OAK
ADVISING & CONSULTING, INC.

September 4, 2017

Dear Public Company Accounting Oversight Board,

I would like to submit my comments on the proposed amendments to auditing standards outlined in PCAOB Release No. 2017-003/Rulemaking Docket Matter No 044 Auditor's Use of the Work of Specialists and Release No. 2017-002/Rulemaking Docket Matter No. 043 Auditing Accounting Estimates and their potential impacts. My perspective is one of an internal (employed and engaged) environmental specialist supporting public accounting firms. Since environmental liability and asset retirement obligation (ARO) estimates contain issues that will, in most cases, be subject to both proposals, my comments are not divided between the documents but presented for consideration together.

While my experiences have allowed me to observe certain complexities with both management estimates and specialists, I would not presume to have sufficient accounting and auditing knowledge to propose revisions or additions to the proposals. Instead, I hope the Board can use these experiences and examples of difficulties in performing the proposed requirements to inform their discussions and revisions, as appropriate. Some of these observations may represent challenges in meeting the current requirements and others of meeting the proposed requirements. If the Board desires further clarification of any of these comments to support its work, I would be pleased to discuss them further.

I am an environmental remediation specialist and have served as an audit specialist (employed and engaged) supporting financial audits of environmental liabilities and asset retirement obligations for approximately eight years. In most cases, I believe my work and those of my teammates, largely with bigger firms, has, as the specialist proposal described, "*exceed*[ed] *the existing requirements of AS 1210*." In most cases, audits in which I was scoped to provide support did include "substantive procedures, including tests of details and substantive analytic procedures" of management estimates (typically using specialists) that were not measured at fair value but which were considered to contain a high degree of uncertainty and management judgment.

Such procedures included "*testing and evaluating the data used by the specialist, evaluating the methods and significant assumptions used by the specialist, and evaluating the relevance and reliability of the specialist's work and its relationship to the relevant assertion*." For the most part, we considered the assumptions and conclusions of managements' engaged specialists to be as management's own for reasons I will discuss herein.

While I have been privileged to learn a great deal regarding accounting and auditing from my colleagues and my firms, my experience in audit support, naturally, was focused only on environmental liabilities and AROs. As such, the observations made here are not intended to describe circumstances involving other management estimates or specialists or imply there may be similarities, though it is possible that they may exist. I hope that these responses will be helpful to your team in spite of these limitations. My most general comments on the expected results of, and concerns with, the proposed requirements are included in the section "Overall Comments." Specific observations of difficulties auditing specialist estimates that I hope will also be of use to the Board are included in the "Specific Comments" section.

Regards,

J. M. Young,
Principal, Environmental Specialist

OVERALL COMMENTS

At the highest level, the proposed changes specify that management estimates, specifically including contingencies like environmental liabilities and AROs (which are commonly supported by the work of internal or external specialists), be subject to greater efforts, subject to their identification by the audit team as being of significant risk.

I first joined a "big 4" firm in the fall of 2009 when that firm (U.S.) had launched an initiative to assemble a group of environmental and other technical specialists specifically to provide environmental specialist support to the audit function. The newly formed group was invested with a former audit partner to guide the work of the group and to dialogue with the current firm audit partners that would form the body of internal customers. This would later be augmented by support from National Audit Practice leaders. I believe the success of that group, in terms of improving audit quality, was very much based upon the fact that both perspectives were represented: deep knowledge of auditing expectations and norms along with deep but "fresh" technical engineering perspectives with no auditing or accounting knowledge whatsoever. In hindsight, we would realize that the extensive communication gaps that existed between our professions in the microcosm of our team also existed in companies and external auditors at large. I believe both sides were surprised by the depth of knowledge the other did not possess.

For this reason, at first, the engagements were challenging, time-consuming, and, occasionally, contentious as specialists and audit team colleagues came to understand the complexities in each other's area of expertise and develop a common language between fields of expertise. Additionally company environmental specialists, both employed and engaged, unused to the additional scrutiny and challenge to their conclusions, were often times confused and frustrated by the new requests, questions, and additional company effort required. Over time, as understanding of the complexities, uncertainties, and level of subjectivity in these estimates grew within the firm, the audit procedures designed to address these risks focused increasingly in assessing management assumptions, data, and methodologies and quality of documentation. In the first couple of years, hundreds of specialist hours (and in at least one engagement, over a thousand) were added to some audits to the consternation of audit teams under market pressure to provide more and more cost efficient audits. Later, it was possible to streamline efforts somewhat due to the updated and refined risk methodologies promoted in 2010/2011 and, the maturation of the auditor-specialist communication. Even in these latter cases, assessments of site estimates (typically large estimates for large clients) were difficult to complete with appropriate levels of scrutiny, documentation, and senior review for less than 80 hours per estimate. On the other hand, procedures performed by auditor's specialists for other firms have involved less than 20 hours. It seems reasonable that the proposed guidance offered by the Board will allow the development of some consistency, both in scope and effort, across engagements and firms. However, I would offer to the Board based on my experiences, and for informational purposes, that the impact per estimate assessed on engagement budget may be in the range of 50+ specialist hours.

