

BEFORE THE MINNESOTA OFFICE OF ADMINISTRATIVE HEARINGS  
600 North Robert Street  
St. Paul MN 55101

FOR THE MINNESOTA PUBLIC UTILITIES COMMISSION  
121 7<sup>th</sup> Place East, Suite 350  
St Paul MN 55101-2147

IN THE MATTER OF THE APPLICATION OF  
ENBRIDGE ENERGY, LIMITED PARTERSHIP  
FOR A CERTIFICATE OF NEED FOR THE LINE  
3 REPLACEMENT PROJECT IN MINNESOTA  
FROM THE NORTH DAKOTA BORDER TO  
THE WISCONSIN BORDER

Docket No. PL9/CN-14-916  
OAH Docket No. 65-2500-32764

DIRECT TESTIMONY OF DAVID J. DYBDAHL

ON BEHALF OF

MINNESOTA DEPARTMENT OF COMMERCE  
DIVISION OF ENERGY RESOURCES

SEPTEMBER 11, 2017

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1     **I.    INTRODUCTION AND QUALIFICATIONS**

2     **Q.    Please state your name, occupation, and business address.**

3     A.    My name is David J. Dybdahl. I am president of American Risk Management Resources  
4            Network LLC. My business address is 7780 Elmwood Avenue, Suite 130, Middleton, WI  
5            53562.

6  
7     **Q.    What is your educational and professional background?**

8     A.    I have extensive experience in environmental risk management and insurance. I hold a  
9            bachelor’s and a master’s degree in risk management and insurance from the University  
10           of Wisconsin in Madison where I have been a guest lecturer on environmental risk  
11           management and insurance topics for over 35 consecutive years. I have been published  
12           in numerous journals and textbooks, including the chapter on Environmental Insurance  
13           in the Chartered Property and Casualty Underwriter (CPCU) 4, Commercial Liability, Risk  
14           Management and Insurance textbook, and authored and edited the chapters  
15           “Environmental Loss Control” in the Associate in Risk Management (ARM) textbook and  
16           the chapter on environmental claims in the Associate in Claims textbook. My complete  
17           *curriculum vitae* is attached at DER Ex. \_\_\_\_ at DD-1 (Dybdahl Direct).

1     **II.   PURPOSE AND SCOPE**

2     **Q.   What is the purpose of your testimony?**

3     A.   I have prepared an insurance and risk financing report for the Minnesota Department of  
4         Commerce (Department) to assist in its review of the proposed Enbridge Energy  
5         Partners Line 3 pipeline in MPUC Docket No. PL9/CN-14-916.

6  
7     **III.   REPORT**

8     **Q.   Please provide the report you prepared for the Department.**

9     A.   My report is attached testimony as DER Ex. \_\_\_\_ at DD-1 (Dybdahl Direct), and, together,  
10        comprise my Direct Testimony.

11

12    **Q.   Does this conclude your Direct Testimony?**

13    A.   Yes.

**A Risk Financing and Insurance Report  
on the  
Proposed Enbridge Line 3 Replacement**

Prepared for  
**The Minnesota Department of Commerce**

September 11, 2017

Prepared by:  
David J. Dybdahl Jr, MBA, CPCU, ARM  
President  
American Risk Management Resources Network LLC.  
7780 Elmwood Avenue, Suite 130  
Middleton, WI 53562

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## Executive Summary

### Background

This insurance and risk financing report was prepared for The Minnesota Department of Commerce (The State) to assist in its review of the proposed Enbridge Energy Partners (Enbridge) Line 3 pipeline. The estimated \$2.1 billion, 36-inch diameter steel pipeline will transverse approximately 337 miles across Minnesota from near Clearbrook in the Northwest to near Duluth in the east. Line 3 will transport approximately 760 barrels per day (bpd) of heavy crude oil from the tar sands reserves in Alberta, Canada to refineries in the U.S.

### Recommendations

In consideration of my research findings and conclusions, and based upon my 35 years of experience in the environmental insurance and risk management profession, I recommend:

- That Enbridge Incorporated agree to indemnify and hold harmless The State of Minnesota for pollution losses arising from the Line 3 pipeline. The indemnity obligation to The State of Minnesota should not be limited to the resources of Enbridge Energy Partners only;
- That Enbridge procures and maintains liability insurance, including Environmental Impairment Liability (EIL) insurance covering the Line 3 pipeline;
- The State of Minnesota should be named as an Additional Insured under both the General Liability (GL) insurance, and the recommended Environmental Impairment Liability insurance policies;
- Enbridge should maintain at least \$100,000,000 of GL insurance dedicated to Line 3. This GL coverage should include “time element” pollution or “sudden and accidental” exceptions to the pollution exclusion. The policy should include an automatic reinstatement of limits option or a \$200,000,000 policy aggregate. The required amounts of insurance should increase by \$10,000,000 every five years during the operation of Line 3; and
- In light of the recent \$85,000,000 adverse arbitration decision on the coverage for pipeline spills under the GL insurance purchased by Enbridge for the Line 6B spill, Enbridge should purchase \$100,000,000 of EIL insurance to specifically insure the proposed Line 3 under a dedicated limit of liability. This policy should include one automatic reinstatement of limits or a policy aggregate of \$200,000,000. This amount of insurance should increase \$10,000,000 every five years over the operation life of Line 3. Based upon my conversations with EIL underwriters I estimate that the price for this policy, on a new crude oil pipeline, 300 miles in length, would be in the range of \$450,000 annually. The estimated cost of a 3-year policy, sharing a single limit of liability, could be obtained for a single premium of approximately \$900,000. These premium estimates reflect the insurance market price for a new crude oil pipe line and are not specific to Enbridge.
- The insurance specifications for the recommended GL insurance and EIL insurance appear in Appendix A.



## Summary Of Research Findings

Upon review of the Environmental Impact Statement, Enbridge's financial statements and government sponsored oil spill response programs, I find and conclude that:

- Pipelines are the safest means of transportation for crude oil when measured on a per barrel basis;
- A pipeline leak has the potential to create the costliest clean-ups and other damages compared to alternative modes of crude oil transportation including trucks and trains;
- Enbridge on Line 6 had an oil spill in 2010 in the state of Michigan that cost the firm \$1.2 billion in expenses associated with the event;
- The alternative routes of Line 3 present many similar risks to the Line 6B pipeline in Michigan;
- Spills from a pipeline are inevitable. Spills can be caused by either equipment failure or human error; the risk of spills can never be completely engineered away;
- Much of the line 6B spill was attributed to human error overriding the engineered safety controls;
- Line 3 has the potential to do more environmental harm than Line 6B spill due to the remoteness of Line 3 and the pristine nature of the environment that Line 3 transects through;
- Enbridge paid the expenses associated with Michigan through a combination of partially recoverable GL insurance proceeds, cash reserves and profits from ongoing operations;
- The \$940 million of GL insurance coverage including coverage for pollution<sup>1</sup> that Enbridge currently purchases is less than the known loss cost of the \$1.2 billion Enbridge oil spill in 2010 on Line 6B in Michigan;
- The scope of the current "sudden and accidental pollution coverage" mentioned in the Enbridge financial statements is unknown at this time;
- There was coverage litigation associated with the Enbridge Line 6B spill in 2010 that highlights the insurance coverage ambiguity inherent in a GL insurance policy containing a Pollution Exclusion with limited exceptions to the exclusion;
- Subject to the Pollution Exclusion in the policy, the Enbridge GL insurance policies would be expected to insure "Property Damages" and would not include specific insurance coverage for clean-up costs, restoration costs, and natural resources damages normally associated with an oil spill;
- Controversy over these missing coverages in the GL insurance policies currently purchased by Enbridge lie at the core of the Line 6B insurance coverage arbitration which on May 2 2017 resulted in \$85 million in unrecovered insurance proceeds for the Line 6 B spill in 2010<sup>2</sup>;
- In contrast to the GL insurance policies which usually only apply to liability arising from "Property Damage", EIL insurance policies contain specific insurance coverage for "Clean-up Costs", "Restoration Costs" and "Natural Resources Damages" associated with an oil spill;
- The projected cost to purchase \$100,000,000 of EIL insurance dedicated to the new Line 3

