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An empirical analysis of the disclosures of loss contingencies associated with operational laws and regulations

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AN EMPIRICAL ANALYSIS OF THE DISCLOSURES OF LOSS CONTINGENCIES ASSOCIATED WITH OPERATIONAL LAWS AND REGULATIONS

by

Lisa Nesbit Bostick, B.S., M.P.A.

A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Business Administration

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ABSTRACT

This study was intended to determine whether there was a change in the disclosure of all loss contingencies associated with operational laws and regulations (i.e., environmental and non-environmental) and/or whether there was a complementary association between the environmental and non-environmental loss contingency disclosures during the period 1989 to 1999. In summary, the results of the study suggest (1) that there was an increase in all loss contingency disclosures associated with operational laws and regulations, and (2) that there was a complementary association between the environmental and non-environmental loss contingency disclosures.

The primary sources of the loss contingency disclosures (i.e., the data) were the Annual Report and the Form 10-K of 310 NYSE companies having a relatively high potential for environmental liabilities. After extracting the loss contingency disclosures from LEXIS/NEXIS, the data were enumerated through content analysis techniques, and changes in the quantity and quality of these disclosures for the period 1989 to 1999, if any, were tested using the Wilcoxon Signed Rank Test.

This study was motivated by the authoritative attention on environmental liability reporting during the 1990's and the relationship of such authoritative attention to Statement on Auditing Standards (SAS) No. 54 "Illegal Acts by Clients." Specifically, did the authoritative attention on

environmental liability reporting during the 1990's pierce the "shield of protection" offered by SAS No. 54 with respect to environmental loss contingencies? Further, was there a related contagion effect with respect to non-environmental loss contingencies?

Given that the results found an increase in all loss contingency disclosures associated with operational laws and regulations, and, given that there was a complementary association between the environmental and non-environmental disclosures, the "shield of protection" offered by SAS No. 54 may have indeed been pierced. Future research should examine whether there has been an increase in auditor litigation associated with loss contingencies associated with operational laws during the 1990's and thereafter. Additionally, future research should investigate whether differences in the reporting practices of operational loss contingencies are associated with different auditing firms.

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Author Lisa J Bostick

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

The reporting of environmental liabilities, a loss contingency associated with operational laws and regulations, has received much attention in the academic and popular press (e.g., Wiseman 1982; Freedman and Stagliano 1995; Post 1991; and Johnson 1993). Until this emphasis on environmental liability reporting, such loss contingencies received little attention from the accounting profession. With the exception of SEC Regulation S-K (SEC, 1973),[1] little authoritative guidance regarding the reporting of environmental liabilities existed prior to1993. Thereafter, the Financial Accounting Standards Board (FASB), the Securities and Exchange Commission (SEC), and the American Institute of Certified Public Accountants (AICPA) issued the following authoritative guidance; respectively, regarding the reporting of environmental liabilities - Emerging Issues Task Force (EITF) Issue No. 93-5 (FASB, 1993), Staff Accounting Bulletin (SAB) No. 92[2] (SEC, 1993) and Statement

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[1] In 1973, the SEC (SEC Regulation S-K, 1973) began requiring registrants to disclose in their Form 10-K the material effects that compliance with environmental laws and regulations may have upon the capital expenditures, earnings, and competitive position of the registrant.

[2] SABs are not rules or interpretations of the SEC. They represent interpretations and practices followed by the Division of Corporation Finance and the Office of the Chief Accountant in administering the disclosure requirements of the Federal securities laws.

of Position (SOP) No. 96-13 (AICPA, 1996). EITF Issue No. 93-5, SAB No. 92, and SOP 96-1 will be referred to as "E/L guideline(s)" in the following discussions. The issuance of the E/L guidelines and their association with changes in loss contingency disclosure practices is the motivation of this study. In this regard, the significance of the issuance of the E/L guidelines cannot be fully appreciated without an understanding of the promulgations related to the reporting and identification of loss contingencies.

Background

Statement of Financial Accounting Standards (SFAS) No. 5, *Accounting for Contingencies* (FASB, 1973) provides the underlying substantial authoritative support pertaining to **reporting** loss contingencies. In turn, Statement on Auditing Standards (SAS) No. 12, *Inquiry of a Client's Lawyer Concerning Litigation, Claims, and Assessments* (AICPA, 1976) and SAS No. 54, *Illegal Acts by Clients* (AICPA, 1988) provide the primary professional guidance with respect to the **identification** of possible loss contingencies that meet the requirements of SFAS No. 5. Figure 1.1 models the relationships of loss contingencies to SFAS No. 5, SAS No. 12, and SAS No. 54.

SFAS No. 5 (FASB, paragraph 1, 1973) defines loss contingency as ". . . an existing condition, situation, or set of circumstances involving uncertainty as to possible . . . loss to an enterprise that will ultimately be resolved when one or

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3SOPs present the conclusions on accounting issues of at least two-thirds of the Accounting Standards Executive Committee. Accounting treatments specified by SOPs should be used unless another treatment better presents the substance of the transaction in the circumstances.

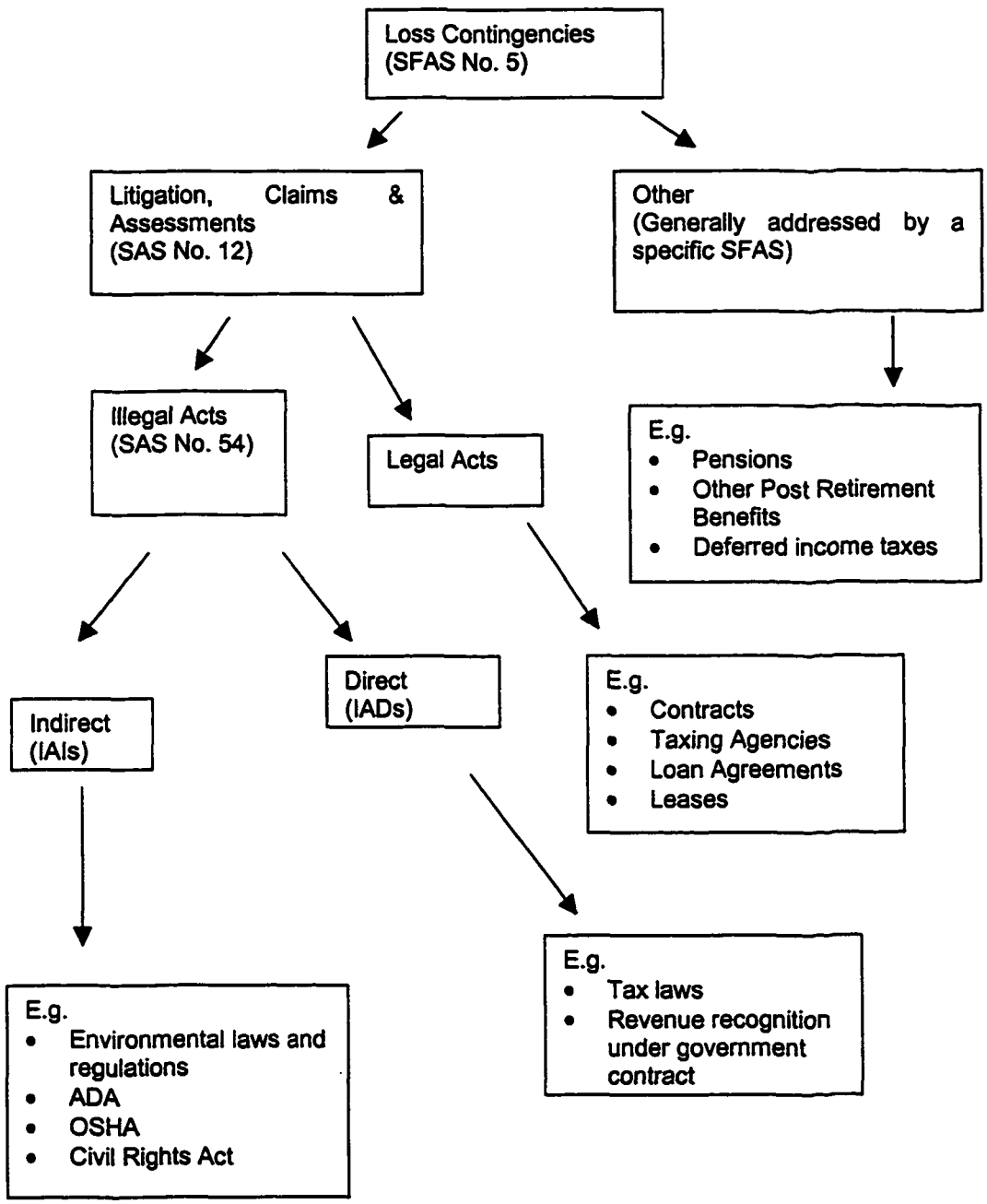

Figure 1.1 Model of Loss Contingencies Relationships to SFAS No. 5, SAS No. 12, and SAS No. 54

more future events occur or fail to occur." Significant to this study is the fact that loss contingencies that meet the requirements of SFAS No. 5 often arise from litigation, claims, and assessments (LCAs). Identification of LCAs is addressed by SAS No. 12. In this regard, SAS No. 12 (AICPA, sec. 337.05, 1976) states,

> Since the events or conditions that should be considered in the financial accounting for and reporting of litigation, claims, and assessments are matters within the direct knowledge and, often, control of management of an entity, management is the primary source of information about such matters.

SAS No. 12 (AICPA, sec. 337.05 & sec. 337.08, 1976) indicates that managements' representations regarding LCAs should be formally documented in written representations obtained from management and corroborated with a letter of audit inquiry to the client's lawyer. Additionally, SAS No. 12 (AICPA, sec. 337.07, 1976) states, "[t]he audit normally includes certain other procedures undertaken for different purposes that might also disclose litigation, claims, and assessments."

While SAS No. 12 specifically focuses on loss contingencies associated with LCAs, loss contingencies can also arise from activities other than LCAs. Reporting requirements regarding these types of loss contingencies are generally addressed by specific SFASs (e.g., pensions, other post-retirement benefits, and deferred income taxes). Professional guidance regarding the identification of these types of loss contingencies falls within the scope of the general evidence gathering procedures required to comply with generally accepted auditing standards, and are not specified in any particular SAS. Accordingly, no additional discussion is warranted in this regard. However, this is not the case with respect to LCAs.

Intuitively, LCAs may arise from either legal or illegal acts. Extrapolating from SAS No. 12 (AICPA, sec. 337.07, 1976), LCAs associated with legal acts can result from documents such as contracts, correspondence from taxing agencies, loan agreements, leases, and compliance with laws and regulations. While SAS No. 12 provides general guidance with respect to identifying LCAs associated with both legal and illegal acts, SAS No. 54 specifically addresses LCAs associated with illegal acts. In this regard, SAS No. 54 (AICPA, sec. 317.02, 1988) defines illegal acts as violations of laws or governmental regulations. For determining the auditor's responsibility for identifying LCAs associated with illegal acts, SAS No. 54 classifies illegal acts as either those with a direct effect on the financial statements (IAD) or those with an indirect effect on the financial statements (IAI). Generally speaking, IADs relate to the **financial and accounting** aspects of an entity whereas IAIs relate to the **operational** aspects of an entity. LCAs associated with IADs can result from violations of tax laws and revenue recognition regulations under government contracts (AICPA, sec. 317.05, 1988). LCAs associated with IAIs can result from violations of operational laws and regulations, such as environmental, Americans with Disabilities Act (ADA), Occupational Safety and Health Administration (OSHA), and the Civil Rights Act of 1991 (AICPA, sec. 317.06, 1988).

With respect to IAIs, SAS No. 54 (AICPA, sec. 317.06, 1988) indicates that:

> Entities may be affected by many other laws and regulations, including those related to securities trading, occupational safety and health, food and drug administration, environmental protection, equal employment, and price-fixing or other antitrust violations.

> Generally, these laws and regulations relate more to an entity's operating aspects than to its financial and accounting aspects, and their financial statement effect is indirect. An auditor ordinarily does not have sufficient basis for recognizing possible violations of such laws and regulations. Their indirect effect is normally the result of the need to disclose a contingent liability because of the allegation or determination of illegality.

Additionally, SAS No. 54 (AICPA, sec. 317.06, 1988) states:

> Even when violations of such laws and regulations can have consequences material to the financial statements, the auditor may not become aware of the existence of the illegal act unless he is informed by the client, or there is evidence of a governmental agency investigation or enforcement proceeding in the records, documents, or other information normally inspected in an audit of financial statements.

In essence, SAS No. 54 suggests that auditors do not have sufficient basis for recognizing violations of laws and regulations relating to the operational aspects of an entity and therefore the auditor's responsibility for identifying loss contingencies associated with IAIs is limited. In this regard, SAS No. 54 (AICPA, sec. 317.07, 1988)[4] specifically indicates that:

> The auditor should be aware of the possibility that such illegal acts may have occurred. If specific information comes to the auditor's attention that provides evidence concerning the existence of possible illegal acts that could have a material indirect effect on the financial statements, the auditor should apply audit procedures specifically directed to ascertaining whether an illegal act has occurred. However, because of the characteristics of illegal acts explained above, an audit made in accordance with generally accepted auditing standards provides no assurance that illegal acts will be detected or that any contingent liabilities that may result will be disclosed.

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[4]It is important to note that within SAS No. 54 (AICPA, sec. 317.07, 1988) illegal acts having material but indirect effects on financial statements (those associated with the operational aspects of the entity) were referred to simply as "illegal acts."

In summary, because violations of laws and regulations relating to the operational aspects of an entity are IAIs, the auditor has limited responsibility--under SAS No. 54–to identify loss contingencies associated with IAIs.

Given that SFAS No. 5 is silent on management's responsibility to specifically exclude (or include for that matter) loss contingencies associated with IAIs in the financial statements, and given that violations of laws and regulations relating to the operational aspects of the entity (IAIs) give rise to loss contingencies as defined in SFAS No. 5, a disparity exists between management's reporting responsibilities under SFAS No. 5 and the auditor's responsibility to identify such loss contingencies under SAS No. 54. Stated otherwise, while management has a responsibility to report all material loss contingencies, the auditor has limited responsibility to identify loss contingencies associated with IAIs. This disparity is referred to as the "5/54 gap" in the following discussions.

Motivation

Environmental liabilities are associated with operational laws and regulations that protect the environment, such as the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), the Clean Water Act and the Clean Air Act. Violations of such laws and regulations result in loss contingencies associated with IAIs as defined by SAS No. 54 and thus lie within the 5/54 gap. Similarly, other loss contingencies lie within the 5/54 gap. They arise from violations of operational laws and regulations relating to, for example, securities trading, occupational safety and health, food and drug

administration, equal employment, and price-fixing and other antitrust violations. Such loss contingencies also arise from IAIs; however, unlike environmental liabilities they had not received authoritative attention.

This lack of authoritative attention on loss contingencies associated with other operational laws and regulations (i.e., non-environmental) was not at issue in this study. Rather, given that the E/L guidelines address loss contingencies associated with IAIs and thus lie within the 5/54 gap, it was the authoritative attention on reporting environmental liabilities that motivated this study.

Statement of the Problem

Prior research has shown an increase in environmental disclosures associated with an external event (e.g., Patten 1992; Gamble et al., 1995; Deegan and Gordon 1996; Walden and Schwartz 1997; Brown and Deegan 1998; and Stanny 1998). For example, these external events include, but are not limited to, the Exxon *Valdez* oil disaster and SAB No. 92. Other prior research found that this increase in environmental disclosures was associated with an increase in other social disclosures, and that this association was complementary in nature. (e.g., Gray et al, 1995 and Neu et al., 1998). This study sought to determine whether there was a change in the disclosure of loss contingencies associated with other operational laws and regulations (i.e., non-environmental) and/or whether this association was complementary to the change in environmental disclosures.

Objectives of this Study

The objectives of this study were to (1) identify trends in the disclosures of loss contingencies associated with operational laws and regulations (i.e., environmental and non-environmental) in terms of quantity and quality and, to the extent possible, (2) characterize the associations (whether intended or unintended) between the changes (if any) in environmental loss contingency disclosures and other operational (i.e., non-environmental) loss contingency disclosures.

Overview of Methodology

The primary data sources are the Annual Report (AR) and the Form 10-K of New York Stock Exchange (NYSE) companies that have a relatively high potential for environmental liabilities. For purposes of this study, data were extracted from the footnotes accompanying the financial statements within the AR. Additionally, data were extracted from the Description of Business (Item 101), Legal Proceedings (Item 103), and Management's Discussion and Analysis of Financial Condition and Results of Operations (Item 303) of the Form 10-K. Barth and McNichols (1994) identified companies within ten two-digit SIC codes as having relatively high potential for environmental liabilities (see Appendix A for a listing of these SIC codes). Included within these ten two-digit SIC codes are companies within the utility (4900) industry. However, because the utility industry is a regulated industry and are subject to different regulatory factors than other industries, companies within this SIC code were excluded from this study. Loss contingency disclosure data from all NYSE companies within these nine two-digit

SIC codes were analyzed in this study. Data were collected for the period 1989 to 1999 (the study period). Once the data had been collected, (1) trends in the disclosure practices of loss contingencies associated with operational laws and regulations (i.e., environmental and non-environmental) in terms of quantity and quality were identified and, to the extent possible, (2) the associations (whether intended or unintended) between the changes (if any) in environmental loss contingency disclosures and other operational (i.e., non-environmental) loss contingency disclosures were analyzed. The loss contingency disclosures were enumerated through content analysis techniques, and changes in the quantity and quality of these disclosures for the period 1989 to 1999, if any, were tested using the nonparametric test for differences in matched pairs, the Wilcoxon Signed Rank Test.

Summary

Reporting environmental liabilities has received increased attention in recent years. With the exception of SEC Regulation S-K (SEC, 1973), little authoritative guidance specifically addressing reporting environmental liabilities existed prior to 1993. Then, the SEC, FASB, and AICPA issued the E/L guidelines. Although the E/L guidelines did not amend SFAS No. 5 or SAS No. 54, they did specifically address loss contingencies that lie within the 5/54 gap. Motivated by the authoritative attention on reporting environmental liabilities, this study sought to determine whether there was a change in the disclosure practices of loss contingencies associated with other (i.e., non-environmental)

operational laws and regulations and/or whether this association was complementary to the change in environmental disclosures.

This remainder of this study is presented as follows. Chapter 2 is a review of relevant literature. Chapter 3 is a discussion of the methodology used in this study. Chapter 4 is a presentation of the results of this study. And finally, Chapter 5 presents a summary of the findings, the contribution of the study, and the implications for further research.

CHAPTER 2

LITERATURE REVIEW

This chapter provides a review of the literature relevant to this study. For organizational purposes, this literature review is divided into six major sections: Professional Guidance for Reporting Loss Contingencies, Professional Guidance for Identifying Loss Contingencies, Loss Contingency Disclosures, Voluntary Disclosures, Environmental Disclosures, and Practitioner Advice. The first section, Professional Guidance for Reporting Loss Contingencies, reviews the authoritative guidance for reporting loss contingencies in general and environmental liabilities in particular. The second section, Professional Guidance for Identifying Loss Contingencies, reviews the authoritative guidance for identifying loss contingencies in general and environmental liabilities in particular. Only private section authoritative guidance is reviewed in this section since there is no public section authoritative guidance applicable to this section. The third section, Loss Contingency Disclosures, summarizes studies that (1) demonstrated problems with applying the requirements of SFAS No. 5 and (2) showed that investor reaction is associated with disclosing new loss contingencies. The fourth section, Voluntary Disclosures, summarizes studies that evaluated factors that affect manager's incentives to disclose or not to disclose voluntary information. The fifth section, Environmental Disclosures,

summarizes studies that evaluated the association of environmental disclosures with (1) actual environmental performance, (2) market reaction, and (3) a change in the quantity and quality of these disclosures subsequent to an external event. The sixth section, Practitioner Advice, summarizes practitioner-oriented articles that offered advice to accountants for reporting and auditing environmental liabilities. This Chapter concludes with a brief summary.

Professional Guidance for Reporting Loss Contingencies

The requirements for reporting loss contingencies are stipulated by the SEC and the FASB. In addition to the requirements promulgated by the FASB, publicly-held companies are required to provide additional information as stipulated by the SEC. This section is divided into two major sub-sections (1) requirements of the SEC - the public regulatory agency, and (2) requirements of the FASB - the private regulatory agency.

Public Regulatory Agency

In 1934, the Securities and Exchange Commission (SEC) was created by Congress as an independent regulatory agency of the U.S. government to administer the Truth-in-Securities Act of 1933, the Securities Exchange Act of 1934, and several other acts. The 1934 Act requires the registration of securities with the SEC before they can be sold to the public. Specific financial and other information is made available for inspection by the public and must be kept up to date by periodic financial statements and other information filed by the entity. Listed below is a summary of the major guidance that stipulates the other

information publicly-traded entities must provide to the SEC regarding loss contingencies.

Regulation S-K of the Securities and Exchange Commission. Regulation S-K of the Securities and Exchange Commission (SEC) provides registrants the standard instructions for filing forms under the Securities Act of 1933, Securities Act of 1934, and Energy Policy and Conservation Act of 1975 (SEC Regulation S-K, Part 229). The reporting requirements for loss contingencies in a registrant's Form 10-K is addressed in the following subparts of Regulation S-K:

- Item 101 *Description of Business*
- Item 103 *Legal Proceedings*
- Item 303 Management's Discussion and Analysis of Financial Condition and Results of Operations

Each of these items are summarized below:

- Item 101 *Description of Business*

Registrants are to include within Item 101 of Form 10-K (SEC Reg. §229.101) a narrative description of the following:

1. general development of business.
2. financial information about segments.
3. narrative description of business.

In particular, Paragraph (c)(1)(xii) of Item 101 requires registrants to include disclosures within the narrative description of business of the

> . . . material effects that compliance with Federal, State and local provisions which have been enacted or adopted regulating the discharge of materials into the environment, or otherwise relating to the protection of the environment, may have upon the

> capital expenditures, earnings and competitive position of the registrant and its subsidiaries. The registrant shall disclose any material estimated capital expenditures for environmental control facilities for the remainder of its current fiscal year and its succeeding fiscal year and for such further periods as the registrant may deem material (SEC Reg. '229.101).