Based on the audits performed, I concur that the proposed changes in audit approach to estimates and using the work of specialists will increase audit quality and financial reporting of environmental liabilities and AROs. Out of over 200+ environmental liability estimates and AROs audits in which I participated, using the methods like those proposed, I have observed only one estimate without identifiable errors, based on the work performed. The majority of errors in the remaining estimates, while they were important from a sampling/extrapolation and internal controls standpoint, were not, alone, material to the financial statements.

(In my experience, auditor specialists are rarely, if ever, informed of the potential for impact in combination with errors identified from other procedures) However, large errors were not as rare as might have been expected. At one site, a $100M estimate was found to be over 100% understated in the first year of specialist support for the audit. At another, a $1.5M estimate was found, in conjunction with environmental due diligence providers, to be more accurately estimated at $150+M (two orders of magnitude understated). While our team did not maintain statistics about the frequency and size of errors, I would anecdotally estimate that approximately 10% to 15% of management environmental liability and ARO estimates contained significant errors or omissions requiring the company to revise the estimate before the close of the reporting period. Based on these observations, I agree that material errors in environmental liabilities may have gone, and may continue to go, undetected under the current requirements.

Further, it has been my observation that multiple public accounting firms are using environmental specialists to assist financial audits of environmental liability and ARO estimates; however, there is a noticeable disparity in the nature, scope, and objectives in these procedures between firms, and not uncommonly, between engagements performed for the same firm. I believe the PCAOB proposals for estimates and use of specialists will drive greater intra-firm and inter-firm consistency in the scope, objectives, completeness, quality, and documentation of specialist work and not only result in meaningful comparability in financial statements for investors but also 'level the playing field' for companies that may already have subject themselves to greater audit procedures relative to their competitors.

One concern I do have regarding the proposals is the references to assessing the company's engaged specialist's estimates as if it was the company's estimate. As I discuss below regarding what I believe to be a systemic bias and challenges to objectivity in estimates provided by environmental consulting/engineering providers, in general, I agree that company-engaged specialist estimates and data should be subject to greater auditing procedures. In practice, I have discovered large errors in engaged specialist estimates resulting from many factors.

What is not clear from the current or proposed standards, however, is if, or where, such consideration ends. For example, if I acknowledge that the engineering consultant's report may contain bias or a lack of objectivity for which I should design procedures; may I still appropriately rely upon the data provided by the specialist's subcontractors like laboratories, surveyors, soil engineers, remediation equipment providers, etc.? (For reference, a description of these roles in the "typical" environmental response is included in the Appendix). Does this data qualify as "*data from an external source*" used by the company? In terms of environmental liabilities, in particular, this data is typically extensive. In practice, such data is not confirmable or verifiable by the auditor or the auditor's specialist (as an example, we generally cannot collect soil samples and submit them for independent analysis). If possible, it would be helpful to have more explicit guidance or interpretation on the degree of separation at which it is appropriate to accept data without further assessment so that auditor and specialist effort is not wasted in the performance of unnecessary procedures.

SPECIFIC COMMENTS

Systemic Estimate Bias

In my experience, first as an environmental remediation consulting, providing environmental remediation estimates for corporate clients, and then as an audit environmental specialist, bias in the development of environmental liability estimates and ARO estimates is systemic and heavily skewed to underestimation. Due

to motivations having nothing to do with the relevant accounting guidelines(see further discussion in the background information presented in the attached Appendix), about which the large majority of environmental remediation professionals have little knowledge, the default approach for environmental response professionals is to provide and advocate for, the lowest possible estimate. As such, upon discussion with the company's specialists (employed or engaged), it often becomes apparent that the estimate presented for financial reporting purposes, is either or both, not the best point in the range or demonstrates significant omissions.

In my observations, management typically has not addressed this bias in its review of the estimates prior to performance of audit procedures like those proposed by the Board. This appears to be due to a combination of management not being keenly motivated to search for "bad news" with respect to estimates and not having identified that a bias exists in the environmental/legal function in the first place due to the knowledge and culture gaps between the environmental/legal and accounting functions.

Interestingly, in many of the audit engagements which I have supported for multiple years in a row, management continues to insufficiently or ineffectively address this bias, despite its illumination by the repeated identification of understatement errors of various magnitudes. However, perhaps improvements in this area will be realized as the PCAOB proposals drive public accounting firms to provide more consistent attention to this area.

