



Standard Guide for Disclosure of Environmental Liabilities¹

This standard is issued under the fixed designation E2173; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 *Purpose*—The purpose of this guide is to provide a series of options or instructions consistent with good commercial and customary practice in the United States for environmental liability disclosures accompanying audited and unaudited *financial statements*. This guide is consistent with Generally Accepted Accounting Principles (GAAP)² issued by *Financial Accounting Standards Board (FASB)*, as well as related statements, rules, regulations, and/or procedures issued by *Government Accounting Standards Board (GASB)*, *Public Company Accounting Oversight Board (PCAOB)*, *Securities and Exchange Commission (SEC)*, and *Federal Accounting Standards Advisory Board (FASAB)*. This guide is intended to be consistent with other issuers of accounting standards and practices, including *International Accounting Standards Board (IASB)*.

1.2 *Objectives*—The objectives of this guide are to determine the conditions warranting disclosure and the content of appropriate disclosure.

2. Referenced Documents

2.1 ASTM Standards:³

E1527 Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process

E2091 Guide for Use of Activity and Use Limitations, Including Institutional and Engineering Controls

E2137 Guide for Estimating Monetary Costs and Liabilities for Environmental Matters

¹ This guide is under the jurisdiction of ASTM Committee E50 on Environmental Assessment, Risk Management and Corrective Action and is the direct responsibility of Subcommittee E50.05 on Environmental Risk Management.

Current edition approved Oct. 1, 2016. Published November 2016. Originally approved in 2001. Last previous edition approved in 2011 as E2173 – 07(2011). DOI: 10.1520/E2173-16.

² This guide alone does not satisfy or include all disclosure requirements under GAAP, SEC, IASB, or any other agency or regulatory body. Appendix X1 provides some examples of where such requirements are contained.

³ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

2.2 FASB Standard:⁴

Statement of Financial Accounting Concepts No. 8 “Conceptual Framework for Financial Reporting”, September 2010

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *accretion, n*—increase to the present value of a liability solely because of the passage of time, normally a year; also “unwinding the discount.”

3.1.2 *activity and use limitations, AULs, n*—legal or physical restrictions or limitations on the use of, or access to, a *site* or facility to eliminate or minimize potential exposures to chemicals of concern or prevent activities that could interfere with the effectiveness of a response action to ensure maintenance of a condition of “acceptable risk” or “no significant risk” to human health and the environment.

3.1.2.1 *Discussion*—These legal or physical restrictions are intended to prevent adverse impacts to individuals or populations that may be exposed to chemicals of concern. (E2091)

3.1.3 *asset retirement obligation, n*—legal or constructive obligations associated with the retirement of a tangible long-lived asset that result from the acquisition, construction, development, or normal operation of a tangible long-lived asset.

3.1.3.1 *Discussion*—Activities include, but are not limited to, demolition, decommissioning, decontamination, reclamation, restoration, and abandonment.

3.1.4 *claim, n*—demand for payment or compensation.

3.1.5 *commitment, n*—type of liability covering purchase obligations that serve to mitigate environmental liabilities.

3.1.5.1 *Discussion*—An example is an entity continuing a property lease obligation indefinitely to defer a remediation or *asset retirement obligation* due at the end of the lease. (ASC 440)

3.1.6 *Comprehensive Environmental Response, Compensation and Liability Act of 1980 (as amended, 42 USC Section*

⁴ Financial Accounting Standards Board 401 Merritt 7 P.O. Box 5116 Norwalk, Connecticut 06856-5116. <http://www.fasb.org/>

9601 *et seq.*), *CERCLA*, *n*—also known as “Superfund,” a major U.S. Federal environmental law establishing key legal concepts of environmental costs and liabilities.

3.1.7 *Comprehensive Environmental Response, Compensation and Liability Information System, CERCLIS*, *n*—list of sites compiled by the *EPA* that the *EPA* has investigated or is currently investigating for potential hazardous substance contamination for possible inclusion on the *National Priorities List*; succeeded by *SEMS*.

3.1.8 *constructive obligation*, *n*—concept that past practice creates a valid expectation on the part of a third party.

3.1.8.1 *Discussion*—An example is a company policy to excavate all underground storage tanks once removed from service. **(IAS 37:10)**

3.1.9 *contingency*, *n*—type of liability dependent on the outcome of one or more events.

3.1.9.1 *Discussion*—An example is multiparty *CERCLA* liability lacking an allocation among *PRPs*. **(ASC 440)**

3.1.10 *counterparty risk*, *n*—entity’s exposure to the non-performance risk of default by one or more *PRPs* that share a legal or *constructive obligation* in environmental costs and risks; alternatively, one *PRP*’s financial exposure to any other *PRP* on the same environmental cost or risk, especially where another *PRP* bears responsibility to perform, *guarantee*, or indemnify another.

3.1.10.1 *Discussion*—Also refers to the ability to pay and long-term creditworthiness. (ASC 410-30-30-7, ASC 820-10-35-17/18, GASB 72:62, IFRS 13:42, FRS 102:21.9, SOP 96-1 6.20—See **Appendix X1 – Appendix X5**)

3.1.11 *current government environmental record source*, *n*—any environmental record source available from a government or commercial entity, provided the record is updated in accordance with the update requirement of Practice **E1527**.

3.1.12 *engineering controls, EC*, *n*—physical modifications to a *site* or facility (for example, capping, slurry walls, or point of use water treatment) to reduce or eliminate the potential for exposure to chemicals of concern or petroleum products in the soil or ground water on the property.

3.1.12.1 *Discussion*—*Engineering controls* are a subset of activity and use limitations.

3.1.13 *EnviroFacts*, *n*—*EPA* database search tool that accesses over 20 current and historical environmental record sources, including *CERCLIS* and *RCRAInfo*.

3.1.14 *environmental liabilities*, *n*—asset retirement obligations, accrued liabilities, commitments, contingencies, and guarantees associated with any natural conditions or manmade incidents, including terrorism, that pose an unacceptable risk to health, safety, property, or the environment that would be the subject of an enforcement action or other legal action. **(ASC 410, 440, 450, 460, GASB 49, IAS 37)**

3.1.15 *Federal Accounting Standards Advisory Board, FASAB*, *n*—U.S. accounting standard-setting body focused on federal entities; established and funded by Secretary of the Treasury, the Director of the Office of Management and Budget, and the Comptroller General of the United States.

3.1.16 *Federal Register, FR*, *n*—publication of the U.S. Government published daily (except for federal holidays and weekends) containing all proposed and final regulations and some other activities of the federal government.

3.1.16.1 *Discussion*—When regulations become final, they are included in the Code of Federal Regulations (CFR), as well as published in the *Federal Register*.

3.1.17 *Financial Accounting Standards Board, FASB*, *n*—U.S. accounting standard-setting body focused on private sector entities; a part of the Financial Accounting Foundation.

3.1.18 *financial statements*, *n*—include, but are not limited to, statements associated with shareholder reporting, managerial accounting, financial accounting, tax accounting, registration statements, loans, mergers, acquisitions, or divestitures.

3.1.18.1 *Discussion*—*Financial statements* may include statements outside of SEC filings.

3.1.19 *Generally Accepted Accounting Principles, GAAP*, *n*—framework of guidelines for accounting and financial reporting.

3.1.20 *Government Accounting Standards Board, GASB*, *n*—U.S. accounting standard-setting body focused on non-federal government units, such as state, county, and municipal governments; a part of the Financial Accounting Foundation.

3.1.21 *guarantee*, *n*—assurance issued by a guarantor that remains in effect; examples include, (but are not limited to, financial and performance guarantees and indemnifications, “joint and several liability” under *CERCLA*, and an irrevocable letter of credit from a mining company to a state agency assuring eventual completion of reclamation work. **(ASC 460 and GASB 70)**

3.1.22 *historical government environmental record sources*, *n*—any environmental record source available from a government or commercial entity that is older than the most recent *current government environmental record source*.

3.1.23 *historical use information*, *n*—those sources of information about the history of uses of a property.

3.1.23.1 *Discussion*—*Historical use information* is available from local libraries, historical societies, private resellers, or commercial entities. Some examples of the sources are specified and defined in Practice **E1527**.

3.1.24 *IAS 37*, *n*—accounting standard titled “Provisions, Contingent Liabilities and Contingent Assets” issued by *IASB* in September 1998.

3.1.25 *institutional controls*, *n*—administrative or legal mechanisms or both that minimize the potential exposure(s) of human and ecological receptors to chemicals of concern by limiting land use or resource use; see also **3.1.2**.

3.1.26 *International Accounting Standards Board, IASB*, *n*—independent multinational accounting standard setting body which issues International Financial Reporting Standards (IFRS), International Accounting Standards (IAS), interpretations and other pronouncements.