- Item 103 *Legal Proceedings*

Registrants are to include within Item 103 of Form 10-K (SEC Reg. §229.103) a brief description of any material pending legal proceedings, other than ordinary routine litigation incidental to the business. Instruction number five to Item 103 (SEC Reg. §229.103) stipulates that administrative or judicial proceedings resulting from any laws or regulations regulating the discharge of materials into the environment for the purpose of protecting the environment shall not be considered ordinary routine litigation incidental to the business.

- Item 303 *Management's Discussion and Analysis of Financial Condition and Results of Operations*

Registrants are to include within Item 303 of Form 10-K (SEC Reg. §229.303) discussion regarding the registrant's financial condition, changes in financial condition, and results of operations. This discussion should provide information with respect to liquidity, capital resources, and results of operations and any other information that is necessary to an understanding of its financial condition, changes in financial condition, and results of operations. Specifically for liquidity, registrants are to "Identify any known trends or any known demands, commitments, events or uncertainties that will result in or that are reasonably likely to result in the registrant's liquidity increasing or decreasing in any material way (SEC Reg §229.303(a)(1))." Instruction 3 of Item 303 requires that

> The discussion and analysis shall focus specifically on material events and uncertainties known to management that would cause reported financial information not to be necessarily indicative of future operating results or of future financial condition. This would include descriptions and amounts of (A) matters that would have an impact on future operations and have not had an impact in the post, and (B) matters that have had an impact on reported operations and are not expected to have an impact upon future operations (SEC Reg§229.303 Instruction 3).

Financial Reporting Release No. 36 Managements Discussion and Analysis of Financial Condition and Results of Operations; Certain Investment Company Disclosures

In 1989, the SEC issued Financial Reporting Release (FRR) No. 36 *Managements Discussion and Analysis of Financial Condition and Results of Operations; Certain Investment Company Disclosures* (SEC, 1989) providing further guidance regarding the disclosure required by Item 303 of Regulation S-K. As previously discussed, Instruction 3 of Item 303 requires management to disclose the future impact of presently known trends, events or uncertainties. FRR No. 36 requires management to disclose although they cannot determine whether a known trend, demand, commitment, event or uncertainty is reasonable likely to occur. The FRR provided examples of application of these principles using environmental liability issues.

Staff Accounting Bulletin No. 92 Accounting and Disclosures Relating to Loss Contingencies

In 1993, the SEC issued SAB No. 92, *Accounting and Disclosures Relating to Loss Contingencies* (SEC, 1993), providing additional guidance regarding the accounting and disclosures relating to loss contingencies in general and emphasizing environmental matters specifically. The SEC expressed its

position in this Bulletin that at least a minimum liability can be estimated rather early in the remediation[5] process; therefore, it is unacceptable to accrue nothing. FASB Interpretation No. 14 (discussed below) should be followed even if the upper limit of the range of possible liability amounts cannot be estimated.

Private Regulatory Agency

Although the SEC was given broad powers to prescribe accounting principles; in 1938 it established a policy of relying on generally accepted accounting principles (GAAP) developed in the private sector by the accounting profession (SEC, 1938 Accounting Series Release (ASR) No. 4). Initially, the private sector standard-setting body was the Committee on Accounting Procedures (1936-1959). In 1958, the Accounting Principles Board (APB) was formed. According to Hendriksen and Van Breda (1992) p. 73, AThe objectives of the APB were to advance the written expression of generally accepted accounting principles, narrow the areas of difference in appropriate practice, and lead in discussions of unsettled and controversial issues." Because of the APB's inability to meet its objective of narrowing the areas of difference and inconsistency in accounting practice, the Financial Accounting Standards Board (FASB) was formed in 1973 and is still in existence today. Listed below is the major current guidance prescribed by the FASB with regard to reporting of loss contingencies.

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[5]Remediation refers to the ". . . long-term actions by an entity to (a)investigate, alleviate, or eliminate the effects of a release of a hazardous substance into the environment; (b) investigate, alleviate, or eliminate a threat of the release of an existing hazardous substance that could potentially harm human health or the environment; or (c) restore natural resources." (AICPA, 1996 SOP No. 96-1).

Statement of Financial Accounting Standards (SFAS) No. 5 Accounting for Contingencies

In 1975, the FASB issued SFAS No. 5 *Accounting for Contingencies* (FASB, 1975). This SFAS establishes the current requirements regarding the accounting and reporting for loss contingencies. SFAS No. 5 requires accruing a liability for a loss contingency when it is probable that a liability has been incurred at the date of the financial statements and the loss can be reasonably estimated (SFAS No. 5 paragraph 8). SFAS No. 5 requires disclosing a liability for a loss contingency when (1) the likelihood of loss is probable but the amount cannot be reasonably estimated, or (2) it is reasonably possible that a liability has been incurred, or (3) a loss contingency arises after the balance sheet date and the likelihood of a loss is either probable or reasonably possible (SFAS No. 5 paragraphs 10 & 11). With respect to a loss contingency from an unasserted claim or assessment, SFAS No. 5 does not require disclosure unless it is considered probable that an assertion will be made and there is a reasonable possibility that the outcome will be unfavorable (SFAS No. 5 paragraph 10).

FASB Interpretation No. 14 Reasonable Estimation of the Amount of a Loss

In 1976, FASB issued FASB Interpretation (FIN) No. 14, *Reasonable Estimation of the Amount of a Loss* (FASB, 1976), providing guidance concerning accrual of loss contingencies when the reasonable estimate of the loss is a range of amounts. FIN No. 14 requires that when some amount within the range appears to be a better estimate, then that amount should be accrued. However,

when no amount within the range is a better estimate then any other amount, the minimum amount in the range should be accrued.

Emerging Issues Task Force (EITF) Issue No. 89-13
Accounting for the Cost of Asbestos Removal

In 1989, the FASB's Emerging Issues Task Force (EITF) issued EITF Issue No. 89-13, *Accounting for the Cost of Asbestos Removal* (FASB, 1989), providing guidance on whether costs incurred to treat asbestos should be capitalized or charged to expense. The Task Force reached a consensus that asbestos treatment costs should be capitalized.

EITF Issue No. 90-8 Capitalization of Costs to Treat
Environmental Contamination

In 1990, the EITF issued EITF Issue No. 90-8 *Capitalization of Costs to Treat Environmental Contamination* (FASB, 1990) providing guidance on whether environmental contamination treatment costs should be capitalized or charged to expense. The Task Force reached a consensus that, in general, environmental contamination treatment costs should be charged to expense.

EITF Issue No. 93-5 Accounting for
Environmental Liabilities

In 1993, the EITF issued EITF Issue No. 93-5, *Accounting for Environmental Liabilities* (FASB, 1993), providing guidance regarding discounting environmental liabilities and offsetting expected recoveries against environmental liabilities. The Task Force reached a consensus that discounting environmental liabilities is appropriate and amounts of the contingent liability should be estimated and evaluated independently from any claim for recovery.

Professional Guidance for Identifying Loss Contingencies

The AICPA promulgates generally accepted auditing standards through SASs. There are several SASs that provide guidance that will assist in the identification of loss contingencies (e.g., SAS No. 22 *Planning and Supervision* (AICPA, 1978); however, the following discussion only includes those SASs that are germane to the identification of loss contingencies.

SAS No. 12 Inquiry of a Client's Lawyer Concerning Litigation, Claims, and Assessments

In 1976, SAS No. 12, *Inquiry of a Client's Lawyer Concerning Litigation, Claims, and Assessments* (AICPA, 1976), became effective providing guidance on the procedures an auditor should consider performing to identify LCAs. SAS No. 12 (AICPA, Sec. 337.05 and 337.08, 1976) identifies the entity's management as the primary source of information; however, managements' representations regarding LCAs should be formally documented in written representations obtained from management and corroborated with a letter of audit inquiry to the client's lawyers.

SAS No. 53 The Auditor's Responsibility to Detect and Report Errors and Irregularities

In 1989, SAS No. 53, *The Auditor's Responsibility to Detect and Report Errors and Irregularities* (AICPA, 1988), became effective providing that auditors should design the audit to provide reasonable assurance of detecting errors and irregularities that are material to the financial statements. This SAS was superceded by SAS No. 82 in 1997.

SAS No. 54 Illegal Acts by Clients

In 1989, SAS No. 54, *Illegal Acts by Clients* (AICPA, 1988), became effective providing guidance regarding the auditor's responsibility for detecting illegal acts and on the auditor's responsibility when a possible illegal act is detected. SAS No. 54 (AICPA, sec. 317.05 and sec. 317.06, 1988) classifies laws and regulations into two types as follows:

1. those that have a direct and material effect on the financial statements, generally relating to the financial and accounting aspects of an entity; and,
2. those that have an indirect effect on the financial statements, generally relating to the operational aspects of an entity.

Section 317.06 of the SAS recognized that auditors ordinarily do not have the expertise to identify possible violations of operational laws and regulations. In this regard, SAS No. 54 (AICPA, sec. 317.06, 1988) states:

> Even when violations of such laws and regulations can have consequences material to the financial statements, the auditor may not become aware of the existence of the illegal act unless he is informed by the client, or there is evidence of a governmental agency investigation or enforcement proceeding in the records, documents, or other information normally inspected in an audit of the financial statements.

SAS No. 54 refers the auditor to SAS No. 53 (superceded by SAS No. 82 effective for periods ending on or after December 15, 1997) for those illegal acts that have a direct and material effect on the financial statements. SAS No. 54 (AICPA, sec. 317.07, 1988) does not include audit procedures specifically designed to detect those illegal acts that have an indirect effect on the financial statements. Unless specific information comes to the auditor's attention, the

auditor can rely on other procedures applied during the audit to identify possible illegal acts that have an indirect effect on the financial statements.

SAS No. 82 Consideration of Fraud in a Financial Statement Audit

In 1997, SAS No. 82, *Consideration of Fraud in a Financial Statement Audit* (AICPA, 1996), became effective providing guidance regarding the auditor's responsibility for obtaining reasonable assurance that the financial statements are free of material misstatement caused by fraud. This SAS (AICPA, sec. 316.01 footnote 1, 1996) established that the auditor's responsibility for detecting illegal acts that have a direct and material effect on the financial statements is the same as that for errors or fraud. Specifically, SAS No. 82 states:

> The auditor's consideration of illegal acts and responsibility for detecting misstatements resulting from illegal acts is defined in section 317, *Illegal Acts by Clients*. For those illegal acts that are defined in that section as having a direct and material effect on the determination of financial statement amounts, the auditor's responsibility to detect misstatements resulting from such illegal acts is the same as that for errors. . . or fraud (AICPA, sec 316.01 footnote 1, 1996).

SAS No. 82 requires the auditor to specifically assess the risk of material misstatement due to fraud. The categories of fraud risk factors that the auditor is to consider are (1) the risk factors relating to misstatements associated with fraudulent financial reporting, and (2) the risk factors relating to misstatements associated with misappropriation of assets.

AICPA Statement of Position (SOP) No. 96-1
Environmental Remediation Liabilities

In 1996, the AICPA issued SOP No. 96-1, *Environmental Remediation Liabilities* (AICPA, 1996), providing guidance for recognizing, measuring, and disclosing environmental liabilities in the financial statements, effective for years starting December 1996. This SOP provides (1) an overview of environmental laws and regulations, (2) the accounting guidance with respect to environmental remediation liabilities, (3) the current authoritative literature, (4) a remediation liability case study, and (5) recommendations of the Environmental Issues Task Force of the Auditing Standards Board regarding the application of generally accepted auditing standards at they relate to environmental remediation liabilities. Table 2.1 is a summary of the requirements for reporting loss contingencies. Table 2.2 is a summary of the requirements for identifying loss contingencies.

Loss Contingency Disclosures

As previously stated, SFAS No. 5 establishes the accounting requirements for loss contingencies and defines the criteria for when it is appropriate to accrue a liability and when it is appropriate to disclose the liability in the financial statements. Dennis and Keith (1981) examined the litigation disclosures of 198 firms listed on the New York Stock Exchange and concluded that compliance with the disclosure requirements of SFAS No. 5 are "severely deficient (p. 54)." Fesler and Hagler (1989) selected 126 lawsuits lost by publicly traded firms and

TABLE 2.1

Summary of Professional Guidance for Reporting Loss Contingencies

Year	Name	Promulgative Body	Abbreviation
1973	Regulation S-K Item 101 *Description of Business*	SEC	Item 101
1982	Regulation S-K Item 103 *Legal Proceedings*	SEC	Item 103
1968	Regulation S-K Item 303 *Management's Discussion and Analysis of Financial Condition and Results of Operations*	SEC	Item 303
1993	Staff Accounting Bulletin No. 92 *Accounting and Disclosures Relating to Loss Contingencies*	SEC	SAB No. 92
1975	Statement of Financial Accounting Standard No. 5 *Accounting for Contingencies*	FASB	SFAS No. 5
1976	FASB Interpretation No. 14 *Reasonable Estimation of the Amount of a Loss*	FASB	FIN No. 14
1989	Emerging Issues Task Force Issue No. 89-13 *Accounting for the Cost of Asbestos Removal*	FASB	EITF No. 89-13
1990	Emerging Issues Task Force Issue No. 90-8 *Capitalization of Costs to Treat Environmental Contamination*	FASB	EITF No. 90-8
1993	Emerging Issues Task Force Issue No. 93-5 *Accounting for Environmental Liabilities*	FASB	EITF No. 93-5

TABLE 2.2

Summary of Professional Guidance for Identifying Loss Contingencies

Year	Name	Promulgative Body	Abbreviation
1976	Statement on Auditing Standard No. 12 *Inquiry of a Client's Lawyer Concerning Litigation, Claims, and Assessments*	AICPA	SAS No. 12
1989	Statement on Auditing Standard No. 53 *The Auditor's Responsibility to Detect and Report Errors and Irregularities*	AICPA	SAS No. 53
1989	Statement on Auditing Standard No. 54 *Illegal Acts by Clients*	AICPA	SAS No. 54
1997	Statement on Auditing Standard No. 82 *Consideration of Fraud in a Financial Statement Audit*	AICPA	SAS No. 82
1996	Statement of Position No. 96-1 *Environmental Remediation Liabilities*	AICPA	SOP No. 96-1

determined whether the firms disclosed the possible loss contingency in the pre-disposition year. They found that 35% of the firms did not mention the litigation in the pre-disposition year annual report. They suggested that reasons for non-disclosure include (1) the significant leeway allowed for professional judgment in SFAS No. 5, (2) the reliance on the legal profession for appraisal of litigation although the legal profession has an obligation to in good-faith act in client interest and preserve the attorney-client privilege (p. 19).

Banks and Kinney (1982) examined changes in the risk-adjusted returns of firms that disclosed a new loss contingency relative to a matched control group of firms not experiencing loss contingencies. They were interested in studying the

importance of accounting loss contingencies as a measure of earnings quality. They found that the risk-adjusted stock price performance of the firms with new contingencies was significantly worse than that of the control group. Banks (1985) extended the Banks and Kinney (1982) study and found that the evidence suggests that investors may revise their expectations quite rapidly when announcements of new contingencies are made and without the benefit of much information other than the existence of the contingency.[6]

Voluntary Disclosures

Blacconiere and Northcut (1997) state, "[w]hile reporting of environmental information technically is required by Securities and Exchange Commission and Financial Accounting Standards Board policies, the extent of this disclosure is largely discretionary (p. 155)." Therefore, this section summarizes articles that examined reasons that managers voluntarily disclose information.

Verrecchia (1983) showed that the existence of disclosure-related costs is a reason that managers do not always fully disclose. Investors do not know whether a manager has withheld information because the information represents bad news, or that the information represents good news, but not sufficiently good news to warrant incurring the disclosure-related costs (p. 182). Thus, there is a threshold level of disclosure. Verrecchia (1990) extended the model in Verrecchia (1983) by discussing how the quality of the manager's information affects his incentives to disclose or withhold that information. He shows that higher quality

[6]Banks sample was the 29 firms in the Banks and Kinney (1982) study that had initially announced the existence of a new loss contingency in the Wall Street Journal. Therefore, little if any information is available to assess the probability or amount of future loss.

information implies a lower threshold level of disclosure and a greater probability of disclosure (p. 375). Conversely, the lower the quality of the manager's information the higher the threshold level of disclosure. Thus, managers are less likely to disclose poor quality information.

Patten (1991) examined whether voluntary social disclosures are related to either public pressure or firm profitability. He found that the level of voluntary social disclosure was more related to public pressure than to profitability. Thus, supporting the argument that social disclosures are used as a means of addressing the exposure that firms face to the social environment (p. 305).

Skinner (1994) studied stock price reactions to earnings-related voluntary disclosures to examine why firms voluntarily disclose bad news. He argues that there are at least two reasons managers may voluntarily disclose bad news -(1) stockholders may sue when there are large stock price declines on earnings announcement dates, since they can allege that the manger did not disclose the news promptly and (2) managers may incur reputational costs if they fail to disclose bad news promptly (p. 39).

Gray et al. (1995) analyzed social and environmental disclosures of UK companies using content analysis over the period 1979-1991. Among their findings were (1) pre-1986 total voluntary social disclosure levels remained constant with new social issues replacing an older issue (p. 61), (2) environmental disclosure rose significantly throughout the period (p. 57), and (3) after 1986, the rise in environmental disclosures was associated with an overall increase in voluntary social disclosures (p. 62).

Environmental Disclosures

The American Accounting Association's Committee on Environmental Effects of Organization Behavior reported in 1973 that as a result of widespread concern throughout society for environmental issues there is a need for new information inputs. The reports states that the effort to regulate pollution, ". . .brings with it the need for new information inputs to the decision-making processes and new reporting problems which are of particular concern to the accounting profession in its role as a preparer of financial information, as attestor of financial reports and as advisor to management (p. 76)." The accounting profession and the SEC began recognizing the importance of the environmental reporting issue in the early 1970's. Wiseman (1982, p. 53) reports that the accounting profession addressed the environmental reporting issue in the early 1970's when major accounting associations issued research studies and committee reports addressing this issue either separately or as an integral part of corporate social accounting. The SEC addressed the environmental reporting issue in 1973 when it began requiring registrants to disclose in their Form 10K the material effects that compliance with environmental laws and regulations may have upon the capital expenditures, earnings, and competitive position of the registrant (SEC, 1973). In her study, Wiseman (1982, pp. 53-54) reports that numerous studies done during the 1970s have advocated the need for environmental reporting. She states, "These studies in conjunction with the professional research efforts and SEC requirements emphasize the extensive interest in and need for an environmental accounting system. (p. 54)"

Grounded in the literature on social responsibility disclosures, Ingram and Frazier (1980) examined the relationship between measures of firms' environmental performances and the environmental disclosures in the firms' annual report. Using content analysis to measure the content of each firm's environmental disclosures, Ingram and Frazier found that firms' disclosures do not relate strongly with their environmental performance.

Wiseman (1982, p. 53) reports that although societal demands for a cleaner environment and extensive environmental legislation have forced firms to participate in extensive pollution control programs that no system for measuring and reporting environmental performance had been adopted. As a result, environmental disclosures made by a firm are voluntary. Using an indexing procedure to analyze the contents of environmental disclosures in annual reports, she examines the relationship between firm's environmental disclosures and the firm's environmental performance. Her results indicate that corporate environmental disclosures are incomplete and are not related to the firm's actual environmental performance.

Rockness (1985) extended the work of Ingram and Frazier (1980) and Wiseman (1982) by conducting a field experiment to determine whether environmental disclosures in annual reports are adequate for subjects to accurately evaluate environmental performance. She found that in most cases the statement users, which had diverse backgrounds, were able to form consistent comparable evaluations of firm environmental performance. However, their evaluations were not accurate interpretations of actual performance. Thus, she concluded that the environmental disclosures are incomplete or inaccurate

reports of actual performance and, therefore, their usefulness is questionable (p. 350). She suggests that there is a possible need for additional environmental reporting requirements.

Freedman and Wasley (1990) extended this stream of research, by examining the relationship between environmental performance and environmental disclosures in both the annual report and the 10-K report. Using the indexing procedure developed by Wiseman, they found that neither the voluntary annual report environmental disclosures nor the mandatory 10-K disclosures are indicative of actual environmental performance. Therefore, Freedman and Wasley suggest that ". . .regulation of the environmental disclosures made in annual reports and improvements in the mandatory 10-K disclosures may be required (p. 183)."

Other studies examined the relationship between environmental disclosures and market reaction. Belkaoui (1976) examined the 1970-71 annual report of 50 companies that disclosed their pollution control expenditures. Using the Markowitz and Sharpe market model he found that the stocks of disclosing firms were performing more poorly than the market prior to the disclosure of pollution control expenditures; however, subsequent to the disclosure these firms performed better than the market. Belkaoui concluded that these results support both the efficient market hypothesis in its semi-strong form and the ethical investor hypothesis.

Jaggi and Freedman (1982) studied the 1973 and 1974 10K and annual reports of firms in highly polluting industries. Motivated by the SEC's 1973 emphasis on disclosure of environmental information (the SEC began requiring

disclosure of environmental information in 1973), they used event study methodology to examine whether investors perceive environmental disclosures as containing additional information. They hypothesized that if investor reaction is negative than Friedman's rational investor hypothesis[7] is supported. On the other hand, if investor reaction is positive the ethical investor hypothesis[8] is supported. Based on their results, Jaggi and Freedman concluded that investors do perceive environmental disclosures as containing additional information, and that their reaction was positive, providing support for the ethical investor hypothesis.

Freedman and Jaggi (1986) examined whether the extensiveness of pollution disclosures in annual reports and 10Ks influenced investors' decisions. They found no significant difference between investor reaction to extensive disclosures and investor reaction to minimal disclosures. Consequently, implying that extensive pollution disclosures did not have incremental information content and that investors' reaction did not significantly differ with the extent of pollution disclosure. Freedman and Jaggi were motivated by a decision from the SEC in the 1970s to become more aggressive in enforcing environmental disclosure requirements. However, the results of the study suggest that the extensiveness of disclosures does not provide incremental information.