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<sup>1</sup> EPA – Oil Spill Liability Trust Fund: <https://www.epa.gov/oil-spills-prevention-and-preparedness-regulations/oil-spill-liability-trust-fund>

<sup>2</sup> Enbridge Energy Partners' June 30 10Q Pg. 30, 15. Commitments and Contingencies – Continued, Insurance, Paragraph 2:  
[https://www.sec.gov/Archives/edgar/data/880285/000114420417040068/v470885\\_eep-10q.htm](https://www.sec.gov/Archives/edgar/data/880285/000114420417040068/v470885_eep-10q.htm)

- pipeline is \$450,000 annually or \$900,000 for a 3-year policy; and
- The estimated total available limits for EIL insurance on a new crude oil pipeline in the insurance market place exceeds \$200,000,000.

Because the permitted use of the Line 3 corridor is for unlimited duration, risk factors, which may be encountered decades into the future, need to be incorporated into the permitting process today. The State of Minnesota may not be able to change insurance and risk management requirements in the future once the permit is granted.

Future risk factors include:

- The potential (likely) down turn in the use of fossil fuels, in general, over time and less demand for tar sands source crude oil over time in particular;
- Reduced cash flow and profitability for Enbridge caused by a general down turn in the throughput of tar sands based crude oil in pipelines. The increased productivity of fracking based oil production near refineries in the United States, specifically in the Texas Permian Basin which has a current breakeven production price of \$35/bbl, as compared to tar sands oil with production costs today of \$43.31/bbl to high as \$70/bbl, without \$8/bbl transportation costs. These kinds of production price differentials put into question the future demand for tar sands source crude oil and its ability to compete on price or total carbon load with other sources of crude oil in the United States<sup>3</sup>;
- A general down turn in tar sands fossil fuel business would lead to the reduced ability of Enbridge to maintain robust safety and loss control protocols over time, increasing the likelihood of human error causing a spill;
- Over time, without the financial resources to upgrade the aging pipe line systems, the legacy pipelines would become more prone to spills; and
- In the above scenario, Enbridge may not have the liquid assets that the company has today to pay for a significant spill, at the same time they are more likely to have a spill due to an aging infrastructure and poorer loss control procedures.

## Qualifications Of The Author

What is your experience in environmental risk management and insurance?

I have extensive experience in environmental risk management and insurance. I hold a bachelor's and a master's degree in risk management and insurance from the University of Wisconsin Madison where I have been a guest lecturer on environmental risk management and insurance topics for over 35 consecutive years. I have been published in numerous journals and textbooks, including the chapter on Environmental Insurance in the Chartered Property and Casualty Underwriter (CPCU) 4, *Commercial Liability, Risk Management and Insurance* textbook, and authored and edited the chapters "Environmental Loss Control" in the *Associate in Risk Management (ARM)* textbook and the chapter on environmental claims in the *Associate in Claims* textbook. My Curriculum Vitae is attached in Appendix C.

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<sup>3</sup> Forbes, Texas' Permian Basin: An Oil and Natural Gas Production Machine; Clemente, Jude (February 12, 2017) <https://www.forbes.com/sites/judeclemente/2017/02/12/texas-permian-basin-an-oil-and-natural-gas-production-machine/2/#33227d0329c1>  
Oil Sands Magazine (February 9, 2017) <http://www.oilsandsmagazine.com/news/2017/2/9/oil-sands-breakeven-prices-decline-since-2015>

Have you advised public entities on environmental risk management and insurance topics in the past?

My past work includes advising and providing technical information on environmental insurance to the U.S. Department of Defense, the U.S. Environmental Protection Agency, the U.S. Department of Justice and the U.S. Department of Energy. Directly related to this work for The State of Minnesota, I was the author of An Insurance and Risk Management Report on the Proposed Enbridge Pumping Station which was prepared for The Dane County Zoning and Land Regulation Committee and submitted for review on April 8, 2015. Many of the risk and insurance topics associated with Enbridge Line 61 in Dane County parallel the risks and insurance topics associated with Line 3 in Minnesota.

Are you familiar with the GL and environmental insurance topics associated with the replacement and operation of Line 3?

I have served as an expert witness on over one billion dollars in litigated and arbitrated insurance coverage cases involving environmental damage losses in both state and federal courts. In my profession as an insurance broker, I have placed thousands of environmental insurance policies into the global insurance market place. These environmental insurance policies insured risks ranging from mold in a single-family home to the clean-up operations of the Chernobyl nuclear disaster in the Ukraine. I have worked with environmental insurance products on a day to day basis for 35 years.

### **The Objective Of This Risk Management Overview**

The objective of this risk management overview is to provide The State of Minnesota with information on the financial capacity of Enbridge to address the clean-up costs and other potential damages resulting from an oil spill over the operational life of the upgraded Line 3 pipeline.

The State of Minnesota seeks assurances that:

- The permittee of the Line 3 pipeline has the financial resources to ensure the timely remediation and restoration of the environment in the event of a pipe line spill;
- That money will be available to compensate the stakeholders in The State of Minnesota for the damages that the citizens may incur as a result of an oil spill on Line 3; and
- There will be no unfunded potential liability or expense incurred by The State of Minnesota arising from the operation of Line 3 within The State of Minnesota.

The primary focus of this report is financing the cost of a spill from Line 3. Indirect costs to third parties from a pipeline accident that affects unrelated, but interconnected activity and business, such as tourism, can be a significant loss exposure arising from a spill, but are not accounted for in this report.

### **Observations On The Line 3 Risks**

At the present time, Enbridge has access to adequate financial resources through cash and insurance to fund the clean-up of a likely loss scenario caused by a release from Line 3 in Minnesota. However, due to the duration of the operational permit for Line 3 and unavoidable risk factors inherent in the Enbridge

business model, I recommend an enduring risk financing protocol, which is back stopped by enhanced commercial insurance. The specifications for this insurance are detailed in Appendix A.

The operation of pipelines to transport crude oil to refineries is an important part of the current fossil fuel based energy economy in the United States.

Alternative forms of transporting crude oil to refineries, including trucks and rail, are inadequate to handle the volume of oil currently used to meet the energy demands of the economy in the U.S.

Pipelines are the safest way to transport oil when measured on a risk per barrel transported basis. However, pipeline also have the costliest spills.

Replacing an aging Line 3 pipeline, as is being proposed, would be expected to reduce the risk of a spill in The State of Minnesota.

All pipelines have an inherent risk of spills in their operations. The risk of having a spill cannot be completely engineered away because of the ever-present potential for human error contributing to, or causing a spill event.

Enbridge incurred the costliest on land spill of oil on record in 2010 on Line 6B in Michigan. The full cost of this event to Enbridge was \$1.2 billion dollars. Much of the blame for this spill can be placed on human error. This report provides a summary of the root causes behind Enbridge Line 6B spill in 2010 as compiled by the U.S. National Transportation Safety Board. Human error combined with aging infrastructure was the root cause of the Line 6B spill.

The Enbridge Line 3 pipeline will transverse over hundreds of miles of remote and pristine land in Minnesota. Line 3 crosses over more than fifty waterways including the head waters of the Mississippi river. The environmental impact of a spill on an inland waterway in Minnesota could reasonably be expected to produce environment damages similar to the Enbridge Line 6B spill in Michigan. The costliest oil spill clean-ups on land are associated with pipelines near water. There is a significant amount of water along the proposed Line 3 alternative routes.