Moral Hazard

The Board raised the issue of moral hazard on the part of the public accounting firm with the example that auditors may have incentives to behave sub-optimally, from investors' point of view by, not "sufficiently challenging management's estimates or underlying assumptions in order not to disturb the client relationship"…or "seeking to maximize profits and/or minimize costs." The Board also acknowledges that "it is conceivable that, in some situations, moral hazard may take the form of the auditor either influencing the findings or conclusions that the specialists reach or modifying the specialist work after the fact to support the conclusions sought by the auditor."

I would alert the Board, if it has not already been considered in the statement above, that moral hazard may also exist on the part of the specialist due to an awareness of "client relationships" and the motivation to "maximize profit/minimize cost." Since it would likely be financially and logistically prohibitive for each audit team to have its own embedded specialist for each area of specialty, the specialists whether engaged or employed, are expected to be organized separately from the audit teams and, more importantly, have as their "clients", not the audited entity but the audit teams themselves.

Depending on the organizational structure, the specialist team may not be subject to the same consequences as the audit team, should the audit work be concluded to be insufficient and therefore the risk of moral hazard (to maintain client relationships or reduce costs) may be greater at the specialist level than at the auditor level; particularly in the case of the engaged specialist.

Many times I have experienced an audit partner "pushing back" on either scoped effort due to budgetary constraints or specialist conclusions due to concern about his client relationship, the financial reporting deadlines, etc. In most of these cases, the partner-level leadership of the environmental specialist team shared in the potential consequences of poor audit quality and, thus, was appropriately resolute in her position. However, specialists, either engaged or employed, without such visible and engaged senior sponsorship may be influenced to inappropriately adjust their position. Further, a specialist having learned in one engagement

what scope or conclusions are not desired by an audit team ("client"), may not propose scopes or put forth conclusions anticipated to be rejected by another audit team ("client") before auditor pressure is even applied.

It appears conceivable that this risk, while present with both employed or engaged auditor specialists, would be greater with an auditor engaged environmental specialist due to the fact that the engaged specialist is unlikely to face the same professional or financial consequences of a poor financial audit (see the related comments on Specialist Qualifications below) and that if multiple specialist companies are engaged, consistency and performance quality trends across the work of any one engaged specialist will be difficult for the audit firm to monitor.

The Board states that moral hazard and poor work quality on the part of the specialist may be, at least partially, alleviated by the specialist perceiving a risk of reputational damage or being subject to codes of conduct, standard, and disciplinary actions in their own profession. I believe this expectation to be more applicable to an employed specialist rather than an engaged specialists as it appears likely, particularly in fiscal years immediately following implementation of the proposed standard, that engaged environmental specialists will represent companies whose services include more traditional environmental consulting services to industry (see related comments in Specialist Qualifications and Specialist Availability below)

Given that I have served with teams that were already conducting work exceeding the current standards and similar to the proposed standard, when these risks for moral hazard were experienced, it is unclear to me how the proposed standards will effectively address this issue, regardless of whether they are aligned with the risk assessment standards or not, unless it is anticipated that specialists will be leveraged to support quality control mechanisms (either internal firm inspections or external PCAOB inspections) to detect or deter suboptimal effort on the part of the specialist.

Professional Judgement vs. Professional Judgement

In the course of performed procedures for environmental liability estimates and AROs for several years, inevitably, we came across instances in which the assumptions of the company's specialists did not appear reasonable to the auditor's specialists but, for varying reasons, the auditor's specialists could not support their conclusions with documentation (i.e. "*If the auditor evaluates the reasonableness of a significant assumption by developing an expectation of that assumption, the auditor should have a reasonable basis for that expectation.*"). For example (exaggerated for illustration purposes) a company specialist investigation estimate might include an assumption that a 300-acre industrial site with large areas of historic hazardous materials storage will require the installation of only three monitoring wells to assess the presences of contaminants in groundwater. The auditor's specialist may consider the same site and acknowledge that the theoretical minimum at nearly every site is three wells (the minimum number necessary to assess groundwater flow direction). But the auditor's specialist may further consider that because of the size and history of the assessed site and type of soils reported in the area, that, based on nothing more concrete than direct past experience with similar sites, a reasonable minimum number of wells that will be approved by the regulator is 50.

In these circumstances, where the judgment of the auditor's professional cannot be supported by documentation (any more than that of the company specialist), the audit team response has varied. Some rejected the conclusions of the auditor's specialists because they may have appeared indefensible (no reasonable basis) to the client with whom relations may (or may not) already be difficult while others have pressed management to assemble documentation that better supported the company's assumptions (if possible).