Freedman and Stagliano (1991) examined investor reaction to the 1981 Supreme Court decision that allowed the Occupational Safety and Health

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[7]The rational investor hypothesis maintains that a rational investor will react to information on a basis of economics, rather than ethical, considerations.

[8]The ethical investor hypothesis maintains that an investor that is governed by ethical considerations will react to information on a basis of ethical, rather than economic, considerations.

Administration (OSHA) to enforce stricter standards for reduction of dust emission in the cotton-textile work environment. They examined the Form 10-K disclosures of firms in the cotton-textile industry and found that their stock prices were adversely affected by the validation of the more stringent OSHA standard. Additionally, Freedman and Stagliano found a difference in the impact based on the type of disclosure made. They found that firms that did not provide quantitative disclosures about the compliance cost of the stricter standards were revalued adversely relative to firms that did provide quantitative disclosures.

Blacconiere and Patten (1994) examined the market reaction of chemical firms other than Union Carbide to the Union Carbide chemical leak in India during December 1984. Using content analysis to measure the extent of environmental disclosures in 10K reports, Blacconiere and Patten found that firms with more extensive prior environmental disclosures in their 10K reports experienced a less negative market reaction to the chemical leak.

Little et al. (1995) examined whether there is a systematic relationship between stock price reactions to publicly announced hazardous waste lawsuits (the market assessment) and the financial statement treatment of those suits (the firms' assessment) (p. 383). Assuming a semi-strong form of the efficient capital market hypothesis and the absence of management holding private information, the financial statement disclosure of a loss contingency should confirm the market's reaction to the public announcement of the loss contingency. Using event-study methodology to measure market reaction and dummy variables indicating whether the suit was disclosed or not, Little et al. examined firms that had lawsuits brought between 1977 and 1986. They found no systematic

relationship between the market assessment and the firms' assessment. Thus, Little et al. concluded that these results raise

> . . .the question of whether the financial statement disclosures are consistent with investors' interests. If financial statement preparers and auditors are accurately signaling the firm's private information in their disclosure decisions, investors' interest are being served despite the difference in the assessments. On the other hand, investors' interests are not necessarily being served if the differences are caused by proprietary costs, management deception, or the ambiguities of SFAS No. 5 (p. 396).

Cormier and Magnan (1997), motivated by the possibility that traditional financial statements may not adequately report the financial consequences of a firm's environmental management, examined the adequacy of current financial statements in reflecting a firm's environmental condition. They examined Canadian firms and, using a cross-sectional valuation approach, found that a firm's pollution performance was negatively related to its market valuation. Cormier and Magnan concluded that implicit environmental liabilities exist, which are not reported in the balance sheet. They make the following suggestions for accounting standard-setters to consider:

- expanding the portion of the management discussion and analysis report devoted to environmental issues
- revising accounting recognition and measurement criteria to reduce the freedom that managers have to choose not to report environmental liabilities because of the uncertainty regarding their magnitude
- tightening auditing standards so the auditors increase consideration of environmental risks, the sources of such risk, and the potential consequences of such risks

Blacconiere and Northcut (1997, p. 151) examined the relationship between stock price reactions to the Superfund Amendments and Reconciliation

Act (SARA) of 1986 and environmental information--the extent of environmental disclosures in 10K reports and firm-specific estimates of Superfund liabilities. They found that both environmental disclosures and firm-specific estimates of Superfund liabilities had incremental relevance in explaining firm-specific stock price reactions to SARA. Blacconiere and Northcut used a narrow-window event study to measure the reactions to SARA and, similar to Blacconiere and Patten (1994), used content analysis to measure the extent of environmental disclosures. Consistent with the findings of Blacconiere and Patten (1994), Blacconiere and Northcut found that firms with more extensive disclosures have a less negative reaction to SARA.

While the studies discussed above examined the relationships between environmental disclosures and environmental performance and market reaction, Freedman and Stagliano (1995) focused their study on detailing both the existence of environmental disclosures and the type of disclosure provided by firms that are impacted by the Superfund Act. They examined the 1987 10-K reports of firms and found that there are a number of firms that are not disclosing data about their Superfund involvement. Additionally, many of the firms that did disclose Superfund information did not provide data that would help a financial statement user reach an informed judgment as to the potential impact of the firm's Superfund involvement. Freedman and Stagliano suggest that disclosure laws do not work when they are not enforced, and that the SEC should regulate and enforce its own rules.

Other studies on environmental disclosures examined the change in these disclosures associated with an external event. Patten (1992) examined the effect

of the March 1989 Exxon *Valdez* oil spill on the annual report environmental disclosures of petroleum firms other than Exxon. Patten was motivated by the arguments of the legitimacy theory[9], that social disclosures can be viewed as a method of responding to the changing perceptions of a firm's relevant publics. His findings support the arguments of the legitimacy theory. Measuring environmental disclosures using a classification scheme similar to Wiseman (1982), he found that environmental disclosures increased from 1988 to 1989.

Gamble et al. (1995) used content analysis to evaluate the quality of environmental disclosures in both 10K and annual reports (AR). The coding scheme they developed was ". . .based upon: (1) our interpretation of voluntary disclosure in ARs and 10Ks, and (2) the disclosure requirements mandated by the FASB and the SEC (p. 38)." They found cross-sectional and longitudinal differences in the quality of AR disclosures. For the period 1986 through 1991 they found the highest quality of disclosures were experienced during 1989, 1990, and 1991, although the quality was low. Additionally, they found that total AR disclosures significantly increased since 1989. Similar longitudinal differences were found with 10K disclosures. Gamble et al. attributed the increase in disclosures during the period 1989 through 1991 to FASB and general public influences and SEC mandates. In 1989 the SEC issued FRR No. 36 requiring management to discuss the future impact of presently known trends, events or uncertainties although they cannot determine whether it is reasonably likely to

[9]Legitimacy theory argues that entities continually seek to ensure that they operate within the bounds and norms of their respective societies (Brown and Deegan, 1998).

occur. The FRR provided examples of application of these principles using environmental liability issues.

Deegan and Gordon (1996) analyzed the environmental disclosures of Australian corporations for the period 1980 to 1991. Using content analysis (individual words were the basic unit of measurement) they found that although the amount of voluntary environmental disclosures were typically low, there was a general increase in these disclosures during the period 1988 to 1991 (p. 198). Additionally, they found that this increase was positively associated with increases in environmental group membership, thus concluding (p. 187), "This change is linked to an apparent increase in societal concern relating to environmental issues."

Walden and Schwartz (1997) used two assessment measures to examine the change in the levels of environmental disclosures subsequent to the 1989 Exxon *Valdez* oil spill. They developed a coding scheme to measure the quantity and quality of environmental disclosures using content analysis. They analyzed environmental disclosures in the 10K and annual report (Walden and Schwartz defined the 10K and annual report disclosures as nonfinancial and financial, respectively) in four industries. They found that both quantity and quality significantly increased from 1988 to 1989 in the nonfinancial environmental disclosures across all four industries. However, the financial environmental disclosures significantly increased from 1988 to 1989 in only two of the four industries for both quantity and quality. For the period 1989 to 1990, financial environmental disclosures significantly increased for all four industries in both quantity and quality. However, an analysis of the nonfinancial environmental

disclosures for the period 1989 to 1990 showed more firms decreased these disclosures in all four industries, than did in the period 1988 to 1989. Walden and Schwartz stated, "Based on these findings, it is doubtful that substantive environmental information aversely affecting future earnings and potential cash flows will be reported voluntarily (p. 146)." They suggest that environmental disclosures may have to be further regulated and that more useful and informative methods of disclosing environmental information should be developed. They concluded that the contents of environmental disclosures were left mostly to the discretion of management, and were time and event specific.

Stanny (1998) examined whether firms expanded disclosure of information about their environmental liabilities and whether they increased the reserved amounts for them between 1991 and 1993 (p. 34). She addressed the perceived inadequacies of environmental disclosures and accruals for liabilities for a period before and after the implementation of SAB No. 92. She identified eight categories in SAB No. 92 to analyze 10K and annual reports and found that since the issuance of SAB No. 92 firms have increased disclosure of information about how they account for their environmental liabilities. She concludes that although the volume of environmental disclosures has increased subsequent to the issuance of SAB No. 92, the SEC still considers environmental disclosures inadequate. She states, "It continues to ask public companies to expand their disclosures of environmental **and other loss contingencies** (emphasis added) in both the notes to the financial statements and the MD&A (p. 47)."

Brown and Deegan (1998) investigated the relationship between the print media's attention to an industry's environmental performance and the

environmental disclosures made by firms within that industry. Using the number of words to measure the extent of environmental disclosures within the annual report, they found that for the majority of the industries studied, higher levels of media attention are associated with higher levels of environmental disclosures (p. 21).

Grounded in the literature on discretionary disclosure, Barth et al. (1997) examined the factors influencing firms' decisions to disclose information about environmental liabilities in their 10K and annual reports for the period 1989 through 1993. They developed a comprehensive list of disclosed items to measure the informativeness of firms' overall disclosures about their Superfund environmental liabilities. They found that the extent of these disclosures were associated with the following factors: (1) regulation influence, (2) allocation uncertainty, (3) litigation, (4) litigation and negotiation concerns, (5) capital market concerns, and (6) other regulatory effects. The only factor tested that was not significantly associated was site uncertainty. Additionally, they found that firms with larger estimated liabilities disclose more about their environmental liabilities and that disclosure increased over the sample period in three of the four disclosure measures. Thus, they conclude that regulatory effects (FASB and SEC regulations and enforcement) significantly effect firms' disclosure decisions, but that firms exercise considerable discretion in their environmental liability disclosure.

Li et al. (1997) extended the work of Barth et al., and using a game-theory model found that Canadian firms disclose environmental liability information strategically. Specifically, they found that a firm is more likely to disclose as (1) its

pollution propensity increases, (2) outsiders' knowledge of its environmental liabilities increases, and (3) the risk of incurring proprietary costs decreases.

Neu et al. (1998) analyzed environmental disclosures in the annual reports of Canadian firms for the period 1982 to 1991. They focused their analysis on three concerns: (1) the influence of external pressure on environmental disclosures, (2) the characteristics of environmental disclosure together with other social disclosures, and (3) the association between environmental disclosures and actual performance. Using the number of words to measure the level of environmental disclosure in annual reports, they found that (1) external pressures from regulators and general societal attention were associated with increased levels of disclosure, but that external pressures from environmentalists were associated with decreased levels of disclosure, (2) other social disclosures within the annual report were associated with increased levels of environmental disclosures, thus appearing to complement one another, and (3) shareholder concerns, measured by an indicator variable of profitable versus non-profitable, were associated with increased levels of disclosure; however, the concerns of creditors, were not associated with the levels of disclosure. Their finding that other social disclosures were associated with an increased level of environmental disclosures is consistent with the finding of Gray et al. (1995). Thus, Neu et al. (1998) believe that environmental and other social disclosures appear to be complements rather than substitutes (p. 273).

Cormier and Magnan (1999) extended the work of Barth et al. (1997) by using a cost-benefit framework to identify determinants of environmental reporting by Canadian firms. For the period 1986 to 1993, using Wiseman's

(1982) coding scheme to measure the extent and the quality of a firms environmental disclosure, they found that both informational costs and financial condition influence corporate environmental disclosures strategies (p. 430). Cormier and Magnan summarize their results as follows:

1. The results suggest that there are systematic patterns in environmental reporting, with an overall trend across industries towards more disclosure (p. 447).

3. There is evidence that a firm's risk, reliance on capital markets, and trading volume are positively related to the extent of its environmental disclosure (p. 447-448).
4. There is evidence that concentrated ownership is associated with less environmental disclosure (p. 448).

5. There is some evidence that firms in good financial condition choose to disclose more than firms in poor financial condition (p. 448).

6. There is some evidence that a firm's environmental performance positively influences its environmental disclosure.

7. There is evidence that certain industries within those subject to environmental compliance regulations disclose more than others.

8. There is evidence that firms with more modern fixed assets as well as large firms disclose more environmental information.

9. There is evidence that firms subject to SEC regulations disclose less environmental information. Thus, suggesting that a firm's legal environment influences its disclosure policies (firm's subject to only Canadian securities regulations disclosed more environmental information).

10. Additionally, there is evidence that a firm's lagged environmental disclosure is a significant determinant of its current year reporting.

Practitioner Advice

Although the SEC began requiring firms to disclose the material effects of environmental regulation in their 10-K reports in 1973, many firms were not

disclosing this information (Freedman and Stagliano 1995; Kreuze et al. 1996). As Freedman and Stagliano (1995) stated, "In the case of not disclosing involvement with toxic wastes in general, and Superfund specifically, the risk of "getting caught" in 1987 appeared quite low considering the SEC had not enforced nondisclosure of other mandated toxic waste disclosures prior to that time (p. 166)." In addition to these studies, other studies were showing that environmental disclosures made in corporate reports were incomplete and not related to the firms' actual environmental performance (Ingram and Frazier 1980; Wiseman 1982; Freedman and Wasley 1990, Gamble et al. 1995).

Price Waterhouse surveyed Corporate America's accounting and disclosure practices of environmental matters in 1990, 1992, and 1994. Among the key findings of the 1992 survey was that 62 percent of the respondents indicated that they have known exposures to environmental costs, but they have not yet been accrued in their financial statements because the SFAS No. 5 criteria are not met (Price Waterhouse 1992, p. 10 - 11). SFAS No. 5 requires accruing when it is probable that a liability has been incurred and the amount can be reasonably estimated; therefore, these known probable environmental loss contingencies should be disclosed. Price Waterhouse (1992) found the following regarding the disclosures of specific liabilities (liability) and environmental compliance in general (general):

TABLE 2.3

Summary of Price Waterhouse 1992 Survey
on Disclosure Locations

Disclosure Locations	Liability	General
Financial statement footnotes	69%	49%
MD&A	61%	50%
Legal Proceedings	59%	n/a
Business Description	41%	65%

Source: Price Waterhouse (1992) p. 28

In their 1994 survey Price Waterhouse found companies expanded their narrative disclosure of environmental matters in the financial statement footnotes, and the MD&A, legal proceedings and business description sections of Form 10-K (p. 1). They attributed this finding to companies responded to SAB No. 92. Additionally, they found that companies are recognizing their liabilities sooner. The 1994 survey resulted in the following regarding disclosure of environmental liabilities:

TABLE 2.4

Summary of Price Waterhouse 1994 Survey
on Disclosure Locations

Disclosure Locations	Environmental Liability
Financial statement footnotes	90%
MD&A	75%
Legal Proceedings	68%
Business Description	55%

Source: Price Waterhouse (1994) p. 24

In the 1994 survey, Price Waterhouse asked respondents if they disclosed potential claims for environmental responsibilities that have not been asserted. Twenty-five percent of the companies with significant environmental exposure responded that they disclosed unasserted claims (p. 26).

Post (1991) develops the argument that environmental matters will be central issues for businesses to manage during the 1990s. Tragic events such as the 1989 Exxon *Valdez* oil spill, the intentional dumping of oil by Iraqi during the 1990-91 Gulf War, and the explosion at Chernobyl have heightened public awareness of environmental issues and increased public fears of toxins. This increased awareness of environmental issues has brought "increased pressure to bear on the SEC to ensure that publicly held companies are disclosing in a fair, full and timely manner the present and potential environmental costs of an economically material nature. My view is that the company owes this to the investing public," said Commissioner of the SEC, Richard Roberts (Risk Management, 1994). Dirks (1991) reported that the FASB chairman identified accounting for environmental matters as one of the new issues that the FASB should address in the 1990s. Johnson (1993), believing that the FASB will eventually add environmental reporting to its agenda, said, "Accordingly, the time is right for research that would help the FASB and others address the financial reporting questions associated with environmental costs and obligations (p. 123)."

Articles within practitioner-oriented journals addressed the accountants' role with regard to the environmental accounting and reporting issues. Dominy (1991) discusses the accounting requirements for environmental contingencies

and predicts that although the requirements are complex and difficult to implement, imprecise and subjective, they are required, important, and are not going away (p. 45). Rabinowitz and Murphy (1991) surveyed the SEC disclosure requirements for environmental issues. Additionally, they discussed reasons for the gap between theory and practice. Zuber and Berry (1992) wrote an article to help accountants and auditors assess the sources of a public or private company's financial risk and the adequacy of presentation or disclosure of environmental matters in financial statements (p. 43). Wade (1993) discussed that a growing number of companies are disclosing their environmental liabilities. Williams and Phillips (1994) suggest that "Accounting principles need to be reviewed and updated to provide more accurate and timely disclosure of environmental liabilities (p. 30)." Steadman et al. (1995) suggest that not only are large firms affected by environmental issues, but also small firms. They challenge CPAs to take a proactive stance as external advisors to inform their clients better of the problems and solutions with regard to environmental issues. McMahon (1995) provided a discussion on the developments in environmental regulation and compliance management to illustrate that accountants are becoming an important part of environmental compliance. Munter et al. (1996) discussed that environmental costs not only affect large chemical companies, but also small companies. As others had previously done, they explained the background and provided guidance for the accounting and disclosure requirements of environmental contingencies. Kreuze et al. (1996) discussed two issues regarding environmental disclosures in annual reports: (1) the footnotes in financial statements and (2) the information needs of environmentally conscious

investors. They analyzed the 1991 annual reports of 645 Forbes 500 corporations and found that most of the annual reports did not provide any information concerning the firm's environmental philosophy and/or policies. Additionally, they found that most did not discuss any environmental issues either in the letter to the stockholders or elsewhere in the annual report (p. 38). Schmidt (1997) provided a history of environmental disclosures and reviewed such disclosures for selected firms before and after emphasis on improving reporting. He found that the disclosure of environmental information for the selected firms improved, and concluded that adoption of SOP No. 96-1 should provide more uniform disclosure. Reinstein et al. (1998) and Hochman (1998) discussed the provisions of the AICPA's SOP No. 96-1 and provided guidance on how CPA firms can assist their clients with complying with the provisions of the SOP.

In addition to providing guidance on environmental reporting issues, practitioner-oriented articles also provided guidance on the auditing issues related to environmental liabilities. Cornell and Apostolou (1991) suggested that auditors should design their audits to consider the financial statement impact of noncompliance with environmental laws. They discuss the audit procedures that SAS No. 12 recommends for identifying uncertainties resulting from litigation, claims, and assessments. In addition to the SAS No. 12 audit procedures, Cornell and Apostolou recommended that for clients exposed to environmental problems the auditor should include an evaluation of internal controls and hiring specialists to perform an environmental audit of the company (p. 17). In their conclusion they advised, ". . .it is essential that external auditors evaluate the impact of these laws on their clients during their audits. Without such an

awareness, auditors may find themselves involved in undesired and costly litigation defending unqualified opinions given to client companies responsible for environmental damage (p. 20)."

Roussey (1992) provided advice for auditing environmental liabilities. In addition to detailing the pertinent federal environmental laws and regulations, he reviewed the auditing requirements of SAS No. 54 that are applicable to laws and regulations that have an indirect effect on the financial statements.

Colbert and Scarbrough (1993) focused their article on the auditing standards which apply to environmental concerns on a financial statement audit. In their discussion of SAS No. 54, Colbert and Scarbrough also recognized that environmental laws and regulations are among those that SAS No. 54 identified as having an indirect effect on the financial statements. Therefore, the auditor is not required to search specifically for violations of environmental laws and regulations (p. 27). In addition to the audit requirements of SAS No. 54, Colbert and Scarbrough identified several other SASs that are relevant to auditing environmental loss contingencies. These include the SASs on the use of specialists, the internal control structure and reportable conditions, accounting estimates, client representation letters, the attorney's letter, the going concern status of the client, the audit report, and communications with the audit committee.

Thompson et al. (1993) discussed the challenge that auditors have for determining the potential effects of uncertainties on financial statements. They cited examples of companies that were involved in litigation resulting from violations of the 1964 Civil Rights Act to demonstrate the auditor's dilemma. The

auditor ". . .must decide whether and when an illegal act has occurred and whether and how to report a possible or actual illegal act. Furthermore, the auditor must assess the potential monetary effects and evaluate whether they affect the company's ability to continue as a going concern (p. 20)."

Pitre (1993) suggests that although audit procedures may be inadequate to deal with the magnitude of environmental liabilities, auditors should carefully evaluate the client's compliance with environmental regulations and pay close attention to the environmental consequences of all business decisions (p. 30). Chadick et al. (1993) emphasized that "It is crucial that the auditor not only understand the environmental risks inherent in the client's operations, but also that he or she understand the basic framework of environmental regulations and proceeding to assess the appropriateness of the client's current accounting and disclosure standard (p. 23)."

Hines and Jackson (1994) motivated by concern for auditors resulting from reports that firms admitted to violating federal or state environmental laws, reviewed the auditor's responsibilities for evaluating and reporting environmental liabilities. In addition to SAS No. 12 and SAS No. 53, Hines and Jackson identified SAS No. 54 as applicable to auditing environmental liabilities. They warned auditors that although SAS No. 54 states that normally an audit does not include procedures specifically designed to detect illegal acts that have an indirect effect on the financial statements, SAS No. 54 could not be used as ". . .a means of escaping responsibility for failing to reasonably test for environmental liabilities (p. 58)."

Ratcliffe and Waters (1994) explain the auditing implications of the Americans with Disabilities Act (ADA). They discussed the auditing requirements of SAS No. 54 and that auditors may have difficulties in discovering illegal acts that SAS No. 54 defined as having an indirect effect on the financial statements. They conclude that although much of the discussion in auditing and accounting literature regarding auditor responsibilities for detecting and reporting potential losses from illegal acts centers on environmental laws,

> it is possible that the ADA will create yet another major disclosure problem for auditors. Currently, problems encountered with the ADA should be considered unasserted claims; but it is just a matter of time before costs related to implementing the act and losses related to violations of the act will have a significant impact on the financial statements of many entities (p. 44).