The Environmental Impact Statement in Chapter 10 .1.3.3.2 contains this analysis on the probability that there will be a spill on Line 3:

*“Using a conservative (cautionary over-estimating) approach, it was estimated that the volumes of spillage in the seven hypothetical Line 3 spill scenarios—ranging from 8,625 bbl to 16,239 bbl—might be expected once in 26 to 99 years somewhere in the State of Minnesota. This does not indicate that the incidents would occur at the specific sites selected for modeling”.*

Due to the environmental conditions in the Line 3 right of way, it is conceivable that a 16,239 bbl release which is similar in volume to the actual 2010 Line 6B spill, into a water way along the Line 3 route, would produce similar remediation costs to those incurred in the Line 6B in today’s dollars at any point in time into the future.

Enbridge eventually paid for all of the costs associated with the 2010 Line 6B spill. However, state and federal agencies emergency responders did tap into Federal oil spill trust fund dollars to respond to the Line 6B spill. Enbridge repaid those amounts into the fund.

Where Enbridge has the proven ability to fund a major clean-up plus fines and penalties arising from a pipeline release of crude oil into a water way, it is unlikely that that ability of the company to pay for major spills will remain stable over time. Changes in the business climate that Enbridge must operate in and the potential to have multiple large spill events over a short period of time, need to be accounted for in developing a risk financing strategy for the proposed Line 3.

Multiple spill events in the same year have occurred in the history of Enbridge. In 2010, Enbridge had two spill events that set records for the cost of inland oil spills. A release from any operation within Enbridge effects the ability of the firm to pay for a second spill occurring in close timing to the first. Any risk financing strategy should anticipate the chance that there could be multiple spills in close timing to one another.

Enbridge has inherent, unavoidable, and potentially unaffordable large scale environmental risks in its current operations. Enbridge currently operates the 64-year-old Line 5 pipeline which crosses the Straits at Mackinac which is the out flow of Lake Superior and Lake Michigan in to Lake Huron on the Great Lakes.

Crude oil spills on big water are much more expensive to remediate than spills on land. The BP Deepwater horizon spill cost BP more than \$50 billion for example.

Due to the volume of water, depth and strong currents at the Straits of Mackinac, a spill from the Line 5 pipeline into the Great Lakes would be reasonably be expected to cost considerably more to remediate than the Line 6B spill, simply because of the scale of the impacted water on the Great Lakes.

A loss from operations unrelated to Line 3 could affect the ability of Enbridge to pay for a loss on Line 3. A major spill arising from Line 5 could easily exceed the ability of Enbridge to pay for the clean-up costs. In which case, the funds of Enbridge will have been depleted, leaving no available assets to pay for a spill on Line 3, or a major spill anywhere else on the 17,000 miles of pipelines operated by various Enbridge companies.

The recommended insurance requirements for Line 3 when combined with the \$1billion Oil Spill Liability Trust Fund, equal the \$1.2 billion costs of the Line 6B spill in 2010.

The 2016 annual report of Enbridge indicates that Enbridge purchased \$940,000,000 in GL insurance that included "sudden and accidental" pollution liability coverage. The extent of the pollution coverage in the Enbridge GL insurance coverage has not been evaluated for this report.

In practice, GL policies have contained exclusions for losses arising from pollution since the 1970's. Pollution coverage within the context of a GL insurance policy is customarily provided as an exception to an "absolute" pollution exclusion. By excluding the exclusion for narrowly defined pollution events, there is remnant GL insurance protection for bodily injury and property damage claims arising from a pipe line spill.

It is common practice for companies in the oil and gas business to solely rely upon a limited exception to the pollution exclusion in their GL insurance policies to insure the loss costs associated with a pipeline spill. This risk management strategy proved to be flawed for Enbridge in the Line 6B spill in Michigan. Multiple insurance companies providing \$145,000,000 of coverage in the overall \$640,000,000 GL insurance program purchased by Enbridge in 2010, decided that the Line 6B spill was not a covered loss under the terms of the policy.

The decision by one insurance company to not pay its insurance policy limits on the \$1.2 billion Line 6B loss

put the insurance company and Enbridge into binding arbitration. Of the \$145,000,000 of limits that refused to pay for the Line 6B loss, all but one insurance company, after more than six years of insurance coverage legal disputes, ultimately paid the claim made by Enbridge for the Line 6B loss.

On May 2, 2017, the arbitrator brought in to resolve the Line 6 claim and insurance coverage dispute made a determination that the insurer providing \$85,000,000 in limits as part of the overall \$640,000,000 in total GL limits purchased by Enbridge in 2010, did not have to pay the pollution damages claim for the Line 6B spill.

The \$85,000,000 insurance policy was a mid-level layer of limits of liability in \$640,000,000 tower of insurance coverage assembled to insure Enbridge in 2010. If all of the layers of coverage included the same terms and conditions, which would be the normal practice in the insurance business, then the \$85,000,000 adverse coverage determination on the Line 6B loss puts into question the recoverability of clean-up costs and associated damages on any current or future insurance policy with the same policy language contained in the 2010 GL policy.

My research into the standard policy terms and conditions in the GL insurance policies sold to large companies in the oil and gas business indicates there has been little change in the policy language provided since 2010. Therefore, the current GL insurance program could have the same policy language that lead to the adverse coverage determination for the Line 6 B claim. If that is the case, which has not been evaluated for the preparation of this report, then the current GL coverage carried by Enbridge is suspect in its coverage for an oil spill.

The meaning and effect of pollution exclusions in GL insurance policies has led to more litigated insurance coverage cases than any clause in the 400-year history of insurance. The above situation reveals the flaws in an insurance program design that relies on narrowly defined exceptions to pollution exclusions within a GL policy for the clean-up costs of an oil spill.

Due to the proven unreliability of the Enbridge GL insurance to cover claims arising from a pipeline spill, I recommend that Enbridge also insure Line 3 under a true environmental insurance policy with a \$100,000,000 limit of liability. A genuine environmental insurance policy will provide specific coverage for clean-up costs arising from a release of contaminates from the pipe line within the insuring agreements. Where genuine environmental insurance will not replace the need for GL insurance, it will shore up potential coverage gaps in the pollution coverage provided by the nebulous exception to the common "absolute" pollution exclusion found in virtually all GL insurance policies sold since the 1970's.

## **Overview Of Risk Management Considerations**

### **The Historical Risk Of Spills And Clean-up Costs In Crude Oil Pipelines**

The historical record of oils spills from 2010 to July 2011 in the U.S. suggests that pipeline spill accidents are sufficiently common and expensive to require serious consideration by the State of Minnesota in a decision to issue a permit for Line 3.

At the federal level, pipeline safety is regulated by the Pipeline Hazardous Material Safety Agency (PHMSA) within the U.S. Department of Transportation, which requires that pipeline companies file accident reports when there is a release, explosion, fire, death, injury or property damage, as specifically provided in PHMSA's regulations:

*An accident report is required for each failure in a pipeline system subject to this part in which there is a release of the hazardous liquid or carbon dioxide transported resulting in any of the following:*

*(a) Explosion or fire not intentionally set by the operator.*

*(b) Release of 5 gallons (19 liters) or more of hazardous liquid or carbon dioxide, except that no report is required for a release of less than 5 barrels (0.8 cubic meters) resulting from a pipeline maintenance activity if the release is:*

*(1) Not otherwise reportable under this section;*

*(2) Not one described in § 195.52(a)(4);*

*(3) Confined to company property or pipeline right-of-way; and*

*(4) Cleaned up promptly;*

*(c) Death of any person;*

*(d) Personal injury necessitating hospitalization;*

*(e) Estimated property damage, including cost of clean-up and recovery, value of lost product, and damage to the property of the operator or others, or both, exceeding \$50,000.<sup>4</sup>*

PMHSA's publicly accessible accident records for the period January 1, 2000 to July 31, 2017 for hazardous liquid pipelines in the U.S. carrying crude oil were compiled for use in this report. PHSMA maintains separate data files for other types of pipelines that transport related products such as natural gas and refined oil, but due to their distinguishing characteristics, these other types of pipelines are not included in the summaries.

