EXHIBIT R-4

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
BOARD OF REGISTRATION OF
HAZARDOUS WASTE SITE CLEANUP PROFESSIONALS

In the Matter of:	)	
	)	**Docket No. LSP 12 AP 01**
Richard J. Cushing,	)	
Respondent.	)	

AFFIDAVIT OF BRIAN V. MORAN

I, Brian V. Moran, under the pains and penalties of perjury, state that I am the Brian V. Moran whose prepared direct testimony and rebuttal testimony is attached to this affidavit. I further state that, if asked the questions contained in the text of such testimony, I would give the answers that are set forth in the text of such testimony. I adopt the aforesaid answers as my direct and rebuttal testimony in this proceeding.

Signed under the pains and penalties of perjury this 10 day of January, 2013.

Brian V. Moran

COMMONWEALTH OF MASSACHUSETTS
BOARD OF REGISTRATION OF HAZARDOUS WASTE SITE CLEANUP PROFESSIONALS
before the
OFFICE OF APPEALS and DISPUTE RESOLUTION

In the Matter of Richard J. Cushing **Docket No. LSP 12 AP 01**

Prepared Direct and Rebuttal Testimony of
Brian V. Moran
Witness in Opposition to the Initial Determination of the
Board of Registration of Hazardous Waste Site Cleanup Professionals

Q. Please state your name and business address.

A. My name is Brian V. Moran. I am the founder and managing partner at Norfolk Ram Group, LLC. Norfolk Ram has two office locations; 1 Roberts Road, Plymouth Massachusetts and 1071 Worcester Road, Framingham, Massachusetts.

Q. Are you introducing any Exhibits (other than the Exhibits pre-marked as Joint Exhibits) in connection with your direct and rebuttal testimony?

A. Yes. I am introducing Exhibit R-5: Moran *Curriculum Vitae*; Exhibit R-6: excerpts from the December 2011 Interim Final Vapor Intrusion Guidance, WSC-11-435; Exhibit R-7: IRIS Fact Sheet for Tetracloroethylene, CASRN: 127-18-4; Exhibit R-8: excerpts from Guidance for Disposal Site Risk Characterization in Support of the MCP, Interim Final Policy, WSC/ORS-95-141; Exhibit R-9: Indoor Air Sampling and Evaluation Guide, WSC Policy #02-430 and Exhibit R-10: Characterizing Risks Posed by Petroleum Contaminated Sites: Implementation of the MADEP VPH/EPH Approach, October 2002.

Q. Please describe your educational background.

A. I have an undergraduate degree with majors in Chemistry and Anthropology from Georgia State University and a Masters of Science in Civil Engineering and Environmental Health from Polytechnic Institute of New York. I have also completed course work towards a Masters of Business Administration at Pace University.

Q. Please describe your professional experience.

A. I have over 35 years of experience in environmental engineering and am registered as a professional engineer in 11 states, including Massachusetts. I am an experienced Licensed Site Professional (LSP) and have held an LSP license since 1993 when the privatized LSP program began. I am also a Certified Soil Evaluator in Massachusetts. In addition to being an LSP, Registered Professional Engineer and Certified Soil Evaluator, I am also a Diplomat and Fellow of the American College of Forensic Examiners and Investigators, a Massachusetts licensed Title 5 Inspector, and received the 40-hour Hazardous Waste Operations and Emergency Response Standard (HAZWORPER) Certification.

I was the professional engineer in charge of the MDL Corporation/Hillside School cleanup in Needham, in which I designed and directed installation of the first crawl-space ventilation system for a vapor intrusion of trichloroethylene (TCE). To the best of my knowledge, this was the first significant vapor intrusion problem that involved chlorinated solvents in Massachusetts. The MDL site was the impetus for the creation of the GW-2 Standards which were designed to be protective of vapor intrusion problems. This clean-up began prior to the implementation of the LSP program.

I have been the LSP of record for over 275 sites since the program began, including over 20 chlorinated solvent sites containing Tetracloroethylene or "PCE". I

have acted as the LSP in charge of several sites containing current and former drycleaners, including performing investigation, assessment (including indoor air testing and imminent hazard evaluation) and remediation of PCE releases at these sites. I have served as LSP of record for numerous projects involving assessment, control, and remediation of chlorinated solvents at commercial and industrial establishments in Massachusetts, including remedial investigation and feasibility studies. I have performed evaluations of soil and groundwater contamination for its potential to migrate into indoor air and have conducted indoor air sampling, and imminent hazard evaluations for vapor intrusion of chlorinated solvents, including PCE.

I have managed hundreds of groundwater and contaminated soil investigations and remedial programs, including the detailed design of air sparing/ soil vapor extraction systems and injection well system designs for in-situ chemical oxidation (ISCO) projects for remediation of chlorinated solvent and petroleum-contaminated groundwater. I am an expert in the use of ISCO technology for destruction of organic contaminants in soil and groundwater for projects in the United States and Europe. ISCO uses oxidizing chemicals, such as hydrogen peroxide, to neutralize contamination caused by petroleum and volatile organic compounds (VOCs) in soil and groundwater. I pioneered the development and use of ISCO technology with modified Fenton's Reagent in the New England region in 1994. I have been the principal in charge for over 150 ISCO projects using Fenton's Reagent and Activated Persulfate chemistries for remediation of contaminated soils and groundwater. Most notably, I provided consulting and environmental services regarding ISCO projects performed for the Czech Environmental Ministry in the Czech Republic.

In addition to my LSP and environmental engineering services, I provide environmental consulting and expert testimony regarding industrial waste releases, and other environmental issues. In this capacity, I have acted as an environmental remediation expert witness in seven litigations and one arbitration. I have also acted as a hearing officer for an environmental dispute with the American Arbitration Association.

With regard to my regulatory experience, in the early 1980's, I developed hazardous waste programs for the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers. With the EPA, I was engaged as a permit writer and inspector for Polychlorinated Biphenyls (PCBs) and the Resource Conservation and Recovery Act (RCRA) disposal facilities. In the U.S. Army Corps of Engineers, I managed the Superfund (CERCLA) and Department of Defense hazardous waste remedial projects, including a technical review of feasibility options for dredging of PCB-contaminated sediments at the New Bedford Harbor Superfund site.

Additional details regarding my professional background are provided in my resume attached as Exhibit R-5.

Q. Have you received any awards for your work as an environmental consultant?

A. I received the Special Act and Service Award from the EPA in 1980, and the Exceptional Performance Award twice from the U.S. Army Corps of Engineers in 1983 and 1984.

Q. Did you review any documents in order to prepare your testimony?

A. I have reviewed the Complaint filed with the Board by the Massachusetts Department of Environmental Protection (MassDEP), Mr. Cushing's Response dated

October 2, 2008, the LSP Board's Oder to Show Cause and Proposed Order, the Respondent's Answer to Proposed Order, the documents that are exhibits in this adjudicatory hearing, documents from the DEP file regarding the Site, the Joint Pre-Hearing Statement and the testimony and proffered exhibits by the LSP Board. I have reviewed the 2003 Massachusetts Contingency Plan ("MCP") which was the version of the MCP in place at the time of the Site assessment and MassDEP's guidance and other regulatory materials in effect during the relevant time period (2003 and 2004). Unless otherwise indicated all of the references in my testimony to sections of the MCP refer to the 2003 version of the MCP.

Q. Have you done anything else in preparation for your testimony in this matter?

A. In addition to reviewing the documents mentioned above, I have spoken with Mr. Cushing and visited the site located at 211 West Main Street, Ayer, Massachusetts (the "Site"), as well as the interior and exterior of the building located on the Site (the "Building").