3.1.27 *interperiod equity*, *n*—from GASB Concepts Statement 1, the concept that current taxpayers pay for current

services and further that burden of payment for service today is not transferred to future taxpayers.

3.1.28 *leaking underground storage tank, LUST, n*—common cause of environmental costs and liabilities.

3.1.29 *legal obligation, n*—duty to carry out what the law or a contract asks.

3.1.30 *materiality, n*—significance of an item to users of a financial statement that considers all relevant and surrounding circumstances.

3.1.30.1 *Discussion*—A material item is one that its omission or misstatement is of such a magnitude in the surrounding circumstances that either the judgment of a reasonable person relying on the financial statement would have been changed or influenced by its inclusion or correction or there is a substantial likelihood that the item, after assessing the inferences and their significance drawn from the given set of facts associated with the financial statement, would be viewed as significantly altering the information made available to the investor or shareholder. Relevant sources of information and references are included in [Appendix X2](#). Note that this definition is not intended to supersede the definition of *materiality* in SEC Staff Accounting Bulletin Topic 1.M, Financial Statements—Materiality (See [Appendix X1](#) and [Appendix X2](#).)

3.1.31 *National Priorities List, NPL, n*—list compiled by the EPA pursuant to CERCLA 42 USC § 9605(a)(8)(B) of properties with the highest priority for cleanup pursuant to the EPA’s Hazard Ranking System. **(40 CFR Part 300)**

3.1.32 *obligating event, n*—past outcome that confirmed a financially recognizable obligation. **(GASB 49:11)**

3.1.33 *pollution remediation obligations, n*—obligations to address the current or potential detrimental effects of existing pollution by participating in pollution remediation activities such as *site* assessments and remediation, as stated in GASB Statement 49 (November 2006) for non-federal governmental units.

3.1.34 *Potentially Responsible Party, PRP, n*—any individual, legal entity, or government—including owners, operators, transporters, or generators—potentially responsible for, or contributing to, conditions that present an unacceptable risk of harm to human health or the environment and that would be the subject of an enforcement action or other legal action.

3.1.35 *Public Company Accounting Oversight Board, PCAOB, n*—nonprofit corporation established by the U.S. Congress (Sarbanes-Oxley Act of 2002) to oversee the audits of public companies to protect the interests of investors and further the public interest in the preparation of informative, accurate, and independent audit reports.

3.1.35.1 *Discussion*—The PCAOB subjects auditors to external and independent oversight, a change from self-regulation.

3.1.36 *RCRAInfo, n*—EPA database of current and historical environmental records about a facility’s compliance with *Resource Conservation and Recovery Act (RCRA)*.

3.1.37 *reasonably possible, adv*—likelihood, or probability, associated with a given event occurring that lies in the range

between remote (less likely) and probable (defined as more likely than “*reasonably possible*”).

3.1.37.1 *Discussion*—The probability values assigned to remote, *reasonably possible* and probable will depend on the industry, the aggregate number of sites, observations, and possible outcomes, and the uncertainty associated with estimating probabilities.

3.1.38 *recognition benchmark, n*—stages in the assessment and remediation process which create the expectation of a more comprehensive or robust estimate. **(GASB 49:12-13, ASC 410-30-25-15)**

3.1.39 *release, n*—any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment.

3.1.40 *remedial or corrective action, n*—all environmental response activities to an environmental liability.

3.1.41 *reporting entity, n*—any business or public agency preparing a financial statement.

3.1.42 *Resource Conservation and Recovery Act, RCRA, n*—as amended 42 USC Section 6901 et seq., a major U.S. Federal environmental law.

3.1.43 *Securities and Exchange Commission, SEC, n*—U.S. Federal regulator of the securities industry and their related exchanges

3.1.44 *site, n*—real property affected by an environmental liability or a multi-property area defined for a regulatory purpose.

3.1.45 *Superfund Enterprise Management System, SEMS, n*—successor to the EPACERCLIS database in 2016.

3.1.46 *U.S. Environmental Protection Agency, EPA, n*—Federal agency implementing environmental laws and regulations.

4. Significance and Use

4.1 *Significance*—Since the release of FASB Statement 5—Accounting for Contingencies—in March 1975, the regulatory complexity around environmental matters has increased due to a variety of long-term trends and factors, including but not limited to:

4.1.1 Number and scope of federal, state, local, and non-U.S. environmental and financial reporting laws and their implementing regulations;

4.1.2 Number and scope of treaties signed by the United States, as well as the implementing laws and regulations; parties in these treaties include multilateral organizations and Native American tribes;

4.1.3 Judicial decisions clarifying the impact of laws, regulations, and treaties;

4.1.4 Costs to comply with environmental regulations;

4.1.5 Number of known chemical compounds (see Chemical Abstracts Service REGISTRYSM, which contains over 113 million unique organic and inorganic substances);

4.1.6 Knowledge about benefits and effects of chemical compounds on human health, ecological receptors, and the environment, such as toxicology studies (see National Library of Medicine’s TOXNET database at www.nlm.nih.gov);

- 4.1.7 Number and efficacy of remedial technologies;
- 4.1.8 Experience with assessing and remediating environmental conditions;
- 4.1.9 Financial impact of counterparty failure; and
- 4.1.10 Investor interest in the impact of these trends and factors on their investments.

4.2 Concurrently, the issuers of generally accepted accounting principles (*GAAP*) and financial reporting standards have been evolving. While the Securities and Exchange Commission (SEC) was established in 1934, *FASB* was created in 1973, *GASB* in 1984, *FASAB* in 1990, and *IASB* in 2001. As part of Sarbanes-Oxley Act of 2002 (Public Law 107–204, 116 Stat. 745), *PCAOB* was founded in 2002.

NOTE 1—Many of these trends and factors, as well as the changes to *GAAP*, have occurred slowly. For example, users of this guide will likely be aware that chemicals that were not regulated or considered contamination yesterday may be deemed so tomorrow.

4.3 *Uses*—This guide is intended for use on a voluntary basis by a *reporting entity* that provides financial and qualitative disclosure regarding environmental liabilities. Disclosure is integrated with preceding elements of *financial statements*, namely recognition, measurement, and presentation of environmental liabilities, as noted in Fig. 1. (Full explanation of this framework can be found in *FASB Concepts Statement 8*, September 2010.)

4.3.1 The degree and type of disclosure depends on the scope and objective of the *financial statements*. Such statements may not always be audited and prepared for the public domain.

4.3.2 For example, users may need to make non-public disclosures for the benefit of investors, lenders, regulators, tax authorities, key customers and joint venture partners.

4.3.3 Users of this guide should be aware that shareholder concerns, contractual obligations, financial assurance requirements, court decisions, and regulatory directives may affect their flexibility in use of this guide.

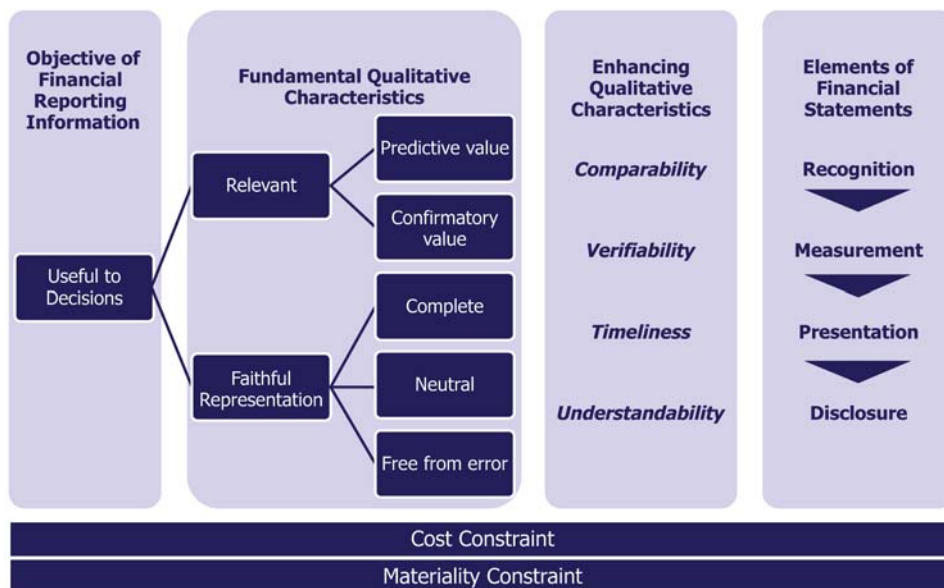
4.4 *Principles:*

4.4.1 The following principles are an integral part of this guide and are intended to be referred to in resolving any ambiguity or dispute regarding the interpretation of disclosures regarding environmental liabilities.