The salient data from PHSMA's files are shown in the following two tables. TABLE 1 summarizes all reported accidents in reviewed time period for all hazardous oil pipelines, and TABLE 2 summarizes all reported accidents for only Enbridge Inc.'s various divisions, subsidiaries, partnerships and affiliates.<sup>5</sup> In both tables, Column A shows the total barrels reported for unintended releases of crude oil and Column B shows the reported cost to remediate the release in the relevant time period, excluding the cost to the company for lost commodity product.

With regard to TABLE 1 for all companies, there were 1,497 reported accidents in the time period covered. In that period, the total releases were 250,120 barrels of crude oil, which cost \$1,733,389,975 to remediate. The average release involved 167 barrels and cost \$1,159,364 to cleanup. The maximum event released 20,600 barrels as reported in 2013 from a pipeline owned by Tesoro High Plains Pipeline Company. The maximum remediation cost was \$817,400,000 incurred by Enbridge for an accident that began in 2010 on Line 6 B. Of the 1,497 total accidents, 85 of those accidents cost more than \$1 million to remediate, again exclusive of commodity losses, or 5.7% of the total accidents.

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<sup>4</sup>49 C.F.R. §195.50.

<sup>5</sup>Enbridge Inc., is the parent company, domiciled in Ontario, Canada, that effectively controls 17,511 miles of crude oil pipelines and ancillary equipment and property in North America through a series of divisions, subsidiaries, partnerships and affiliates in order to manage its operations, attract capital on favorable terms, minimize its tax liability and shield its assets. None of these downstream entities operate autonomously of the parent. Instead, they reflect to one degree or another the economic dynamics and financial imperatives operating on Enbridge Inc.

<b>TABLE 1</b>		
<b>Reported Accidents by All U.S. Crude Oil Pipeline Companies January 1, 2010 to July 31, 2017 – 1,497 Accidents</b>		
	<b>(a) Uncontrolled Releases (barrels)</b>	<b>(b) Cost to Remediate (excluding Commodity Losses)</b>
<b>Total</b>	250,120	\$1,733,389,975
<b>Average</b>	167	\$1,157,909
<b>Maximum</b>	20,600	\$817,400,000

In TABLE 2, which is for Enbridge related entities only, there were 114 reported accidents in that time frame, or 7.6% of the total crude oil pipeline accidents by all pipeline companies. In that period, Enbridge's total releases were 250,120 barrels of crude oil, which were reported to cost \$1,733,389,975 in total to remediate, or 16.2% of the total costs for all crude oil pipeline accidents. The average release involved 167 barrels and reportedly cost \$1,159,364 to cleanup. The maximum event released 20,082 barrels, which it reported to PHMSA in 2010. Enbridge's maximum remediation cost was \$817,400,000 for the same accident. For all of Enbridge's reported accidents, nine cost more than \$1 million to clean up, or 7.9% of its total accidents.

<b>TABLE 2</b>		
<b>Reported Accidents by All Enbridge's Crude Oil Pipeline Entities January 1, 2010 to July 31, 2017 – 114 Accidents</b>		
	<b>(a) Uncontrolled Releases (barrels)</b>	<b>(b) Cost to Remediate (w/o Commodity Losses)</b>
<b>Total</b>	40,473	\$908,496,332
<b>Average</b>	355	\$7,969,266
<b>Maximum (Enbridge Line 6)</b>	20,082	\$817,400,000

These previous tables reflect the total tabulated data of reported accidents since 2010. The next two tables disaggregate those total values for number of accidents, uncontrolled releases and the cost to remediate by year. TABLE 3 shows the annual data for all U.S. crude oil pipeline companies.



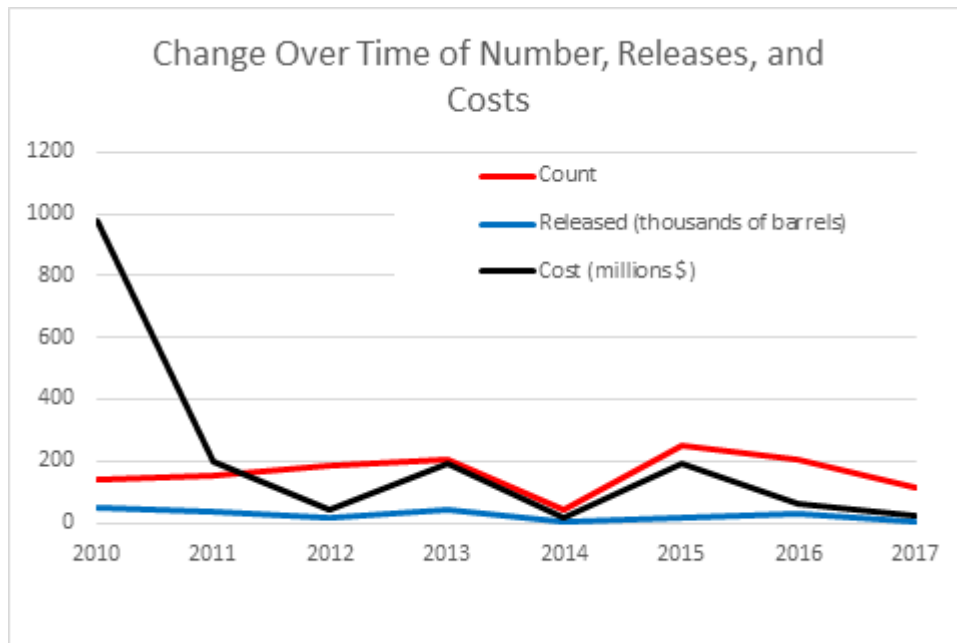
<b>TABLE 3</b>		
<b>Reported Accidents by All U.S. Crude Oil Pipeline Companies Each year from 2010 to 2017*</b>		
(a) <b>Number per year</b>	(b) <b>Uncontrolled Releases barrels</b>	(c) <b>Cost to Remediate (w/o Commodity Loses)</b>
2017	117	35,985
2016	204	30,839
2015	252	19,632
2014	45	6,058
2013	203	39,212
2012	183	15,844
2011	150	36,404
2010	143	50,511

TABLE 4 shows the same data for Enbridge and its associated entities over the same time period, along with

Enbridge's results compared as a percent to the total of all U.S. pipeline companies.

<b>TABLE 4</b>						
<b>Reported Accidents by Enbridge and Associated Entities Each Year from 2010 to 2017*</b>						
	<b>Number</b>	<b>%</b>	<b>Uncontrolled Releases Barrels</b>	<b>%</b>	<b>Cost to Remediate</b>	<b>%</b>
2017	5	4.3%	578	1.6%	\$ 6,328,475	26.7%
2016	6	2.9%	259	0.8%	\$ 289,718	0.5%
2015	21	8.3%	49	0.3%	\$ 2,102,181	1.1%
2014	5	11.1%	37	0.6%	\$ 396,078	2.6%
2013	20	9.9%	2,476	6.3%	\$ 18,358,750	9.7%
2012	14	7.7%	4,257	26.9%	\$ 19,560,481	46.9%
2011	11	7.3%	452	1.2%	\$ 879,297	0.4%
2010	21	14.7%	31,591	62.5%	\$ 858,933,471	88.1%

\* 2017 for Jan 1 to July 31 only



The line 6B spill into a stream in 2010 illustrates how much more expensive it is to clean up oil in water than it is on land. Northern Minnesota has a lot of water.