In some cases, this decision may have been influenced by the audit team requesting feedback from the auditor's specialist on the magnitude of the potential error. While this seems a reasonable consideration, it seems that it is more common for audit teams to ask this of the auditor's specialist than of management. In practice, this process is difficult and, to a certain extent, risky, for the auditor's specialist as it is not uncommon to have insufficient technical data to independently estimate the difference in costs. In the example above, for instance, without any wells previously drilled into the site subsurface and prior to the assessment of any documentation the company's specialist has to support technical assumptions, there may be no way for the auditor's specialist to anticipate the difficulty of installing the wells, what size and depth of wells will be necessary to withdraw groundwater, what materials the well will need to be constructed with based on the potential contaminants and soil particle size, etc. Given that the auditor's specialist does not have known values for these inputs, the range of the estimate could be so great that the estimate becomes of little use to the audit team. Complicating this assessment, typically, is the fact that the debated estimate may have itself been sampled from the larger site estimate for testing purposes thereby making the cost threshold for determining potential impacts across the estimate and the portfolio even lower.

Similar to the comments above regarding which specialist work can be relied upon, if any, without further assessment, it would be helpful to have more explicit guidance or interpretation on the role of "professional judgement" in the auditor's specialist's work and the level of reliance which can be based upon it (or not) in situations in which the other assessment characteristics (ex. relevant industry or regulatory standards, company's objectives, historical or recent experience of the company, etc.) are absent. Experience performing the procedures proposed has demonstrated to me that this dilemma will arise and guidance in this area could aid in developing consistency in these circumstances.

A Risk-based Approach

With regard to the alignment with estimate assessments to the risk identification and mitigation approaches outlined in AS 2110, though outside of my area of expertise, I would agree, in principal, that audit quality is increased when planning is based on assessed risk of material misstatement. However, in practice, at least as far as environmental liabilities and AROs are concerned, application is challenging.

Most notably, in my observation, is that the risks of material misstatement are often assessed by the audit team long before the involvement of an auditor's environmental specialist. Despite urging from Specialist leader and National Office level professionals, audit teams still involve environmental specialists in the planning phases of the audit only rarely and in the risk assessment, essentially not at all. This can prove problematic due, again, to lack of understanding by the auditor of the complexities of such estimates, and typical environmental management practices driving management's assumptions (including the systemic bias discussed previously and at length in the Appendix) and the communication gaps between the environmental (and occasionally legal) function and the financial reporting function. Each of these contributes significantly to the risks of material misstatements with regard to environmental liabilities and AROs.

"Walk-throughs" performed by the audit team with the audit client often fail to identify these risks as audit teams may not have the basis of knowledge to ask the questions that would illuminate them. Further, even with specialist participation in the walk-through, the team may not have sufficient documentation of site/estimate issues to provide the challenges to management statements during the walk-through that could also cause risks to surface. For this reason, many times, these gaps will not become apparent until the substantive procedures are performed because it is then that the auditor's specialist has access to documentation presenting information contradictory to management's statements.

As an example, in response to an auditor's specialist's question regarding the author of a remediation estimate, management responded that the file provided to the specialist and audit team was management's documentation of an estimate originally provided by a third-party (company engaged) specialist. When this third-party document was requested and provided, it demonstrated a total cost 30% greater than that represented in the management buildup. When asked about the discrepancy, the company's environmental management team (employed specialists) responded that they "always marked down their consultant's estimate by 30%" before providing it to the financial reporting function. The company (employed) specialists continued by explaining that this adjustment was made because they understood from experience that the financial reporting function subsequently applied a 30% "contingency" to the estimate as it was received from the company employed environmental specialists before submitting into the financial statements. By "backing down" the estimate before delivery to the accounting office, the environmental specialists were "ensuring that it was right." In theory, it was possible that this practice could have been identified in a "walk-through" exercise but, it had not been previously, and it would have required the audit team to consider that such an unusual practice had the potential to exist. I have experienced many other examples of similar communication gaps and significant unstated assumptions and these characteristics can form the basis for key risks of material misstatement. As noted, these risks may be difficult for the audit team to identify and assess.

In my experience, the audit teams I have supported generally have expressed surprise, upon completion procedures like those proposed, at the level of complexity, uncertainty, and judgement in environmental liability and ARO estimates; despite having performed audit-team procedures in prior years. However, once known, communication of these risks is slow to spread through the practice, even with National Office/Practice sponsorship. In the firms with which I have worked, many audit teams with clients holding such accounts have not used environmental specialists, even in the risk-assessment phase to establish that no other specialist support was necessary. As such, it is conceivable that material misstatements have occurred and will occur, regardless of the approaches proposed here by the Board, in which audits of environmental liability or ARO accounts have been inappropriately de-prioritized ("risked-away") in the risk assessment phase.

Of the "risk factors" listed (p 94, 2017-002) proposed to be assessed during risk considerations, at least four ("susceptibility to misstatement due to error or fraud," "accounting and reporting complexities associated with disclosures", "exposure to losses in the account," and "possibility of significant contingent liabilities arising from activities reflected in the account or disclosure") represent areas in which it is possible that an audit team may not have sufficient understanding of the risk issues to appropriately prioritize or de-prioritize the account.