4.4.2 *Uncertainty Not Eliminated*—Although a *reporting entity*, as of the time when its *financial statements* are prepared, may hold a certain position with regard to the existence and extent of its environmental liabilities, there remains uncertainty with regard to the final resolution of factual, technological, regulatory, legislative, and judicial matters, which could affect its valuation of environmental liabilities. Under the constraints of preparation cost and *materiality* (noted in FIG 1), users needing reliable information may experience additional limitations, such as unaudited cost projections, draft scientific findings, or the bounds of attorney-client privilege. Users may encounter decisions identified as uncertainties and observe liabilities priced solely through the costs to implement potential remedial strategies; information on cognitive biases in valuing environmental costs and liabilities may be found in Guide E2137.

4.4.3 *Disclosure Dependent on Circumstances*—Not every environmental liability warrants the same level of detail in its disclosure. Disclosure will be guided by the scope and objective of the financial statement, and accordingly, by the *materiality* of the environmental liability and the level of information available.

FASB Conceptual Framework



Source: *FASB Statement of Financial Accounting Concepts No. 8*, September 2010

FIG. 1 FASB Conceptual Framework

4.4.4 Comparison with Subsequent Disclosures—Subsequent disclosures that convey different information regarding the extent or magnitude of the *reporting entity's* exposures should not be construed as indicating the initial disclosures were inappropriate or incorrect. Disclosures shall be evaluated on the reasonableness of judgments and inquiries made at the time and under the circumstances in which they were made. Subsequent disclosures should not be considered valid standards to judge the appropriateness of any prior disclosure based on hindsight, new information, use of developing analytical techniques, or other factors. However, information on trends may be of value to a user of *financial statements*.

4.4.5 Not Exhaustive—Appropriate disclosure does not necessarily mean an exhaustive disclosure; discretion and professional judgment is used by estimators, auditors, and the *reporting entity's* management in setting limits on the preparation cost, *materiality*, and volume of information worth disclosing as environmental liabilities.

NOTE 2—For each entity, there is a tradeoff between displaying detailed information and identifying reliable and accurate insights that are useful to user decisions.

4.4.6 Assessment of Risk—As the *reporting entity* becomes aware of an environmental liability, the condition or issue should be evaluated to assess the actual or potential risk to human health and environment and resources. The degree of risk is evaluated in context of the current regulatory environment, an understanding of the specifics of the condition or issue, potential future uses, and asset retirement obligations.

4.4.7 Improved Capital Stewardship—Disclosure, along with the preceding steps of recognition, measurement, and presentation, provides context for environmental liabilities and may improve the defensible allocation of capital to resolving those liabilities as efficiently as possible. Over time, an entity may find it valuable or even essential to demonstrate leadership in cost efficiency for understanding, controlling, preventing, and reducing environmental liabilities. The need for intermittent internal presentations may transform into the need for regular public disclosures as an entity acquires environmentally impaired assets or other environmental liabilities. An entity may prefer to make the ongoing investment in competent and continuous data collection and interpretation to draw internal managerial attention toward measuring and ensuring progress in discharging the liabilities as efficiently as possible.

5. Determining Whether a Disclosure is Warranted

5.1 Circumstances Associated with Environmental Liabilities—The following are major circumstances that might give rise to environmental liabilities that may be subject to disclosure:

5.1.1 Enforcement of environmental laws or regulations regarding investigation, cleanup, maintenance of *engineering controls* or land use controls or both, and other costs. Such circumstance arises if the *EPA*, a state agency, or a local government has named the *reporting entity* a *PRP* on a *site*, or a *reporting entity* is required to perform corrective action under *RCRA* or is required to assess (and potentially remediate) a property under any other environmental law or is required to

conduct a natural resources damage assessment and associated mitigation. Degree of enforcement (federal, state, local, or via third-party tort *claim*) may also impact the timing of expenditures;

5.1.2 Contractual assumption of risk or risk transfer agreements. The most familiar forms of risk transfer agreements are insurance contracts, hold-harmless agreements, indemnity agreements, and similar terms within contracts for the transfer of property;

5.1.3 Commencement of litigation or assertion of a *claim* or assessment by a party alleging legal liability on the part of the *reporting entity*.

5.1.4 Information is known by the *reporting entity* that indicates an environmental liability has been incurred;

5.1.5 Asset retirement obligations (*GASB 18*, *ASC 410-20*, *IAS 37*); and

5.1.6 Ability to pay analysis, a routine determination that a *reporting entity* possesses the capacity to honor commitments, guarantees, contingencies, and obligations. This is also termed nonperformance risk of default and *counterparty risk*. Where a *reporting entity* determines an environmental liability valuation rests solely on a counterparty's ability to pay, valuation requires an understanding of that counterparty's ability to pay, especially in light of the *reporting entity's* own ability to pay. (See definition of *counterparty risk* in 3.1.10.)

5.2 Sources of Information—This guide identifies standard sources that should be reviewed by a *reporting entity* to properly determine if conditions warrant disclosure. These sources should be reasonably ascertainable, which is defined as information that is (1) publicly available, (2) obtainable from its source within reasonable time and cost constraints, and (3) practically reviewable. Such sources may include but are not limited to the following categories:

5.2.1 Current Government Environmental Record Source—Any environmental record source available from a government or commercial entity, provided the record is updated in accordance with the update requirement of Practice **E1527**. These sources include, but are not limited to, the standard environmental record sources specified and defined in Practice **E1527**. Current government environmental record sources may identify responsible parties, environmental suits and costs, environmental claims, releases, groundwater contamination, permits, asset retirement obligations, activity and use limitations, institutional control and engineering control registries, and other environmental conditions warranting disclosure. Examples of current government environmental record sources include, but are not limited to:

5.2.1.1 *EPA National Priorities List (NPL) site list*,

5.2.1.2 *EPASuperfund Enterprise Management System (SEMS)*, or predecessor database, *CERCLIS*,

5.2.1.3 Published list of sites and identified responsible parties under state or local environmental laws,

5.2.1.4 Published list of *PRPs*,

5.2.1.5 Lists of leaking underground storage tanks (*LUSTs*),

5.2.1.6 *EPARCRAInfo* database,

5.2.1.7 *EPAEnvirofacts* database, and

5.2.1.8 *TOXNET* database hosted by the U.S. National Library of Medicine, part of the National Institutes of Health.

5.2.2 Historical Government Environmental Record Sources—Any environmental record source available from a government or commercial entity that is older than the most recent *current government environmental record source*. *Historical government environmental record sources* may identify responsible parties, historical releases, historical groundwater contamination, asset retirement obligations, and other historical environmental conditions.

5.2.3 Historical Use Information—Those sources of information about the history of uses of a property. *Historical use information* is available from local libraries, historical societies, private resellers, or commercial entities. *Historical use information* may identify responsible parties, historical releases, historical groundwater contamination, asset retirement obligations, and other historical environmental conditions warranting disclosure. Some examples of *historical use information* are specified and defined in Practice **E1527**.

5.2.4 Internal Reporting Entity Records—The *reporting entity's* internal environmental records regarding environmental conditions. It is prudent for reporting companies to corroborate internal environmental records with publicly available data when available. Examples of internal *reporting entity* records include, but are not limited to:

5.2.4.1 Lists of *PRPs* (and any other potentially liable parties) and their allocated shares, their current financial condition, and details on any financial instrument, insurance, or entity *guarantee* validating the long-term viability of their allocation;

5.2.4.2 Environmental suits involving the *reporting entity*,

5.2.4.3 Environmental claims or demands involving the *reporting entity*, other than filed suits,

5.2.4.4 Lists of leaking underground storage tanks (*LUSTs*),

5.2.4.5 Title searches of at least 50 years on known sites that are currently or were previously owned or operated by the *reporting entity* or predecessor entities;

5.2.4.6 Known payments by the *reporting entity* for environmental claims and costs,

5.2.4.7 Environmental claims or demands involving the *reporting entity*, other than filed suits,

5.2.4.8 Lease agreements, purchase and sale agreements, and other contractual documents,

5.2.4.9 *reporting entity's* environmental records, for example, the results of *site* assessment or investigation reports, environmental audits, monitoring results,

5.2.4.10 Regulatory permits and monitoring reports,

5.2.4.11 Existing asset retirement obligations and other environmental obligation accruals or provisions, including recent forecasts of liabilities and projects to settle the liabilities. Financial auditing reports related to these accruals or provisions;

5.2.4.12 Any predictive listing of “*reasonably possible*” or “*remote*” liability accruals (as described in ASC 450 and GASB 62), sometimes termed a “*watch list*” or “*escalation list*”. See examples in **Appendix X3**;

5.2.4.13 Corporate installation records, blueprints, or other documents identifying potential worker, contractor, or other exposure to the entity's hazardous materials,

5.2.4.14 Interviews of employees of the *reporting entity* concerning potential environmental liabilities, and

5.2.4.15 Corporate policies and other non-contractual commitments regarding environmental cleanup and disposal standards and asset retirement activities.