### Required Liability Insurance As A Risk Management Tool

Insurance is the de facto risk governance mechanism used by parties to gauge the risks of certain endeavors in commerce. The insurance industry is global in scope and is capable of incorporating knowledge of new risks into the cost of insurance within hours of the new information becoming available in any part of the world.

As a case in point, through the global reinsurance market, where insurance companies insure other insurance companies, every fire insurance policy sold in Minnesota incorporates the knowledge of fire losses from all parts of the globe. Implicitly the global knowledge about the probability and cost of fires is incorporated into the availability and cost of fire insurance on a building in Minnesota.

A common example of the efficiency of the insurance mechanism to evaluate and price risk is a banker requiring a borrower to maintain fire insurance on a building the banker is lending money on. By requiring fire insurance on the building, the banker does not need to evaluate the relative riskiness of the building being damaged by a fire, the insurance underwriter has already made that determination in the insurance premium charged to insure the building.

If the risk of a fire on the building is low, the insurance premium will be low in relative terms. If the risk of a fire leading to an insurance claim is high, the premium charged for fire insurance will be high. If the risk of fire is so high that it makes the building uninsurable in the informed opinion of the insurance underwriter, the banker will not make the loan because bankers always require hazard insurance to protect their security interest in the properties they lend money on.

By simply requiring fire insurance on the building, the banker accesses the global knowledge base of the insurance industry on the relative risk of fires specifically on the building the loan will be made on. As an added benefit for the banker and the borrower, if there is a fire, there will be insurance coverage to pay for the repairs to the building or to pay off the loan. The banker does not need to know anything about fire hazards to manage the fire risk on the building. A simple go or no go on the lending decision relative to the risk that the building will have a fire can be based on the ability of the borrower to obtain fire insurance. Requiring insurance on the building is all the banker needs to do to harness the collective wisdom of thousands of fire risk management practitioners in the insurance industry around the globe.

In a similar fashion to the banker accessing the insurance industry's vast expertise in fire risks simply by requiring fire insurance on the buildings they lend money on, The State of Minnesota can harness the knowledge of the insurance underwriting community on the spill risks of pipelines simply by requiring a relatively small amount of spill insurance on the proposed new Line 3 pipeline.

Insurance has been utilized in commerce for more than 400 years. Insurance is the one financial mechanism that can be counted on to endure for decades into the future. Insurance is a dynamic financial tool that is able to quickly adapt to new information on risks over time. Simply by requiring insurance be maintained on Line 3 station, the global knowledge base in the insurance industry on the relevant risks of pipeline spills will be accessed by the stakeholders in Line 3 on an annual basis.

Therefore, I am recommending that minimum amounts of liability insurance be maintained by Enbridge over the life of the Permit.

### **Reasons to Incorporate Insurance Requirements Into The Permit Approval Process**

There are compelling reasons for The State of Minnesota to require liability insurance including EIL insurance as a condition of permit approval:

- The insurance underwriting process is an independent and objective evaluation of the environmental risks associated with Line 3;
- The availability of insurance serves as a canary in the coal mine indicator of the relative risk of an operation or firm. If a firm cannot obtain insurance for a business activity because the activity is uninsurable, or the firm itself is uninsurable, in the multi-billion-dollar global insurance market place, it opens the question of, as a matter of public policy, should the activity be allowed?

### **Determining the Risk of a Line 3 Spill - Maximum Probable Loss**

To accomplish the goals of this report, an objective measure of the potential costs resulting from a spill from Line 3 in The State of Minnesota must be made. As a benchmark for a Maximum Probable Loss scenario, I used the \$1.2 billion cost already incurred by Enbridge due to the 2010 oil spill from Line 6B in Michigan. The Line 3 risks are similar in scale to Line 6B due to Line 3 being a high-pressure pipeline crossing multiple inland water ways.

On Line 6B a 6½ -foot rupture on July 25<sup>rd</sup>, 2010 released somewhere between 819,000 gallons to more than 1 million gallons of diluted bitumen (known as tar sand oil) that contaminated two miles of Talmadge

Creek, which feeds into the Kalamazoo River. The heavier than water oil sank and coated almost 36 miles of river bottom from the point where it sank, making it exceedingly difficult to clean up, unlike conventional oil that floats on water and can be readily skimmed. A 241-page report describing the response efforts prepared by the Federal On Scene Coordinator for the Line 6B spill can be accessed at. <https://www.epa.gov/sites/production/files/2016-04/documents/enbridge-fosc-report-20160407-241pp.pdf>

The U.S. National Transportation Safety Board (NTSB) conducted an intensive investigation which, among other things, found that the six serious cracks that led to the pipe rupture were not detected or were ignored by Enbridge operators over the five years before the accident.

The report in my opinion reflected a larger pattern of Enbridge failing to fix known defects, that pervasive organizational failures biased against shutting down a line were responsible for the leak going uncorrected for 17 hours, and that Enbridge at the time did not have the necessary company culture to safely operate its pipeline network.

The excerpts taken from the report are below illustrate the human factor contributing to industrial accidents:

*On Sunday, July 25, 2010, at 5:58 p.m., eastern daylight time, a segment of a 30-inch-diameter pipeline (Line 6B), owned and operated by Enbridge Incorporated (Enbridge) ruptured in a wetland in Marshall, Michigan. The rupture occurred during the last stages of a planned shutdown and was not discovered or addressed for over 17 hours. During the time lapse, Enbridge twice pumped additional oil (81 percent of the total release) into Line 6B during two startups; the total release was estimated to be 843,444 gallons of crude oil. The oil saturated the surrounding wetlands and flowed into the Talmadge Creek and the Kalamazoo River. Local residents self-evacuated from their houses, and the environment was negatively affected. Cleanup efforts continue as of the adoption date of this report, with continuing costs exceeding \$767 million. About 320 people reported symptoms consistent with crude oil exposure. No fatalities were reported.*

*The National Transportation Safety Board (NTSB) determines that the probable cause of the pipeline rupture was corrosion fatigue cracks that grew and coalesced from crack and corrosion defects under disbonded polyethylene tape coating, producing a substantial crude oil release that went undetected by the control center for over 17 hours. The rupture and prolonged release were made possible by pervasive organizational failures at Enbridge Incorporated (Enbridge) that included the following:*

- Deficient integrity management procedures, which allowed well-documented crack defects in corroded areas to propagate until the pipeline failed.*
- Inadequate training of control center personnel, which allowed the rupture to remain undetected for 17 hours and through two startups of the pipeline.*
- Insufficient public awareness and education, which allowed the release to continue for nearly 14 hours after the first notification of an odor to local emergency response agencies.*

Contributing to the accident was the Pipeline and Hazardous Materials Safety Administration's (PHMSA) weak regulation for assessing and repairing crack indications, as well as PHMSA's ineffective oversight of pipeline integrity management programs, control center procedures, and public awareness.

Contributing to the severity of the environmental consequences were (1) Enbridge's failure to identify and ensure the availability of well-trained emergency responders with sufficient response resources, (2) PHMSA's lack of regulatory guidance for pipeline facility response planning, and (3) PHMSA's limited oversight of pipeline emergency preparedness that led to the approval of a deficient facility response plan.