Q: Are you familiar with the Massachusetts Contingency Plan?

A: Yes. The Massachusetts Contingency Plan is the Compilation of Regulations issued by the Commissioner of the Department of Environmental Protection that governs the assessment and clean-up of potential and actual hazardous waste sites in Massachusetts.

Q: Are you familiar with the obligations of an LSP pursuant to the MCP?

A: Yes.

Q: Are you familiar with the Regulations promulgated by the Board of Registration of Hazardous Waste Site Clean-Up Professionals which govern the Rules of Professional Conduct for Licensed Site Professionals codified at 309 CMR 2.0-9.0?

A: Yes, I am familiar with these regulations.

Q: Based on your knowledge of the MCP, the Professional Conduct Rules for Licensed Site Professionals, your review of the Site and Building at the Site along with your understanding of the facts in this matter, are you prepared to provide an opinion as to whether or not Mr. Cushing complied with the MCP and met the standard of care required of a Licensed Site Professional?

A: Yes.

Q. The LSP Board alleges that after Mr. Cushing received the soil gas results in October 2003, he breached the standard of care required of an LSP set forth in 309 CMR 4.02(1), 4.02(3) and 4.03(3)(a) by not adequately assessing potential indoor air risk by, among other things: (a) Not sampling indoor air; (b) Not asking the risk assessor for more information when she informed him that a condition of No Significant Risk did not exist; and (c) Not performing an Imminent Hazard Evaluation. Do you have an opinion as to whether or not Mr. Cushing's actions breached the standard of care?

A. I do have an opinion and my opinion is that Mr. Cushing did not breach the standard of care required under the stated sections of the CMR.

Q. What is the basis of this opinion?

A. Before I get into each of these topics, let me provide some background. The LSP role in site assessment is an iterative process, which often requires the LSP to make a series of professional judgment calls on how to proceed with the assessment and remediation. The MCP sets forth a general performance standard for conducting cleanups, called the Response Action Performance Standard or "RAPS", not detailed procedural directives. See, 310 CMR 40.0191 and Exhibit R-8, p. 2-14 The Guidance for Disposal Site Risk Characterization Interim Final Policy #WSC/ORS-95-14, prepared by the MassDEP. In addition, the MCP specifically acknowledges that the regulations contain flexibility for professional judgment. 310 CMR 40.0193. There is not just one way to conduct a Site Assessment.

In 2003 and 2004, the issue of vapor intrusion did not receive the attention it does today and the standard on how to handle vapor intrusion issues was evolving. For example, in 2003 and 2004, there were no air standards available in the MCP. Very few bright line tests existed regarding when an LSP should determine whether vapor intrusion could be a problem. This was compounded by the fact that training for LSPs in 2003 and 2004 on vapor intrusion was not what it is today. It is also important to note that the focus on air-phase contamination at this time was on petroleum, not PCE. For example, the guidance in effect at this time used to perform the Method 2 risk assessment only prescribed methods to evaluate petroleum vapor intrusion. (See Exhibit R-10, VPH/EPH Final Policy, WSC-02-411. pp. 27-43) This guidance did not prescribe methods to evaluate chlorinated solvents such as PCE.

Even today, a lack in clarity exists regarding the standard of care for detecting and assessing vapor intrusion. In December 2011, MassDEP issued updated Vapor Intrusion

Guidelines in an attempt to provide some clarity to these issues. However, the MassDEP concedes that even with the new guidance and policies, issues related to vapor intrusion remain complex and hard to assess, and has stated that further revisions to these guidelines will forthcoming. This was made clear in a recent DEP training session on vapor intrusion and the Disclaimer in their 2011 Interim Final Vapor Intrusion Guidance, WSC-11-425. A few months after the 2011 DEP vapor intrusion guidelines were issued, U.S.E.P.A. revised the cancer unit risk factor for PCE by an order of magnitude, reducing the risk of exposure to this chemical. (See Exhibit R-7, IRIS Fact Sheet Tetracloroethylene, CASRN: 127-18-4). This revision has yet to be adopted by MADEP but is an example of the changing standards regarding vapor intrusion.

Under the MCP in 2003 and 2004, the clear guideline for evaluating vapor intrusion was the GW-2 standard. Under the GW-2 standard, if the ground water was located outside of 30 feet from an existing occupied building or structure, or the average annual depth to groundwater in that area is more than 15 feet, contaminated ground water was not considered to be a potential source of vapor intrusion to indoor air. 310 CMR 40.0932(6). In 2003 and 2004, the GW-2 standard was intended to be protective of indoor air, and LSPs could use it to screen out whether a vapor intrusion pathway needed to be further evaluated. It was not until April 2006, that the MassDEP issued regulations requiring soil analysis around building foundations (such as the analysis performed by Mr. Cushing in 2003). (See 310 CMR 40.0942(1)(d)(2006)). Prior to this time, soil gas analysis for vapor emissions was not required by the regulations if the GW-2 standard was not exceeded.

Given the nature of this process and increasing changes in the science and underlying assumptions (especially with regard to vapor intrusion) and changes in the MCP regulations, it is easy with the benefit of hindsight to second guess judgment calls made by an LSP years ago. With this background let me address the LSP Board's allegations one at a time.

Conducting Indoor Air Sampling in October 2003: If the GW-2 standards did not apply to a site (i.e. the ground water was located outside of 30 feet from an existing occupied building, or the average annual depth to groundwater within 30 feet from the building is more than 15 feet), then the LSP was permitted to assume that indoor air was not being impacted as a result of groundwater contamination. In 2003, soil gas testing for potential vapor intrusion was not specifically required if the groundwater was not in a GW-2 setting for a Method 1 risk assessment. At this Site, the groundwater within 30 feet from the Building was greater than 15 feet deep, so the GW-2 Standards were not applicable. Given that groundwater GW-2 standards were not applicable to this site, Mr. Cushing was not required to investigate vapor intrusion for the groundwater pathway which was the primary focus at the time for vapor intrusion from chlorinated solvents such as PCE. But despite this fact, he tested the soil gas. Mr. Cushing deserves credit – not criticism – for continuing to investigate vapor intrusion, which was ultimately the driving force behind early detection of the problem. Mr. Cushing's next step after receiving the October 2003 soil gas results was to consult a risk assessor to determine if indoor air testing needed to be conducted immediately based on the soil gas readings. Mr. Cushing asked the risk assessor whether he needed to immediately test indoor air as a result of his soil gas readings. The risk assessor modeled the data and reported to him

that indoor air testing did not need to happen immediately and testing in Phase II was okay. If the risk assessor found that a potential imminent hazard condition existed he then would have needed to test indoor air. However, the risk assessor told Mr. Cushing that a condition of no significant risk did not exist but did not tell him that an imminent hazard condition existed or that further testing was needed immediately.

Based upon information provided by the risk assessor and the fact that the groundwater did not exceed the GW-2 standard, there was no compelling data supplied to Mr. Cushing that would have alerted him of a need to immediately conduct indoor air testing and to perform an Imminent Hazard Evaluation. Accordingly, Mr. Cushing acted within the standard of care in relying upon Ms. Listernick's findings, conclusions and advice.