5.2.5 Foreign, national, state, and local environmental laws (for example, imposing legal obligations associated with the retirement of the *reporting entity's* tangible, long-lived assets).

5.2.6 Credit reporting and rating service reports.

6. Content of the Disclosure Accompanying *Financial Statements*

6.1 *Application*:

6.1.1 The content of the disclosures addressed by this guide are provided by management and are meant to facilitate and supplement, rather than duplicate, the disclosure requirements as prescribed or regulated through *GAAP*, *SEC*, European Commission or any other agency or regulatory body. Disclosures may occur in many places, including but not limited to the notes and narrative text of *financial statements*. As examples, this guide applies to management's discussion and analysis accompanying annual *financial statements* and to corporate sustainability reports. Reporting entities may also need to make seller disclosures for due diligence, bankruptcy, initial public offerings, escrow and trust creation, liquidation (under Chapter 7 of the US Bankruptcy Code), insurance underwriting, captive insurer reserve ratio calculation, financial assurance, loan making, and secondary capital issuance.

6.2 *Flowchart of Disclosures to be Made for Material Environmental Liabilities (See Fig. 2)*:

6.2.1 Disclosure should be made when an entity believes its environmental liability for an individual circumstance or its environmental liability in the aggregate is material. These amounts include, but are not limited to, damages attributed to the entity's products or processes, cleanup of hazardous waste or substances, reclamation costs, disposal of contaminated equipment and materials, fines, and litigation costs. Costs include both initial response costs as well as long-term costs (for example, operations and maintenance costs of remediation equipment, costs associated with maintaining *AULs*, including *institutional controls* and/or *engineering controls*). Users of this guide will find it useful to review periodically relevant accounting literature (such as ASC 410, GASB 49 and IAS 37) for additional examples of **Fig. 2**.

6.2.2 The following data on the material circumstance(s) in **6.2.1** should be prepared by the *reporting entity* in anticipation of possible disclosure:

6.2.2.1 Statement regarding the judgment or assumptions used by the *reporting entity* regarding the likelihood of liability from any or all individual sites, actions, suits, cases, claims, requests for payment, notices or demands, and the potential *materiality* of that liability.

6.2.2.2 Statement regarding the number of sites for which the *reporting entity* has been named as a *PRP* and the number of claims, suits, actions, demands, requests for payment, notices, or cases that have been presented to the *reporting entity* for environmental liabilities.

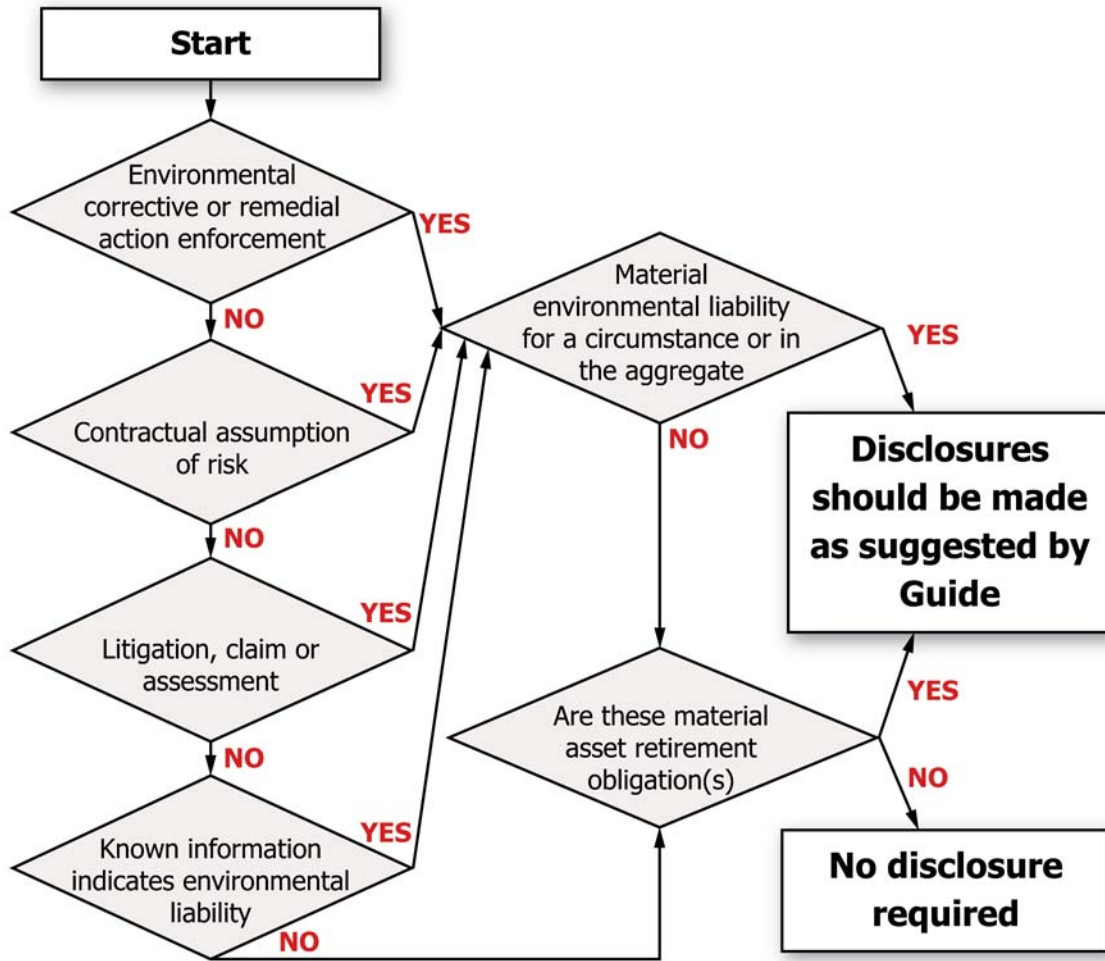


FIG. 2 Disclosure of Environmental Liabilities

6.2.2.3 Statement regarding the *reporting entity's* asset retirement obligations, including but not limited to:

- (1) A general description of the asset retirement obligations and the associated long-lived assets.
- (2) The fair value of assets that are legally restricted for purposes of settling asset retirement obligations.
- (3) A reconciliation of the beginning and ending aggregate carrying amount of asset retirement obligations showing separately the changes attributable to (a) liabilities incurred in the current period, (b) liabilities settled in the current period, (c) accretion expense, and (d) revisions in estimated cash flows, whenever there is a significant change in one or more of those four components during the reporting period. See X4.1, X4.2, and X4.4 for examples.

6.2.2.4 The *reporting entity's* estimate of its environmental liabilities, a description of the approach used to estimate the amounts, and the amounts accrued by the *reporting entity* for environmental liabilities. See X4.7 for an example.

(1) Environmental liabilities should be stated prior to reduction for amounts anticipated to be recovered from any third parties (for example, recoveries from insurance companies; X4.6 for an example display of recoveries).

(2) The *reporting entity* should disclose the cost estimation methodology employed for accrued liabilities and a characterization of any material loss contingencies. Refer to Guide E2137, X4.4 and X4.5 for examples.

(3) In a situation where a *reporting entity* believes it has a material environmental liability but cannot quantify all or part of that liability, a written statement shall be included that describes the conditions or limitations associated with estimating the liability.

(4) In circumstances in which the liability for an *asset retirement obligation* cannot be reasonably estimated, a description of the obligation, the fact that a liability has not been recognized because the fair value cannot be estimated reasonably, and the reasons why fair value cannot be estimated reasonably.

6.2.2.5 The *reporting entity's* estimate of anticipated recoveries and a description of their approach to estimate the amount of anticipated recoveries from other parties by means of risk transfer agreement(s) that are associated with the estimated liabilities. The description should disclose any significant issues regarding the collectability of recoveries (see exhibit X4.6 for an example display of recoveries).

6.2.2.6 A discussion of key external and internal environmental factors regarding the timing or amount of the liabilities, or recoveries. These factors include, but are not limited to, the following:

(1) Uncertainties with respect to joint and several liability that may affect the magnitude of the *contingency*, including disclosure of the aggregate expected cost to remediate particular sites that are individually material if the likelihood of contribution by other significant parties has not been established.

(2) The nature and terms of cost-sharing arrangements with other *PRPs*.

(3) The anticipated time frame over which the accrued or presently unrecognized amounts for environmental liability may be paid out.

6.2.2.7 The *reporting entity's* estimate of *counterparty risk*.

6.2.2.8 The *reporting entity's* estimate of their own risk of non-performance (default), based on their current credit rating.

6.2.2.9 The *reporting entity's* net exposure from *counterparty risk*, namely the value in 6.2.2.7 less 6.2.2.8. See exhibit X4.4 for an example.