Evaluating the Qualifications of the Environmental Specialist

The Company's Specialist

Current and proposed standards require the auditor to assess the professional qualifications of the company's specialist (employed or engaged). I would offer that, in my experience, while this is a useful and necessary documentation effort, the results of these demonstrate little correlation with the conclusions made in the assessment of environmental liability and ARO estimates (valuation, completeness, obligations, etc.) and are, as such, of limited value in reducing audit risk. This may be due to a variety of reasons. The most significant of these is expected to be the systemic bias discussed previously and the related issue of specialist objectivity discussed below. Environmental liability and decommissioning estimation is typically strongly skewed toward underestimation, regardless of the degree of technical competency and qualifications.

However, even in the absence of the issue of underestimation bias, simply identifying an environmental specialist's education, license status, and self-reported summary of experience cannot offer robust documentation of actual experience in environmental remediation or asset retirement activities. Like many other professions, only the general principles of environmental remediation and protection are offered in degree programs. A majority of required knowledge is gained from "in-field" experience and is fundamentally dependent upon time under instruction and the competence and experience of the senior field scientist acting as the instructor. Aside from checking the state licensing bodies (which simply states that a license is or is not current and, in some cases, is or is not in "good standing"), there is no consistent method to corroborate an individual or company's claims of technical competency or experience. Further, the quality of experiences is similarly undeterminable by an audit specialist or even an environmental specialist except in the highly unusual circumstance that the auditor's specialist maintains a relationship with another professional with whom the company's specialist may have worked. A similar challenge might be expected for an engineering professional to document the qualifications of a certain audit team senior manager (for example). At best, the engineer might be able to establish that the auditor holds a CPA license in good standing.

With technical firms, this is true also at the company level. While public accounting firm quality could potentially be assessed from PCAOB and SEC data, reports, and communications, the regulators for environmental response do not produce similarly public assessments and any "reputational" considerations made by audit teams or their specialists are commonly limited to characteristics like an engineering company's sales relative to another (See Engineering News Records top firms), self-reports of industry awards, or checks to determine if the specialist has been black-listed to perform work for federal entities. In some cases, particularly under the current requirements for non-fair-value estimates, these indirect reflections of competence could be leveraged to imply greater confidence in the specialist qualifications than might otherwise be possible and to avoid or diminish the performance of other procedures (see the discussion at Moral Hazard).

The qualifications and objectivity (see discussion below) assessments of company environmental specialists may have little impact in reducing the risk of using the estimates of company specialists. The Board may wish to consider, based on this perspective, if further clarification of, or elaboration on, the proposed requirements is prudent or necessary.

The Auditor's Specialist

A risk exists related to qualifications for the use of an auditor's engaged specialist as well; however the qualifications desired will include not only remediation/decommissioning experience but also an at least rudimentary set of financial auditing/accounting qualifications, as well. Specialist companies providing both qualifications are expected to be extremely limited (see Environmental Specialist Availability discussed below).

Additionally, keeping in mind that the sources used to establish an auditor's engaged specialists qualifications will typically be the same as those for the company's specialists, even though these sources only address the specialist's environmental technical qualifications. It is noteworthy that none of these sources will be impacted by or will be expected to report upon (or even follow) the quality of audit procedures performed (or not performed) by the auditor's engaged specialist. Perhaps in extreme cases, the auditors could make formal complaints to the licensing bodies (if any) of the engaged specialist but as such bodies are governing activities other than audit (ex. engineering, geology), the complaints of the audit client may not trigger censure from the licensing body as it may conclude that it has no authority to do so in some cases. As such, the Board's

hypothesis that moral hazard and poor work quality on the part of the auditor's engaged specialist may be, at least partially, alleviated by the specialist perceiving a risk of reputational damage or being subject to codes of conduct, standard, and disciplinary actions in their own profession is not, yet, particularly convincing.

This issue could be expected to also apply to the company that employs the individual environmental specialist as it is anticipated (discussed further below) that most companies employing such specialists will continue, at least in the short term, to derive more revenue from industrial clients than audit clients. As such the reputations of these companies will be reflected more in the engineering and technical venues in which the audit company (and certainly any individual audit team) holds little influence. Perhaps it will be the intention of the Board, in the performance of its regular inspection duties, to highlight specialist companies who, in the course of providing audit support work, performed sub-optimally but it is unclear how much authority, if any, the Board will have to apply sanctions for poor specialist company performance. Moreover, and perhaps more important for audit team planning purposes, there does not appear to be a mechanism by which the Board can present the specialist companies supporting inspected audits that were determined to have performed adequately.

Evaluating the Objectivity of the Engaged Environmental Specialist

AS 1210 and the current proposals require that the auditor perform certain procedures when using the work of a company's specialist including evaluating the relationship of the specialist to the company, including circumstances that might impair the specialist's objectivity. As discussed previously, there is a very common, and I believe highly systemic, bias for underestimation of environmental liability and ARO estimates. However, beyond that, the issue of objectivity of an engaged environmental specialist (both the company's and the auditor's) may be problematic.