Summary

SFAS No. 5 allows for significant leeway in professional judgment for determining the proper reporting of a particular contingent liability. Given this leeway, often the decision whether to disclose a possible loss contingency and to what extent the disclosure should be are left to the discretion of management. Thus, prior research on both environmental liability disclosures and voluntary disclosures is presented.

SAS No. 12 and SAS No. 54 have been identified as the primary auditing guidance for identifying possible loss contingencies associated with LCAs resulting from illegal acts. These standards suggest that inquiry of the firm's managers and attorneys are the primary sources for identifying such possible loss contingencies, both asserted and unasserted. With respect to LCAs resulting

from IADs, SAS No. 54 recognized that auditors do not ordinarily have the expertise to identify these types of violations.

Despite the protection from SAS No. 54 for identifying (and therefore reporting) possible loss contingencies resulting from operational laws and regulations, practitioner-oriented articles challenged accountants to take a proactive stance with regard to environmental issues. Additionally, the SEC and the FASB issued additional requirements and guidance specifically on reporting environmental liabilities.

Prior research has shown that the quantity and quality of environmental disclosures have increased associated with an external event. Additionally, prior research has shown that the increase in environmental disclosures was associated an increase in other social disclosures, thus appearing to complement one another. Therefore, this study sought to determine whether there is a change in the disclosure practices of loss contingencies associated with other operational laws and regulations (i.e., non-environmental) and/or whether this association is complementary to the change in environmental disclosures.

CHAPTER 3

METHODOLOGY

The theoretical justification for this study and its related hypotheses are grounded in the 5/54 gap and the results of prior research. In this regard, this chapter begins with a summary of the 5/54 gap. (The details of the development of the 5/54 gap were previously provided in Chapter 1.) Secondly, the results of prior research are presented and an explanation of how this study extended prior research is provided. Thirdly, this chapter provides the hypotheses of this study and their theoretical development. After providing the theoretical justification for this study and the hypotheses, a description of the research methodology to be used in testing the hypotheses is presented. This chapter concludes with a summary.

Theoretical Justification

Summary of the 5/54 Gap

SFAS No. 5 provides the underlying substantial authoritative support pertaining to **reporting** loss contingencies. While SFAS No. 5 pertains to reporting loss contingencies, SAS No. 12 and SAS No. 54 provide the primary

professional guidance with respect to the **identification** of possible loss contingencies that meet the requirements of SFAS No. 5. Significant to this study is the guidance that SAS No. 54 provides with respect to loss contingencies associated with IAIs. In this regard, SAS No. 54 limits the auditor's responsibility for identifying these types of loss contingencies.

Given that SFAS No. 5 is silent on management's responsibility to exclude (or include for that matter) IAIs in the financial statements, and given that violations of laws and regulations relating to the operational aspects of the entity (IAIs) give rise to loss contingencies as defined in SFAS No. 5, a disparity exists between management's reporting responsibilities under SFAS No. 5 and the auditor's responsibility to identify such loss contingencies under SAS No. 54. This disparity is referred to as the 5/54 gap. In essence, the 5/54 gap can be summarized as follows: While management has a responsibility to report all material loss contingencies, the auditor has limited responsibility to identify loss contingencies associated with IAIs.

Results of Prior Research and Extension of Prior Research by this Study

With respect to loss contingencies associated with IAIs, the FASB, the SEC, and the AICPA issued the E/L guidelines, and thus issued guidance on loss contingencies that lie within the 5/54 gap (i.e., environmental). However, the E/L guidelines did not address loss contingencies associated with IAIs in general, nor has any other authoritative attention been provided to date regarding loss contingencies associated with IAIs specifically.

Prior research has shown that an increase in environmental disclosures is associated with certain external events (e.g., Patten, 1992; Deegan and Gordon, 1996; Walden and Schwartz, 1997; Brown and Deegan, 1998; Neu et al., 1998; and Stanny, 1998). These external events include, but are not limited to, the Exxon *Valdez* oil disaster and SAB No. 92. Additionally, prior research has found that an increase in environmental disclosures was associated with an increase in other social disclosures, and that this association was complementary in nature (e.g., Gray et al., 1995 and Neu et al., 1998). Panel A of Figure 3.1 models the relationships found in the prior research.

The theoretical justification of this study and its related hypotheses are grounded in the following: (1) the issuance of the E/L guidelines that address a specific type of loss contingency associated with IAIs and thus lie within the 5/54 gap (i.e., environmental), (2) the results of prior research showing an association between an increase in environmental disclosures and the issuance of SAB No. 92, and (3) the results of prior research reporting an association between an increase in environmental disclosures and an increase in other social disclosures. This study extended the prior research by seeking to determine whether there is a change in the disclosure practices of loss contingencies associated with other operational laws and regulations (i.e., non-environmental) and/or whether this association is complementary to the change in environmental disclosures. Panel B of figure 3.1 models the relationships evaluated in this study.

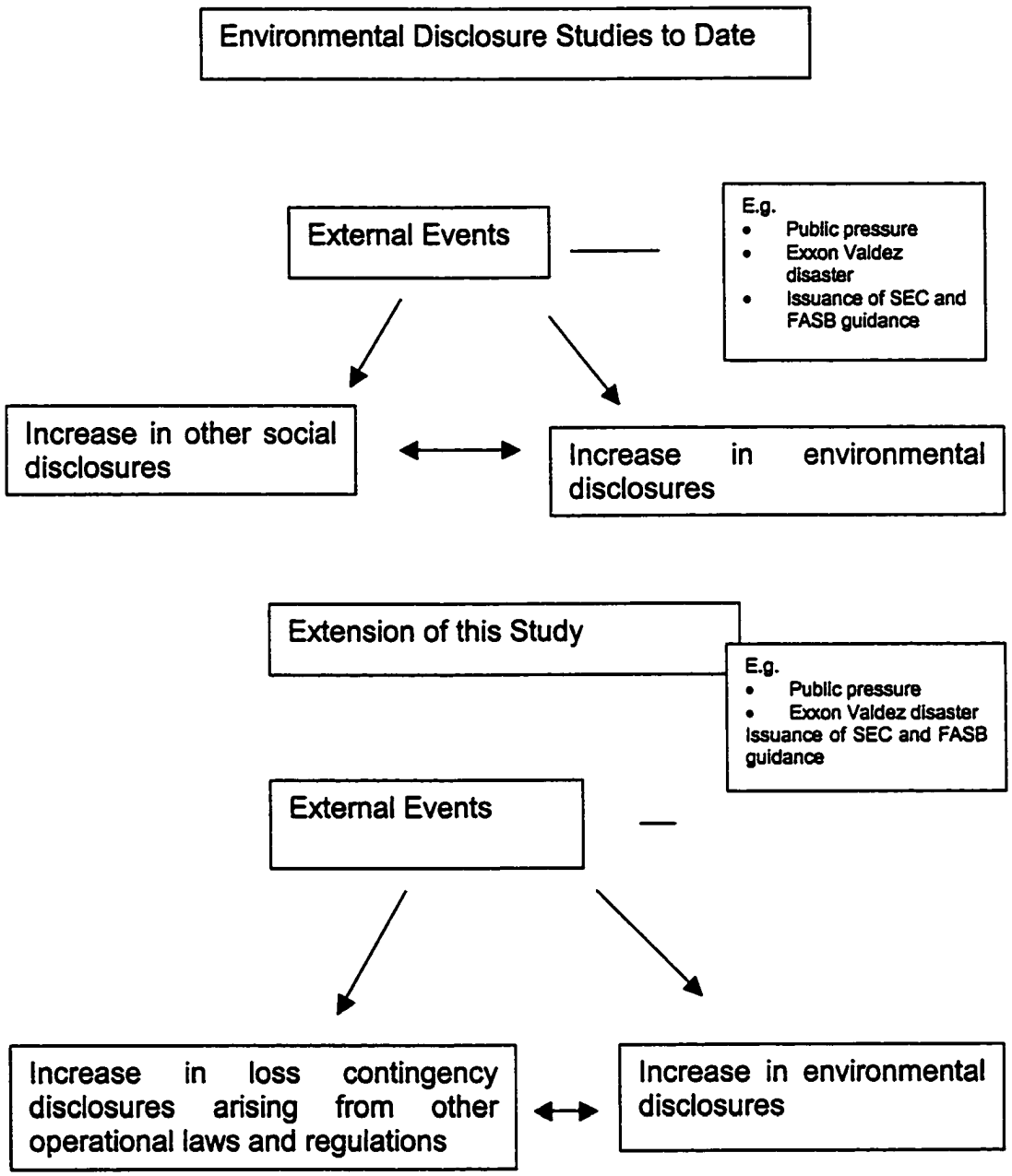

Figure 3.1 Model of Relationships found in Environmental Disclosure Studies to Date

Compare panel A (prior research) with panel B (current study). Note that an association between an increase in other social disclosures and an increase in environmental disclosures was found in the prior research. Additionally, both increases were associated with a common external event. In this study, I investigated whether there is a change in the disclosure practices of loss contingencies associated with other operational laws and regulations (i.e., non-environmental) and/or whether this association is complementary to the change in environmental disclosures.

Hypotheses Development

I analyzed the disclosure practices of loss contingencies in both the Annual Report (AR) and the Form 10-K. As indicated in Figure 3.2, there are four types of loss contingencies (based on the authoritative promulgations discussed in Chapter 1). However, for analysis purposes, the loss contingencies associated with IAIs (Type I) are decomposed into those associated with environmental laws and regulations (Type I EL) and those associated with all other operational laws and regulations (Type I OP). Accordingly, after this decomposition there are five types of loss contingencies as follows:

Loss contingencies associated with LCAs - illegal acts

Type I EL- Loss contingencies associated with violations of environmental laws and regulations - IAIs (operational)

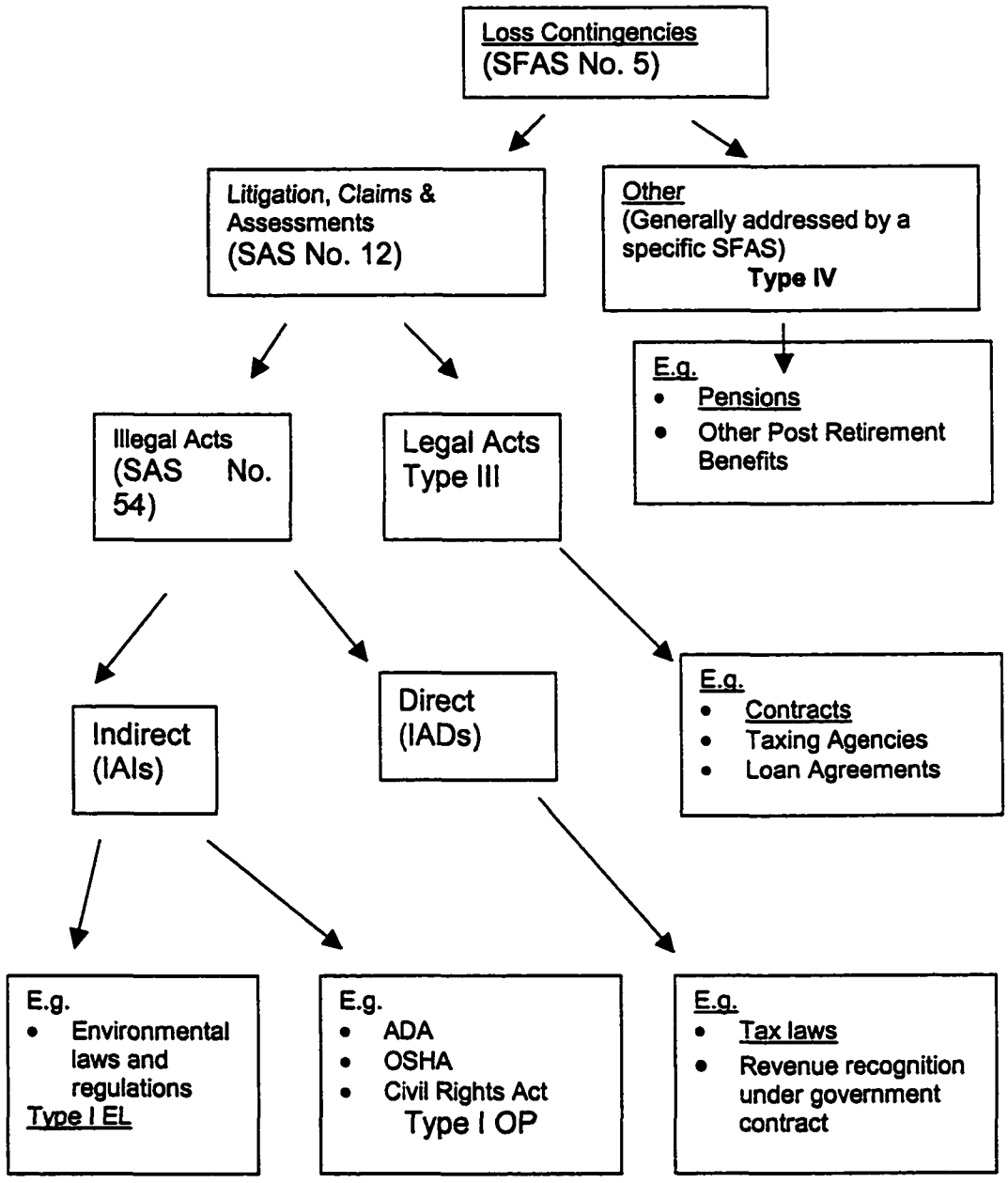

Figure 3.2 Model of Loss Contingencies Relationships to SFAS No. 5, SAS No. 12, and SAS No. 54 and Identification of the Five Types of Loss Contingencies

Type I OP- Loss contingencies associated with violations of all other operational laws and regulations (i.e., non-environmental) - IAIs (operational)

Type II- Direct loss contingencies - IAD (financial and accounting)

Loss contingencies associated with LCAs - legal acts

Type III- Loss contingencies associated with LCAs - legal acts (financial and accounting)

Other loss contingencies

Type IV- Other loss contingencies (financial and accounting)

Type I EL loss contingencies are LCAs that are associated with environmental laws and regulations. On the other hand, Type I OP loss contingencies are LCAs that arise from violations of all other operational laws and regulations (i.e., non-environmental). Type II loss contingencies are LCAs that are associated with violations of laws and regulations that relate to the financial and accounting aspects of an entity. Type III loss contingencies are LCAs that are not associated with violations of laws and regulations, but result from activities in the ordinary course of business. Type IV loss contingencies do not result from LCAs, but are liabilities incurred in the ordinary course of business. Provided in figure 3.2 are examples for each Type of these loss contingencies. However, of particular interest to this study are loss contingency disclosures associated with IAIs (Type I EL and Type I OP); therefore, only these Types of loss contingency disclosures were analyzed in this study.

To accomplish the objectives of this study, as stated in Chapter 1, I identified trends in the reporting practices of loss contingency disclosures associated with operational laws and regulations (Type I EL and Type I OP).

Once the data had been collected and categorized by Type, trends in terms of both quantity and quality in the disclosure practices of Type I EL and Type I OP loss contingencies were identified. Then, to determine whether there is a complementary association between the environmental loss contingency disclosures (Type I EL) and other operational loss contingency disclosures (Type I OP), the following research questions were addressed (which are presented in terms of quantity and quality).

Research Questions in Terms of Quantity

To identify trends in the disclosure practices of loss contingencies associated with operational laws and regulations (Type I EL and Type I OP) within the AR and the Form 10-K:

1. Is there a change in the quantity of Type I EL loss contingency disclosures within the AR and the Form 10-K?

2. Is there a change in the quantity of Type I OP loss contingency disclosures within the AR and the Form 10-K?

To determine whether there was a complementary association between the environmental loss contingency disclosures (Type I EL) and other operational (i.e., non-environmental) loss contingency disclosures (Type I OP) within the AR and the Form 10-K:

3. Is there a complementary association between the quantity of Type I EL and Type I OP loss contingency disclosures within the AR and the Form 10-K?

To determine whether there was a complementary association between the operational loss contingency disclosures (Type I EL and Type I OP) within the AR and those within the Form 10-K:

4. Is there a complementary association between the quantity of Type I EL loss contingency disclosures within the AR and those within the Form 10-K?

5. Is there a complementary association between the quantity of Type I OP loss contingency disclosures within the AR and those within the Form 10-K?

Research Questions In Terms of Quality

To identify trends in the disclosure practices of loss contingencies associated with operational laws and regulations (Type I EL and Type I OP) within the AR and the Form 10-K:

6. Is there a change in the quality of Type I EL loss contingency disclosures within the AR and the Form 10-K?

7. Is there a change in the quality of Type I OP loss contingency disclosures within the AR and the Form 10-?

To determine whether there was a complementary association between environmental loss contingency disclosures (Type I EL) and other operational (i.e., non-environmental) loss contingency disclosures (Type I OP) within the AR and the Form 10-K:

8. Is there a complementary association between changes (if any) in the quality of Type I EL and Type I OP loss contingency disclosures within the AR and the Form 10-K?

To determine whether there was a complementary association between the operational loss contingency disclosures (Type I EL and Type I OP) within the AR and those within the Form 10-K:

9. Is there a complementary association between the quality of Type I EL loss contingency disclosures within the AR and those within the Form 10-K?

10. Is there a complementary association between the quality of Type I OP loss contingency disclosures within the AR and those within the Form 10-K?

These research questions were examined through consideration of several hypotheses. Stated in the null they are presented in Table 3.1.

Research Design and Data Analysis Techniques

The primary data analysis technique used for analyzing the data was content analysis. Holsti (1969, p. 25) defines content analysis as ". . . any technique for making inferences by objectively and systematically identifying specified characteristics of messages." Weber (1990, p. 9) defines content analysis as ". . . a research method that uses a set of procedures to make valid inferences from text." Research using content analysis can be designed to make inferences about the characteristics of text (Holsti 1969, p. 24). Specifically, it can be used to describe the attributes of messages by addressing the "what" question and if the researcher desires the "to whom" and "how" questions. The process takes two steps. First, the content data must be collected. Second, the content data must then be compared to some other data so that meaningful conclusions can be drawn (Holsti 1969, p. 28). Comparisons of content data across time, situation, or audiences can be done so that the researcher may draw inferences about trends in communication content and the effects of situation and audience on communication content, respectively.

TABLE 3.1

Hypotheses

In terms of quantity

Hypothesis 1

H_0: There are no changes in the quantity of Type I EL loss contingency disclosures within the AR and the Form 10-K.

Hypothesis 2

H_0: There are no changes in the quantity of Type I OP loss contingency disclosures within the AR and the Form 10-K.

Hypothesis 3

H_0: There is no complementary association between the quantity of Type I EL and Type I OP loss contingency disclosures within the AR and the Form 10-K.

Hypothesis 4

H_0: There is no complementary association between the quantity of Type I EL loss contingency disclosures within the AR and those within the Form 10-K.

Hypothesis 5

H_0: There is no complementary association between the quantity of Type I OP loss contingency disclosures within the AR and those within the Form 10-K.

In terms of quality

Hypothesis 6

H_0: There are no changes in the quality of Type I EL loss contingency disclosures within the AR and the Form 10-K.

Hypothesis 7

H_0: There are no changes in the quality of Type I OP loss contingency disclosures within the AR and the Form 10-K.

Hypothesis 8

H_0: There is no complementary association between the quality of Type I EL and Type I OP loss contingency disclosures within the AR and the Form 10-K.

Hypothesis 9

H_0: There is no complementary association between the quality of Type I EL loss contingency disclosures within the AR and those within the Form 10-K.

Hypothesis 10

H_0: There is no complementary association between the quality of Type I OP loss contingency disclosures within the AR and those within the Form 10-K.

Addressing the question "what" can be used to describe trends in the communication content (Holsti 1969, p. 43). Of interest to this study, is what are the types of loss contingency disclosures made in ARs and the Form 10-Ks? The results of this question provided data on the quantity of the Type I EL and Type I OP loss contingency disclosures. Comparisons across time, for these loss contingency disclosures within each source, will identify trends in the reporting practices of loss contingency disclosures with respect to quantity.

Addressing the question "how" can be used to identify the form of the communication (Holsti 1969, p. 59). Of particular interest, is how are the different Types of loss contingency disclosures reported in ARs and the Form 10-Ks? The results of this question provided data on the quality of Type I EL and Type I OP loss contingency disclosures. Comparisons across time, for these loss contingency disclosures within each source, will identify the trends in the disclosure practices of loss contingencies with respect to quality.

To operationalize the use of content analysis, a coding scheme must be developed to categorize the data in a meaningful manner. Holsti (1969, p. 94) describes coding as ". . .the process whereby raw data are systematically transformed and aggregated into units which permit precise description of relevant content characteristics." Additionally, Holsti (p. 94) suggests that coding rules are a central part of the research design and that the following decisions need to be made:

- How is the research problem defined in terms of *categories?*
- What *unit* of content is to be classified?

- What system of enumeration will be used? (Holsti 1969, p. 94).

Categories should be clearly defined and well adapted to the content and research question. According to Holsti (1969, p. 95), ". . .categories should *reflect the purposes of the research*, be *exhaustive*, be *mutually exclusive*, *independent*, and be derived from a *single classification principle*." For the purposes of this study, five categories will be used. Each category will consist of each Type of loss contingency as presented in Figure 3.2.

In addition to the selection of the categories, the specific segment of content, or recording unit that is to be coded must be designated (Holsti, 1969, p. 116). Recording units can be defined as a single word, theme, character, sentence or paragraph, or item. Holsti (1969, p. 116) described the theme, a single assertion about some subject, as the most useful unit of content analysis. Weber (1990, p. 22) described using theme as the recording unit as a labor-intensive form of coding, but that its use leads to more detailed and sophisticated comparisons. The recording unit chosen for this study is the theme of the loss contingency disclosures. The five Types of loss contingency disclosures define the five themes used as the recording units.

Two systems of enumeration are used in this study--a quantity assessment and a quality assessment. Analyzing both the quantity and quality will provide information on both questions–that is, what loss contingencies are being disclosed and how are these contingencies being disclosed.