Relying on Risk Assessor's Verbal Report and Not Asking the Risk Assessor for Additional Information When She Informed Him That a Condition of No Significant Risk Did Not Exist: Often, LSPs need to rely upon other professionals in order to make appropriate judgment calls. In fact, The Guidance for Disposal Site Risk Characterization specifically states that "the data collected at the site must be reviewed by a risk assessor." (See Exhibit 8, p.2-57); and "it is up to the risk assessor to determine the appropriate risk characterization approach from among the methods identified as applicable to the site." (See Exhibit R-8, p. 3-1). An LSP may rely on the information provided by a risk assessor.

The LSP Board's Regulations state, in pertinent part:

(1) An LSP shall not provide Professional Services outside his or her areas of professional competency, where this competency is based on his or her education,

training and/or experience, unless that LSP has relied upon the technical assistance of one or more professionals whom the LSP has reasonably determined are qualified in such area or areas by education, training and/or experience.

(2) In providing Professional Services, an LSP may rely in part upon the advice of one or more professionals whom the LSP reasonably determines are qualified by education, training and/or experience.

309 CMR 4.02.

Accordingly, it is not only customary and appropriate for an LSP to hire and rely upon other professionals, including risk assessors in order to perform their duties; it is required when the LSP does not have the training or experience.

With regard to the roles at a hazardous waste site, the LSP's responsibility is to assess the site to determine the nature and extent of the contamination including an evaluation of potential exposure pathways. On the other hand, the risk assessor's responsibility is to develop the exposure assumptions and evaluate exposure point concentrations based on information and data supplied by the LSP and determine the level of risk by calculating the results of testing provided by the LSP and interpreting the results of those calculations. See Exhibit R- 8 Guidance for Disposal Site Risk Characterization, Interim Final Policy, WSC/ORS-95-141, pp. 10-10 to 10-12.

Most LSPs lack the degree of skill, knowledge and experience necessary to perform risk calculations or to draw conclusions from these calculations. In fact, an LSP performing the risk calculations without this education, training and experience would be subject to discipline for acting beyond their professional competencies if a risk assessor were not engaged. Accordingly, the standard of care in 2003 would not necessarily

require an LSP to check the calculations or analysis of a risk assessor. The standard of care in 2003 required the LSP to hire a qualified risk assessor and make sound professional judgments using the risk assessor's interpretations and conclusions as a guide.

By all accounts, Ms. Listernick was a competent risk assessor and Mr. Cushing had utilized her services for over 25 years without issue. Accordingly, the standard of care permitted Mr. Cushing to rely upon Ms. Listernick based upon his extensive experience with her work.

To the best of my knowledge the Board is not challenging the competency of the risk assessor or alleging that Mr. Cushing failed to hire a risk assessor that he "reasonably determine[d] [was] qualified by education, training or experience" as required under 309 CMR 4.02. It was incumbent on the risk assessor to alert Cushing if an imminent hazard evaluation needed to be performed based upon her ELCR results. In order to perform any risk analysis calculation, a risk assessor needs to be aware of the relevant risk values and what they mean under the MCP. If the risk assessor found something in her analysis that indicated a potential Imminent Hazard she should have reported that fact to the LSP. But the LSP should not be responsible for the risk assessor's failure to report all of the relevant information within her knowledge.

Was an Imminent Hazard Evaluation Required After Receiving the October 2003 Soil Gas Results. Mr. Cushing receiving soil gas results, which ranged from 159,000 micrograms per cubic meter ($\mu g/m^3$) to 2,400,000 $\mu g/m^3$. Soil gas results alone would not trigger the need for an Imminent Hazard Evaluation without additional assessment data. There is no support in the MCP or in any MassDEP guidance that

suggests that the "raw" data from a soil gas test triggers the need for an Imminent Hazard Evaluation. Mr. Cushing's action, which was to send the soil gas samples out to be evaluated to determine if a potential Imminent Hazard existed and therefore an Imminent Hazard Evaluation needed to be performed, was the proper way to evaluate the levels found in the soil gas data.

A high soil gas result often can be misleading. In some cases, "hot spots" (i.e. areas where the dumping of VOCs occurred) may be extraordinarily high, but does not impact the indoor air. If, for instance, the soil gas test was conducted right where a release of PCE had occurred, the tests would be far higher than the surrounding area. Soil gas testing is a proxy for indoor air testing and the results need to be attenuated (i.e. factor in soil conditions, distance to building, characteristic of the building, etc.) by a Risk Assessor in order for conclusions to be drawn from the results. Accordingly, soil gas testing alone without further analysis should not be a basis for triggering an Imminent Hazard Evaluation, but may trigger a need for additional assessment and testing. This is exactly what Mr. Cushing did.

An Imminent Hazard is defined as a hazard that may pose a significant risk of harm to health, safety, public welfare or the environment if it were present for even a short period of time. 310 CMR 40.0953; 310 CMR 40.0955. An Imminent Hazard Evaluation can occur at any point in the MCP site investigation and remediation process. It is noted that in deciding whether an Imminent Hazard Evaluation is warranted, that exposures must be actually occurring (or very likely to occur) in order for an Imminent Hazard to exist. The regulations describe general factors that must be considered in the decision about whether to conduct an Imminent Hazard Evaluation and rely on the LSP

and risk assessor's application of professional judgment to determine when site conditions warrant such an evaluation. See 310 CMR 40.0426 and 310 CMR 40.0953; Exhibit R- 9, Indoor Air Sampling and Evaluation Guide, WSC Policy #02-430, pp. 99 and Exhibit R-8, Guidance for Disposal Site Risk Characterization, Interim Final Policy, WSC/ORS-95-141, pp. 10-2. Additionally, the regulations provide the LSP the right to rebut the presumption of an Imminent Hazard. See 310 CMR 40.0321(4).

Q. The Phase I Submittal filed with the DEP in January 2004 by Mr. Cushing did not reference an Imminent Hazard Evaluation and stated that neither a two-hour notification nor an Immediate Response Action was required. Do you have an opinion as to whether or not Mr. Cushing's action breached the standard of care required by 309 CMR 4.02(1), or 4.03(3)(b)?

A. I do have an opinion and my opinion is that Mr. Cushing did not breach the standard of care required under the stated sections of the CMR.

Q. What is the basis of this opinion?

A. The record clearly shows that at the time Mr. Cushing filed the Phase I Report with the DEP he did not have any evidence that an Imminent Hazard Evaluation or an Immediate Response Action was required. Therefore, he could not have reported this in the Phase I Report. Even Denise Childs of the DEP acknowledges in February 2004 that the Site was not an IRA situation. Since Mr. Cushing complied with the standard of care in evaluating the soil gas samples, he cannot be deemed to have breached the standard of care for not referencing that an Imminent Hazard Evaluation should be conducted or that a two hour notification was required.

Q. **Mr. Cushing stated in the Phase I Submittal that indoor air would be sampled "as appropriate" but did not indicate that indoor air should be sampled immediately. Do you have an opinion as to whether or not Mr. Cushing's action breached the standard of care required by 309 CMR 4.02(1), or 4.03(3)(b)?**

A. I do have an opinion and my opinion is that Mr. Cushing did not breach the standard of care required under the stated sections of the CMR.