Safety issues identified during Line 6B accident investigation include the following:

- The inadequacy of Enbridge's integrity management program to accurately assess and remediate crack defects. Enbridge's crack management program relied on a single in-line inspection technology to identify and estimate crack sizes. Enbridge used the resulting inspection reports to perform engineering assessments without accounting for uncertainties associated with the data, tool, or interactions between cracks and corrosion. A 2005 Enbridge engineering assessment and the company's criteria for excavation and repair showed that six crack-like defects ranging in length from 9.3 to 51.6 inches were left in the pipeline, unrepaired, until the July 2010 rupture.
- The failure of Enbridge's control center staff to recognize abnormal conditions related to ruptures. Enbridge's leak detection and supervisory control and data acquisition systems generated alarms consistent with a ruptured pipeline on July 25 and July 26, 2010; however, the control center staff failed to recognize that the pipeline had ruptured until notified by an outside caller more than 17 hours later. During the July 25 shutdown, the control center staff attributed the alarms to the shutdown and interpreted them as indications of an incompletely filled pipeline (known as column separation). On July 26, the control center staff pumped additional oil into the ruptured pipeline for about 1.5 hours during two startups. The control center staff received many more leak detection alarms and noted large differences between the amount of oil being pumped into the pipeline and the amount being delivered, but the staff continued to attribute these conditions to column separation. An Enbridge supervisor had granted the control center staff permission to start up the pipeline for a third time just before they were notified about the release.
- The inadequacy of Enbridge's facility response plan to ensure adequate training of the first responders and sufficient emergency response resources allocated to respond to a worst-case release. The first responders to the oil spill were four Enbridge employees from a local pipeline maintenance shop in Marshall, Michigan. Their efforts were focused downstream along the Talmadge Creek rather than near the immediate area of the rupture. The first responders neglected to use the culverts along the Talmadge Creek as underflow dams to minimize the spread of oil, and they deployed booms unsuitable for the fast-flowing waters. Further, the oil spill response contractors, identified in Enbridge's facility response plan, were unable to immediately deploy to the rupture site and were over 10 hours away.
- Inadequate regulatory requirements and oversight of crack defects in pipelines. Title 49 Code of Federal Regulations (CFR) 195.452(h) fails to provide clear requirements for performing an engineering assessment and remediation of crack-like defects on a pipeline. In the absence of prescriptive regulatory requirements, Enbridge applied its own methodology and margins of safety. Enbridge chose to use a lower margin of safety for cracks than for corrosion when assessing crack defects. PHMSA expects pipeline operators to excavate all crack features; however, PHMSA did not issue any findings about the methods used by Enbridge in previous inspections.
- Inadequate regulatory requirements for facility response plans under 49 CFR 194.115, which do

not mandate the amount of resources or recovery capacity required for a worst-case discharge. In the absence of such requirements, Enbridge interpreted the level of oil response resources required under PHMSA's three-tier response time frame, resulting in a lack of adequate oil spill recovery equipment and resources in the early hours of the first response. By contrast, the U.S. Coast Guard (Coast Guard) and the U.S. Environmental Protection Agency (EPA) regulations specify effective daily response capability for each of the three tiers for oil spill response planning.

- PHMSA's inadequate review and approval of Enbridge's facility response plan that failed to verify that the plan content was accurate and timely for an estimated worst-case discharge of 1,111,152 gallons. PHMSA's facility response program oversaw 450 facility response plans with 1.5 full-time employees, which is a lower staffing commitment than comparable response plan review programs carried out by the EPA and the Coast Guard. PHMSA and other Federal agencies receive funding from the Oil Spill Liability Trust Fund to cover operational, personnel, enforcement, and other related program costs.<sup>6</sup>

This discussion of the causes of the worst on land oil spill in U.S history goes to show that oil spill risks cannot be completely engineered away through safety systems because of the human element. In the case of the Line 6B spill Enbridge employees actually added oil into the leaking line twice and almost did it a third time.

In another example of human error causing contamination incidences, the steam explosion that caused the Chernobyl nuclear disaster in the Ukraine was the result of safety engineers at the nuclear power plant voluntarily testing the anti-melt down safety system of a nuclear reactor. Ironically it was engineers working on the safety system itself that was the proximate cause of the steam explosion that caused radioactive contamination to fall to the ground all the way to Scotland.

In another example, human error was largely responsible for the \$50,000,000,000 Deep Water Horizon crude oil spill into the Gulf of Mexico. The Deep Water Horizon spill also illustrates how much clean-up costs can be on big water.

The human factor error factor in industrial accidents should not be underestimated in the risk evaluation of a pipeline.

Experience shows that pipelines have spills. The question for this report is how will the damage caused by the leak be paid for?

The recommended insurance requirements at a total of \$200,000,000 per loss event on Line 3 is only 17% of the Maximum Probable Loss as established on the Line 6B spill in Michigan. This is a very conservative amount designed to make the recommended insurance coverage on Line 3 procurable and affordable for Enbridge, while creating a long-term risk management and financial backstop for The State of Minnesota, which is unrelated to the future profitability of Enbridge.

Assuming a solvent Oil Spill Liability Trust Fund with a \$1 billion per loss cap, combined with \$200,000,000 of recoverable insurance proceeds protects The State of Minnesota for the Maximum

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<sup>6</sup>National Transportation Safety Board, *Pipeline Accident Report for Enbridge Incorporated Hazardous Liquid Pipeline*

*Rupture and Release Marshall, Michigan* (July 25, 2010) (NTSB/PAR-12/01 PB2012-916501), at pp. xxii to xiv.

Probable Loss from Line 3 in today's dollars.

### **The Monetary Resources of Enbridge Energy Partners Today to Pay for A Spill Event**

To evaluate the risk bearing capacity of Enbridge Energy Partners, I considered the company's available cash flow from ongoing operations which was \$108.8 million in cash and cash equivalents at the end of 2016<sup>7</sup>, and the insurance coverage in place today, which is \$940 million of GL insurance with "sudden and accidental pollution" coverage. Enbridge can also access the federal government sponsored petroleum spill response program providing up to \$1 billion per spill.<sup>8</sup> This fund is a financial guarantee rather than insurance; any amount paid out by the fund needs to be eventually reimbursed by Enbridge.

From the risk financing perspective of the State of Minnesota concerning Line 3, the fact that the Federal oil spill fund needs to be reimbursed by the party causing the pollution is not very important. The Federal government has taken on the risk of the potential insolvency of the responsible party.

Only the cash and cash equivalents plus earnings and potential pollution insurance proceeds comprise the liquid assets available for Enbridge today to address the costs associated with a spill from Line 3. The costs incurred in responding to a major spill event transpire over many years, and in theory multiple years of earnings could be utilized to pay for a major spill event. When combined, these amounts today are would cover the costs from a Line 6B sized spill event, assuming the full limits of the \$940,000,000 of General Liability insurance is collectable. However, the collectability of the \$940 million of GL insurance currently purchased by Enbridge has been put into question due to the adverse arbitration coverage determination on the \$85,000,000 of GL insurance with "sudden and accidental pollution coverage".

There is a chance that none of the General Liability insurance will be collectable for a spill event depending on the specific facts of the spill. Not all of the GL insurance purchased by Enbridge in 2010 responded to pay for the Line 6B spill. The intricacies of GL coverage for pollution associated events are addressed in later sections of this report.

I did not consider the ability of Enbridge to use debt to pay for a pipeline spill. The ability of any company to raise funds by borrowing is greatly impacted by the financial condition of the company at the time the funds are needed. Borrowing as a method to pay for uninsured losses is highly unreliable because lenders are always concerned about the financial health of the borrower when a loan is made. In the face of major uninsured clean-up liabilities, access to borrowed funds will certainly be impaired.