Measures of Quantity

Ingram and Frazier (1980), Wiseman (1982), and Walden and Schwartz (1997) used the sentence as the unit of analysis. Patten (1991 and 1992) used 1/100th of a page as the unit of analysis. Freedman and Stagliano (1995) and Stanny (1998) identified disclosure categories to analyze environmental disclosures and used the appearance of the disclosure category as the unit of analysis. Deegan and Gordon (1996) and Brown and Deegan (1998) used individual words as the unit of analysis. For the purposes of this study, similar to Ingram and Frazier (1980), Wiseman (1982), Walden and Schwartz (1997), the number of sentences within each of the Types of loss contingencies (the recording unit) will be used as the unit of enumeration. Walden and Schwartz (1997, p. 150) explained, ". . .the use of the number of sentences or financial statement lines related to the themes, attempts to capture the amount of information conveyed as part of the message, . . . We considered a sentence as a conventional unit of speech or writing, but the portion of the page measurement as not."

Measure of Quality

Ingram and Frazier (1980) used content analysis to examine the relationship between measures of firms' environmental performances and its environmental disclosures. To measure the content of each firm's environmental disclosures, they rated the disclosures based on (1) evidence–quantitative or non-quantitative, (2) time–past, present or future, and (3) specificity–specific or general. Wiseman (1982) and Freedman and Wasley (1990) used content

analysis to examine the relationship between firm's environmental disclosures and its environmental performance. To measure the extent of the environmental disclosures, they rated the disclosures based on the degree of specificity of the information–specific or general and quantitative or non-quantitative. Freedman and Stagliano (1995) used content analysis to examine both the existence of environmental disclosures and the type of disclosure provided. To measure the content of the environmental disclosures, they categorized the disclosures based on specificity and quantitative criteria. Walden and Schwartz (1997) used content analysis to examine the change in the levels of environmental disclosures subsequent to the Exxon *Valdez* disaster. To measure the quality of environmental disclosures, they rated the disclosures based on (1) effect–significant or not significant, (2) quantification–monetary or not monetary, (3) specificity–general or specific, and (4) time–past, present, or future.

For the purposes of this study, a three-element index was used as the measure of quality. Similar to Walden and Schwartz (1997), the three elements of the quality measure are (1) quantification–monetary or not monetary, (2) specificity–specific as to actions, persons, events, or places or not specific, and

(3) time–past, present, or future.[10] Again, similar to Walden and Schwartz (1997), each element of the quality measure will be coded as follows:

quantification
monetary - 2 points
not monetary - 0 points

specificity
specific - 1 point
not specific - 0 points

time
past - 0 points
present - 1 point
future - 2 points

Therefore, Type I EL and Type I OP loss contingency disclosures could receive a minimum of zero points or a maximum of five points each based on the three-element measure of quality. Each company could receive a minimum of zero points or a maximum of 10 points (five points available for each of the loss contingency disclosures).

Sample Selection

Using content analysis, I measured the quantity and quality of the Type I EL and Type I OP loss contingency disclosures for NYSE companies that have a relatively high potential for environmental liabilities. Companies that have a relatively high potential for environmental liabilities are more likely to be affected

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[10]Walden and Schwartz (1997) used four elements in their quality measure. Their fourth element, effect–significant or not significant, was based on location within the annual report. Those disclosures found in the Letter to Shareholders and financial sections of the annual report were deemed significant (p. 150-151). Because a separate analysis is done on both the Annual Report and the Form 10-K in this study, this fourth element was not deemed necessary.

by the issuance of the E/L guidelines. Barth and McNichols (1994) identified firms within ten two-digit SIC codes as having a relatively high potential for environmental liabilities (see Appendix A for a listing of these SIC codes). Included within these ten two-digit SIC codes are companies within the utility (4900) industry. However, because the utility industry is a regulated industry and are subject to different regulatory factors than other industries, companies within this SIC code were excluded from this study. Loss contingency disclosure data from all NYSE companies within these nine two-digit SIC codes were analyzed in this study. Data were collected for the period 1989 to 1999 (the study period) from the AR and the Form 10-K of these NYSE companies. Data were extracted from the footnotes accompanying the financial statements within the AR. Additionally, data were extracted from the Description of Business (Item 101), Legal Proceedings (Item 103), and Management's Discussion and Analysis of Financial Condition and Results of Operations (Item 303) of the Form 10-K.

Statistical Tests

Once the data had been collected, (1) trends in the disclosure practices of Type I EL and Type I OP loss contingencies in terms of quantity and quality were identified and, to the extent possible, (2) the associations (whether intended or unintended) between the changes (if any) in environmental loss contingency disclosures and other operational (i.e., non-environmental) were analyzed. The statistical tests used to analyze the data depended, among other things, on the measurement scale used to measure the data. Several types of measurement scales exist--nominal, ordinal, interval, and ratio. This study used an interval

scale. Parametric tests can only be used with a measurement scale that is at least interval, provided that other assumptions are met.

The parametric test for differences in matched pairs is the paired t-test. The nonparametric test for differences in matched pairs is the Wilcoxon Signed Rank Test. Both of these tests require a measurement scale that is at least interval. Walden and Schwartz (1997) used the nonparametric Wilcoxon Signed Rank Test to report their findings. They stated, "[d]ue to the small sample size, variability in the data, and the need to avoid specification of the underlying distribution, the Wilcoxon test was used (p. 137)." As suggested by Walden and Schwartz (1997), to avoid specification of the underlying distribution, the Wilcoxon Signed Rank Test is used in this study.

Type I EL and Type I OP loss contingency disclosures were enumerated through content analysis techniques. Changes in the quantity and quality of the these loss contingency disclosures for each consecutive year in the study period within the AR and the Form 10-K and between the AR and the Form 10-K were tested using the Wilcoxon Signed Rank Test. Additionally, to determine whether there is a complementary association between changes (if any) in the quantity and quality of the Type I EL and Type I OP loss contingency disclosures, the differences were tested using the Wilcoxon Signed Rank Test.

Summary of Expected Findings

Type I EL Disclosures

Prior research found an increase in environmental disclosures, associated with certain external events, within industries having a relatively high potential for environmental liabilities. This prior research suggests that there will be an

increase in environmental disclosures (Type I EL) within industries having a relatively high potential for environmental liabilities, in terms of both quantity and quality (hypotheses 1 and 6, respectively). Accordingly, if an increase in environmental disclosures is found , this result would be consistent with prior research. On the other hand, if there is not an increase in these disclosures , then further research into the factors influencing environmental disclosures would be warranted.

Type I OP Disclosures

With respect to loss contingencies associated with other operational laws and regulations (i.e., non-environmental) (Type I OP) there are two streams of prior research to consider. First, prior research has found a complementary relationship between increases in environmental disclosures and increases in other social disclosures associated with a common external event. Thus, the results from prior research suggest that loss contingencies associated with other operational laws and regulations (i.e., non-environmental) (Type I OP) should be positively associated with the anticipated increase in environmental disclosures (Type I EL). Second, prior research on voluntary disclosures reports mixed results regarding a manager's propensity to disclose bad news (e.g. loss contingencies).

Verrecchia (1990) suggests that managers are less likely to disclose poor quality information.[11] On the other hand, Skinner (1994) suggests that managers

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[11]Verrecchia (1990, p. 365) defined information quality as, ". . . information quality involves the distributional characteristics of an uncertain event (e.g., its variance). . ."

may disclose bad news because stockholders may sue and the manager may incur reputational costs if they fail to disclose the bad news promptly. Accordingly, as discussed in the remainder of this section, prior research suggests that loss contingencies associated with other operational laws and regulations (i.e., non-environmental) (Type I OP) could either remain constant or increase.

If there is an increase in loss contingency disclosures associated with other operational laws and regulations (i.e., non-environmental), then this result would be consistent with Skinner (1994) suggesting that managers are concerned about stockholder lawsuits and/or their reputations. Additionally, this result could suggest that there is a complementary relationship between environmental disclosures and loss contingency disclosures associated with other operational laws and regulations (i.e., non-environmental).

On the other hand, if there is not an increase in loss contingency disclosures associated with other operational laws and regulations (i.e., non-environmental), then this result would be consistent with Verrecchia (1990) suggesting that managers are hesitant to disclose poor quality information. Additionally, this result could suggest that (1) managers have been complying with the reporting requirements of SFAS No. 5, thus no change in their disclosure practice was necessary and or (2) managers are underreporting loss contingencies associated with other operational laws and regulations (i.e., non-environmental), as was the case with environmental liabilities. In summary, whether the results of this study find an increase in loss contingency disclosures associated with other operational laws and regulations (i.e., non-environmental)

or not, to gain insights into the factors influencing these results would require further research.

Summary

This chapter provided the theoretical justification for this study and its related hypothesis. Additionally, this chapter provided a description of the research methodology to be used in testing the hypothesis presented. The results of this study are discussed in the next chapter.

CHAPTER 4

RESULTS

This chapter is presented in three main sections. First, a description of the sample is provided. Second, the descriptive statistics and the results of statistical tests of hypotheses are provided. Finally, the chapter concludes with a summary.

Sample

A list of NYSE companies was obtained from Compustat PC that had a primary two-digit SIC code identified by Barth and McNichols (1994) as having a relatively high potential for environmental liabilities.[12] This initial sample included 666 companies that met these criteria. Of these 666 companies it was necessary to exclude 356 companies for the following reasons: 341 companies because they did not have filings on LEXIS/NEXIS for the entire study period and 15 companies

[12]Barth and McNichols (1994) identified companies within ten two-digit SIC codes as having relatively high potential for environmental liabilities. Included within these ten two-digit SIC codes are companies within the utility (4900) industry. However, because the utility industry is a regulated industry and is subject to regulatory factors that are different than other industries, companies within this SIC code were excluded from this study. Thus, data were obtained for nine (not ten) SIC codes. Please see Appendix A for a listing of these SIC codes.

because they were involved in corporate restructurings, and therefore, did not exist in the same form (i.e., as the same basic entity) during the entire study period. Accordingly, the final sample included 310 of the initial 666 companies identified as having a relatively high potential for environmental liabilities.

Using LEXIS/NEXIS, loss contingency disclosure data for each of the 310 companies in the sample was obtained. Specifically, the loss contingency disclosure data was extracted from the financial statement footnotes of the AR and from the Description of Business (Item 101), Legal Proceedings (Item 103), and Managements' Discussion and Analysis of Financial Condition and Results of Operations (Item 303) of the Form 10-K.

After collecting the loss contingency disclosure data, the data was categorized by Type of loss contingency disclosure. Thereafter, content analysis was performed on the Type I EL and Type I OP loss contingency disclosures for both quantity and quality. Specifics regarding data categorization and content analysis are provided in Chapter 3.

Descriptive Statistics and Results of Statistical Tests of Hypotheses

This section provides the descriptive statistics and results of statistical tests of hypotheses for each group of hypotheses. Recall from Chapter 3 that the hypotheses were presented in terms of quantity (hypotheses 1 – 5) and in terms of quality (hypotheses 6 –10). Within these two groups the hypotheses were further organized by objective as follows:

1. To identify trends in the disclosures practices of loss contingencies associated with operational laws and regulations (Type I EL and Type I OP).

   In terms of quantity – hypotheses 1 and 2
   In terms of quality – hypotheses 6 and 7

2. To determine whether there is a complementary association between environmental loss contingency disclosures (Type I EL) and other operational (i.e., non-environmental) loss contingency disclosures (Type I OP).

   In terms of quantity – hypothesis 3
   In terms of quality – hypothesis 8

3. To determine whether there is a complementary association between operational loss contingency disclosures (Type I EL and Type I OP) within the AR and those within the Form 10-K.

   In terms of quantity – hypotheses 4 and 5
   In terms of quality – hypotheses 9 and 10

For convenience, the remainder of this section is organized in this same manner.

Hypothesis 1_o and Hypothesis 2_o

Hypothesis1_o and Hypothesis 2_o were analyzed to identify trends in the disclosure practices of loss contingencies associated with operational laws and regulations (Type I EL and Type I OP) in terms of quantity. In particular, they were analyzed to determine whether there was a change in the quantity measure of Type I EL and Type I OP loss contingency disclosures within the AR and the Form 10-K. Descriptive statistics relating to the data employed in analyzing hypotheses 1 and 2 are reported immediately below. The results of the statistical tests of hypotheses 1 and 2 are reported thereafter.

Descriptive Statistics

The descriptive statistics for the Type I EL and Type I OP loss contingency disclosures for quantity are summarized in Tables 4.1 and 4.2, respectively.

TABLE 4.1

Descriptive Statistics- Type I EL -Quantity Measure-AR and Form 10-K

Variable	N	Mean	Std. Deviation	Minimum	Maximum
Panel A – AR					
EL89#	310	2.2200	7.1400	0	76
EL90#	310	2.5900	7.0800	0	75
EL91#	310	3.1032	7.5236	0	73
EL92#	310	4.0065	9.1521	0	82
EL93#	310	5.8194	10.7125	0	95
EL94#	310	7.5484	12.5833	0	109
EL95#	310	8.5194	13.2672	0	100
EL96#	310	9.4613	15.9371	0	124
EL97#	310	9.6968	17.0082	0	132
EL98#	310	9.9129	15.1192	0	113
EL99#	310	10.2032	16.6991	0	119
Panel B – Form 10-K					
EL89#	310	12.0500	20.4300	0	158
EL90#	310	14.3400	22.6100	0	143
EL91#	310	16.1839	24.4902	0	167
EL92#	310	18.9871	28.5396	0	197
EL93#	310	22.0839	33.1647	0	270
EL94#	310	24.0387	35.7007	0	241
EL95#	310	24.1419	37.5639	0	344
EL96#	310	23.4516	38.1547	0	312
EL97#	310	22.3194	36.3410	0	310
EL98#	310	23.0387	37.6308	0	344
EL99#	310	24.3323	41.0275	0	364

TABLE 4.2

Descriptive Statistics- Type I OP -Quantity Measure- AR and Form 10-K

Variable	N	Mean	Std. Deviation	Minimum	Maximum
Panel A – AR					
OP89#	310	3.60	7.12	0	55
OP90#	310	4.25	8.92	0	71
OP91#	310	4.65	10.29	0	95
OP92#	310	5.21	9.41	0	58
OP93#	310	5.82	11.36	0	89
OP94#	310	6.01	11.84	0	97
OP95#	310	6.38	12.22	0	115
OP96#	310	6.50	12.63	0	108
OP97#	310	7.07	15.78	0	191
OP98#	310	7.65	14.72	0	142
OP99#	310	8.55	15.78	0	171
Panel B – Form 10-K					
OP89#	310	10.09	21.11	0	196
OP90#	310	9.99	19.72	0	158
OP91#	310	10.98	21.17	0	161
OP92#	310	11.26	19.73	0	147
OP93#	310	12.42	20.68	0	142
OP94#	310	12.44	21.83	0	173
OP95#	310	11.55	20.19	0	202
OP96#	310	11.96	24.90	0	270
OP97#	310	13.26	28.16	0	287
OP98#	310	14.84	29.95	0	237
OP99#	310	15.75	30.79	0	223

As indicated by the results reported in Panel A of Table 4.1, the means of the quantity measure of the Type I EL loss contingency disclosures within the AR increased each year during the study period. As indicated by the results reported in Panel B of Table 4.1, the means of the quantity measure of the Type I EL loss contingency disclosures within the Form 10-K increased each year from 1989 through 1995; thereafter the means decreased until 1998. In turn, as indicated by

the results reported in Panel A of Table 4.2, the means of the quantity measure of the Type I OP loss contingency disclosures within the AR increased each year during the study period. As indicated by the results reported in Panel B of Table 4.2, the means of the quantity measure of the Type I OP loss contingency disclosures within the Form 10-K increased each year from 1990 through 1994 and then, after a decrease in 1995, increased again for each year from 1996 through 1999.

Results of Statistical Tests of Hypotheses

$H1_o$: There are no changes in the quantity of Type I EL loss contingency disclosures within the AR and the Form 10-K.

The Wilcoxon Signed Rank Test was used to determine whether there was a change in the quantity measure of Type I EL loss contingency disclosures within the AR and the Form 10-K for each consecutive year in the study period. Tables 4.3 and 4.4 summarize the results of the Wilcoxon Signed Rank Test for changes in the medians of the quantity measure of the Type I EL loss contingency disclosures between each consecutive year in the study period within the AR and the Form 10-K, respectively.

As indicated by the results reported in Table 4.3, significant differences in the medians of the quantity measure of the Type I EL loss contingency disclosures within the AR were found for each consecutive year during the study period, except for 1996-1997 and 1998-1999. In turn, as indicated by the results

TABLE 4.3

Wilcoxon Signed Ranks Test for Changes in the Quantity Measure of Type I EL- AR

Variable	Z score	P value (2-tailed)
EL90# - EL89#	3.419	0.001*
EL91# - EL90#	3.433	0.001*
EL92# - EL91#	4.542	0.000*
EL93# - EL92#	6.826	0.000*
EL94# - EL93#	6.380	0.000*
EL95# - EL94#	4.166	0.000*
EL96# - EL95#	3.178	0.001*
EL97# - EL96#	0.894	0.371
EL98# - EL97#	2.014	0.044*
EL99# - EL98#	0.364	0.716

p value was ≤ .05.

Variable definitions:
EL_t # is the number of sentences within the environmental loss contingency disclosures

TABLE 4.4

Wilcoxon Signed Ranks Test for Changes in the Quantity Measure of Type I EL- Form 10-K

Variable	Z Score	P value (2-tailed)
EL90# - EL89#	6.258	0.000*
EL91# - EL90#	3.870	0.000*
EL92# - EL91#	5.408	0.000*
EL93# - EL92#	4.959	0.000*
EL94# - EL93#	2.511	0.012*
EL95# - EL94#	0.009	0.993
EL96# - EL95#	1.796	0.072
EL97# - EL96#	1.340	0.180
EL98# - EL97#	2.158	0.031*
EL99# - EL98#	1.073	0.283

p value was ≤ .05.

Variable definitions:
EL_t # is the number of sentences within the environmental loss contingency disclosures.

reported in Table 4.4, significant differences in the medians of the quantity measure of the Type I EL loss contingency disclosures within the Form 10-K were found for each consecutive year from 1989 through 1994; thereafter, the only consecutive years with a significant difference was 1997-1998. Accordingly, the null hypothesis was rejected for the consecutive years with significant differences within the AR and the Form 10-K; not rejected otherwise.

$H2_o$: There are no changes in the quantity of Type I OP loss contingency disclosures within the AR and the Form 10-K.

The Wilcoxon Signed Rank Test was used to determine whether there was a change in the quantity measure of Type I OP loss contingency disclosures within the AR and the Form 10-K for each consecutive year in the study period. Tables 4.5 and 4.6 summarize the results of the Wilcoxon Signed Rank Test of changes in the medians of the quantity measure of the Type I OP loss contingency disclosures between each consecutive year in the study period within the AR and the Form 10-K, respectively.

As indicated by the results reported in Table 4.5, significant differences in the medians of the quantity measure of the Type I OP loss contingency disclosures within the AR were found for the following consecutive years: 1989-1990, 1991-1992, 1997-1998, and 1998-1999. In turn, as indicated by the results reported in Table 4.6, significant differences in the medians of the quantity measure of the Type I OP loss contingency disclosures within the Form 10-K were found for the following consecutive years: 1990-1991, 1992-1993, 1996-1997, and 1998-1999. Accordingly, the null hypothesis was rejected for the

TABLE 4.5

Wilcoxon Signed Ranks Test for Changes in the Quantity Measure of Type I OP- AR

Variable	Z Score	P value (2-tailed)
OP90# - OP89#	2.792	0.005*
OP91# - OP90#	1.751	0.080
OP92# - OP91#	2.610	0.009*
OP93# - OP92#	1.469	0.142
OP94# - OP93#	1.488	0.137
OP95# - OP94#	1.791	0.073
OP96# - OP95#	0.336	0.737
OP97# - OP96#	1.925	0.054
OP98# - OP97#	2.898	0.004*
OP99# - OP98#	2.682	0.007*

* p value was ≤ .05.

Variable definitions:
OP_t# is the number of sentences within the operational (i.e., non-environmental) loss contingency disclosures.

TABLE 4.6

Wilcoxon Signed Ranks Test For Changes In the Quantity Measure Of Type I OP- Form 10-K

Variable	Z Score	P value (2-tailed)
OP90# - OP89#	1.219	0.223
OP91# - OP90#	2.511	0.012*
OP92# - OP91#	1.038	0.299
OP93# - OP92#	2.191	0.028*
OP94# - OP93#	0.928	0.354
OP95# - OP94#	0.383	0.702
OP96# - OP95#	0.211	0.833
OP97# - OP96#	2.275	0.023*
OP98# - OP97#	1.627	0.104
OP99# - OP98#	2.290	0.022*

* p value was ≤ .05.

Variable definitions:
OP_t# is the number of sentences within the operational (i.e., non-environmental) loss contingency disclosures.

consecutive years with significant differences within the AR and the Form 10-K; not rejected otherwise.

Hypothesis 3_0

Hypothesis 3_O was analyzed to determine whether there was a complementary association between the environmental loss contingency disclosures (Type I EL) and other operational (i.e., non-environmental) loss contingency disclosures (Type I OP) in terms of quantity. This was done by analyzing whether there was a change in the differences between these Types of loss contingency disclosures for each consecutive year in the study period, within the AR and the Form 10-K. Descriptive statistics relating to the data employed in analyzing hypothesis 3_o are reported immediately below. The results of the statistical tests of hypothesis 3_o are reported thereafter.

Descriptive Statistics

The descriptive statistics for the difference between the quantity measures of the Type I EL and Type I OP loss contingency disclosures (EL_Op#) for the AR and the Form 10-K are summarized in Tables 4.7 and 4.8, respectively.