7. Keywords

7.1 asset retirement obligations; capital stewardship; corporate governance reporting; counterparty risk; decommissioning; disclosure; environmental liability; financial assurance; financial reporting; financial statement; pollution remediation obligations; remediation; reporting entity; sustainability reporting

APPENDIXES

(Nonmandatory Information)

X1. RELATED DOCUMENTS

X1.1 US Code of Federal Regulations References

SEC Regulation S-K, 17 CFR Part 229

Sarbanes-Oxley, Public Law 107-204, 15 USC 7241 and 18 USC 1350

X1.2 Financial Accounting Standards Board References

X1.2 Accounting Standards Codification, completed in 2009 and updated annually

Topic 275 Risks and Uncertainties

Topic 410 Asset Retirement and Environmental Obligations

Topic 440 Commitments

Topic 450 Contingencies

Topic 460 Guarantees

Topic 805 Business Combinations

Topic 820 Fair Value Measurement

NOTE X1.1—Users may find a subscription to the current definitive versions of *FASB* content at www.fasb.org.

X1.3 Government Accounting Standards Board (GASB) References

Statement 18: Accounting for Municipal Solid Waste Landfill Closure and Postclosure Care Costs

Statement 49: Pollution Remediation Obligations

Statement 62: Codification of Accounting and Financial Reporting Guidance Contained in Pre-November 30, 1989 *FASB* and AICPA Pronouncements

Statement 70: Nonexchange Financial Guarantees

Statement 72: Fair Value Measurement and Application

NOTE X1.2—Users may find a subscription to the current definitive versions of *GASB* content at www.gasb.org. In particular, regular updates on deliberations and a possible new Statement on “Certain Asset Retirement Obligations” are found there. *GASB* added asset retirement obligations (AROs) to their research agenda in December 2013 and approved an exposure draft in December 2015. Users of this standard should determine if *GASB's* current published ARO standard development work is relevant.

X1.4 Public Company Accounting Oversight Board (PCAOB) References

AS 1015: Due Professional Care in the Performance of Work

AS 1105: Audit Evidence

AS 1210: Using the Work of a Specialist

AS 2501: Auditing Accounting Estimates

AS 2502: Auditing Fair Value Measurements and Disclosures

AS 2705: Required Supplementary Information

Alert 4: Auditor Considerations Regarding Fair Value Measurements, Disclosures, and Other-Than-Temporary Impairments (April 21, 2009)

Alert 10, Maintaining and Applying Professional Skepticism in Audits (Dec. 4, 2012)

NOTE X1.3—Users may find current definitive versions of *PCAOB* content at www.pcaobus.org.

X1.5 Federal Accounting Standards Advisory Board (FASAB) References

SFFAS 5: Accounting for Liabilities of the Federal Government

SFFAS 6, Accounting for Property, Plant, and Equipment [Chapter 4, Cleanup Costs]

Technical Release 2: Determining Probable and Reasonably Estimable for Environmental Liabilities in the Federal Government

Technical Release 11: Implementation Guidance on Cleanup Costs Associated with Equipment

Technical Bulletin 2006-1, Recognition and Measurement of Asbestos-Related Cleanup Costs

NOTE X1.4—Users may find current definitive versions of *FASAB* content at www.fasab.gov. In particular, regular updates on guidance for “Establishing Opening Balances for General Property, Plant, and Equipment” are found there.

X1.6 International Accounting Standards Board (IASB) References

IAS 37: Provisions, Contingent Liabilities and Contingent Assets

IFRS 13: Fair Value Measurement

IFRIC 1: Changes in Existing Decommissioning, Restoration and Similar Liabilities

IFRIC 5: Rights to Interests arising from Decommissioning, Restoration and Environmental Rehabilitation Funds

NOTE X1.5—Users may find current definitive versions of IASB content at www.ifrs.org. Access to the current versions of standards requires a paid subscription; information on current work plans and developing standards is available without a subscription.

X1.7 Other GAAP References

Australian Accounting Standards Board: AAST Standard 137, Provisions, Contingent Liabilities and Contingent Assets, August 2015

Canadian Public Sector Accounting Board: Section PS 3260, Liability for Contaminated Sites, March 2010

Canadian Institute of Chartered Accountants: Handbook Section 3110, Asset Retirement Obligations, effective January 2011

New Zealand Accounting Standards Board: NZ IAS 37, Provisions, Contingent Liabilities and Contingent Assets, effective July 2014

UK and Ireland: Financial Reporting Council: FRS 102, Provisions and Contingencies, September 2015

NOTE X1.6—Users may find definitive versions of the above standards through the respective websites.

X1.8 ASTM References³

ASTM E2081 Guide for Risk-Based Corrective Action

ASTM E2091 Guide for Use of Activity and Use Limitations, Including Institutional and Engineering Controls

ASTM E2205 Guide for Risk-Based Corrective Action for Protection of Ecological Resources

ASTM E2435 Guide for Application of Engineering Controls to Facilitate Use or Redevelopment of Chemical-Affected Properties.

X1.9 Other Reference on Financial Forecast Preparation

Principles of Corporate Finance (12th Edition, January 2016) by Richard Brealey, Stewart Myers, Franklin Allen. ISBN-13: 978-1259144387.

X1.10 Other Historical References

FASB Statement 5: Accounting For Contingencies, Issued March 1975. Superseded by ASC 450 – Contingencies.

FASB Interpretation 14, “Reasonable Estimation of the Amount of a Loss and Interpretation of FASB-5.”

SEC Staff Accounting Bulletin No. 92, “Environmental Liability Disclosure Update”, May 5, 1995.

SEC Staff Accounting Bulletin No. 99—Materiality, August 12, 1999.

FASB Statement 143, “Accounting for Asset Retirement Obligations,” September 2001.

FASB Interpretation 47, “Accounting for Conditional Asset Retirement Obligations,” March 2005.

American Institute of Certified Public Accountants (AICPA) Statement of Position 96-1, Environmental Remediation Liabilities (Including Auditing Guidance), October 10, 1996.

X2. MATERIALITY REFERENCES

X2.1 The authoritative literature on *materiality* includes (but is not limited to) the following references; users of this Standard Guide are reminded to review any current guidance on *materiality* by courts, regulatory agencies, and statutes.

X2.2 Court Decisions on Materiality

X2.2.1 *TSC Industries Inc. versus Northway, Inc.* 426 U.S. 438, 448 (1976). (Note: Concluded that an “omitted fact is material if there is a substantial likelihood that a reasonable shareholder would consider it important in deciding how to vote.” To fulfill *materiality* requirement “there must be a substantial likelihood that the disclosure of the omitted fact would have been viewed by the reasonable investor as having significantly altered the ‘total mix’ of information available.” *Materiality* should not be so expansive as to result in shareholders being “bur[ied] in an avalanche of trivial information.”) As the Supreme Court has noted, determinations of *materiality* require “delicate assessments of the inferences a ‘reasonable shareholder’ would draw from a given set of facts and the significance of those inferences to him....” See also *Basic, Inc. v. Levinson*, 485 U.S. 224 (1988).

X2.2.2 *In re Caterpillar Inc.*, Exchange Act Rel. No. 30532, 51 SEC Docket (CCH) 147 (March 31, 1992). (Indicates that

material information is information “necessary [for the investor] to understand the registrant’s *financial statements*.”)

X2.3 SEC References on Materiality

X2.3.1 *SEC Staff Accounting Bulletin Topic 1.M, Financial Statements—Materiality*—The purpose of this SAB is to provide guidance to financial management and independent auditors with respect to the evaluation of the *materiality* of misstatements that are identified in the audit process or preparation of the *financial statements*. This SAB is not intended to provide definitive guidance for assessing “*materiality*” in other contexts, such as evaluations of auditor independence, as other factors may apply. There may be other rules that address financial presentation. See, for example, Rule 2a-4, 17 CFR 270.2a-4, under the Investment Company Act of 1940. As used in this SAB, “misstatement” or “omission” refers to a financial statement assertion that would not be in conformity with *GAAP* As used in the accounting literature and in this SAB, “qualitative” *materiality* refers to the surrounding circumstances that inform an investor’s evaluation of financial statement entries. Whether events may be material to investors for nonfinancial reasons is a matter not addressed by this SAB. The “bulletin expresses the views of the staff that exclusive

reliance on certain quantitative benchmarks to assess *materiality* in preparing *financial statements* and performing audits of those *financial statements* is inappropriate.”

X2.3.2 *SEC Interpretation: Management’s Discussion and Analysis of Financial Condition and Results of Operations; Certain Investment Company Disclosures*. May 18, 1989. Part III. Evaluation of Disclosure – Interpretive Guidance (subpart D. Material Changes).

X2.3.3 *SEC Regulation S-K, Item 103, Legal Proceedings* 17 CFR 229.103. (Instruction 5 to Item 103 requires disclosure of environmental proceedings when such proceedings: (1) are material to the business or financial condition of the registrant; (2) involve primarily a *claim* for damages that exceeds 10 % of the current assets of the registrant and its subsidiaries on a consolidated basis; or (3) involve a governmental authority as a party and such proceedings result in monetary sanctions, unless the registrant reasonably believes that the proceeding will result in no monetary sanctions or in monetary sanctions, exclusive of interest and costs, of less than \$100,000.)