Q. What is the basis of this opinion?

A. As stated above, the information that Mr. Cushing had at the time he filed the Phase I Submittal did not indicate that indoor air should be sampled "immediately." It is clear in the Phase I submittal that he intended to test indoor air. In addition, on February 11, 2004, Mr. Cushing sent the owner of the Site a statement of work (the "SOW"), which clearly sets forth that he intended to perform 14 hours of indoor air sampling (inclusive of 8 hrs. of field sampling) as part of Phase II. In general, LSPs provide a conceptual scope of work for Phase II in the Phase I Report. Once the client approves the SOW, the LSP normally repackages the SOW as a detailed Phase II Scope of Work, which is then submitted to the MassDEP. Mr. Cushing was never given the chance to implement his Phase 2 SOW as he was disengaged by his client shortly after the Phase 2 SOW submittal. Mr. Cushing's provision of a conceptual scope of work complies with the generally accepted practice in the LSP community. Accordingly, Mr. Cushing's Phase I Report meets the standard of care in 2003 and 2004. His prompt attention to move forward with the project on a pre-active and timely manner more than met the spirit and intent of the MCP regulations.

Q. The LSP Board alleges that Mr. Cushing submitted a Numerical Ranking System ("NRS") score sheet to the DEP on January 21, 2004 that did not score indoor air as a "likely potential pathway." (as stated in the Joint Pre-Hearing Statement). Based on the information available to Mr. Cushing at the time, do you have an opinion as to whether or not Mr. Cushing breached the standard of care required by 309 CMR 4.02(1), or 4.03(3)(b) regarding his determination of a numerical ranking?

A. I do have an opinion and my opinion is that Mr. Cushing did not breach the standard of care required under the stated sections of the CMR.

Q. What is the basis of this opinion?

A. Under the MCP, in rendering an LSP Tier Classification Opinion regarding the NRS scoring of a disposal site, "the LSP shall consider the data, facts and other information known about a disposal site, including but not limited to, the data, facts and other information obtained during Phase I, and if applicable, during Phase II." 310 CMR 40.1503(2). The MCP recognizes that Tier Classification can evolve and change from Phase I to Phase II, and requires submittal of revised Tier Classification as new information becomes available. 310 CMR 40.1511; 310 CMR 40.0530.

Further, Tier Classification is a matter of the LSP's professional judgment and is generally subjective. If an LSP determines that a "reasonable likelihood exists that the indoor air quality of an occupied building will be impacted", the LSP should score indoor air as a "Potential Exposure Pathway". 310 CMR 40.1512(4). If the LSP determines that a "reasonable likelihood exists" that the contamination "is affecting air quality in an occupied building", the LSP should score indoor air as a "Likely or Confirmed Exposure

Pathway". The differences between the two standards is very small and the LSP is required to exercise his professional judgment in order to determine which classification applies based upon the data, facts and other information known at the time. At the time the Site was scored, only soil gas data was available which was taken out side of the building foundation. More convincing data would be needed to score this pathway as a "Likely or Confirmed Exposure Pathway".

Here, based upon the facts known to Mr. Cushing at the time, he was well within his professional judgment to have scored indoor air as a Potential Exposure Pathway rather than a Likely or Confirmed Exposure Pathway. Ms. Listernick informed Mr. Cushing that, based upon the modeling from the outdoor soil gas results, there was a potential that the indoor air quality will be impacted. However, Mr. Cushing had not yet confirmed that an air exposure pathway existed. This is further complicated by the fact that the groundwater was not in a GW-2 exposure category, which creates a presumption that indoor air was not being impacted. Finally, the basement foundation of the Premises has excellent integrity, which would be considered favorably in the scoring. Accordingly, Mr. Cushing was within his professional judgment to score indoor air at 100 points as a Potential Exposure Pathway.

Q. In February, 2004 Mr. Cushing conducted indoor air testing at the Site. He sent this data to a risk assessor to determine whether or not an Imminent Hazard existed at the site. Using the indoor air sampling provided by Mr. Cushing the risk assessor determined that no Imminent Hazard existed at the site. The LSP Board alleges that Mr. Cushing breached his duty of care by not identifying alleged inaccuracies in the Imminent Hazard Evaluation prepared by the risk assessor,

including the assumption that part-time workers were a more likely scenario at the site. Did Mr. Cushing breach his duty of care by failing to identify this alleged inaccuracy?

A: First, I refer you to my earlier testimony regarding the relationship between the LSP and risk assessor. With regard to the February 23, 2004 Indoor Air Evaluation, it is important to note that Ms. Listernick performed the calculations and prepared the report, not Mr. Cushing. Prior to issuing her report, Ms. Listernick verbally informed Mr. Cushing that her calculations showed that there was no Imminent Hazard for the full time employee. Exhibit R-3, Phone Log dated February 19, 2004. Based upon the fact that Ms. Listernick is a highly regarded risk assessor, who Mr. Cushing utilized as a risk assessor for 25 years, it was within the LSP standard of care in 2004 for Mr. Cushing to rely on Ms. Listernick to be aware of the relevant standards and perform the proper calculations in accordance with the requirements of the MCP and render an opinion whether the presence of an Imminent Hazard condition existed.

Although Ms. Listernick's report states that the part-time employee was the "more likely" scenario, she still calculated the ELCR for a full time employee and determined that no Imminent Hazard existed. Joint Exhibit 9. In fact, Cushing's cover letter plainly indicated that Ms. Listernick's conclusion that no Imminent Hazard existed was based upon using the "worst-case" scenario for a full time worker at the video store. Joint Exhibit 10. In any event, it is the responsibility of the risk assessor, to develop the risk exposure scenarios for the site based on data input and site specific information supplied by the LSP for their risk calculations. Exhibit R-8 Guidance for Disposal Site Risk Characterization, Interim Final Policy, WSC/ORC-95-151, p. 10-2. Here, Ms. Listernick

provided a conclusion in her report and verbally to Mr. Cushing that either under a part time or full time analysis, no Imminent Hazard existed. Given that Mr. Cushing was not a qualified risk assessor and he had a long standing professional relationship with Ms. Listernick, he was entitled to rely upon her conclusions that an Imminent Hazard did not exist at the time. In my experience, most LSPs in 2004 would have trusted the professional opinion of their risk assessor and not second guessed the conclusions in the report. Mr. Cushing deserves the benefit of the doubt on this issue.

Q. Is there anything else you would like to say regarding Mr. Cushing's activities at the Site?

A. After thoroughly reviewing the MassDEP and LSP Board files and speaking with Mr. Cushing, I do not find that Mr. Cushing intended to avoid or deceive anyone concerning the existence of an Imminent Hazard condition at the site, nor do I believe that his work was below the standard of reasonable care of a reasonably prudent LSP. He carried out each step of his Site assessment diligently and in accordance with the MCP. Accordingly, based upon these circumstances, the LSP community understands of and available training regarding vapor intrusion, and upon the general standards of care required for a reasonable LSP in 2003 and 2004, it is my professional opinion that Mr. Cushing complied with the standards of care for an LSP in this matter.

In addition, I have reviewed Mr. Cushing's Phase I and II remediation Plan and I believe that the proposed remediation would have been successful had the client authorized Mr. Cushing to proceed. Even after being terminated by the client, Mr. Cushing rescored and resubmitted the Tier Classification scoring document, which he was not obligated to undertake, since he had been disengaged by his client at this point.

Based on my site inspection, a less rigorous vapor intrusion sub slab depressurization mitigation system has been deployed which will not provide a permanent solution for the problem. This is not a remedial system like the one Mr. Cushing had proposed.

Q. Have you reviewed the testimony of Gerard M. Martin which was submitted by the LSP Board in conjunction with this case?

A. Yes.

Q. Do you have a professional opinion regarding Mr. Martin's conclusion that Mr. Cushing failed to comply with the MCP when he addressed the concentrations of PCE in soil gas?