This conclusion is based upon the consideration that, with limited exceptions, the firms providing environmental remediation or decommissioning estimates are the same firms providing environmental remediation and decommissioning services, commonly with greater resulting gross revenue than the estimate development itself. In fact, in the most common case, the company's estimate is from a bid/ proposal to perform the services. Even where it is not, it is highly uncommon (in the 200+ estimates audited, I have observed less than four cases, each with very special circumstances) that the consultant providing the estimate for financial reporting purposes was not the provider selected for performing the services.

This is not necessarily a negative point as it would actually arouse some skepticism if the company maintained an estimate by one provider but was having the work provided by another. In this case, it could be conceivable that the company was inflating the estimate by using a more expensive provider and reserving any saved actual costs as a "cookie jar." However, it does result in a fact pattern in which the engaged specialist's company has an incentive to please the industrial client in order to win more work in the future. This risk would apply also to the auditor's engaged specialist. For instance, if "Environmental Engineering Company ABC" is contracted to provide 100 hours to an audit team but, the same or another team in ABC is delivering, or has the potential to deliver, on 10,000 hours of work on a contaminated site for the financial reporter being audited, the engaged ABC audit specialist could experience significant implicit or explicit pressure to perform sub-optimally on the financial audit (related to the Moral Hazard discussion above).

For this reason, like the assessments of specialist qualifications discussed above, it has been my experience that the audit exercises to assess objectivity are necessary from a documentation perspective but they are of limited value in reducing audit risk. Conversely, as discussed with the specialist qualification assessment, in some cases, these documentation procedures could be leveraged to imply greater confidence in the specialist's objectivity than might otherwise be possible and to avoid or diminish the performance of other procedures (see the discussion at Moral Hazard).

Environmental Specialist Availability

Regarding the potential for other unforeseen impacts, I would suggest to the Board that it is conceivable that audit delays and increased effort or costs (beyond those identified by the Board) could be experienced by audit teams finding it necessary in the first year, and perhaps subsequently, to leverage an auditor-employed or engaged environmental specialist and finding that the resources are severely constrained. For reasons discussed in these comments, and for some others, the firms with which I was employed struggled to attract and retain talent to provide audit support services. The employed resources that are present, generally, are not maintained at levels that exceed the current need, for obvious reasons. A surge in demand in the first audit season (or more) could result in delays as audit teams must wait on the same small-number resources to cycle through their work on separate engagements or the expenditure of additional time and costs to locate resources outside the firm (engaged specialists), potentially at a premium.

In regard to environmental liabilities particularly, delays in starting procedures could prove problematic. I have observed that most companies, for reasons I won't detail here, do not prepare their annual liability estimate updates until well after the end of the third quarter. Even in a 'normal' audit season of repeat engagements, the environmental specialists are typically heavily leveraged from approximately October to March since, because of these company practices, it is often not possible to "pull the work forward." Waiting for resources, identified to be necessary, to become available could easily push audit teams up against their and their clients' reporting deadlines. To further exacerbate this issue, it is not uncommon to find in the first year performing procedures on environmental liability and ARO estimates like those the Board has proposed, that the estimate documentation prepared and provided by the company is insufficient, and in some cases, severely insufficient, to support management's assertions. Multiple rounds of document requests and estimate revisions have been observed in audits of environmental liabilities and AROs subjected to the first year of substantive procedures.

A similar shortage of resources is possible with external environmental specialists capable (and determined appropriate) to be engaged by the firm due to the objectivity concerns outlined above and the general lack of environmental specialists with a knowledge of the relevant accounting guidance and financial audit theory and practice. I would anticipate that most audit firms would at least prefer to prepare some standard contracts and, perhaps, master service agreements with specialist companies to manage consistency and costs in the contracting of engaged environmental specialists with whom they may not have previously worked. As this could be expected to require that the audit practice leadership understand how many teams may need support, which the teams themselves may not know until year-end planning in the 3rd quarter, this effort may also introduce a delay in securing resources. Audit firms lagging in entering the marketplace to secure resources may find they are no longer available. In all of the possible scenarios described above, what does the Board consider the appropriate response for an audit team that has identified that the assistance of a employed or engaged specialist is necessary but find that such assistance is unavailable?

APPENDIX

Background – Potential Historical Contributions to Observed Bias in Environmental Response Costs

In my experience, first as an environmental remediation consulting, providing environmental remediation estimates for corporate clients, and then as an audit environmental specialist, bias in the development of environmental liability estimates and ARO estimates is systemic and heavily skewed to underestimation.