X2.4 PCAOB References on Materiality

X2.4.1 *PCAOB AS 2105: “Consideration of Materiality in Planning and Performing an Audit”* establishes requirements regarding the auditor’s consideration of *materiality* in planning and performing an audit.

X2.4.2 *PCAOB AS 2810.01: “Evaluating Audit Results”* establishes requirements regarding the auditor’s evaluation of audit results and determination of whether he or she has obtained sufficient appropriate audit evidence.

X2.4.3 *PCAOB AS 2810.17: “Evaluation of the Effect of Uncorrected Misstatement”*, states the auditor should evaluate whether uncorrected misstatements are material, individually or in combination with other misstatements. In making this evaluation, the auditor should evaluate the misstatements in relation to the specific accounts and disclosures involved and to the *financial statements* as a whole, taking into account relevant quantitative and qualitative factors.

X2.4.4 *PCAOB AS 2810 Appendix B: “Qualitative Factors Related to the Evaluation of the Materiality of Uncorrected Misstatements”*:

X2.4.4.1 The potential effect of the misstatement on trends, especially trends in profitability.

X2.4.4.2 A misstatement that changes a loss into income or vice versa.

X2.4.4.3 The effect of the misstatement on segment information, for example, the significance of the matter to a particular segment important to the future profitability of the company, the pervasiveness of the matter on the segment information, and the impact of the matter on trends in segment information, all in relation to the *financial statements* taken as a whole.

X2.4.4.4 The potential effect of the misstatement on the company’s compliance with loan covenants, other contractual agreements, and regulatory provisions.

X2.4.4.5 The existence of statutory or regulatory reporting requirements that affect *materiality* thresholds.

X2.4.4.6 A misstatement that has the effect of increasing management’s compensation, for example, by satisfying the requirements for the award of bonuses or other forms of incentive compensation.

X2.4.4.7 The sensitivity of the circumstances surrounding the misstatement, for example, the implications of misstatements involving fraud and possible illegal acts, violations of contractual provisions, and conflicts of interest.

X2.4.4.8 The significance of the financial statement element affected by the misstatement, for example, a misstatement affecting recurring earnings as contrasted to one involving a non-recurring charge or credit, such as an extraordinary item.

X2.4.4.9 The effects of misclassifications, for example, misclassification between operating and non-operating income or recurring and non-recurring income items.

X2.4.4.10 The significance of the misstatement or disclosures relative to known user needs, for example:

(1) The significance of earnings and earnings per share to public company investors.

(2) The magnifying effects of a misstatement on the calculation of purchase price in a transfer of interests (buy/sell agreement).

(3) The effect of misstatements of earnings when contrasted with expectations.

X2.4.4.11 The definitive character of the misstatement, for example, the precision of an error that is objectively determinable as contrasted with a misstatement that unavoidably involves a degree of subjectivity through estimation, allocation, or uncertainty.

X2.4.4.12 The motivation of management with respect to the misstatement, for example, (1) an indication of a possible pattern of bias by management when developing and accumulating accounting estimates or (2) a misstatement precipitated by management’s continued unwillingness to correct weaknesses in the financial reporting process.

X2.4.4.13 The existence of offsetting effects of individually significant but different misstatements.

X2.4.4.14 The likelihood that a misstatement that is currently immaterial may have a material effect in future periods because of a cumulative effect, for example, that builds over several periods.

X2.4.4.15 The cost of making the correction—it may not be cost-beneficial for the client to develop a system to calculate a basis to record the effect of an immaterial misstatement. On the other hand, if management appears to have developed a system to calculate an amount that represents an immaterial misstatement, it may reflect a motivation of management as noted in X2.4.4.12 above.

X2.4.4.16 The risk that possible additional undetected misstatements would affect the auditor’s evaluation.

NOTE X2.1—Note on source: The Public Company Accounting Oversight Board, www.pcaobus.org, accessed February 2016.

X2.4.5 *AS 1015—Due Professional Care in the Performance of Work*

X2.4.6 *AS 1105—Audit Evidence*

X2.4.7 *AS 1210—Using the Work of a Specialist*

X2.4.8 *AS 2501—Auditing Accounting Estimates*

X2.4.9 *AS 2502*—Auditing Fair Value Measurements and Disclosures

X2.4.10 *AS 2705*—Required Supplementary Information

X2.4.11 *Alert 4*—Auditor Considerations Regarding Fair Value Measurements, Disclosures, and Other-Than-Temporary Impairments (April 21, 2009)

X2.4.12 *Alert 10*—Maintaining and Applying Professional Skepticism in Audits (Dec. 4, 2012)

X2.5 FASB References on Materiality

X2.5.1 *FASB Statement of Financial Accounting Concepts No. 8—September 2010*:—Conceptual Framework for Financial Reporting. “Materiality” Sections BC3.17 and BC3.18

X2.5.2 *FASB Statement of Financial Accounting Concepts No. 2—May 1980*—Qualitative Characteristics of Accounting Information. “Materiality” Section in Summary of Principal Conclusions: “Materiality is a pervasive concept that relates to the qualitative characteristics, especially relevance and reliability. Materiality and relevance are both defined in terms of what influences or makes a difference to a decision maker, but the two terms can be distinguished. A decision not to disclose certain information may be made, say, because investors have no need for that kind of information (it is not relevant) or because the amounts involved are too small to make a difference (they are not material). Magnitude by itself, without regard to the nature of the item and the circumstances in which the judgment has to be made, will not generally be a sufficient

basis for a *materiality* judgment. The Board’s present position is that no general standards of *materiality* can be formulated to take into account all the considerations that enter into an experienced human judgment. Quantitative *materiality* criteria may be given by the Board in specific standards in the future, as in the past, as appropriate.” [Note on source: Financial Accounting Standards Board, www.fasb.org]

X2.6 GASB References on Materiality

X2.6.1 *GASB Statement 34, Guide to Implementation of GASB Statement 34 and Related Pronouncements, Questions and Answers, Questions 1 through 6—Assessing Materiality in Preparing Financial Statements.* ()

NOTE X2.2—Note on source: Governmental Accounting Standards Board, www.gasb.org.

X2.7 IASB References on Materiality

X2.7.1 *IFRS Conceptual Framework for Financial Reporting*—“QC11. *Materiality*. Information is material if omitting it or misstating it could influence decisions that users make on the basis of the financial information of a specific *reporting entity*. In other words, *materiality* is an entity-specific aspect of relevance based on the nature or magnitude or both of the items to which the information relates in the context of an individual entity’s financial report. Consequently, the Board cannot specify a uniform quantitative threshold for *materiality* or predetermine what could be material in a particular situation.” (Note on source: IFRS Foundation, www.ifrs.org.)

X3. WATCH LIST

X3.1 When developing a range of values for an individual environmental liability, the differences among significant cost outcomes is often worth future evaluation. For example, when an operating manufacturing plant experiences a hazardous waste spill, the short-term costs for an emergency response may be all of the costs or just a small fraction of the lifecycle costs to settle the liability. A watch list is a useful display for identifying the wide range of potential outcomes even though with current information they are not reserved, budgeted, or disclosed.

X3.2 As noted in [Appendix X4](#), users of this guide may find it useful to aggregate the ranges of values for many components of many individual liabilities, especially in an effort to justify an appropriate level of spending to efficiently reduce the individual liabilities, and to prioritize spending among available options. In order to set (and then improve) the capital stewardship standards for addressing an environmental liability portfolio, users may find that tabular summaries (both for individual sites and for portfolios) support more efficient capital allocation and more rational decision analysis.

X3.3 Adoption of a “watch list” of *reasonably possible* or remote liability increases is one method for compiling this information. In the example below, the following columns are used:

X3.3.1 *Type*—asset retirement obligation (ASC 410-20 or GASB18), or remediation obligations (ASC 410-30 or GASB49), or contingencies (ASC 450, GASB10), or commitments (ASC 440, IAS16), or guarantees (ASC460, GASB70, IAS39)

X3.3.2 *Definition of environmental liability*—a brief explanation of the media, dimensions, source(s), chemical of concern.

X3.3.3 *Current obligating events*—notation of any milestones creating a legal or *constructive obligation* (also in Canada, an equitable obligation).

X3.3.4 *Future obligating event or recognition benchmark(s)*—a triggering event to cause the entity to estimate the liability under different circumstances and possibly change the amount reserved or provisioned.