A. Mr. Martin's conclusion that Mr. Cushing failed to comply with the MCP with regard to the soil gas results is unfounded. Mr. Martin opines that Mr. Cushing should have conducted an immediate Imminent Hazard Evaluation based solely upon receiving soil gas results, which ranged from 159,000 micrograms per cubic meter ($\mu g/m^3$) to 2,400,000 $\mu g/m^3$.

Mr. Martin is troubled by the "millions of micrograms" measurement but this needs to be put in perspective. The 2.4 million microgram reading in soil gas equates to only 364 ppmV. The soil gas modeled concentration in the building was 785ug/m3 which equates to 0.115ppmV. If this were still an active drycleaner establishment, a worker would be allowed to breathe 100ppmV for 8 hours a day as a full time employee under OSHA rules and this would not be an MCP issue since the permitted concentration would be in excess of two orders of magnitude higher than the concentration in air due to vapor intrusion alone.

Further, as I testified previously, soil gas results alone would not trigger the need for an Imminent Hazard Evaluation without additional assessment data. Even today, there is no support in the MCP or in any MassDEP guidance that suggests that the "raw" data from a soil gas test triggers the need for an Imminent Hazard Evaluation. Notably, Mr. Martin fails to provide any support for his opinion other than his statement that "MassDEP considers even a concentration in the tens of thousands to potentially create an Imminent Hazard." In fact, the MassDEP's actions in this matter contradict Mr. Martin's assertion. In an internal email on February 3, 2004, the MassDEP noted: "This is not a residence or school so it's not an automatic IRA Condition [note an IRA (Immediate Response Action) is prompted by an Imminent Hazard as well as other conditions], but if they find substantial defects in the indoor air they should be doing a formal IH evaluation before the permit is issued. (May change score). . . . Timing is good, February is the month for indoor air sampling, and they will need it for Phase II anyhow." Joint Exhibit 11. Based upon this email, it is clear that the MassDEP was not convinced that an Imminent Hazard existed at the time it requested indoor air testing in February 2004.

Moreover, the site conditions at the Premises did not support a need for an Imminent Hazard Evaluation. First, the ground water within 30 feet of the building was more than 15 feet deep, which as I explained above, is not in a GW-2 setting. See Joint Exhibit 6, Phase I Report, Table 1. Based upon this, in 2003 and 2004, Mr. Cushing did not have analytical data to assume that indoor air was being adversely impacted by an environmental release (as opposed to previous off gassing of normal process spills from the prior drycleaner operations at the Premises). He planned to conduct further

assessment of the potential vapor intrusion pathway as part of a Phase 2 investigation and this is supported by the regulations. See 310 CMR 40.0932(6). In my professional opinion, Mr. Cushing should be credited, rather than criticized for his efforts to further investigate vapor intrusion beyond the mandatory requirements of the MCP in 2003 and 2004. Mr. Cushing's efforts uncovered the potential for indoor air impacts at the Premises far earlier than the normal standard of care for a Phase I investigation in 2002 and 2003.

In any event, the standard of care in 2003 and 2004 (and even today) does not require an LSP to immediately conduct an Imminent Hazard Evaluation simply based solely upon "raw" soil gas results. In fact, it is not even possible for an imminent hazard evaluation to be performed simply based upon soil gas results. The standard of care in 2003 and 2004 required an LSP to have the soil gas results analyzed to determine if further testing and possibly an imminent hazard evaluation was necessary. Here, Mr. Cushing met this standard of care by recognizing the potential of indoor impacts based upon the soil gas results and hiring a risk assessor Debra Listernick, to perform a risk analysis using the soil results with a predictive computer model. By October 2003, Mr. Cushing had worked with Ms. Listernick for approximately 25 years and he had no reason to doubt her competence as a risk assessor. Quite the opposite, Ms. Listernick is an experienced and highly regarded risk assessor amongst the LSP community, and the LSP Board appointed her as a Board Member in 2011.

In October 2003, Ms. Listernick rendered a risk analysis using the soil gas results as input to the model and informed Mr. Cushing that although the results were greater than No Significant Risk (NSR), in her professional opinion, indoor testing could be

performed as part of Phase II. Given that the ground water was not in a GW-2 setting and the measured levels of PCE in the groundwater did not exceed Upper Concentration Limits (UCLS), 310 CMR 40.0996, Mr. Cushing met the requirements of MCP and standard of care in 2003 and 2004 by conducting soil gas testing and seeking confirmation from a qualified risk assessor regarding whether further investigation or an imminent hazard evaluation was necessary prior to Phase II. As previously discussed in my testimony, Mr. Cushing was entitled to rely upon Ms. Listernick's expert advice regarding the timing of the indoor testing as confirmation that an Imminent Hazard Evaluation was not required at that time. Accordingly, Mr. Cushing's determination that an imminent hazard evaluation was not required complies with the LSP standard of care in 2003 and 2004.

Q. Have you reviewed Mr. Martin's criticisms related to Mr. Cushing's Phase I Report submitted to the MassDEP for this site?

A. Yes.

Q. Do you have a professional opinion as to these criticisms?

A. In my professional opinion, Mr. Martin's criticisms largely involve the level of detail in the Phase I Report. However, the MCP does not quantify the level of detail required in the Phase I report. In my professional experience, Phase I Reports vary greatly in detail from LSP to LSP and such minor discrepancies in the level of detail should not be a basis for discipline. In any event, Mr. Martin's criticisms are discussed below.

First, Mr. Martin claims that the Phase I Report should have contained a reference to an Imminent Hazard Evaluation or stated that an Imminent Hazard existed. This claim

is not based on the record. As I testified above, Mr. Cushing was well founded in his belief that an Imminent Hazard Evaluation was not necessary based upon the fact that the GW-2 standard was not exceeded and Ms. Listernick's advice that indoor testing could be done as part of Phase II. It is undisputed that Mr. Cushing was not privy to the actual calculations of Ms. Listernick or the ELCR used in October 2003, and he did not have the required expertise to review the calculations even if they were made available to him. Accordingly, Mr. Cushing complied with the standard of care for an LSP in 2003 and 2004 by stating in the Phase I Report that there was no Imminent Hazard Evaluation necessary or Imminent Hazard.

Second, Mr. Martin claims that Section 8.1.1 of the Phase I Report is misleading because it states that "Vapors attributable to the release have not been identified in the site building," opining that the statement implies that indoor testing had occurred. His sole focus on Section 8.1.1 to come to this conclusion ignores the fact that Section 7.2.2 of the Phase I Report plainly states that only monitor well and soil sampling were performed at this site. See, Exhibit R-6. Based upon a reading of the totality of the Phase I Report, there is no reasonable basis to conclude that Mr. Cushing had misrepresented that indoor testing had already occurred.

Mr. Martin's third criticism that the Phase I did not discuss any effort to identify the source of the release as part of the release history is again merely a minor complaint as to the level of detail provided in the Phase I Report. In fact, the Phase I Report addresses all of the concerns raised by Mr. Martin. Section 1.1 of the Phase I sets forth the regulatory background, including the MassDEP's efforts to investigate an alleged dumping of PCE on the premises in 1993. Section 5 sets forth the site history. Sections 6

and 7 document Mr. Cushing's assessment activities, which includes assessment of the release and the site's hydrological characteristics. Section 11 provides a summary of Mr. Cushing's findings related to the release. Accordingly, the Phase I Report meets the MCP requirement to set forth the disposal site history, including Mr. Cushing's attempts to locate the source of the release.