It is my belief that this results from many aspects of the history of environmental response in the U.S. The first legislation addressing preventing and cleaning up contamination (RCRA) was passed in 1976 immediately following the recession of the mid-1970s. It can be expected that few in industry welcomed the additional overhead costs related to environmental response. Subsequently, CERCLA ("Superfund") was passed in 1980. CERCLA imposed strict liability for environmental contamination at abandoned hazardous waste sites. Companies that had divested or abandoned facilities long before may have suddenly found themselves liable for expensive responses and facing the regulatory authority of a young agency, the USEPA. Under CERCLA, the relationship between industry and regulatory agency quickly evolved into an antagonistic, and oftentimes bitter, one. Additionally, complex and expensive legal battles played out over sites for which multiple parties were held liable.

Early in the Superfund timeline, the nascent environmental response "industry" may have found itself employed equally by USEPA and industrial respondents. However, as time passed and the Agency transitioned to having the responding parties perform the remedies, environmental consultants were more commonly hired by private industry and strongly influenced by client internal or external legal functions. In the nearly 40 years since CERCLA was passed, the role of the environmental engineering consultant hired by the respondent, has become one where the environmental consultant is largely the company's advocate defending the company against the requirements of the regulator or the claims of another respondent. Similarly, the role of the USEPA (and the state agencies to which it grants authority) has matured into one in which the agency is responsible for detecting and refusing sub-effective response actions; not unlike other regulator-regulated relationships.

My professional career started at an environmental consulting firm that enjoyed a good reputation in the site investigation and remediation industry for quality work. Notwithstanding this, I was coached, as was all new staff, on how to present the industrial client's site in the best light in submitted reports; how to design an investigation that most strategically limited the scope just within the bounds of professional ethics; and how to advocate for the lowest-cost remedy reasonably anticipated to "get by" the regulator or counterparty. In short, we were coached rigorously to assume the client's objectives and priorities as our own.

Even with this commitment to provide the lowest costs possible to the client, it was (and is) not uncommon for clients, upon receiving a proposal estimate, to "shop" it with other consultants to get an even better price. Engineering/technical staff was thus coached to provide estimates low in detail, highly caveated, and unrealistically limited in cost and scope to "buy the work" or "get our foot in the door."

While this culture does result in the most competitive prices for industry, over many years of focusing on cost cutting and estimating at the low end of the range with little interest in "realistic" or "reasonable" estimates (much less "best" estimates), environmental remediation and decommissioning professionals find it difficult, in my observation, to divest themselves of this underestimation bias when it becomes necessary for them to do

so. On the other side, the culture in environmental departments at industrial clients (who may themselves come from consulting backgrounds), ever more squeezed by "lean" initiatives and budgetary constraints and focus on market performance, also are not highly incentivized to challenge their consultant's estimates. In my observations, only an exceptionally small percentage of company environmental remediation managers have received formal training on the estimation and accounting rules relevant to their estimates, and even among those, company employed specialists and architects of internal controls often experience difficulty in identifying and mitigating the underestimation bias.

Background – "Typical[1]" Environmental Clean-Up Progression at an Operating Site

1. A release is observed or strongly suspected to have occurred.
2. Emergency control and removal may be performed by site (Company) personnel or a contractor may be employed to perform emergency response.
3. Company evaluates if the release is of sufficient significance (volume/risk per the relevant law) to inform the environmental regulatory agency of the release.
4. If it is, the agency may require investigation of the release and remediation of any impacts exceeding those allowed by law.
5. The Company enters into a certain regulatory path depending on site and release circumstances.
6. The Company engages an environmental engineering contractor to investigate and, potentially remediate, contamination resulting from the release.
7. Commonly, but not always, the Company environmental consultant will be directed to collect "preliminary" or "screening" samples of media (soil, groundwater, surface water, sediment, etc.) that may be impacted by the release to help inform the size of the investigation area. **With Company input**, the environmental investigator will select both the sample locations and the contaminants for which to analyze the samples. The sample collector will also collect related data with the media samples including geological data at the soil/groundwater sampling point (ex. soil composition, layers, color, particle size, depth to groundwater, screening level of volatile organic chemicals using an appropriately-calibrated meter, water temperature, water hardness, water salinity, water turbidity, etc.) or sediment/surface water sampling point (sediment depth, sediment characteristics including particle size, presence/absence of sediment organisms, surface water depth, temperature, hardness, clarity/turbidity, etc.) These samples are then delivered to a laboratory for analysis. In most cases, but not all, the laboratory is a subcontractor independent from that which collected the field samples. The locations of the samples are typically surveyed by yet another independent contractor.
8. Once the data is received from the laboratory and the surveyor, the environmental investigator plots the contamination against as-built engineering drawings of the site. Further information may be collected or deducted by the environmental investigator related to the potential transport of contaminants including, but not limited to, groundwater flow direction, typical wind speed and direction, presence of nearby (onsite or offsite) "receptors" (human or ecological) to contaminants (ex. schools, residences, creeks, rivers, wetlands, endangered species, on-site workers, etc.), presence of nearby groundwater wells, presence of nearby potential contaminant sources (waste ponds, injection wells), etc. This information, combined with the analytical results from the samples are used to inform the potential exposure "risk" presented by contaminants released at the site.
9. Based on the results, the Company, through its environmental consultant, recommends a course of action to the environmental regulatory agency: either a request for closure of the incident or remediation with, or without, further investigation.
10. If further investigation/remediation is warranted, the Company, through its environmental consultant, will formally (investigation or remediation plan) or informally (email, conversations, etc.), depending upon the regulatory track in which the response is progressing, present an investigation plan to the regulators. In the