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<sup>7</sup> Enbridge Energy Partners Financial Information: <https://www.enbridgepartners.com/Investor-Relations/EEP/Financial-Information/Cash-Flow-Statement.aspx>

<sup>8</sup> EPA – Oil Spill Liability Trust Fund: <https://www.epa.gov/oil-spills-prevention-and-preparedness-regulations/oil-spill-liability-trust-fund>



## **Enbridge Has Unavoidable High-Risk Loss Exposures Within Its Overall Operations**

Enbridge had two of the largest pipeline releases in U.S. history in 2010 and leaking pipelines are unavoidable.

During the seven years since the Kalamazoo disaster, Enbridge has reported another 103 accidents to PHMSA in which 16,578 barrels unintentionally leaked and \$85,702,542 was spent on post-Kalamazoo cleanups. One of those, which occurred in the same year as the Line 6B spill, was an accident at Line 6A near Romeoville, Illinois on September 9, 2010, which according to Enbridge's report to PHMSA, involved a leak of 7,538 barrels that cost \$35,089,779 to cleanup.

Enbridge today also has environmental legacy risk which it cannot avoid. In 1953, Enbridge's predecessor company, Interprovincial Pipe Line Company, constructed a pipeline to connect a tank farm in Superior, Wisconsin, to an oil refinery in Sarnia, Ontario. To reduce costs of building and operating the pipe line, the company selected the shortest route across the top of the Great Lakes, which became Line 5, instead of a longer route along the bottom of Lake Michigan following the Lines 61, 6A and 6B corridors. The northern route required the crossing of the combined outflows of Lake Superior and Lake Michigan at the Straits of Mackinac on the St. Lawrence seaway. The decision to follow the shorter route made seven decades ago locked in magnitudes of greater potential environmental impact risk on Line 5 when compared to the company's inland routes, into the operations of Enbridge.

Today Line 5 transports more than 23 million gallons of light crude oil and natural gas liquids per day through two, now 64-year old pipelines, under the straits that connects Lake Michigan and Lake Huron, a span of 4½ miles wide and running as much as 260 feet deep. The pipelines are exposed and buffeted by currents from above. The pipes are not buried under the undulating bottom mud that is continually shifting and scoured by the currents where the two great lakes meet.

A break in Line 5 in big water could lead to environmental clean-up costs that exceed the sum-total of all available funds of Enbridge and the Oil Spill Liability Trust Fund.

If there was a catastrophic loss on Line 5, leaving Enbridge in a state of financial ruin, there would be no guarantee of available funds for a spill on Line 3, with the exception of The State of Minnesota making a claim under the Oil Spill Trust Fund and insurance recoveries on the specified insurance for Line 3 as recommended in this report.

Assuming the Oil Spill Liability Trust Fund still exists at the time of the Line 3 spill, and that the trust fund has assets, the trust fund could contribute \$1 billion for clean-up costs on the second spill. The adequate funding of the Oil Spill Liability Trust Fund is not a certainty. Between 2004 and 2006 the trust fund had less than \$1 billion in total assets. Insurance as a source of assets to respond to a spill on the other hand is much more predictable over the long term. Insurance also survives bankruptcy as an asset.

With \$200,000,000 in dedicated insurance limits on Line 3, increasing every five years as recommended in this report, the combination of the spill fund proceeds and the insurance funds as specified in Appendix A, the maximum probable loss for Line 3 could be funded, even if Enbridge Incorporated was completely without funds as a result from a spill in one of their other lines or a general decline in the business of crude oil pipeline companies.

## **Time Adds Risk**

The ability for Enbridge to pay for an oil spill could deteriorate over the life of the proposed pipeline. Profits and access to insurance vary year to year. The funding level of the Oil Spill Trust Fund varies over time as well. In the history of the Oil Spill Liability Trust Fund there was less than a billion in the fund between 2003 and 2006.

Governmental sponsored spill remediation funds are subject to politics and may not endure over time. Over time, even funds generated by fines imposed by the federal government for oil spills may be dismantled or used for other political priorities, these potential actions could significantly affect the amount of funds in the Oil Spill Liability Trust fund.

Access to insurance is not guaranteed over time either, however insurance as a financial tool has endured politics and wars for over 400 years. The insurance industry has a proven track record of fulfilling demand for insurance when the risk is insurable and adequate premiums can be charged.

Due to its long term viability and ability to react to changes over time Insurance does and should play a continuing role in the overall risk management strategy of the stakeholders on Line 3. The ability to procure insurance is in of itself a risk management tool. Access to insurance operates as the canary in the coal mine to provide early warning to the stakeholders of unusually risky or uninsurable operations.

## **Future Financial Risk Factors**

The core business of Enbridge is essentially the transport of tar sands derived crude oil through its pipelines to processing facilities and markets thousands of miles away from the source of the crude oil. A reduction in demand for tar sands derived crude oil would significantly change the fundamental business of Enbridge and impair the future profits of the firm. As a result, Enbridge may have less ability to pay for pipeline maintenance or the costs arising from a spill on Line 3 over time.

Changes in social norms and a heightened awareness of the human impact on the planet can also effect the Enbridge business model. The precipitous decline of the coal industry in the US is a prime example that illustrates the impact of environmental concerns in the general population on an entire industry segment of the energy economy. The use of coal as an energy source remained unchanged for centuries. Coal powered the industrial revolution for over 100 years. However, the coal industry has seen over 70% of its valuation evaporate in just 5 years, driven by a great extent over environmental concerns. New coal fired generating plants are not being built in the U.S. and existing coal fired generating plants are being closed, primarily due to the costs of pollution control equipment and public pressure for the reduction in greenhouse gases. Other sources of cleaner energy have an inherent cost advantage over coal. With inherent cost advantages, other sources of cleaner energy will naturally gravitate to higher use, with less use of coal over time.

All fossil fuel based companies will be subject to the same economic pressures over time as society moves to reduce the green house foot print of energy sources. This trend is already under way as evidenced by the coal industry as the first indication of what is likely to come in the fossil fuel business. Per [Business Insiders](#), "Approximately 44% of US coal now comes from companies that have declared bankruptcy sometime in the last four years."<sup>9</sup>

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<sup>9</sup> Varinsky, Dana (December 9, 2016) Business Insider, Nearly Half of US Coal is Produced by Companies that have

Crude oil produced by tar sands is a relatively expensive, energy intensive, and dirty source of crude oil. It would reasonably be expected that cleaner sources of crude oil would have a cost advantage over a source with the above attributes. These cost advantages are already reflected in the breakeven cost of production per barrel, without taking into account the costs associated to the relative carbon load of the different sources of crude oil or the transportation costs to move crude oil thousands of miles to refineries.

If current global trends continue to focus on reducing the carbon footprints of energy sources, tar sand derived crude oil will be disproportionately affected because of the relative high use of carbon based fuels that are used in the extraction process to produce marketable crude oil from tar sands.

The U.S. market is the primary consumer of the oil products transported by Enbridge pipe lines. Expansions of fracking based production in newly discovered major deposits of oil in the United States closer to refineries and population centers creates significant cost advantages in the U.S. market place for locally sourced crude oil.