As indicated by the results reported in Table 4.7, the means of the differences between the quantity measures of the Type I EL and Type I OP loss contingency disclosures within the AR show that Type I OP loss contingency disclosures were greater than Type I EL loss contingency disclosures for each year from 1989 through 1992. However, for the years 1993 through 1999,Type I EL loss contingency disclosures were greater than Type I OP loss contingency

TABLE 4.7

Descriptive Statistics of Difference Between the Type I EL and Type I OP Quantity Measure- AR

Descriptive Statistics Variable	N	Mean	Std. Deviation	Minimum	Maximum
EL_OP89#	310	-1.3806	7.4079	-42	46
EL_OP90#	310	-1.6581	9.0206	-71	50
EL_OP91#	310	-1.5516	10.0379	-59	63
EL_OP92#	310	-1.2000	12.4938	-58	82
EL_OP93#	310	0.0032	15.0220	-81	95
EL_OP94#	310	1.5387	17.4019	-96	109
EL_OP95#	310	2.1387	17.8336	-111	100
EL_OP96#	310	2.9645	19.5273	-94	124
EL_OP97#	310	2.6226	22.4427	-183	129
EL_OP98#	310	2.2677	20.0597	-124	113
EL_OP99#	310	1.6581	22.6774	-146	119

TABLE 4.8

Descriptive Statistics of Difference Between the Type I EL and Type I OP Quantity Measure- Form 10-K

Descriptive Statistics Variable	N	Mean	Std. Deviation	Minimum	Maximum
EL_OP89#	310	1.9581	26.9853	-192	158
EL_OP90#	310	4.3452	26.6158	-138	127
EL_OP91#	310	5.2032	28.0492	-122	134
EL_OP92#	310	7.7290	30.6581	-146	176
EL_OP93#	310	9.6645	37.9149	-141	235
EL_OP94#	310	11.5968	41.4754	-165	240
EL_OP95#	310	12.5903	40.6250	-190	301
EL_OP96#	310	11.4935	44.1894	-256	284
EL_OP97#	310	9.0548	43.9867	-274	271
EL_OP98#	310	8.2032	46.4412	-217	306
EL_OP99#	310	8.5871	48.9951	-158	336

disclosures. In turn, as indicated by the results reported in Table 4.8, the means of the differences between the quantity measures of the Type I EL and Type I OP loss contingency disclosures within the Form 10-K report that Type I EL loss contingency disclosures were greater than Type I OP loss contingency disclosures during the entire study period.

Results of Statistical Tests of Hypothesis

$H3_o$: There is no complementary association between the quantity of Type I EL loss contingency disclosures and Type I OP loss contingency disclosures within the AR and the Form 10-K.

The Wilcoxon Signed Rank Test was used to determine whether there was a complementary association between the quantity measures of the Type I EL and Type I OP loss contingency disclosures for each consecutive year in the study period within the AR and the Form 10-K. If there was no significant change in the difference between the quantity measures of the Type I EL and Type I OP loss contingency disclosures, then it can be said that Type I EL and Type I OP had a complementary association in terms of quantity. Tables 4.9 and 4.10 summarize the results of the Wilcoxon Signed Rank Test for changes in the difference between the quantity measures of the Type I EL and Type I OP loss contingency disclosures for each consecutive year in the study period within the AR and the Form 10-K, respectively.

As indicated by the results reported in Table 4.9, significant changes in the differences between the quantity measures of the Type I EL and Type I OP loss contingency disclosures within the AR were found for the following consecutive

years: 1992-1993 and 1993-1994. In turn, as indicated by the results reported in Table 4.10, significant changes in the differences between the quantity measures

TABLE 4.9

Wilcoxon Signed Rank Test for Complementary Association
Between the Changes in the Quantity Measure of
Type I EL and Type I OP – AR

Test Statistics Variable	Z Score	P value (2-tailed)
EL_OP90# - EL_OP89#	0.458	0.647
EL_OP91# - EL_OP90#	1.169	0.243
EL_OP92# - EL_OP91#	0.916	0.360
EL_OP93# - EL_OP92#	4.365	0.000 *
EL_OP94# - EL_OP93#	3.858	0.000 *
EL_OP95# - EL_OP94#	1.665	0.096
EL_OP96# - EL_OP95#	1.758	0.079
EL_OP97# - EL_OP96#	1.018	0.309
EL_OP98# - EL_OP97#	0.983	0.325
EL_OP99# - EL_OP98#	1.476	0.140

* p value was ≤ .05.

Variable definitions:
EL_OP_t # is the difference between the number of sentences in the environmental loss contingency disclosures and the operational loss contingency disclosures (i.e., non-environmental) within the AR.

of the Type I EL and Type I OP loss contingency disclosures within the Form 10-K were found for the following consecutive years: 1989-1990, 1991-1992, and 1996-1997. Accordingly, the null hypothesis was rejected for the consecutive years that do not have significant differences within the AR and the Form 10-K; not rejected otherwise.

TABLE 4.10

Wilcoxon Signed Rank Test for Complementary Association Between the Changes in the Quantity Measure of Type I EL and Type I OP - Form 10-K

Test Statistics Variable	Z Score	P value (2-tailed)
EL_OP90# - EL_OP89#	4.512	0.000 *
EL_OP91# - EL_OP90#	1.415	0.157
EL_OP92# - EL_OP91#	3.229	0.001 *
EL_OP93# - EL_OP92#	1.657	0.098
EL_OP94# - EL_OP93#	1.282	0.200
EL_OP95# - EL_OP94#	0.421	0.674
EL_OP96# - EL_OP95#	1.011	0.312
EL_OP97# - EL_OP96#	2.774	0.006 *
EL_OP98# - EL_OP97#	0.242	0.809
EL_OP99# - EL_OP98#	0.883	0.377

* p value was ≤ .05.

Variable definitions:
EL_OP_t # is the difference between the number of sentences in the environmental loss contingency disclosures and the operational loss contingency disclosures (i.e., non-environmental) within the Form 10-K.

Hypothesis $H4_0$ and $H5_0$

Hypotheses $H4_0$ and $H5_0$ were analyzed to determine whether there was a complementary association between the operational loss contingency disclosures (Type I EL and Type I OP) within the AR and those within the Form 10-K in terms of quantity. Of particular concern was whether there was a change in the differences between the quantity measures of Type I EL and Type I OP loss contingency disclosures within the AR and those within the Form 10-K. However, for additional information regarding the association between the quantity of operational loss contingency disclosures (Type I EL and Type I OP) within the AR and the quantity within the Form 10-K, the quantitative data of Type I EL and

Type I OP loss contingency disclosures from the AR was compared with the quantitative data from the Form 10-K for each year in the study period. This was done to determine whether there was a difference in the quantity measures of these Types of loss contingency disclosures between the AR and the Form 10-K. Descriptive statistics relating to the data employed in analyzing hypotheses 4_o and 5_o are reported immediately below. The results of the statistical tests of hypotheses 4_o and 5_o are reported thereafter.

Descriptive Statistics

The descriptive statistics for the difference in the quantity measure between the AR and the Form 10-K for Type I EL and Type I OP loss contingency disclosures are summarized in Tables 4.11 and 4.12, respectively.

TABLE 4.11

Descriptive Statistics for the Difference in the Type I EL Quantity Measure Between the AR and the Form 10-K

Descriptive Statistics Variable	N	Mean	Std. Deviation	Minimum	Maximum
EL89#AR_10K	310	-9.8355	18.4537	-136	21
EL90#AR_10K	310	-11.7452	20.4832	-143	18
EL91#AR_10K	310	-13.0806	21.7926	-147	19
EL92#AR_10K	310	-14.9806	26.0021	-178	50
EL93#AR_10K	310	-16.2645	29.4869	-257	41
EL94#AR_10K	310	-16.4903	31.7675	-222	53
EL95#AR_10K	310	-15.6226	34.1413	-326	69
EL96#AR_10K	310	-13.9903	33.7402	-294	92
EL97#AR_10K	310	-12.6226	32.4709	-287	96
EL98#AR_10K	310	-13.1258	32.7495	-321	82
EL99#AR_10K	310	-14.1290	34.6226	-341	75

TABLE 4.12

Descriptive Statistics for the Difference in the Type I OP Quantity Measure Between the AR and the Form 10-K

Descriptive Statistics					
Variable	N	Mean	Std. Deviation	Minimum	Maximum
OP89#AR_10K	310	-6.4968	19.2485	-161	54
OP90#AR_10K	310	-5.7419	18.1753	-146	48
OP91#AR_10K	310	-6.3258	19.2258	-149	63
OP92#AR_10K	310	-6.0516	17.265	-108	58
OP93#AR_10K	310	-6.6032	17.1546	-115	44
OP94#AR_10K	310	-6.4323	15.4886	-88	30
OP95#AR_10K	310	-5.1710	17.0664	-101	95
OP96#AR_10K	310	-5.4613	20.8118	-173	89
OP97#AR_10K	310	-6.1903	23.1933	-189	90
OP98#AR_10K	310	-7.1903	24.5807	-188	54
OP99#AR_10K	310	-7.2000	26.3947	-216	67

As indicated by the results reported in Tables 4.11 and 4.12, the means of the differences in the quantity measure between the AR and the Form 10-K for both the Type I EL and Type I OP loss contingency disclosures report that these disclosures within the Form 10-K are greater than those in the AR for the entire study period.

Results of Statistical Tests of Hypotheses

$H4_o$: There is no complementary association between the quantity of Type I EL loss contingency disclosures within the AR and those within the Form 10-K.

The Wilcoxon Signed Rank Test was first used to provide additional information regarding the association between the quantity of Type I EL loss contingency disclosures within the AR and the quantity within the Form 10-K for

each year in the study period. Then, the Wilcoxon Signed Rank Test was used again to determine whether there was a complementary association between the quantity measures of Type I EL loss contingency disclosures within the AR and those within the Form 10-K for each consecutive year in the study period. If there was no significant change in the difference between the quantity measures of Type I EL loss contingency disclosures within the AR and those within the Form 10-K, then it can be said that the AR and the Form 10-K had a complementary association with respect to Type I EL loss contingency disclosures in terms of quantity. Table 4.13 summarizes the results of the Wilcoxon Signed Rank Test for differences in the medians of the quantity measure of the Type I EL loss contingency disclosures between the AR and the Form 10-K for each year in the study period. Tables 4.14 summarizes the results of the Wilcoxon Signed Rank Test for changes in the differences in the quantity measure of the Type I EL loss contingency disclosures between the AR and the Form 10-K for each consecutive year in the study period.

First, as indicated by the results reported in Table 4.13, significant differences in the quantity measure of Type I EL loss contingency disclosures between the AR and the Form 10-K were found for each year in the study period. Accordingly, the results indicate that Type I EL loss contingency disclosures within the Form 10-K were significantly higher than those within the AR in terms of quantity. Additionally, as indicated by the results reported in Table 4.14, significant changes in the differences in the quantity measure of Type I EL loss contingency disclosures between the AR and the Form 10-K were found for the

following consecutive years: 1989-1990, 1990-1991, 1991-1992, and 1995-1996.

TABLE 4.13

Wilcoxon Signed Rank Test for the Type I EL Quantity Measure Difference Between the AR and the Form 10-K

Test Statistics Variable	Z Score	P value (2-tailed)
EL88#10K - EL88#AR	12.298	0.000 *
EL89#10K - EL89#AR	12.412	0.000 *
EL90#10K - EL90#AR	12.975	0.000 *
EL91#10K - EL91#AR	13.200	0.000 *
EL92#10K - EL92#AR	12.794	0.000 *
EL93#10K - EL93#AR	12.445	0.000 *
EL94#10K - EL94#AR	11.745	0.000 *
EL95#10K - EL95#AR	11.490	0.000 *
EL96#10K - EL96#AR	10.239	0.000 *
EL97#10K - EL97#AR	9.990	0.000 *
EL98#10K - EL98#AR	10.416	0.000 *
EL99#10K - EL99#AR	10.726	0.000 *

* p value was ≤ .05.

Variable definitions:
EL_t#10K - EL_t#AR is the comparison between the number of sentences in the environmental loss contingency disclosures within the Form 10-K and the AR.

Accordingly, the null hypothesis was rejected for the consecutive years with significant differences; not rejected otherwise.

$H5_0$: There is no complementary association between the quantity of Type I OP loss contingency disclosures within the AR and those within the Form 10-K.

The Wilcoxon Signed Rank Test was used to provide additional information regarding the association between the quantity of Type I OP loss contingency

disclosures within the AR and the quantity within the Form 10-K for each year in the study period. Then, the Wilcoxon Signed Rank Test was used to determine whether there was a complementary association between the quantity measure

TABLE 4.14

Wilcoxon Signed Rank Tests for the Changes in the Differences of the Type I EL Quantity Measure Between the AR and the Form 10-K

Test Statistics Variable	Z Score	P value (2-tailed)
EL90#AR_10K - EL89#AR_10K	5.217	0.000 *
EL91#AR_10K - EL90#AR_10K	2.435	0.015 *
EL92#AR_10K- EL91#AR_10K	3.935	0.000 *
EL93#AR_10K - EL92#AR_10K	1.849	0.064
EL94#AR_10K - EL93#AR_10K	0.729	0.466
EL95#AR_10K - EL94#AR_10K	1.495	0.135
EL96#AR_10K - EL95#AR_10K	3.108	0.002 *
EL97#AR_10K - EL96#AR_10K	1.465	0.143
EL98#AR_10K - EL97#AR_10K	1.140	0.254
EL99#AR_10K - EL98#AR_10K	0.835	0.404

* p value was ≤ .05.

Variable definitions:
EL_t #AR_10K is the difference between the number of sentences in the environmental loss contingency disclosures within the AR and the Form 10-K.

of Type I OP loss contingency disclosures within the AR and those within the Form 10-K for each consecutive year in the study period. If there was no significant change in the difference between the quantity measures of Type I OP loss contingency disclosures within the AR and those within the Form 10-K, then it can be said that the AR and the Form 10-K had a complementary association with respect to Type I OP loss contingency disclosures in terms of quantity. Table

4.15 summarizes the results of the Wilcoxon Signed Rank Test for differences in the medians of the quantity measure of Type I OP loss contingency disclosures between the AR and the Form 10-K for each year in the study period. Table 4.16 summarizes the results of the Wilcoxon Signed Rank Test for changes in the differences in the quantity measure of the Type I OP loss contingency disclosures between the AR and the Form 10-K for each consecutive year in the study period.

TABLE 4.15

Wilcoxon Signed Rank Test for the Type I OP Quantity Measure Difference Between the AR and the Form 10-K

Test Statistics Variable	Z Score	P value (2-tailed)
OP88#10 - OP88#AR	8.187	0.000 *
OP89#10 - OP89#AR	8.663	0.000 *
OP90#10 - OP90#AR	7.714	0.000 *
OP91#10 - OP91#AR	8.232	0.000 *
OP91#10 - OP92#AR	6.200	0.000 *
OP93#10 - OP93#AR	7.692	0.000 *
OP94#10 - OP94#AR	7.576	0.000 *
OP95#10 - OP95#AR	6.471	0.000 *
OP96#10 - OP96#AR	5.955	0.000 *
OP97#10 - OP97#AR	6.169	0.000 *
OP98#10 - OP98#AR	6.466	0.000 *
OP99#10 - OP99#AR	5.913	0.000 *

* p value was ≤ .05.

Variable definitions:
OP_t#10 - OP_t#AR is the comparison between the number of sentences in the loss contingency disclosures associated with operational laws and regulations (i.e., non-environmental) within the Form 10-K and the AR.

First, as indicated by the results reported in Table 4.15, significant differences in the quantity measure of Type I OP loss contingency disclosures between the AR and the Form 10-K were found for each year in the study period. Accordingly, the results indicate that Type I OP loss contingency disclosures within the Form 10-K are significantly higher than those within the AR in terms of quantity. Additionally, as indicated by the results in Table 4.16, significant changes in the differences in the quantity measure of Type I OP loss contingency disclosures between the AR and the Form 10-K were not found for any of the consecutive years in the study period. Accordingly, the null hypothesis cannot be rejected.

TABLE 4.16

Wilcoxon Signed Rank Tests for the Change in the Differences of the Type I OP Quantity Measure Between the AR and the Form 10-K

Test Statistics Variable	Z Score	P value (2-tailed)
OP90#AR_10K - OP89#AR_10K	0.442	0.659
OP91#AR_10K - OP90#AR_10K	1.879	0.060
OP92#AR_10K - OP91#AR_10K	0.349	0.727
OP93#AR_10K - OP92#AR_10K	1.363	0.173
OP94#AR_10K- OP93#AR_10K	0.466	0.641
OP95#AR_10K- OP94#AR_10K	0.955	0.340
OP96#AR_10K - OP95#AR_10K	0.551	0.581
OP97#AR_10K - OP96#AR_10K	0.632	0.527
OP98#AR_10K - OP97#AR_10K	0.199	0.843
OP99#AR_10K - OP98#AR_10K	1.170	0.242

* p value was ≤ .05.

Variable definitions:
OP_t#AR_10K is the difference between the number of sentences in the loss contingency disclosures associated with operational laws and regulations (i.e., non-environmental) within the Form 10-K and the AR.

Hypothesis 6_0 and Hypothesis 7_0

Hypothesis 6_0 and Hypothesis 7_0 were analyzed to identify trends in the disclosure practices of loss contingencies associated with operational laws and regulations (Type I EL and Type I OP) in terms of quality. In particular, they were analyzed to determine whether there was a change in the quality measure of Type I EL and Type I OP loss contingency disclosures within the AR and the Form 10-K. Descriptive statistics relating to the data employed in hypotheses 6_o and 7_o are reported immediately below. The results of the statistical tests of hypotheses 6_o and 7_o are reported thereafter.

Descriptive Statistics

The descriptive statistics for the Type I EL and Type I OP loss contingencies for quality are summarized in Tables 4.17 and 4.18, respectively. As indicated by the results reported in Panel A of Table 4.17, the means of the quality measure of the Type I EL loss contingency disclosures within the AR increased each year from 1989 through 1998; then decreased slightly in 1999. As indicated by the results reported in Panel B of Table 4.17, the means of the quality measure for the Type I EL loss contingency disclosures within the Form 10-K increased each year from 1989 through 1995 and then, decreased each year from 1996 through 1999. In turn, as indicated by the results reported in Panel A of Table 4.17, the means of the quality measure of Type I OP loss contingency disclosures within the AR increased each year from 1989 through 1992 and then, after a slight decrease in 1993 and 1996, increased again until

TABLE 4.17

Descriptive Statistics- Type I EL -Quality Measure - AR and Form 10-K

Variable	N	Mean	Std. Deviation	Minimum	Maximum
Panel A – AR					
EL89QL	310	0.73	1.41	0	5
EL90QL	310	0.94	1.52	0	5
EL91QL	310	1.12	1.62	0	5
EL92QL	310	1.28	1.75	0	5
EL93QL	310	1.68	1.96	0	5
EL94QL	310	1.99	2.06	0	5
EL95QL	310	2.13	2.09	0	5
EL96QL	310	2.20	2.10	0	5
EL97QL	310	2.21	2.10	0	5
EL98QL	310	2.33	2.14	0	5
EL99QL	310	2.27	2.16	0	5
Panel B – Form 10-K					
EL89QL	310	2.43	1.76	0	5
EL90QL	310	2.58	1.74	0	5
EL91QL	310	2.80	1.76	0	5
EL92QL	310	2.95	1.80	0	5
EL93QL	310	3.08	1.80	0	5
EL94QL	310	3.15	1.74	0	5
EL95QL	310	3.16	1.78	0	5
EL96QL	310	3.09	1.75	0	5
EL97QL	310	3.08	1.71	0	5
EL98QL	310	3.08	1.72	0	5
EL99QL	310	3.04	1.74	0	5

1999. As indicated by the results reported Panel B of Table 4.18, the quality measure of Type I OP loss contingency disclosures within the Form 10-K increased each year from 1989 through 1995 and then, decreased each year from 1996 through 1999.

TABLE 4.18

Descriptive Statistics- Type I OP -Quality Measure - AR and Form 10-K

Variable	N	Mean	Std. Deviation	Minimum	Maximum
Panel A – AR					
OP89QL	310	1.56	1.58	0	5
OP90QL	310	1.62	1.61	0	5
OP91QL	310	1.71	1.64	0	5
OP92QL	310	1.87	1.69	0	5
OP93QL	310	1.84	1.66	0	5
OP94QL	310	2.01	1.71	0	5
OP95QL	310	2.18	1.73	0	5
OP96QL	310	2.14	1.71	0	5
OP97QL	310	2.19	1.67	0	5
OP98QL	310	2.17	1.64	0	5
OP99QL	310	2.25	1.67	0	5
Panel B – Form 10-K					
OP89QL	310	2.21	1.59	0	5
OP90QL	310	2.26	1.66	0	5
OP91QL	310	2.32	1.69	0	5
OP92QL	310	2.36	1.70	0	5
OP93QL	310	2.45	1.68	0	5
OP94QL	310	2.46	1.70	0	5
OP95QL	310	2.50	1.65	0	5
OP96QL	310	2.42	1.64	0	5
OP97QL	310	2.39	1.62	0	5
OP98QL	310	2.35	1.58	0	5
OP99QL	310	2.34	1.59	0	5

Results of Statistical Tests of Hypotheses

$H6_o$: There are no changes in the quality of Type I EL loss contingency disclosures within the AR and the Form 10-K.

The Wilcoxon Signed Rank Test was used to determine whether there was a change in the quality measure of Type I EL loss contingency disclosures within the AR and the Form 10-K for each consecutive year in the study period. Tables

4.19 and 4.20 summarize the results of the Wilcoxon Signed Rank Test for changes in the medians of the quality measure of the Type I EL loss contingency disclosures between each consecutive year in the study period within the AR and the Form 10-K, respectively.

TABLE 4.19

Wilcoxon Signed Ranks Test for Changes in the Quality Measure of Type I EL – AR

Variable	Z Score	P Value (2-tailed)
EL90QL - EL89QL	3.795	0.000*
EL91QL - EL90QL	3.044	0.002*
EL92QL - EL91QL	3.100	0.002*
EL93QL - EL92QL	5.527	0.000*
EL94QL - EL93QL	4.819	0.000*
EL95QL - EL94QL	2.959	0.003*
EL96QL - EL95QL	1.494	0.135
EL97QL - EL96QL	0.221	0.825
EL98QL - EL97QL	1.907	0.057
EL99QL - EL98QL	1.041	0.298

* p value was ≤ .05.