Fourth, Mr. Martin's criticism that the Phase II scope of work did not comply with the MCP is unfounded. As conceded by Mr. Martin, a conceptual scope of the Phase II work is sufficient if it provides interim milestones. 310 CMR 40.0510(2)(f). Section 9.0 of the Phase I provides a conceptual scope of work, which provides for additional soil borings, and soil, groundwater and indoor air samplings. Section 9.6 provides the interim milestones of May 2005 for completion of testing and November 2005 for submittal of the Phase II Report. This meets the standard of care in 2003 and 2004.

Mr. Martin also criticizes Mr. Cushing's statement in the Phase I Report that he planned to test indoor air as part of Phase II "as appropriate." Mr. Martin twists the phrase "as appropriate" to mean "if appropriate" to bolster his criticisms. However, on February 11, 2004, Mr. Cushing sent the owner a statement of work (the "SOW"), which clearly sets forth that he intended to perform 14 hours of indoor air sampling (inclusive of 8 hrs. of field sampling) as part of Phase II. In general, LSPs provide a conceptual scope of work for Phase II in the Phase I Report. Once the client approves the SOW, the LSP normally repackages the SOW as a detailed Phase II Scope of Work, which is then submitted to the MassDEP. Mr. Cushing was never given the chance to implement his Phase 2 SOW as he was disengaged by his client shortly after the Phase 2 SOW

submittal. Mr. Cushing's provision of a conceptual scope of work complies with the generally accepted practice in the LSP community. Accordingly, Mr. Cushing's Phase I Report meets the standard of care in 2003 and 2004. His prompt attention to move forward with the project on a pre-active and timely manner more than met the spirit and intent of the MCP regulations.

Q. Do you have an opinion regarding Mr. Martin's statement that he would have required indoor testing and an Imminent Hazard evaluation in October 2003 when Mr. Cushing received the soil gas results?

A. As testified above, Mr. Martin's opinion is not consistent with the standard of care in 2003 and 2004. Based upon the facts known by Mr. Cushing at the time, the standard of care in 2003 and 2004 did not require him to conduct immediate indoor testing or an Imminent Hazard Evaluation simply based upon a soil gas concentration. This is within Mr. Cushing's professional judgment and meets the standard of care.

Mr. Martin's statement is also contradicted by the MassDEP's actions in this matter. As I previously testified, the record indicates that MassDEP requested indoor testing because "Timing is good, February is the month for indoor air sampling, and they will need for Phase II anyhow." Joint Exhibit 11. Contrary to Mr. Martin's opinion, the MassDEP did not require an Imminent Hazard Evaluation to be performed immediately. Rather, it requested indoor testing based upon the soil gas concentrations to be performed to determine if an Imminent Hazard Evaluation was necessary. No assumption was made by the MassDEP that an Imminent Hazard existed or that even an Imminent Hazard Evaluation needed to be performed at the time it requested the indoor testing. Rather, it appears that the MassDEP wanted the testing to occur in February 2004, which is

generally considered the best time to conduct indoor air testing. Joint Exhibit 11. Testing in the warmer weather months is not considered conservative because the indoor air samples could be impacted by increased air circulation (i.e. having windows and doors open causes the rooms to ventilate) and lower pressure gradients, and thus potentially diluting the air concentrations. Accordingly, Mr. Martin's unsupported testimony does not reflect the LSP standard of care in 2003 and 2004.

Q. Do you have a professional opinion regarding Mr. Martin's conclusion that the score of 100 on the Numerical Ranking System (NRS) score sheet for indoor air failed to comply with the MCP?

A. In my professional opinion, Mr. Martin's opinion regarding scoring of the NRS score sheet is without support. Under the MCP, in rendering a LSP Tier Classification Opinion regarding the NRS scoring of a disposal site, "the LSP shall consider the data, facts and other information known about a disposal site, including but not limited to, the data, facts and other information obtained during Phase I, and if applicable, during Phase II." 310 CMR 40.1503(2). The MCP recognizes that Tier Classification can evolve and change from Phase I to Phase II, and requires submittal of revised Tier Classification as new information becomes available. 310 CMR 40.1511; 310 CMR 40.0530.

Further, Tier Classification is a matter of the LSP's professional judgment and is generally subjective. If an LSP determines that a "reasonable likelihood exists that the indoor air quality of an occupied building will be impacted", the LSP should score indoor air as a "Potential Exposure Pathway". 310 CMR 40.1512(4). If the LSP determines that a "reasonable likelihood exists" that the contamination "is affecting air quality in an occupied building", the LSP should score indoor air as a "Likely or Confirmed Exposure

Pathway". The differences between the two standards is very small and the LSP is required to exercise their professional judgment in order to determine which classification applies based upon the data, facts and other information known at the time. At the time the site was scored, only soil gas data was available which was taken out side of the building foundation. More convincing data would be needed to score this pathway as a "Likely or Confirmed Exposure Pathway".

Here, based upon the facts known to Mr. Cushing at the time, he was well within his professional judgment to have scored indoor air as a Potential Exposure Pathway rather than a Likely or Confirmed Exposure Pathway. Ms. Listernick informed Mr. Cushing that, based upon the modeling from the outdoor soil gas results, there was a potential that the indoor air quality will be impacted. However, Mr. Cushing had not yet confirmed that an air exposure pathway existed. This is further complicated by the fact that the groundwater was not in a GW-2 exposure category, which created a presumption that indoor air would not be impacted. Finally, the basement foundation of the Premises has excellent integrity, which would be considered favorably in the scoring. Accordingly, Mr. Cushing was within his professional judgment to score indoor air at 100 points as a Potential Exposure Pathway.

Q. Do you have an opinion regarding Mr. Martin's testimony that Mr. Cushing failed to comply with the MCP when he submitted the risk assessor's report which stated there was no Imminent Hazard?

A. With regard to the February 23, 2004 Indoor Air Evaluation, it is important to note that Ms. Listernick performed the calculations and prepared the report, not Mr. Cushing. Prior to issuing her report, Ms. Listernick verbally informed Mr. Cushing that

her calculations showed that there was no Imminent Hazard for the full time employee. Exhibit R-3 Phone Log dated February 19, 2004. Based upon the fact that Ms. Listernick is a highly regarded Risk Assessor, who Mr. Cushing utilized as a risk assessor for 25 years, it was within the LSP standard of care in 2003 and 2004 for Mr. Cushing to rely on Ms. Listernick to be aware of the relevant standards and perform the proper calculations in accordance with the requirements of the MCP and render an opinion whether the presence of an Imminent Hazard condition existed.

Mr. Martin's statement that Mr. Cushing "chose" the part-time analysis over the more conservative full time analysis is contradicted by the record. Although Ms. Listernick's report states that the part-time employee was the "more likely" scenario, she still calculated the ELCR for a full time employee and determined that no Imminent Hazard existed. Joint Exhibit 9. In fact, Cushing's cover letter plainly indicated that Ms. Listernick's conclusion that no Imminent Hazard existed was based upon using the "worst-case" scenario for a full time worker at the video store. Joint Exhibit 10. In any event, it is the responsibility of the Risk Assessor, to develop the risk exposure scenarios for the site based on data input and site specific information supplied by the LSP for their risk calculations. Exhibit R-8 Guidance for Disposal Site Risk Characterization, Interim Final Policy, WSC/ORC-95-151, p. 10-2. Here, Ms. Listernick provided a conclusion that either under a part time or full time analysis, no Imminent Hazard existed. Given that Mr. Cushing was not a qualified Risk Assessor and he had a long standing professional relationship with Ms. Listernick, he was entitled to rely upon her conclusions that an Imminent Hazard did not exist at the time. In my experience, most LSPs in 2003 and 2004 would have trusted the professional opinion of their Risk

Assessor and not second guessed the conclusions in the report. Mr. Cushing deserves the benefit of the doubt on this issue.

