've marked 23 the invoices as Exhibits 6 and 7. Can you just 24 confirm that, up until now, these are all of 25 the invoices you've submitted to counsel for

Page 278 1 payment? 2 A. I don't do this work in my company, 3 so all I can tell you is that I know that the 4 invoicing occurs monthly. I know that because 5 I had 21 projects until the end of -- from 6 October to end of January, I think the fact 7 that my first invoice is in February seems to 8 be right, and, obviously, I continued to work 9 on this through May, so it seems like they're 10 right? 11 MR. RHEINHEIMER: And I would just 12 ask counsel if there's -- if you discover 13 there's one missing, let us know. 14 MR. CONLIN: And we'll supplement 15 it as we get closer to trial. 16 A. This was done by my accountant, so 17 I'm assuming that they -- they do this for all 18 the legal cases. They prepare these, so I have 19 no reason to believe it's not accurate. 20 Q. Okay. 21 MR. RHEINHEIMER: Why don't we go 22 off the record. 23 THE VIDEOGRAPHER: We're off the 24 record. 25 (Recess is taken.)	Page 280 1 Thereupon, the deposition concluded 2 at approximately 5:35 p.m. 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Page 279 1 THE VIDEOGRAPHER: We're on the 2 record. 3 Q. Mr. Petty, thank you for your time. 4 I have no further questions. 5 A. Thank you, sir. 6 MR. CONLIN: No questions for us, 7 pending the -- as we spoke off the record, 8 we're going to provide a -- some errata sheets 9 and correct some of the non-substantive typos 10 that you identified. 11 And the only other thing for the 12 record is after going through the deposition, 13 Plaintiffs don't see anything that would 14 warrant this deposition remaining confidential. 15 That's it. Thanks. 16 THE VIDEOGRAPHER: We're off the 17 record. 18 THE REPORTER: And I understand you 19 need a rough and the final in five days? 20 MR. RHEINHEIMER: Yes. 21 THE REPORTER: And the same order 22 for you? 23 MR. CONLIN: Yes, we have a 24 standing order for expedited. 25 (Signature not waived.)	Page 281 1 AFFIDAVIT/ERRATA SHEET 2 STATE OF OHIO: 3 SS: 4 COUNTY OF FRANKLIN: 5 6 I, STEPHEN E. PETTY, P.E., C.I.H., 7 C.S.P., do hereby certify that I have read the 8 foregoing transcript of my deposition given on 9 June 23, 2026, and wish to make the following 10 additions, corrections, amendments, or 11 deletions: 12 13 14 15 16 17 PAGE NO. LINE NO. CHANGE AND REASON FOR 18 CHANGE: 19 20 21 22 23 In all other respects, the transcript is true 24 and correct. 25 19 _____ 20 STEPHEN E. PETTY, P.E., C.I.H., C.S.P. 21 Subscribed and sworn to before me this ____ day 22 of _____, 2026. 23 _____ 24 NOTARY PUBLIC, STATE OF OHIO 25 My Commission Expires: Job No. CS8284158

Page 282 1 C E R T I F I C A T E 2 - - - 3 4 THE STATE OF OHIO: 5 SS: 6 COUNTY OF FRANKLIN: 7 8 I, Rebecca Williams, a Professional 9 Reporter and Notary Public in and for the State 10 of Ohio, do hereby certify that before the 11 taking of his said deposition, the said STEPHEN 12 E. PETTY, P.E., C.I.H., C.S.P., was first duly 13 sworn by me to tell the truth, the whole truth, 14 and nothing but the truth; 15 That said deposition was taken in 16 all respects pursuant to the stipulations of 17 counsel heretofore set forth; that the 18 foregoing is the deposition given at the said 19 time and place by the said STEPHEN E. PETTY, 20 P.E., C.I.H., C.S.P.; 21 That I am not an attorney for or 22 relative of either party and have no interest 23 whatsoever in the event of this litigation. 24 IN WITNESS WHEREOF, I have hereunto 25 set my hand and official seal of office at Columbus, Ohio, this 30th day of June, 2026. <u>Rebecca J. Williams</u> Notary Public, State of Ohio My Commission Expires: June 7, 2027.	Page 284 1 Ceramfab, Inc., et al. v. Norfolk Southern Corporation, et al. 2 Stephen E Petty, P.E., C.I.H., C.S.P. (#8284158) 3 E R R A T A S H E E T 4 PAGE_____ LINE_____ CHANGE_____ 5 _____ 6 REASON_____ 7 PAGE_____ LINE_____ CHANGE_____ 8 _____ 9 REASON_____ 10 PAGE_____ LINE_____ CHANGE_____ 11 _____ 12 REASON_____ 13 PAGE_____ LINE_____ CHANGE_____ 14 _____ 15 REASON_____ 16 PAGE_____ LINE_____ CHANGE_____ 17 _____ 18 REASON_____ 19 PAGE_____ LINE_____ CHANGE_____ 20 _____ 21 REASON_____ 22 _____ 23 _____ 24 Stephen E Petty, P.E., C.I.H., C.S.P. Date _____ 25 Job No. CS8284158
Page 283 1 Jon Conlin, Esq. 2 jconlin@CoryWatson.com 3 June 30, 2026 4 RE: Ceramfab, Inc., et al. v. Norfolk Southern Corporation, et 5 6/23/2026, Stephen E Petty, P.E., C.I.H., C.S.P. (#8284158) 6 The above-referenced transcript is available for 7 review. 8 Within the applicable timeframe, the witness should 9 read the testimony to verify its accuracy. If there are 10 any changes, the witness should note those with the 11 reason, on the attached Errata Sheet. 12 The witness should sign the Acknowledgment of 13 Deponent and Errata and return to the deposing attorney. 14 Copies should be sent to all counsel, and to Veritext at 15 (Erratas-CS@veritext.com). 16 Return completed errata within 30 days from 17 receipt of testimony. 18 If the witness fails to do so within the time 19 allotted, the transcript may be used as if signed. 20 21 22 Yours, 23 Veritext Legal Solutions 24 25 Job No. CS8284158	

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Federal Rules of Civil Procedure

Rule 30

(e) Review By the Witness; Changes.

(1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:

(A) to review the transcript or recording; and

(B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.

(2) Changes Indicated in the Officer's Certificate. The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

DISCLAIMER: THE FOREGOING FEDERAL PROCEDURE RULES ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

THE ABOVE RULES ARE CURRENT AS OF APRIL 1, 2019. PLEASE REFER TO THE APPLICABLE FEDERAL RULES OF CIVIL PROCEDURE FOR UP-TO-DATE INFORMATION.

VERITEXT LEGAL SOLUTIONS

COMPANY CERTIFICATE AND DISCLOSURE STATEMENT

Veritext Legal Solutions represents that the foregoing transcript is a true, correct and complete transcript of the colloquies, questions and answers as submitted by the court reporter. Veritext Legal Solutions further represents that the attached exhibits, if any, are true, correct and complete documents as submitted by the court reporter and/or attorneys in relation to this deposition and that the documents were processed in accordance with our litigation support and production standards.

Veritext Legal Solutions is committed to maintaining the confidentiality of client and witness information, in accordance with the regulations promulgated under the Health Insurance Portability and Accountability Act (HIPAA), as amended with respect to protected health information and the Gramm-Leach-Bliley Act, as amended, with respect to Personally Identifiable Information (PII). Physical transcripts and exhibits are managed under strict facility and personnel access controls. Electronic files of documents are stored in encrypted form and are transmitted in an encrypted

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