TABLE X3.1 Site-Specific Watch List Example

Type	Definition of Environmental Liability	Current <i>Obligating Event(s)</i>	Future <i>Obligating Event</i> or <i>Recognition Benchmark(s)</i>	Probability of Future <i>Obligating Event</i> or <i>Recognition Benchmark(s)</i>	Range of dates (current expectations)	Range of Costs (low to high)
Asset Retirement	UST removals (4), demolition of 800,000 SF warehouse	Purchased 1962 Building in service in 1983	Decision to remove building from service	100%	11 to 40 years	\$4 - \$50 M
RCRA Closure	Closure of process water cooling system, 8 acres	Purchased 1962 RCRA Permit 1993	Permit termination decision by owner or regulator	Decision to modify or sell operation 10% Decision to close 100%	1 to 40 years	\$20 - \$40 M
Remediation	Abandonment of groundwater well network	Purchased 1962 2010 Spill Response 2014 Groundwater remediation system installation	Regulatory approval of the well abandonment step	Regulatory approval 100% Decision to close facility and convert use 95%	2024 to 2034 2020 to 2056	\$1 M
Remediation	Soil excavation, 2 acres x depth of 6-10 feet	Purchased 1962 1995 Fire	Regulator issues notice of violation	25%	2017 to 2020	\$2 - \$3 M
Offsite Sediment	Up to 500 feet of stormwater discharge lines, eight sewer outfalls and 2,000 feet of adjacent river	Plant sewers upgraded 1965 1992 news story of regional flooding	Completion of creek habitat study and notice of violation	90%	2018 to 2025	\$1 - \$10 M
Offsite Sediment	Counterparty Default by any of three PRPs	PRP Agreement, signed January 2010	Financial stress or bankruptcy leaving PRP group	30%	2018 to 2025	\$1 - \$10 M
Air Pollution Control	Installation of selective catalytic reduction (SCR) system	Unfulfilled compliance requirement (2015 Consent Order)	Enforcement of compliance deadline of 6/27/2017	100%	2016 - 2017	\$1 - \$2 M

TABLE X3.2 Remediation Portfolio Watch List Example (\$ millions unless noted)

Site	<i>Obligating Event</i> or <i>Recognition Benchmark</i>	Prob	Low Value	Expected Value	High Value	Timing
Site 1	RCRA Closure of Process Water System	10 -100%	\$20	\$30	\$40	2017 - 2056
Site 1	Abandonment of groundwater well network after completing remediation	95%	\$1	\$1	\$1	2020-2056
Site 1	Soil excavation due to regulator NOV	25%	\$2	\$3	\$4	2017-2020
Site 2	Remedy selection: SVE for 10 years	100%	\$7	\$10	\$15	2018-2022
Site 3	Insurer denies coverage	50%	\$49	\$70	\$105	1/1/2018
Site 3	30% design of soil removal 20,000 MT (lead)	50%	\$35	\$50	\$75	2018-2020
Site 4	Scope of investigation	100%	\$3.5	\$5	\$7.5	1/1/2018
Site 5	NRDA claim/damages	80%	\$7	\$10	\$15	2017-2025
Site 5	25% PRP defaults by 2018	33%	\$21	\$30	\$45	7/1/2018
Site 5	Remedy selection for 195,000 MT (solvents)	100%	\$28	\$40	\$60	7/1/2020
Site 6	Spill excavation, pipeline areas A-1 to C-10	100%	\$14	\$26	\$40	2018-2025
...	List continues...	...	...	\$75	...	...
...	Sum of Loss Contingencies	...	...	\$350	...	...

X3.3.5 *Probability of future obligation event or recognition benchmark(s)*—the probability of that event or benchmark ever happening (without a time limit); most of these probabilities are at or near 100 %.

X3.3.6 *Range of dates (current expectations)*—this range may span years or decades.

X3.3.7 *Range of costs (low to high)*—using remedial strategies on the market today, this range may span widely due to the lack of comprehensive information.

X3.4 Using the data of Table X3.1, a Portfolio Watch List (Table X3.2) can be constructed. This tabular summary (consistent with ASC 410-30-50-9, whose “disclosure is encouraged but not required”) allows for a rigorous portfolio analysis and calculations to justify reporting and disclosure of GAAP defined increments of unreserved (or unprovisioned) liabilities. In ASC 410-30, GAAP defines a reserve as “likely” but gives no specific percentile within a range for that term, only that “likely” has a higher probability than “reasonably possible”, which in turn has a higher probability than “remote”.

X4. DISPLAY OF PORTFOLIO AGGREGATION

X4.1 To enable periodic improvements in capital stewardship, reporting entities may find it useful to explain how a portfolio of environmental costs or liabilities is evolving over time. Examples of displays include [Table X4.1](#) and [Table X4.2](#).

X4.2 ARO Site Population Tracking (Table X4.1)

X4.2.1 A listing of an entity’s *asset retirement obligation site* counts over three or more years provides users with a leading indicator for long-term costs. This display can help a user quickly determine if the liability portfolio is growing, stabilizing or decreasing, and can allow readers to infer the very long duration of environmental costs and liabilities.

X4.3 ARO Portfolio Tracking (Table X4.2)

X4.3.1 Table example of *site* population tracking: by reviewing row C over time, users may conclude if or when the *site* count (and presumably spending) is nominal or immaterial; by reviewing row B, users may conclude if acquisitions or asset closures are adding reasonable or high-consequence liabilities to the portfolio in the context of rows C and D.

X4.3.2 Displaying three or more years of the comparable financial information explains progress in stabilizing or reducing a portfolio value by using component factors. This format is based on ASC 410-20-50-1 and enables improved auditing and disclosure through display of detail behind liability changes. Whether the data is financial or statistical, it is generally useful to list asset retirement obligations (or ARO, noted in ASC 410-20 and GASB 18) distinctly from other types of environmental liabilities, such as remediation obligations (ASC 410-30 and GASB49), for several reasons. One justification is that ARO forecasts are discounted to a present value (using *FASB* methodology) and includes an annual *accretion* expense. Estimates for other environmental costs and liabilities (ASC 410-30, 440, 450, 460) may be valued at present, current or future value at the choice of the *reporting entity*. See Guide [E2137](#) for methodology comparison. GASB 49 requires the use of current value estimates for *pollution remediation obligations*, which precludes an annual *accretion*.

X4.3.3 *Liabilities incurred due to*: a new capital expenditure; discovery of an *asset retirement obligation*; a property acquisition or divestiture; a new, renewed or terminating lease; a sale/leaseback; the default or nonperformance of an environ-

TABLE X4.2 ARO Portfolio Tracking Table (\$ millions)

ARO Portfolio Tracking Table	2015	2014	2013
A. <i>Asset Retirement Obligation</i> balance – start of fiscal year	\$135	\$165	\$150
B. Liabilities incurred	\$10	\$10	\$10
C. Liabilities settled (includes spending and derecognition)	(\$15)	(\$30)	(\$30)
D. Accretion	\$5	\$5	\$5
E. Revisions in estimated cash flows	\$20	(\$15)	\$30
F. <i>Asset Retirement Obligation</i> balance – end of fiscal year	\$155	\$135	\$165
G. Impact of 1% increase in discount rate to year-end value	(\$15)	(\$11)	(\$17)

mental counterparty on an ARO; a financial guaranty that converts into an ARO; new environmental legislation or regulation.

X4.3.4 *Liabilities settled*—due to spending or transfer to another entity. For a liability to be settled, it must first be recognized. It will be possible but not common for an entity to recognize and settle a liability within the same year.

X4.3.5 *Accretion*—an increase to the present value of a liability solely due to the passage of time, normally a year; also “unwinding the discount”. (If no discounting is performed, *accretion* will be zero.)

X4.3.6 *Revisions in estimated cash flows*: adjustments not covered under the other categories (above); new layers of obligations; currency adjustments; conversion of an ARO to an operating expense or remediation reserve (and vice versa); due to the incremental cost of a constructive or equitable obligation, beyond the *legal obligation*; changes in the tax rate assumptions (if table displays “after tax” values for the entire portfolio).

X4.3.7 *Impact of 1% increase in discount rate*—displays the negative correlation between higher discount rates and lower *asset retirement obligation* balances.

X4.4 Portfolio Tracking Summary (Table X4.3)

X4.4.1 displaying three or more years of the comparable financial information explains progress in stabilizing or reducing a portfolio value by using component factors. While the format is based on ASC 410-20-50-1, [Table X4.3](#) is useful for GASB49, IAS37 and ASC 410-30 remediation obligations, and displays the trends and overall context of any liability changes.