Q. Have you reviewed the testimony of John Kubiczki, which was submitted by the LSP Board in conjunction with this case?

A. Yes.

Q. Do you have a professional opinion with regard to Mr. Kubiczki's testimony related to the roles of the LSP and Risk Assessor at a hazardous waste disposal site?

A. First, Mr. Kubiczki's opinion that a verbal scope of work is not good LSP practice is unfounded. Often short deadlines prevent an LSP from sending a written scope of work to the Risk Assessor. The standard of care in 2003 and 2004 requires the LSP to convey what they have done in relation to the site assessment and what form of risk assessment the Risk Assessor needs to perform. It is then up to the risk assessor to inform the LSP if more information or testing is needed to perform this analysis to draw valid conclusions. Often it is far more efficient (both in cost and time) to verbally communicate this information than to draft formal scopes of work. Further, Mr. Kubiczki's conclusion that the standard of care required the LSP to "spot-check" site data and compare the calculated ELCR to the MCP standards is similarly incorrect. These activities are strictly within the risk assessor's responsibility and an LSP usually lacks the credentials to challenge the risk assessor's calculations and conclusions.

As I testified above, the risk assessor's role is to use their professional judgment in determining the exposure assumptions and evaluate exposure point concentrations, performing the calculations and interpreting the results. Mr. Cushing had confidence in Ms. Listernick's competence in providing risk assessment service based upon his 25

years of working with her on numerous sites. The LSP's role is to manage the contractors and technical specialists on the job, including the risk assessor, not to do their jobs. The LSP's role has sometimes been compared to the director of an orchestra; the LSP is responsible for making sure everyone is playing together, they are not expected to play or master every instrument.

Q. Do you have a professional opinion regarding Mr. Kubiczki's testimony that Mr. Cushing should have performed a risk characterization or an Imminent Hazard evaluation upon receiving the soil gas test results in September 2003?

A. In addition to my testimony above addressing Mr. Martin's opinion on this subject, I note several inconsistencies in Mr. Kubiczki's testimony. First, Mr. Kubiczki's claim that Mr. Cushing did not have a risk characterization performed is not based on the record evidence. Upon receiving the soil gas results, Mr. Cushing appropriately had Ms. Listernick perform a risk analysis to determine if and when indoor testing would be required. Further, there is no basis for Mr. Kubiczki's criticism that Mr. Cushing should have conducted an Imminent Hazard evaluation in October 2003. As I testified above, Ms. Listernick did not convey the ELCR result to Mr. Cushing and without this information, Mr. Cushing was not aware of the potential for an Imminent Hazard. Accordingly, the entirety of Mr. Kubiczki's testimony regarding what Mr. Cushing should have done if he had known the ELCR is irrelevant because it is undisputed that Ms. Listernick did not convey this information to Mr. Cushing. As I testified above, it was not a breach of the duty of care in 2003 and 2004 to not ask for the details of the mathematical calculations used by the risk assessor with whom Mr. Cushing had a long standing professional relationship.

Further, Mr. Kubiczki's statement that the GW-2 standard indicated a need for an Imminent Hazard Evaluation is disingenuous. As I testified above, in 2003 and 2004, the GW-2 Method 1 standards were meant to be a protective screening tool for LSPs to determine whether further investigation of vapor intrusion was even necessary in a GW2 setting. Here, the groundwater did not meet the risk criteria for GW-2. Nor did the levels of PCE in groundwater exceed UCLs which are an indicator of harm to human health and the environment. Accordingly, in 2003 and 2004, Mr. Cushing was relieved of the need to further evaluate vapor intrusion from groundwater impacts which was the paradigm for potential vapor intrusion problems at the time. Rather than criticizing Mr. Cushing based upon the GW-2 risk criteria which did not apply to this site, Mr. Cushing should be credited for investigating further into whether a vapor intrusion problem existed at the site, despite the fact that Mr. Cushing had reason to assume vapor intrusion was not occurring at the Premises.

Q. Mr. Kubiczki has testified that the standard of care required Mr. Cushing to request that Ms. Listernick provide him with a written report of the her analysis of the soil gas results in October 2003. Does the LSP standard of care in 2003 require this?

A. No. The LSP standard of care and the MCP in 2003 and 2004 did not require Mr. Cushing to request a written report regarding the October 2003 soil gas data. It sufficed that Mr. Cushing had the risk assessor perform the risk calculation of the soil results and received a verbal report of her conclusion that indoor testing could be performed as part of Phase II. It is expected that a risk assessor of Ms. Listernick's tenure would be familiar with the base standards of risk assessment (i.e. whether or not her calculations

signaled the need for an imminent hazard). Rather than informing Mr. Cushing of the potential need for an Imminent Hazard Analysis, Ms. Listernick advised him that indoor testing could wait until Phase II. Accordingly, Mr. Cushing had no reason to believe that an Imminent Hazard Evaluation needed to be performed.

Further, Mr. Kubiczki's conclusion that Mr. Cushing should have conducted an Imminent Hazard Evaluation upon receiving Ms. Listernick's report is not supported in the record. As previously discussed, Mr. Cushing was not aware of the ELCR numerical result that Ms. Listernick had calculated. Without the ELCR, Mr. Cushing had no reason to believe that an Imminent Hazard Evaluation was necessary. As I testified previously, the standard of care did not specifically require Mr. Cushing to ask Ms. Listernick for the written ELCR report. The standard of care in 2003 and 2004 required that a soil gas survey be performed and that the data from the survey be evaluated by a competent risk assessor to determine the potential for vapor intrusion and a potential Immanent Hazard condition. Mr. Cushing complied with both of these requirements.

Q. Do you have a professional opinion regarding Mr. Kubiczki's contention that Mr. Cushing could not reasonably rely on Ms. Listernick's advice as to the timing of indoor testing?

A. Mr. Kubiczki's statement that Ms. Listernick as a risk assessor was "most likely unfamiliar with the specifics of the MCP" appears to be without personal knowledge. In any event, risk assessors are required to be familiar with the standards of the MCP to handle even a basic risk assessment. As I testified above, the risk assessor's role is to create the risk calculations and develop conclusions based upon the standards provided under the MCP and other authoritative sources. Additionally, a risk assessor provides an

LSP with their conclusions and guidance based upon those calculations. Simply put, a qualified and competent risk assessor needs to have a working knowledge of the MCP's standards to competently do their job in Massachusetts. As Ms. Listernick is an experienced and well respected risk assessor, as well as a Member of the LSP Board and it was well within the standard of care for Cushing to have assumed that Ms. Listernick was qualified to do her job and be familiar with the requirements of the MCP as they related to her risk assessment calculations. Accordingly, Mr. Cushing complied with the standard of care in 2003 and 2004 when he relied on Ms. Listernick's advice as to the timing of when to conduct indoor testing.

Q. Do you have anything to add regarding Mr. Kubiczki's criticisms related to the Phase I Report?

A. No. Mr. Kubiczki's testimony is generally the same as Mr. Martin's, which I previously addressed in my testimony above.

Q. Do you have anything additional regarding Mr. Kubiczki's testimony related to the February 2004 Indoor Air Evaluation report?