Variable definitions:
EL_t # is the number of sentences within the environmental loss contingency disclosures.

As indicated by the results reported in Table 4.19, significant differences in the medians of the quality measure of the Type I EL loss contingency disclosures within the AR were found for each consecutive year during 1989 through 1994. In turn, as indicated by the results reported in Table 4.20, significant differences in the medians of the quality measure of the Type I El loss contingency disclosures within the Form 10-K were found for each consecutive year from 1989 through

TABLE 4.20

Wilcoxon Signed Ranks Test for Changes in the Quality Measure of Type I EL - Form 10-K

Variable	Z Score	P value. (2-tailed)
EL90QL - EL89QL	2.394	0.017*
EL91QL - EL90QL	4.099	0.000*
EL92QL - EL91QL	2.919	0.004*
EL93QL - EL92QL	2.220	0.026*
EL94QL - EL93QL	1.267	0.205
EL95QL - EL94QL	0.574	0.566
EL96QL - EL95QL	1.491	0.136
EL97QL - EL96QL	0.329	0.742
EL98QL - EL97QL	0.189	0.850
EL99QL - EL98QL	0.872	0.383

* p value was ≤ .05.

Variable definitions:
EL_t # is the number of sentences within the environmental loss contingency disclosures.

1994 and then again from 1997-1998. Accordingly, the null hypothesis was rejected for the consecutive years with significant differences within the AR and the Form 10-K; not rejected otherwise.

$H7_o$: There are no changes in the quality of Type I OP loss contingency disclosures within the AR and the Form 10-K.

The Wilcoxon Signed Rank Test was used to determine whether there was a change in the quality measure of Type I OP loss contingency disclosures within the AR and the Form 10-K for each consecutive year in the study period. Tables 4.21 and 4.22 summarize the results of the Wilcoxon Signed Rank Test of changes in the medians of the quality measure of the Type I OP loss contingency disclosures between each consecutive year in the study period within the AR and the Form 10-K, respectively.

TABLE 4.21

Wilcoxon Signed Ranks Test for Changes in
Quality Measure of Type I – AR

Variable	Z Score	P value. (2-tailed)
OP90QL - OP89QL	0.926	0.355
OP91QL - OP90QL	1.334	0.182
OP92QL - OP91QL	2.340	0.019*
OP93QL - OP92QL	0.648	0.517
OP94QL - OP93QL	2.251	0.024*
OP95QL - OP94QL	2.377	0.017*
OP96QL - OP95QL	0.347	0.728
OP97QL - OP96QL	0.777	0.437
OP98QL - OP97QL	0.133	0.894
OP99QL - OP98QL	1.433	0.152

* p value was ≤ .05.

Variable definitions:
OP_t# is the number of sentences within the operational (i.e., non-environmental) loss contingency disclosures.

As indicated by the results reported in Table 4.21, significant differences in the medians of the quality measure of the Type I OP loss contingency disclosures within the AR were found for the following consecutive years: 1991-1992, 1993-1994, and 1994-1995. In turn, as indicated by the results reported in Table 4.22, significant differences in the medians of the quality measure of the Type I OP loss contingency disclosures within the Form 10-K were not found for any of the consecutive years. Accordingly, the null hypothesis was rejected for the consecutive years with significant differences within the AR; not rejected otherwise.

TABLE 4.22

Wilcoxon Signed Ranks Test for Changes in the Quality Measure of Type I OP -Form 10-K

Variable	Z Score	P value (2-tailed)
OP90QL - OP89QL	0.962	0.336
OP91QL - OP90QL	0.994	0.320
OP92QL - OP91QL	0.617	0.537
OP93QL - OP92QL	1.519	0.129
OP94QL - OP93QL	0.096	0.924
OP95QL - OP94QL	0.851	0.395
OP96QL - OP95QL	1.255	0.209
OP97QL - OP96QL	0.647	0.517
OP98QL - OP97QL	0.826	0.409
OP99QL - OP98QL	0.116	0.907

* p value was ≤ .05.

Variable definitions:
OP_t# is the number of sentences within the operational (i.e., non-environmental) loss contingency disclosures.

Hypothesis 8_0

Hypothesis 8_0 was analyzed to determine whether there was a complementary association between the environmental loss contingency disclosures (Type I EL) and other operational (i.e., non-environmental) loss contingency disclosures (Type I OP) in terms of quality. This was done by analyzing whether there was a change in the differences between these Types of loss contingency disclosures for each consecutive year in the study period, within the AR and the Form 10-K. Descriptive statistics relating to the data employed in analyzing hypothesis 8_0 are reported immediately below. The results of the statistical tests of hypothesis 8_0 are reported thereafter.

Descriptive Statistics

The descriptive statistics for the difference between the quality measure of the Type I EL and Type I OP loss contingency disclosures (EL_Op_tQ) for the AR and the Form 10-K are summarized in Tables 4.23 and 4.24, respectively.

TABLE 4.23

Descriptive Statistics of Difference Between the Type I EL and Type I OP Quality Measure- AR

Descriptive Statistics					
Variable	N	Mean	Std. Deviation	Minimum	Maximum
EL_OP89Q	310	-0.8323	1.8981	-5	5
EL_OP90Q	310	-0.6839	1.9567	-5	5
EL_OP91Q	310	-0.5903	2.0440	-5	5
EL_OP92Q	310	-0.5903	2.2098	-5	5
EL_OP93Q	310	-0.1548	2.3056	-5	5
EL_OP94Q	310	-0.0258	2.5325	-5	5
EL_OP95Q	310	-0.0484	2.5110	-5	5
EL_OP96Q	310	0.0645	2.5610	-5	5
EL_OP97Q	310	0.0194	2.6340	-5	5
EL_OP98Q	310	0.1548	2.5911	-5	5
EL_OP99Q	310	0.0290	2.5950	-5	5

As indicated by the results reported in Table 4.23, the means of the differences between the quantity measures of the Type I EL and Type I OP loss contingency disclosures within the AR show that Type I OP loss contingency disclosures are greater than Type I EL loss contingency disclosures for each year from 1989 until 1995. However, for the years 1996 through 1999, Type I EL loss contingency disclosures are greater than Type I OP loss contingency disclosures. In turn, as indicated by the results reported in Table 4.24, the means of the

TABLE 4.24

Descriptive Statistics of Difference Between the Type I EL and Type I OP Quality Measure- Form 10-K

Descriptive Statistics					
Variable	N	Mean	Std. Deviation	Minimum	Maximum
EL_OP89Q	310	0.2226	2.2351	-5	5
EL_OP90Q	310	0.3194	2.2850	-5	5
EL_OP91Q	310	0.4774	2.3117	-5	5
EL_OP92Q	310	0.5839	2.3396	-5	5
EL_OP93Q	310	0.6258	2.4419	-5	5
EL_OP94Q	310	0.6806	2.3671	-5	5
EL_OP95Q	310	0.6581	2.2952	-5	5
EL_OP96Q	310	0.6774	2.4094	-5	5
EL_OP97Q	310	0.6903	2.3277	-5	5
EL_OP98Q	310	0.7226	2.2884	-5	5
EL_OP99Q	310	0.6935	2.2540	-5	5

differences between the quality measures of the Type I EL and Type I OP loss contingency disclosures within the Form 10-K report that Type I EL loss contingency disclosures are greater than the Type I OP loss contingency disclosures during the entire study period.

Results of Statistical Tests of Hypothesis

$H8_0$: There is no complementary association between the quality of Type I EL loss contingency disclosures and Type I OP loss contingency disclosures within the AR and the Form 10-K.

The Wilcoxon Signed Rank Tests was used to determine whether there was a complementary association between the quality measure of the Type I EL and Type I OP loss contingency disclosures for each consecutive year in the study period within the AR and the Form 10-K. If there was no significant change in the

difference between the quality measures of the Type I EL and Type I OP loss contingency disclosures, then it can be said that Type I EL and Type I OP had a complementary association in terms of quality. Tables 4.25 and 4.26 summarize the results of the Wilcoxon Signed Rank Test for changes in the difference between the quality measure of the Type I EL and Type I OP loss contingency disclosures for each consecutive year in the study period within the AR and the Form 10-K, respectively.

As indicated by the results reported in Table 4.25, significant changes in the differences between the quality measures of the Type I EL and Type I OP loss contingency disclosures within the AR were found for the 1992-1993 consecutive years. In turn, as indicated by the results reported in Table 4.26, significant changes in the differences between the quality measures of the Type I EL and Type I OP loss contingency disclosures within the Form 10-K were found for the1990-1991consecutive years. Accordingly, the null hypothesis was rejected for the consecutive years that do not have significant differences within the AR and the Form 10-K; not rejected otherwise.

TABLE 4.25

Wilcoxon Signed Rank Test for Difference Between Type I EL and Type I OP Quality Measure- AR

Test Statistics Variable	Z Score	P value (2-tailed)
EL_OP90Q - EL_OP89Q	1.606	0.108
EL_OP91Q - EL_OP90Q	1.231	0.218
EL_OP92Q - EL_OP91Q	0.128	0.898
EL_OP93Q - EL_OP92Q	5.006	0.000 *
EL_OP94Q - EL_OP93Q	1.500	0.134
EL_OP95Q - EL_OP94Q	0.246	0.806
EL_OP96Q - EL_OP95Q	1.240	0.215
EL_OP97Q - EL_OP96Q	0.530	0.596
EL_OP98Q - EL_OP97Q	1.535	0.125
EL_OP99Q - EL_OP98Q	1.610	0.107

* p value was ≤ .05.

Variable definitions:
$EL\_OP_t\ Q$ is the difference between the quality of the environmental loss contingency disclosures and the operational loss contingency disclosures (i.e., non-environmental) within the AR.

TABLE 4.26

Wilcoxon Signed Rank Test for Difference Between the Type I EL and Type I OP Quality Measure- Form 10-K

Test Statistics Variable	Z Score	P value (2-tailed)
EL_OP90Q - EL_OP89Q	0.794	0.427
EL_OP91Q - EL_OP90Q	2.068	0.039 *
EL_OP92Q - EL_OP91Q	1.406	0.160
EL_OP93Q - EL_OP92Q	0.123	0.902
EL_OP94Q - EL_OP93Q	0.714	0.475
EL_OP95Q - EL_OP94Q	0.440	0.660
EL_OP96Q - EL_OP95Q	0.420	0.675
EL_OP97Q - EL_OP96Q	0.119	0.905
EL_OP98Q - EL_OP97Q	0.437	0.662
EL_OP99Q - EL_OP98Q	0.557	0.577

* p value was ≤ .05.

Variable definitions:
$EL\_OP_t\ Q$ is the difference between the quality of the environmental loss contingency disclosures and the operational loss contingency disclosures (i.e., non-environmental) within the Form 10-K.

Hypothesis 9_0 and Hypothesis 10_0

Hypotheses 9_0 and 10_0 were analyzed to determine whether there was a complementary association between the operational loss contingency disclosures (Type I EL and Type I OP) within the AR and those within the Form 10-K in terms of quality. Of particular concern was whether there was a change in the differences between the quality measures of Type I EL and Type I OP loss contingency disclosures within the AR and those within the Form 10-K. However, for additional information regarding the association between the quality of operational loss contingency disclosures (Type I EL and Type I OP) within the AR

and the quality within the Form 10-K, the qualitative data of Type I EL and Type I OP loss contingency disclosures between the AR and the Form 10-K were compared for each year in the study period. This was done to determine whether there was a difference in the quality measures of these Types of loss contingency disclosures between the AR and the Form 10-K. Descriptive statistics relating to the data employed in analyzing hypotheses 9_o and 10_o are reported immediately below. The results of the statistical tests of hypotheses 9_o and 10_o are reported thereafter.

Descriptive Statistics

The descriptive statistics for the difference in the quality measure between the AR and the Form 10-K for Type I EL and Type I OP loss contingency disclosures are summarized in Tables 4.27 and 4.28, respectively.

TABLE 4.27

Descriptive Statistics for the Difference in the Type I EL Quality Measure Between the AR and the Form 10-K

Descriptive Statistics Variable	N	Mean	Std. Deviation	Minimum	Maximum
EL89QAR_10K	310	-1.7000	1.7470	-5	4
EL90QAR_10K	310	-1.6452	1.7264	-5	3
EL91QAR_10K	310	-1.6742	1.7479	-5	5
EL92QAR_10K	310	-1.6677	1.7997	-5	5
EL93QAR_10K	310	-1.3935	1.8328	-5	5
EL94QAR_10K	310	-1.1581	1.7911	-5	5
EL95QAR_10K	310	-1.0290	1.6729	-5	4
EL96QAR_10K	310	-0.8903	1.7332	-5	5
EL97QAR_10K	310	-0.8677	1.8200	-5	5
EL98QAR_10K	310	-0.7484	1.7921	-5	5
EL99QAR_10K	310	-0.7613	1.8716	-5	5

TABLE 4.28

Descriptive Statistics for the Difference in the Type I OP Quality Measure Between the AR and the Form 10-K

Descriptive Statistics Variable	N	Mean	Std. Deviation	Minimum	Maximum
OP89QAR_10K	310	-0.6452	1.7038	-5	5
OP90QAR_10K	310	-0.6419	1.8269	-5	5
OP91QAR_10K	310	-0.6065	1.8079	-5	5
OP92QAR_10K	310	-0.4935	1.8394	-5	5
OP93QAR_10K	310	-0.6129	1.8587	-5	5
OP94QAR_10K	310	-0.4516	1.7834	-5	5
OP95QAR_10K	310	-0.3226	1.7879	-5	5
OP96QAR_10K	310	-0.2774	1.7937	-5	5
OP97QAR_10K	310	-0.1968	1.7395	-5	5
OP98QAR_10K	310	-0.1806	1.5866	-5	5
OP99QAR_10K	310	-0.0968	1.7581	-5	5

As indicated by the results reported in Tables 4.27 and 4.28, the means of the differences in the quality measure between the AR and the Form 10-K for both the Type I EL and Type I OP loss contingency disclosures report that these disclosures within the Form 10-K are greater than those within the AR the entire study period.

Results of Statistical Tests of Hypotheses

$H9_0$: There is no complementary association between the quality of Type I EL loss contingency disclosures within the AR and those within the Form 10-K.

The Wilcoxon Signed Rank Test was used to provide additional information regarding the association between the quality of Type I EL loss

contingency disclosures within the AR and the quality within the Form 10-K for each year in the study period. Then, the Wilcoxon Signed Rank Test was used to determine whether there was a complementary association between the quality measures of Type I EL loss contingency disclosures within the AR and those within the Form 10-K for each consecutive year in the study period. If there was no significant change in the difference between the quality measure of Type I EL loss contingency disclosures within the AR and those within the Form 10-K, then it can be said that the AR and the Form 10-K had a complementary association with respect to Type I EL loss contingency disclosures in terms of quality. Table 4.29 summarizes the results of the Wilcoxon Signed Rank Test for differences in the medians of the quality measure of the Type I EL loss contingency disclosures between the AR and the Form 10-K for each year in the study period. Table 4.30 summarizes the results of the Wilcoxon Signed Rank Test for changes in the differences in the quality measure of the Type I EL loss contingency disclosures between the AR and the Form 10-K for each consecutive year in the study period.

First, as indicated by the results reported in Table 4.29, significant differences in the quality measure of Type I EL loss contingency disclosures between the AR and the Form 10-K were found for each year in the study period. Accordingly, the results indicate that Type I EL loss contingency disclosures within the Form 10-K were significantly higher than those within the AR in terms of quality. Additionally, as indicated by the results reported in Table 4.30, significant changes in the differences in the quality measure of Type I EL loss

TABLE 4.29

Wilcoxon Signed Rank Test for the Type I EL Quality Measure - Between the AR and the Form 10-K

Test Statistics Variable	Z Score	P value (2-tailed)
EL89QL10 - EL89QLAR	12.089	0.000 *
EL90QL10 - EL90QLAR	11.970	0.000 *
EL91QL10 - EL91QLAR	12.028	0.000 *
EL92QL10 - EL92QLAR	11.791	0.000 *
EL93QL10 - EL93QLAR	10.355	0.000 *
EL94QL10 - EL94QLAR	9.326	0.000 *
EL95QL10 - EL95QLAR	8.984	0.000 *
EL96QL10 - EL96QLAR	7.725	0.000 *
EL97QL10 - EL97QLAR	7.483	0.000 *
EL98QL10 - EL98QLAR	6.455	0.000 *
EL99QL10 - EL99QLAR	6.419	0.000 *

* p value was ≤ .05.

Variable definitions:
EL_tQL10 - EL_tQLAR is the comparison between the quality of the environmental loss contingency disclosures within the Form 10-K and the AR.

contingency disclosures between the AR and the Form 10-K were found for the following consecutive years: 1992-1993, 1993-1994, 1994-1995, and 1995-1996. Accordingly, the null hypothesis was rejected for the consecutive years with significant differences; not rejected otherwise.

$H10_0$: There is no complementary association between the quality of Type I OP loss contingency disclosures within the AR and those within the Form 10-K.

The Wilcoxon Signed Rank Test was used to provide additional information regarding the association between the quality of Type I EL loss contingency

TABLE 4.30

Wilcoxon Signed Rank Tests for the Changes in the Type I EL Quality Measure Between the AR and the Form 10-K

Test Statistics Variable	Z Score	P value (2-tailed)
EL90QAR_10K - EL89QAR_10K	0.741	0.459
EL91QAR_10K - EL90QAR_10K	0.639	0.523
EL92QAR_10K - EL91QAR_10K	0.134	0.893
EL93QAR_10K - EL92QAR_10K	2.694	0.007 *
EL94QAR_10K - EL93QAR_10K	3.341	0.001 *
EL95QAR_10K - EL94QAR_10K	2.169	0.030 *
EL96QAR_10K - EL95QAR_10K	2.375	0.018 *
EL97QAR_10K - EL96QAR_10K	0.538	0.591
EL98QAR_10K - EL97QAR_10K	1.898	0.058
EL99QAR_10K - EL98QAR_10K	0.162	0.871

* p value was ≤ .05.

Variable definitions:
EL_t QAR_10K is the difference between the quality of the environmental loss contingency disclosures within the AR and the Form 10-K.

disclosures within the AR and the quality within the Form 10-K for each year in the study period. Then, the Wilcoxon Signed Rank Test was used to determine whether there was a complementary association between the quality measure of Type I OP loss contingency disclosures within the AR and those within the Form 10-K for each year in the study period. If there was no significant change in the difference between the quality measures of Type I OP loss contingency disclosures within the AR and those within the Form 10-K, then it can be said that the AR and the Form 10-K had a complementary association with respect to Type I OP loss contingency disclosures in terms of quality. Table 4.31 summarizes the results of the Wilcoxon Signed Rank Test for differences in the

medians of the quality measures of the Type I OP loss contingency disclosures between the AR and the Form 10-K for each year in the study period. Table 4.32 summarizes the results of the Wilcoxon Signed Rank Test for changes in the differences in the quality measure of the Type I OP loss contingency disclosures between the AR and the Form 10-K for each consecutive year in the study period.

TABLE 4.31

Wilcoxon Signed Rank Test for the Type I OP Quality Measure Difference Between the AR and the Form 10-K

Test Statistics Variable	Z Score	P value (2-tailed)
OP89QL10 - OP89QLAR	6.212	0.000 *
OP90QL10 - OP90QLAR	5.845	0.000 *
OP91QL10 - OP91QLAR	5.550	0.000 *
OP92QL10 - OP92QLAR	4.414	0.000 *
OP93QL10 - OP93QLAR	5.400	0.000 *
OP94QL10 - OP94QLAR	4.262	0.000 *
OP95QL10 - OP95QLAR	3.201	0.001 *
OP96QL10 - OP96QLAR	2.576	0.010 *
OP97QL10 - OP97QLAR	2.118	0.034 *
OP98QL10 - OP98QLAR	1.913	0.056
OP99QL10 - OP99QLAR	0.877	0.381

* p value was ≤ .05.

Variable definitions:
OP_tQL10 - OP_tQLAR is the comparison between the quality in the operational loss contingency disclosures (i.e., non-environmental) within the Form 10-K and the AR.

First, as indicated by the results reported in Table 4.31, significant differences in the quality measure of Type I OP loss contingency disclosures

between the AR and the Form 10-K were found for each year in the study period, except for 1998 and 1999. Accordingly, the results indicate that Type I OP loss

TABLE 4.32

Wilcoxon Signed Rank Tests for the Changes in the Differences of the Type I OP Quality Measure Between the AR and the Form 10-K

Test Statistics Variable	Z Scores	P value (2-tailed)
OP90QAR_10K - OP89QAR_10K	0.020	0.984
OP91QAR_10K - OP90QAR_10K	0.412	0.680
OP92QAR_10K - OP91QAR_10K	1.516	0.129
OP93QAR_10K - OP92QAR_10K	1.462	0.144
OP94QAR_10K - OP93QAR_10K	1.727	0.084
OP95QAR_10K - OP94QAR_10K	1.400	0.161
OP96QAR_10K - OP95QAR_10K	0.907	0.364
OP97QAR_10K - OP96QAR_10K	1.104	0.270
OP98QAR_10K - OP97QAR_10K	0.260	0.794
OP99QAR_10K - OP98QAR_10K	1.051	0.293

* p value was ≤ .05.

Variable definitions:
OP_t QAR_10K is the difference between the quality in the operational loss contingency disclosures (i.e., non-environmental) within the Form 10-K and the AR.

contingency disclosures within the Form 10-K were significantly higher than those within the AR in terms of quality. Additionally, as indicated by the results reported in Table 4.32, no significant changes in the differences in the quality measure of Type I OP loss contingency disclosures between the AR and the Form 10-K were found for any of the consecutive years in the study period. Accordingly, the null hypothesis cannot be rejected for any years in the study period.

Summary of Results

Objective 1 in terms of quantity: Generally speaking, the results of the tests of hypothesis 1_o indicate that the means of the quantity measure of the Type I EL loss contingency disclosures have increased since 1989 within the AR and the Form 10-K, although not every year in the study period. Similarly, the results of the test of hypothesis 2_o indicate that the means of the quantity measure of the Type I OP loss contingency disclosures have generally increased since 1989 within the AR and the Form 10-K, although not every year in the study period.