X4.5 Portfolio Assumption Tracking (Table X4.4)

X4.5.1 To make the calculation process more transparent in disclosures, estimators may find that users prefer to see the clear and comprehensive application of financial assumptions and/or reporting of sensitivity analysis. Accompanying notes to these calculations will show the preparer’s basis for selecting a given inflation assumption and discount rate assumption. See [Table X4.4](#), [Appendix X5](#), and Guide [E2137](#) for guidance on selecting the inflation and discount assumptions. By comparing changes in significant underlying assumptions, users can reach their own conclusions about the process used to create the

TABLE X4.1 ARO Site Population Tracking Table

ARO Site Population Tracking	2015	2014	2013
A. ARO Sites at start of fiscal year	47	47	40
B. ARO Sites added or reopened	0	2	10
C. ARO Sites closed or transferred	(1)	(2)	(3)
D. ARO Sites at end of fiscal year	46	47	47

TABLE X4.3 Portfolio Financial Tracking Table (\$ millions)

NOTE 1—Example of Portfolio Value Tracking for Remediation Obligations that Are Distinct from Asset Retirement Obligations

	2015	2014	2013
Remediation Obligation Value – start of fiscal year	\$125	\$160	\$150
Liabilities incurred	\$10	\$10	\$10
Liabilities settled (includes spending and derecognition)	(\$15)	(\$30)	(\$30)
Accretion expense	\$0	\$0	\$0
Revisions in estimated cash flows	\$20	(\$15)	\$30
Remediation Obligation Value – end of fiscal year	\$140	\$125	\$160
Portion of Liability Value offset by deferred tax assets	\$49	\$44	\$56
Corporate tax rate assumption applied	35 %	35 %	35 %

TABLE X4.4 Portfolio Assumption Tracking Table

NOTE 1—Clearly communicating the key assumptions already used in the calculations of the values in X4.3.2 and X4.4 allows a user to determine if market or reasonable factors have been used (and applied consistently across a portfolio over time).

	2015	2014	2013
Inflation assumption (average) applied to portfolio	0%	0%	0%
Discount assumption (average) applied to portfolio	4%	4%	4%
Time horizon used for portfolio liability forecasting	20 yrs	20 yrs	20 yrs
Percent of liability balance calculated using expected value	90 %	85 %	80%
Percentile we used for determining our own “ability to pay” (max = 100)	94%	90%	95%
Weighted average percentile of our counterparties’ abilities to pay (max = 100)	21%	17%	33%
Percent of liability balance concentrated in five largest environmental counterparties (or PRPs)	2%	25%	18%
Percentage of liability balance with updated estimates	40%	0%	10%
Date of cost index used	June 2015	Jan. 2012	Jan. 2012

estimates, and how the assumptions compare to peer organizations managing similar liabilities and disclosures. Users may find that prior to measurement of these assumptions, similar liabilities were not measured in similar ways

X4.6 Portfolio Range Tracking (Table X4.5)

X4.6.1 Estimators preparing a range of values may clarify their explanations by defining where a complex portfolio of liabilities is broken out into increments of “probable”, “*reasonably possible*” and “remote” (see ASC 450-20-20 and GASB 62:100). While the precise definition of those terms may vary from entity to entity, users of the estimates may find value in observing trends beyond the liability balances disclosed in such formats as X4.2, X4.3, and X4.4.

X4.7 Portfolio Recoveries Tracking (Table X4.6)

X4.7.1 Counterparties may be responsible for paying for some or all of an entity’s environmental liabilities. Estimators may be responsible for understanding key aspects of cost recoveries, including (but not limited to) the following:

- (1) What is the financial condition of the counterparty?
- (2) If environmental liabilities are reimbursed, what are the key conditions or limitations? Is there a time limit, scope limit, or significant delay between *claim* and payment?
- (3) If environmental liabilities are paid directly by others, what conditions or limitations are in place?

X4.7.2 Users of this guide will likely find recent experience about the percentage and consistency of cost recoveries to be

TABLE X4.5 Portfolio Metrics Tracking (\$ millions unless noted)

NOTE 1—For example, a user may note that the overall obligation balance (row F) is not clearly declining, the other increments (rows G and H) are successfully declining. Without this level of detail, a user of a simpler financial statement may be misled into concluding that spending to reduce liabilities is inconsequential or ineffective.

	2015	2014	2013
A. Percent of liability balance in 3rd party financial assurance instrument	10 %	0 %	0 %
B. Percent of liability balance which is self-insured	90 %	100 %	100 %
C. Approximate percentile of liability value	55th	55th	55th
D. Approximate percentile of “ <i>reasonably possible</i> ” value	75th	75th	75th
E. Approximate percentile of “remote” value	95th	95th	95th
F. Remediation Obligation balance – end of year (value of percentile expressed in item C in this table.)	\$310	\$270	\$330
G. <i>reasonably possible</i> increment (difference of dollar values of the percentiles expressed in items C and D in this table.)	\$20	\$30	\$40
H. Remote increment (difference of dollar values of the percentiles expressed in items D and E in this table.)	\$105	\$115	\$125

TABLE X4.6 Portfolio Recoveries Tracking Table (\$ millions)

	2015	2014	2013
Recoveries – start of fiscal year	\$0	\$0	\$0
Recoveries added	\$10	\$15	\$15
Recoveries received	(\$10)	(\$15)	(\$15)
Recoveries – end of fiscal year	\$0	\$0	\$0
Recoveries – <i>reasonably possible</i>	\$30	\$35	\$40
Recoveries – remote	\$65	\$70	\$75

both confirmatory of recent experience and predictive of future recoveries, all in the context of the overall liability. Display of the recoveries can accelerate analysis of the impact of an acquisition or divestiture.

X4.8 Comparison and Display of Funding Types

X4.8.1 To make an entity’s capital allocation experience, decisions and commitments visible, users of this guide may find it necessary to provide a tabular summary of the spending

on resolving environmental liabilities. While it is challenging to explain the efficiency of spending matching liability reduction, the intent of this table is to provide context of the spending – recent and anticipated – relative to the entire entity. Users of this standard should expect the audience is aware of the definitions of the different types of spending and that proper controls are in place to reinforce the accounting standards and comparability of this information.

TABLE X4.7 Portfolio Reporting Table (\$ millions)

NOTE 1—Example of portfolio reporting. Clearly explaining the recent and anticipated spending allows a user to determine if long-term trends, significance or *materiality*, impacts of business combinations and exits, or other factors deserve further investigation or concern. In combining recent and anticipated values, users are able to concurrently review the confirmatory and predictive information (as described as “relevant” and therefore “useful to decisions” in Fig. 1 and FASB Statement of Financial Accounting Concepts No. 8, September 2010).

	Forecasts		Current	Recent Years		
	2018	2017	2016	2015	2014	2013
Spending to settle asset retirement obligations	\$10	\$9	\$8	\$8	\$8	\$8
Spending to settle other remediation obligations	\$30	\$40	\$50	\$53	\$48	\$51
Spending on environmental operating expenses	\$100	\$100	\$80	\$57	\$42	\$116
Spending on environmental capital expenditures	\$150	\$150	\$150	\$202	\$216	\$229

X5. INFLATION AND DISCOUNT RATE ASSUMPTIONS

X5.1 Depending on the purpose of the financial statement presentation and/or disclosure (such as due diligence/acquisition, financial assurance, feasibility study, reserve or provision setting, or budgeting) alternative calculations may be performed on the same cash flows. It is important to consider the following when applying inflation and discounting to cash flows:

X5.1.1 Check with any applicable regulations, standards, court rulings and/or internal corporate guidance that may govern your disclosure to determine guidance on required inflation/discounting applications.

X5.1.2 Determine what type of value you are calculating and whether inflation/discounting is required. For example, you may be calculating one of the following, and it is important to understand the difference:

X5.1.2.1 Current value, which is estimated in today's dollars, and excludes the impact of inflation and discounting.

X5.1.2.2 Future value, which inflates values to a future date, and may include interest, and

X5.1.2.3 Present value, which includes discounting to a specified date.

X5.1.3 Understand the type of cash flows that you are working with, and to the extent possible, match the inflation/discounting rates that are appropriate to your cash flows. For example:

X5.1.3.1 If your cash flows are in real (uninflated) dollars, use a real discount rate,

X5.1.3.2 If your cash flows are in nominal (inflated) dollars, use a nominal discount rate,

X5.1.3.3 If your cash flows are pre-tax, use a pre-tax discount rate; if your cash flows are after-tax, use an after-tax discount rate,

X5.1.3.4 Think about what your cash flows represent (for example, chemical processing, construction, energy, labor) and consider whether there is an inflation rate (whether retrospective or prospective) that bests matches the cash flow being inflated, and

X5.1.3.5 Think about whether your cash flows should be discounted with a risk-free rate or a risk-adjusted rate (and if risk-adjusted, what risks are being captured).

X5.1.4 Keep in mind the timing of the cash flows, and match historical or forecast inflation/discount rates that are appropriate to the timing of the cash flows.

X5.1.5 Understand whether compounding is appropriate for your calculations.

X5.2 All inflation/discounting assumptions should be clearly disclosed.

ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org). Permission rights to photocopy the standard may also be secured from the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, Tel: (978) 646-2600; <http://www.copyright.com/>