A. In general, I have addressed these criticisms in my previous testimony above related to Mr. Martin. I would like to add, however, that Kubinzki's opinion fails to recognize that a risk assessor and not the LSP, determines the exposure assumptions and scenarios. It is also within the Risk Assessor's professional judgment whether to include remediation efforts as part of the Imminent Hazard Evaluation. 310 CMR 40.0953(1). Under the MCP, the "specific time period shall be selected in consideration of the nature of the hazard under investigation and the projected time until a Comprehensive Response Action could be completed, in order to determine the need for an Immediate Response

Action." 310 CMR 40.0953. Here, Ms. Listernick informed Mr. Cushing that she found that no Imminent Hazard existed for the full time worker assuming that the remediation was completed within the five year period. Joint Exhibit 9. In general, in 2003 and 2004, LSPs did not challenge Risk Assessors on these types of findings, because the calculations and assessments were, and still are, beyond most LSP's competency and experience.

Q. Have you reviewed the testimony of John H. Guswa, which was submitted by the LSP Board in conjunction with this case?

A. Yes.

Q. Dr. Guswa states that an LSP has the responsibility to determine which exposure assumptions were the most conservative and should be used to comply with the MCP. Did the LSP standard of care in 2003 and 2004 require the LSP to take on this responsibility?

A. No. As I testified above, it is up to the risk assessor to determine which risk exposure assumptions are to be applied when doing the risk analysis calculations. The LSP is required to provide the test results, site conditions and other data that the risk assessor will use in their calculations. It is up to the risk assessor to determine how that data is input into their risk calculations, and what attenuation, toxicity factors and exposure scenario applies. An LSP does not generally have the requisite background to perform this function, and in order to comply with LSP Rule of Professional Conduct Rule 4.02(2), an LSP needs to rely on the risk assessor to complete this task and advise the LSP on how to proceed.

Q. Do have a professional opinion regarding Dr. Guswa's claim that Mr. Cushing failed to comply with the standard of care when he received the soil gas data in October 2003?

A. As I testified above, "raw" soil gas test results is not a basis for an LSP to conclude that an Imminent Hazard exists or even to conduct an Imminent Hazard Evaluation. Dr. Guswa testifies that based upon the soil gas results, PCE could "potentially" infiltrate through cracks in the foundation. As an aside, this testimony contradicts Dr. Guswa's later opinion that Mr. Cushing should have scored indoor air as a Likely or Confirmed Exposure Pathway, rather than a Potential Exposure Pathway in the Tier Classification Score Sheet based solely on the soil gas results. Additionally, based upon my examination of the Premises' basement, I found that the foundation was in excellent condition, without any cracks for PCE to easily migrate through. In my professional opinion, the condition of the basement foundation supports Mr. Cushing's professional opinion at the time that vapor intrusion to the building from an environmental release (e.g. alleged dumping of waste PCE on the soil outside) may not have been occurring. It should also be recognized that an evaluation of site conditions and a site visit /inspection, at a minimum should have been conducted by Mr. Guswa and the other experts involved in this matter prior to rendering site specific opinions about Mr. Cushing's work. It appears that none of the Board's witnesses viewed the Premises prior to rendering their testimony.

In any event, a soil gas result is simply an indicator that the LSP needs to further evaluate the data to determine if further investigation is necessary. Mr. Cushing complied with this standard by providing the soil gas results to Ms. Listernick and

requesting that she perform a risk analysis. Ms. Listernick did not notify Mr. Cushing that the results triggered the need for an Imminent Hazard Evaluation or provide to him with the ELCR. Rather, Ms. Listernick and Mr. Cushing discussed that indoor air testing could wait until Phase II, signaling to Mr. Cushing that an Imminent Hazard Evaluation was not triggered by Ms. Listernick's analysis.

If the ELCR was as high as Dr. Guswa claims (36 times the MCP standard for NSR), Ms. Listernick should have brought this fact to Mr. Cushing's attention immediately and in no way advise him to hold off on indoor testing until Phase II.

Q. Do you have a professional opinion regarding Dr. Guswa's conclusion that Mr. Cushing was required to request the underlying data for Ms. Listernick's analysis of the soil gas results in October 2003?

A. As I testified previously, Dr. Guswa's conclusion that an LSP must request the underlying data of a soil gas risk calculation is not based upon the standard of care in 2003 and 2004. The risk assessor is required to know the MCP standards in order to do her job because these standards are an integral part of the risk assessor's calculation. Accordingly, Mr. Cushing complied with the standard of care in 2003 and 2004 in assuming that Ms. Listernick, whom he trusted based upon a 25 year professional relationship, would be aware of the MCP standards for an imminent hazard and when an imminent hazard evaluation was necessary, and would inform him of the ELCR if it indicated that Mr. Cushing needed to perform an imminent hazard analysis.

Q. Dr. Guswa testified that the high concentrations in the soil gas discovered in October 2003 should have alerted Mr. Cushing to do indoor air testing at that time. Do you have a professional opinion regarding this testimony?

A. Dr. Guswa's testimony is misleading because Mr. Cushing did in fact recognize that indoor air testing needed to be done when he received the soil gas results in October 2003. Mr. Cushing only questioned whether indoor air testing needed to be done immediately, or could it wait until Phase II, which is typically when indoor air testing is performed.

Dr. Guswa further compounds this misleading testimony by asserting that the MassDEP "ordered testing to be done immediately," to support his proposition that the standard of care required immediate indoor testing. However there is no evidence that Mr. Cushing was asked to perform the testing immediately. Joint Exhibit 11.

Q. Do you have anything to add to your previous testimony related to the Phase I Report based upon Dr. Guswa's testimony?

A. In addition to my testimony above, I would like to add that Dr. Guswa's criticism that the Phase II scope of work (as described in the Phase I Submittal) should have included "a commitment to test indoor air immediately" contradicts his prior opinion that indoor air should have been tested immediately in October 2003. If an Imminent Hazard Evaluation had to be performed in October 2003 that is when indoor air testing should have been performed. There is no basis for Dr. Guswa to then opine as a "fall back" position that indoor air testing was required to be performed "immediately" after the Phase I Submittal was filed with the DEP. In any event, as I testified previously, Mr. Cushing's exercise of professional opinion to wait until Phase II to perform indoor air testing, based upon the knowledge he possessed at the time, comported with the standards of care in effect in 2003 and 2004.

Additionally, Dr. Guswa's criticism of the Phase I report based upon the property owner's rejection of Mr. Cushing's proposal regarding the SOW he provided in February and March of 2004 is nonsensical. Joint Exhibit 23, which Dr. Guswa cites to support this claim, states that in February and March 2004, Mr. Cushing presented the remediation plan to the owner. Joint Exhibit 23, pp. 2. The February SOW, delivered after the Phase I was filed with the MassDEP, set forth the remediation plan for Phase II and III. Joint Exhibit 7. The March SOW, which was submitted after the Imminent Hazard was discovered, set forth the costs to remediate the Imminent Hazard. Joint Exhibit 23, Appendix G. After receiving the March SOW, the owner decided that the proposed remediation was too costly and sought a second opinion from another LSP. On March 24, 2004, Mr. Cushing resigned as the LSP for the site. Joint Exhibit 23, pp. 3. It is unclear how the Owner's rejection of the February and March SOWs, which occurred after Mr. Cushing submitted the Phase I and after the Imminent Hazard was detected is a basis to criticize Mr. Cushing's Phase I report. Accordingly, there is no basis find that Mr. Cushing fell below the standard of care in 2003 and 2004 regarding his Phase I Report.

Q. Does this conclude your testimony?

A. Yes.