[1] The reader is encouraged to understand that there exists a large degree of variability in remedial progression at any given site. This description is only intended to present the most commonly observed processes across various sites and regulatory regimes. Many exceptions to this process can be observed.

example where further sampling is deemed to be required, upon agency approval, the Company, again through its environmental consultant, will repeat the sampling process, laboratory analysis, survey, and drafting effort. This is typically an iterative process and will continue until the agency concludes that the full extent of contamination above regulatory limits for each media is identified (surface area, depth, and contaminant concentration). Throughout this process the **Company may influence** the progression of the investigation, including the selection of sampling locations, contaminants to be assessed, etc. typically with the goal of reducing the scope to the minimum that will be considered acceptable to the regulatory agency. Once the data is collected, it may be formally reported in an investigation report. **The draft of this report is subject to Company input** before it is submitted to the regulator. The final draft is then presented to the agency for agency comments and subsequently revised to address these comments. In some cases, further sampling may be required by the regulator and this process repeats until the investigation is approved.

11. Once the regulator has approved the investigation results or report, the Company, through its environmental consultant, will consider the remedial alternatives available to meet the requirements of law. In some regulatory regimes these requirements will be prescriptive. That is to say that a certain acceptable numerical value has been established for each contaminant of concern in each media (ex. amount of benzene in groundwater) and a remedy proposed by a Company must remediate each of the media that are impacted above its regulatory limits regardless of whether an exposure risk exists. In others, a "risk-based" approach has been adopted in which only those contaminated media which are considered to have a "complete exposure pathway" to a receptor (human or ecological) must be remediated to their contamination limits. Again, **these evaluations are performed by the Company's environmental consultant acting as the Company's advocate**. The consultant will then draft a list of alternatives (typically in a report) that it proposes will meet the requirements under law and will specifically recommend to the agency, a desired remedial alternative (commonly the most cost efficient remedy) expected to meet the legal requirements. **The draft of this report is typically reviewed by the Company prior to submittal** to the agency.
12. Upon receipt of the remediation recommendations, the agency reviews the conclusions based on the data and may either accept the report and its recommendations, or return it with comments (including requirements for further investigation, in some cases). Acceptance of the recommendations typically constitutes authority for the Company to plan and implement the remedial alternative it recommended.
13. In some cases, the remediation recommendations communicated to the agency may contain sufficient information to implement the remedy without further study. In other cases, additional data may need to be collected to design the remedy or draft an implementation plan. This could include the further collection an analysis of samples (ex. for contaminants, soil strength, groundwater mapping/flow etc.) or planning data (location of a waste disposal site, etc.) Again, these samples may include the use of various subcontractors to collect and analyze data. If the refinement of a remedial plan was required, typically, the **results will be subject to another round of comment and approval first by the Company** and then by the regulator.
14. Typically, remediation includes one or a combination of different types of activities:
    a. **Restrictions**: institutional or engineering methods to interrupt otherwise complete, or potentially complete, exposure pathways. Examples of the former include a restriction on property usage or a restriction to use of groundwater in contaminated areas. Examples of the latter may include fencing to keep receptors away from contaminated areas). Controls must remain in place until the exposure risk is otherwise removed.
    b. **Construction of components of a remedy:** activities which involve earthmoving, construction of structures, physical activities to deliver soil or groundwater treatments, or installation of equipment required for remedial activities. These can include digging contaminated soil and moving it to a disposal point, injecting treatment chemicals into the soil or groundwater, building a water treatment plant, and many more. Relative to other efforts, construction activities tend to be short-lived events.
    c. **Operation, maintenance, and monitoring (OM&M):** In many sites, the risk presented by the contamination must be monitored to insure that it is controlled by the selected remedy. Where a remedy construction has occurred, the systems may require operation and maintenance. In many cases, OM&M may continue for very long periods of time. Over the course of the OM&M period, the environmental consultant typically submits, on behalf of the Company, on routine report on

the site conditions. **These reports are subject to review and approval first by the Company** and then by the agency. The agency is tasked with reviewing the data to ensure that the remedy continues to function as intended and is appropriately controlling the risk to human health or the environment. If the monitoring data fails to support that the remedy is protective, the agency would be expected to require that the Company perform additional procedures (or new remedies) to control exposure at the site.