Objective 2 in terms of quantity (AR): Generally speaking, the results of the tests of hypothesis 3_o indicate that the means of the quantity measure of the Type I OP loss contingency disclosures were greater than the means of the quantity measure of the Type I EL loss contingency disclosures from 1989 through 1992 within the AR. Thereafter, the Type I EL loss contingency disclosures were greater than the Type I OP loss contingency disclosures. Additionally, the results indicate that there were significant changes in the differences between the quantity measures of the Type I EL and Type I OP loss contingency disclosures within the AR for the consecutive years 1992-1993 and 1993-1994. Accordingly, there was a complementary association between the Type I EL and Type I OP loss contingency disclosures in terms of quantity within the AR for all the years in the study period, except for the consecutive years 1992-1993 and 1993-1994.

Objective 2 in terms of quantity (Form 10-K): Generally speaking, the results of the tests of hypothesis 3 indicate that the means of the quantity

measures of the Type I OP loss contingency disclosures were greater than the means of the quantity measures of the Type I EL loss contingency disclosures in the entire study period. Additionally, the results indicate that there were significant changes in the differences between the quantity measures of the Type I EL and Type I OP loss contingency disclosures within the Form 10-K for the consecutive years 1989-1990, 1991-1992, and 1996-1997. Accordingly, there was a complementary association between the Type I EL and Type I OP loss contingency disclosures in terms of quantity within the Form 10-K for all the years in the study period, except for the consecutive years 1989-1990, 1991-1992, and 1996-1997.

Objective 3 in terms of quantity (Type I EL): The results of the tests of hypothesis 4 indicate that the means of the quantity measures of the Type I EL loss contingency disclosures within the Form 10-K were greater than those within the AR for the entire study period. Additionally, the results indicate that there were significant changes in the differences of the quantity measures of the Type I EL loss contingency disclosures between the AR and the Form 10-K for the consecutive years 1989-1990, 1990-1991, 1991-1992, and 1995-1996. Accordingly, there was a complementary association between the quantity measures of the Type I EL loss contingency disclosures within the AR and those within the Form 10-K for all years in the study period, except for the consecutive years 1989-1990, 1990-1991, 1991-1992, and 1995-1996.

Objective 3 in terms of quantity (Type I OP): The results of the tests of hypothesis 5 indicate that the means of the quantity measures of the Type I OP loss contingency disclosures within the Form 10-K were greater than those within

the AR for the entire study period. Additionally, the results indicate that there were no significant changes in the differences of the quantity measures of the Type I OP loss contingency disclosures between the AR and the Form 10-K during the entire study period. Accordingly, there was a complementary association between the quantity measures of the Type I OP loss contingency disclosures within the AR and those within the Form 10-K for all years in the study period.

Objective 1 in terms of quality: Generally speaking, the results of the tests of hypothesis 6 indicate that the quality measure of the Type I EL loss contingency disclosures have increased since 1989 within the AR and the Form 10-K, although not every year during the study period. Similarly, the results of the tests of hypothesis 7 indicate that the means of the quality measure of the Type I OP loss contingency disclosures have increased since 1989 within the AR and the Form 10-K, although not every year during the study period.

Objective 2 in terms of quality (AR): Generally speaking, the results of the tests of hypothesis 8 indicate that the means of the quality measures of the Type I OP loss contingency disclosures were greater than the means of the quality measures of the Type I EL loss contingency disclosures from 1989 through 1995 within the AR. Thereafter, the Type I EL loss contingency disclosures were greater than the Type I OP loss contingency disclosures. Additionally, the results indicate that there were significant changes in the differences between the quality measures of the Type I EL and Type I OP loss contingency disclosures within the AR for the consecutive year 1992-1993. Accordingly, there was a complementary association between the quality measures of the Type I EL and Type I OP loss

contingency disclosures within the AR for all years in the study period, except for the consecutive year 1992-1993.

Objective 2 in terms of quality (Form 10-K): The results of the tests of hypothesis 8 indicate that the means of the quality measures of the Type I EL loss contingency disclosures are greater than the means of the quality measures of the Type I OP loss contingency disclosures in the entire study period within the Form 10-K. Additionally, the results indicate that there were significant changes in the differences between the quality measures of the Type I EL and Type I OP loss contingency disclosures within the Form 10-K for the consecutive year 1990-1991. Accordingly, there was a complementary association between the Type I EL and Type I OP loss contingency disclosures in terms of quality within the Form 10-K for all years in the study period, except for the consecutive year 1990-1991.

Objective 3 in terms of quality (Type I EL): The results of the tests of hypothesis 9 indicate that the means of the quality measures of the Type I EL loss contingency disclosures within the Form 10-K were greater than those within the AR for the entire study period. Additionally, the results indicate that there were significant changes in the differences of the quality measures of the Type I EL loss contingency disclosures between the AR and the Form 10-K for the consecutive years 1992-1993, 1993-1994, 1994-1995, and 1995-1996. Accordingly, there was a complementary association between the quality measures of the Type I EL loss contingency disclosures within the AR and those within the Form 10-K for all years in the study period, except for the consecutive years 1992-1993, 1993-1994, 1994-1995, and 1995-1996.

Objective 3 in terms of quality (Type I OP): The results of the tests of hypothesis 10 indicate that the means of the quality measures of the Type I OP loss contingency disclosures within the Form 10-K were greater than those within the AR for the entire study period. Additionally, the results indicate that there were no significant changes in the differences of the quality measures of the Type I OP loss contingency disclosures between the AR and the Form 10-K in the entire study period. Accordingly, there was a complementary association between the quality measures of the Type I OP loss contingency disclosures within the AR and those within the Form 10-K for all years in the study period.

Summary

This chapter began with a description of the sample. Descriptive statistics relating to Type I EL and Type I OP loss contingency disclosures from the AR and the Form 10-K for each year in the study period and the results of the statistical test of each of the ten hypothesis were then provided. Chapter 5 provides a summary and implications of the results, the limitations and contributions of this study, and the suggestions for future research.

CHAPTER 5

CONCLUSIONS

This chapter is presented in four main sections. First, a summary and implications of the results is provided. Second, the limitations of this study are presented. Third, the contributions of this study are discussed. Finally, suggestions for future research are provided.

Summary and Implications of the Results

Trends in the disclosure practices of loss contingencies associated with operational laws and regulations (Type I EL and Type I OP) were analyzed in terms of quantity and quality within the AR and the Form 10-K. Of specific concern were:

(1) there was a change in the quantity and quality measures of Type I EL and Type I OP loss contingency disclosures within the AR and the Form 10-K for each consecutive year in the study period (hypotheses 1_o, 2_o, 6_o, and 7_o);

(2) there was a complementary association between the quantity and quality measures of the Type I EL and the quantity and quality measures of the Type I OP loss contingency disclosures within the AR and the Form 10-K (hypotheses 3_o, and 8_o); and,

(3) there was a complementary association between Type I EL and Type I OP loss contingency disclosures within the AR and those within the Form 10-K (hypotheses 4_o, 5_o, 9_o, and 10_o).

The summary and implications of the results of the tests of these hypotheses are presented in the following sections: Type I EL; Type I OP; and finally, the Association Between these two Type I EL and Type I OP.

Type I EL

Generally speaking, the results of the tests of hypotheses regarding the Type I EL loss contingency disclosures indicate that the means of the quantity and quality measures within the AR and the Form 10-K (Tables 4.1 and 4.17) have increased since 1989, although every consecutive year in the study period (Tables 4.3, 4.4, 4.19, and 4.20). This general increase in the quantity and quality of the Type I EL loss contingency disclosures was expected given the public pressure and authoritative attention on environmental liability reporting. Additionally, these results were consistent with prior research that found an increase in environmental disclosures associated with external events such as the Exxon *Valdez* oil disaster and the issuance of SAB No. 92 (e.g., Patten 1992; Gamble et al., 1995; Deegan and Gordon 1996; Walden and Schwartz 1997; Brown and Deegan 1998; and Stanny 1998). Although these studies did not examine the disclosure practices of environmental liability disclosures over an eleven-year time horizon ending in 1999, the general increase in these disclosures subsequent to the issuance of SAB No. 92 in 1993 was expected because of the continued attention on environmental liability reporting (e.g., issuance of SOP 96-1).

Additionally, the results of the tests of hypotheses indicate that the quantity and quality of the Type I EL loss contingency disclosures within the Form

10-K were always significantly higher than the quantity and quality within the AR during the study period (Tables 4.11, 4.13, 4.27, and 4.29). Interestingly, the means of the quantity and quality measures of the Type I EL loss contingency disclosures within the Form 10-K were higher in 1989 (the lowest year in the study) than the means of the quantity and quality measures within the AR in 1999 (the highest year in the study). Thus, the quantity and quality of the Type I EL loss contingency disclosures within the AR were never at the levels of those within the Form 10-K during the study period.

Furthermore, there were significant changes in the differences of the quantity measure of the Type I EL loss contingency disclosures between the AR and the Form 10-K during the period 1989 through 1992 and then again in 1995 through 1996 (Table 4.14). However, recall that the quantity within the AR was never larger than the quantity within the Form 10-K during the study period. During the period 1989 through 1992 (the period after the Exxon *Valdez* oil disaster and just prior to the issuance of SAB No. 92), the increases in the quantity of the Type I EL loss contingency disclosures within the Form 10-K were larger than the increases within the AR. During the period 1995 through 1996 (the period just prior to the issuance of SOP 96-1), the increase in the quantity of the Type I EL loss contingency disclosures within the AR was larger than the increase within the Form 10-K. In contrast, in the years that had no significant change in the differences of the quantity measure of the Type I EL loss contingency disclosures between the AR and the Form 10-K, it can be said that there was a complementary association. Thus, it appears that during the periods associated with public pressures and/or authoritative attention there is a change

in the differences between the quantity measure of the Type I EL loss contingency disclosures between the AR and the Form 10-K. Otherwise, there is a complementary association.

Finally, there were also significant changes in the differences in the quality measures of the Type I EL loss contingency disclosures between the AR and the Form 10-K. These differences occurred during the period 1992 through 1996 (Table 4.30). During this period (the period during the issuance of SAB No. 92 and just prior to the issuance of SOP 96-1), the increases in the quality of the Type I EL loss contingency disclosures within the AR were greater than the increases within the Form 10-K. However, within the AR there has not been a significant change in the quality of Type I EL loss contingency disclosures since 1995 (Table 4.19) and not within the Form 10-K since 1993 (Table 4.20). On the other hand, in the years that had no significant changes in the differences of the quality measure of the Type I EL loss contingency disclosures between the AR and the Form 10-K, it can be said that there was a complementary association.

The implications of a complementary association of either the quantity or quality measures, or both, of the Type I EL loss contingency disclosures between the AR and the Form 10-K depends on whether there is a change in how this loss contingency information is disclosed (i.e., the source of the information). Although both the public (SEC) and private (FASB) regulatory bodies require the reporting of loss contingencies, auditors have a limited responsibility to identify loss contingencies associated with operational laws and regulations (IAIs). Thus, if there is a complementary association of the environmental (Type I EL) loss contingency disclosures between the AR and the Form 10-K, given that research

has shown an increase in environmental loss contingency disclosures associated with certain external events (i.e., Exxon *Valdez* oil disaster, public pressure, authoritative attention), what are the implications of this increase within the AR for the auditors? In turn, given the 5/54 gap on one hand and the specific authoritative attention on environmental loss contingencies on the other, does the auditor still have the shield of protection offered by SAS No. 54 with respect to environmental loss contingencies?

Type I OP

Generally speaking, the results of the tests of hypotheses regarding the Type I OP loss contingency disclosures indicate that the means of the quantity and quality measures within the AR and the Form 10-K (Tables 4.2 and 4.18) have increased since 1989, although not significantly between each of the consecutive years in the study period (Tables 4.5, 4.6, 4.21, and 4.22). Prior research suggested that Type I OP loss contingency disclosures could either remain constant or increase depending on whether managers are less likely to disclose poor quality information (Verrecchia 1990) or, as Skinner (1994) suggests, managers may disclose bad news because stockholders may sue and the manager may incur reputational costs if they fail to disclose the bad news promptly. In turn, the general increase in the Type I OP loss contingency disclosures could suggest that there is a complementary association with the Type I EL loss contingency disclosures. This association was investigated in hypotheses 3_o and 8_o, which is presented in the next sub-section.

Additionally, the results of the tests of hypotheses indicate that the quantity of the Type I OP loss contingency disclosures within the Form 10-K was significantly higher than the quantity within the AR (Tables 4.12 and 4.15). The quality of the Type I OP loss contingency disclosures within the Form 10-K was always significantly higher than the quality within the AR, except for the years 1998 and 1999 (Tables 4.28 and 4.31).[13] Interestingly, the means of the quantity measure of the Type I OP loss contingency disclosures within the Form 10-K were higher in 1989 (the lowest year in the study) than the means of the quantity measure within the AR in 1999 (the highest year in the study). Thus, the quantity of the Type I OP loss contingency disclosures within the AR was never at the levels of those within the Form 10-K during the study period. The mean of the quality measure of the Type I OP loss contingency disclosures within the Form 10-K was higher in 1990 than the mean of the quality measure within the AR in 1999. Thus, the quality of the Type I OP loss contingency disclosures within the AR was only at the levels within the Form 10-K in 1989.

Furthermore, there were no significant changes in the differences of the quantity or the quality measure of the Type I OP loss contingency disclosures between the AR and the Form 10-K during the study period (Tables 4.16 and 4.32).[14] Thus, it can be said there is a complementary association in the quantity

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[13] Note that the quality measure within the Form 10-K was higher than the quality measure within the AR, but not significantly higher.

[14] Note; however, that within the AR there has not been a significant change in the quality of Type I OP loss contingency disclosures since 1995 (Table 4.21) and within the Form 10-K there was no significant change in quality during the study period (Table 4.22).

and quality measures of the Type I OP loss contingency disclosures between the AR and the Form 10-K during the study period.

The implications of a complementary association of either the quantity or quality measures, or both, of the Type I OP loss contingency disclosures between the AR and the Form 10-K depends on whether there is a change in how this loss contingency information is disclosed (i.e., the source of the information). Although both the public (SEC) and private (FASB) regulatory bodies require the reporting of loss contingencies, auditors have a limited responsibility to identify loss contingencies associated with operational laws and regulations (IAIs). Additionally, the implications of the complementary association of the Type I OP loss contingency disclosure between the AR and the Form 10-K also depends on whether there is a complementary association between Type I EL and Type I OP loss contingency disclosures within the AR and the Form 10-K. Given the increase in environmental loss contingency disclosures (Type I EL) associated with certain external events, if there is a complementary association between Type I EL and Type I OP loss contingency disclosures then it can be said that there is an association between Type I OP loss contingency disclosures and these certain external events (e.g., Exxon *Valdez* oil disaster, public pressure, authoritative attention). Again, what are the implications of these increases for the auditor? Given the 5/54 gap on one hand and the complementary association with Type I EL loss contingency disclosures on the other, does the auditor still have the shield of protection offered by SAS No. 54 with respect to non-environmental loss contingencies (i.e., Type I OP)? The issue

of whether there is a complementary association between Type I EL and Type I OP loss contingency disclosures is addressed in the sub-section immediately below.

Association between Type I EL and Type I OP

Generally speaking, the results of the tests of hypotheses regarding the complementary association between the quantity and quality measures of Type I EL loss contingency disclosures and Type I OP loss contingency disclosures within the AR and the Form 10-K indicate that there was a complementary association. There were no significant changes in the differences between the quantity measure of Type I EL and Type I OP loss contingency disclosures except for 1992-1993 and 1993-1994 within the AR (Table 4.9) and 1989-1990, 1991-1992, and 1996-1997 within the Form 10-K (Table 4.10). Also, there were no significant changes in the differences between the quality measures of Type I EL and Type I OP loss contingency disclosures except for 1992-1993 within the AR (Table 4.25) and 1990-1991 within the Form 10-K (Table 4.26). Thus, except for these consecutive years with significant changes in the differences, there was a complementary association between the quantity and quality measures of Type I El and Type I OP loss contingency disclosures within the AR and the Form 10-K.

Interestingly, the means of the differences between the quantity measures of the Type I EL and Type I OP loss contingency disclosures within the AR (Table 4.7) indicate that the Type I OP loss contingency disclosures were greater than the Type I EL loss contingency disclosures for each year from 1989 through

1992. Thereafter, during 1993 through 1999, this relationship changed and the quantity of the Type I EL loss contingency disclosures was greater than the Type I OP loss contingency disclosures. Accordingly, in the years prior to this change and in the years after this change, there was a complementary association between the quantity measures of the Type I EL and Type I OP loss contingency disclosures. Additionally, recall that in 1993 SAB No. 92 and EITF Issue No. 93-5 were issued; therefore this change was associated with this authoritative attention.

Furthermore, the means of the differences between the quantity measures of the Type I EL and Type I OP loss contingency disclosures within the Form 10-K (Table 4.8) indicate that Type I EL loss contingency disclosures were greater than Type I OP loss contingency disclosures during the entire study period. There were significant changes in the differences between the quantity measures in the Type I EL and Type I OP loss contingency disclosures in 1989-1990, 1991-1992, and 1996-1997 (Table 4.10). During 1989-1990 and 1991-1992 (the period subsequent to the Exxon *Valdez* oil disaster and prior to the issuance of SAB No. 92), the increases in the quantity of the Type I EL loss contingency disclosures were greater than the increases of the Type I OP loss contingency disclosures within the Form 10-K. However, during 1996-1997 (the period subsequent to the issuance of SOP 96-1), the increases in the quantity of the Type I OP loss contingency disclosures were greater than the increases of the Type I EL loss contingency disclosures within the Form 10-K.

Additionally, the means of the differences between the quality measures of the Type I EL and Type I OP loss contingency disclosures within the AR (Table

4.23) indicate that the Type I OP loss contingency disclosures were greater than the Type I EL loss contingency disclosures for each year from 1989 through 1995. Then, in 1996 through 1999 the quality of the Type I EL loss contingency disclosures was greater than the Type I OP loss contingency disclosures. Recall that in 1996 the AICPA issued SOP 96-1; however there was not a significant change in the differences in the consecutive years 1995-1996 (Table 4.25). There was a significant change in the difference between the quality measure of the Type I EL and Type I OP loss contingency disclosures in 1992-1993 (Table 4.25). During this period, the increase in the quality of the Type I EL loss contingency disclosures was greater than the increase in the quality of the Type I OP loss contingency disclosures within the AR. Otherwise, there was a complementary association between the quality measures of the Type I EL and Type I OP loss contingency disclosures within the AR.

Finally, the means of the differences between the quality measures of the Type I EL and Type I OP loss contingency disclosures within the Form 10-K (Table 4.24) indicate that Type I EL loss contingency disclosures were greater than Type I OP loss contingency disclosures during the entire study period. There was a significant change in the difference between the quality measures in the Type I EL and Type I OP loss contingency disclosures in 1990-1991 (Table 4.26). During this period, the increase in the quality of the Type I EL loss contingency disclosures was greater than the increase in the quality of the Type I OP loss contingency disclosures within the Form 10-K. Otherwise, there was a complementary association between the quality measures of the Type I EL and Type I OP loss contingency disclosures within the Form 10-K.

Limitations of this Study

The primary limitation of this study relates to the fact that data was limited to companies from industries that had been identified as having a relatively high potential for environmental liabilities. Accordingly, such companies may not be representative of companies in other industries. In this regard, the conclusions of this study should be interpreted in view of this limitation.

Contributions of this Study

The reporting of loss contingency disclosures, particularly environmental loss contingencies, has received much attention in the academic and popular press. In addition to this press attention, environmental liability reporting received authoritative attention from the SEC, FASB, and AICPA beginning in 1993 (E/L guidelines). Given the 5/54 gap and motivated by the issuance of the E/L guidelines, this study focused loss contingency disclosures associated with operational laws and regulations that lie within the 5/54 gap (Type I EL and Type I OP). In this regard, the contributions of this study are as follows. First, the results provided an eleven-year trend analysis on operational loss contingency disclosures B both environmental and non-environmental. Second, the results provided a comparison of these disclosure types between the AR and the Form 10-K. Third, the results provided a comparison between the Type I EL and the Type I OP loss contingency disclosures within the AR and the Form 10-K.

This study extended prior research in several ways. First, environmental loss contingency disclosures over an eleven-year time horizon were examined (versus a shorter time horizon associated with a specific external event). Second,

this study examined loss contingency disclosures associated with other operational laws and regulations (i.e., non-environmental). Third, this study analyzed the association between the environmental (Type I EL) and non-environmental (Type I OP) loss contingency disclosures to determine whether a complementary association existed.

Suggestions for Further Research

Future research should address the following important issues. First, it should analyze the trends of these disclosures types in industries that do not have a relatively high potential for environmental liabilities. Second, it should investigate whether differences in the reporting practices of these operational loss contingencies are associated with different auditing firms. Third, it should investigate the timing of the loss contingency disclosures relative to the settlement of the loss contingency. Fourth, it should extend the time horizon beyond 1999 to determine whether there continues to be a significant difference between environmental loss contingency disclosures and non-environmental loss contingency disclosures and whether the association continues to be a complementary association. Finally, it should examine whether there has been an increase in auditor litigation associated with loss contingencies associated with operational laws and regulations.

APPENDIX
SIC CODES

Appendix

The ten two-digit SIC codes that Barth and McNichols (1994) identified as having a relatively high potential for environmental liabilities. NYSE companies from these ten two-digit SIC codes were selected as the sample for this study.

2000 - Food and kindred products
2800 - Chemicals and allied products
2900 - Petroleum refining and related industries
3300 - Primary metal industries
3400 - Fabricated metals products, except machinery and computer equipment
3500 - Industrial and commercial machinery and computer equipment
3600 - Electronic and other electrical equipment and components, except computer equipment
3700 - Transportation equipment
3800 - Measuring, analyzing, and controlling instruments; photographic, medical and optical goods; watches and clocks
4900 - Utilities

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