These factors could adversely change the overall financial risk picture of the proposed pipeline on Line 3 over the course of time:

- A reduction in the amount of oil products shipped through Enbridge pipelines would reduce cash flow and impair the firm's ability to pay for uninsured spill expenses out of profits;
- Reduced profitability would limit the firm's ability to maintain robust safety levels that Enbridge prides its self upon today;
- A reduction in the amount of crude oil, which is taxed to fund the Federal oil spill response programs would reduce the funding levels for these fail-safe contingency plans to pay for oil spill clean ups. Of interest, tar sand derived crude oil does not pay a tax into the oil spill response program because it is considered a synthetic fuel, this situation creates questions on the fairness of reaping the benefits of the spill fund while not contributing to it. A simple solution to the fairness question would be to tax tar sands oil which would add even more costs to the crude oil developed from tar sands;
- Changes in the global insurance market place and/or the insurance claims experience of Enbridge in particular could impair the firm's ability to purchase liability insurance to pay for the costs associated with a spill in the future;
- GL insurance policies apparently are becoming less reliable as funding sources for oil and gas related spill risks. The current GL insurance policies purchased by large energy companies like Enbridge, have substantially the same policy wording for "sudden and accidental pollution coverage" that led to the denial of the \$85,000,000 of GL coverage for the Line 6B spill. I am personally aware of two other case examples where tens of millions to hundreds of millions of dollars in environmental clean-up claims are being denied under generically the same type of "sudden and accidental pollution coverage" that Enbridge purchases. The adverse arbitration ruling for the \$85,000,000 in GL insurance for the Line 6B spill could

significantly impair the usefulness of the Enbridge GL insurance for future spill events; and

- In matters of litigated insurance coverage, a court in Alberta, London, Minneapolis or New York, ruling on the coverage provided in a GL insurance policy for contamination events and the effect of pollution exclusions on that coverage, in a case totally unrelated to Enbridge or event pipelines, could significantly reduce the insurance available to Enbridge, simply by establishing case law precedence that environmental damages are not insured by the exception to the pollution exclusion in GL policies. A brief discussion on the intricacies associated with General Liability insurance and pollution claims are in the next section of this report.

All of these risk factors have the ability to dramatically alter the ability of Enbridge to pay for an oil spill over the extended duration of the proposed permit to build and operate Line 3 in The State of Minnesota.

As a partial hedge to these changing factors I recommend that the permit contain insurance specific requirements for GL Insurance and EIL insurance on the proposed Line 3 pipeline over the course of its permitted use. These insurance requirements are included in Appendix A.

## **Summary And Analysis Of GL Insurance On Pipeline Companies**

This report is based on the common and enduring customs and practices in the insurance industry for companies in the oil and gas business. No review of the Enbridge insurance program was conducted for the preparation of this report. Enbridge employees or representatives were not consulted with in the preparation of this report.

The base GL insurance policy that Enbridge purchases can be expected to follow the usual and customary liability insurance coverage purchased by large companies in the energy sector. The following observations and commentary are based upon the most common types of liability insurance purchased by large companies in the oil and gas business.

The current Enbridge insurance coverage is largely irrelevant in any decision making regarding a long-term permit to build and operate Line 3. Almost all GL insurance policies only insure for a one-year coverage term and therefore must be renewed annually. The insurance market place changes over time and can be subject to considerable variation year to year. Knowing what the insurance coverage is today on Enbridge is not necessarily predictive of what the coverage will be even 2 years from today.

To access \$940,000,000 in GL insurance with coverage for “sudden and accidental pollution”, the purchaser of this insurance would need to purchase policies from a number of different insurance companies. The way this is done in practice is a “lead” or “primary” insurance company sells a GL policy which establishes the scope of coverage for all of the insurance companies participating in a tower of insurance limits, excess of the primary GL policy. The combination of the primary and excess layers of coverage are referred to in practice as the insurance “program”. Enbridge in 2017 has a GL insurance “program” with \$940,000,000 of GL insurance limits for example. It would not be unusual for fifty separate insurance companies to participate in a \$940 million insurance program.

In this common structure of the insurance programs purchased by large companies, the terms of the coverage in the excess layers are determined by a single primary insurance policy. In the most common insurance program structure the insurance broker will strive to build an insurance program where each

participating excess insurance company agrees to “follow form” with the primary policy and to the layers of coverage below the attachment point of each layer of coverage in the program.

By knowing what the primary insurance policy says in a follow form excess program, the coverage provided by the excess insurance policies is known as well. This rule holds true in the entire insurance program as long as no additional exclusions are added to any of the excess insurance policies in the coverage tower.

### **The Coverage In A GL Insurance Policy**

A GL policy insures claims being made against the Insured party for;

- a. Bodily Injury to non-employees;
- b. Property Damage, defined as physical injury to tangible property;
- c. Personal injury, including libel and slander; and
- d. The policy pays for Defense Costs incurred by the Insured in defending claims made by third parties for the above damages.

The key coverages in the GL insurance policy that would come into play in the event of a spill from a pipe line are claims for bodily injury and property damage and the costs incurred to defend those claims.

Clean-up obligations under environment protection laws are based on strict liability for the polluter. Therefore, defense costs are relatively insignificant in the event of a GL policy paying for a clean-up.

The strict liability for clean-up costs does not clearly fit into the definition of Property Damage normally found in GL policies.

It is not unusual for the General Liability insurance policies sold to companies involved in the oil and gas business to purchase insurance policies that pay losses on an “indemnity” basis. In these types of policies, the insured pays for the loss costs first and then is reimbursed by the insurance company, a process that can add further delays in collecting insurance proceeds. There can be delays of many months or even years before an insurance buyer is paid insurance proceeds, even on claims that have no coverage disputes associated with them.

In the event of a spill there is an immediate need for cash. Although insurance payouts can be expedited they are not immediate in liability insurance policies. In insurance policies with nebulous coverage, pay out delays are longer. For example, Enbridge tried to collect on the \$85,000,000 in GL coverage for the Line 6B spill for over six years before it lost access to those proceeds through an arbitration panel decision in May 2017.

### **The Pollution Exclusion In GL Insurance Policies**

Virtually all GL insurance policies sold over the past 45 years have a pollution exclusion. Introduced into the insurance business in 1970, pollution exclusions are the most litigated words in the history of insurance. Over the past forty years, the legal profession has argued which part of a pollution exclusion, if any, should apply to a loss involving the contamination of things ranging from sandwiches to the clean-up of Superfund hazardous waste sites.

Most pollution exclusions, even exclusions described as “absolute” or “total” pollution exclusions, contain exceptions to the exclusions, which make them less than total or absolute in excluding losses arising from contamination events. Early pollution exclusions used from the early 1970’s to the late 1980’s had an exception to the exclusion for pollution events which were sudden and accidental.

Teams of lawyers working for decades in hundreds of similar insurance coverage litigation cases, have been unable to decisively conclude that a sudden pollution event must mean a pretty darn quick pollution event. To eliminate the ambiguity created by the use of the undefined word “sudden”, in 1986 the word “sudden” as a defining trigger of insurance coverage in the form of an exception to an exclusion, was dropped from common use.

Today in practice, insurers who do provide some coverage for pollution related claims under GL policies, do so by limiting the effect of the pollution exclusion in the policy for pollution events that take place within certain defined time frames. Those defined time frames are accurately referred to as “time element” pollution events coverage. The remnant GL coverage for pollution losses is still dependent upon an exception to an exclusion in time element pollution coverage.

Under “time element” pollution GL coverage commonly sold to companies in the oil and gas business, a property damage or bodily injury claim arising from a pollution release event that begins and is discovered within 7-30 days and is reported to the insurance company within 30-90 days after the discovery of the pollution, is not excluded by the GL insurance policy. Hence, the words “sudden and accidental” carry no weight in determining the effect of modern pollution exclusions on the coverage for a claim.

GL insurance coverage with a “time element” exception to a pollution exclusion is not limited to “pretty darn quick” pollution events. A GL policy with “time element” coverage can pay a claim for property damage from a pollution event that takes place over many days.

Taking the history of GL insurance policies and pollution exclusions into account, it is my professional opinion that The State of Minnesota should avoid being completely dependent upon a GL insurance policy containing a modified pollution exclusion as a financial back stop for an oil spill from a pipeline.

### **How The Typical GL Insurance Policy Sold To Firms In The Oil And Gas Business Applies To Pipeline Spills**

As evidenced by the multi-year insurance coverage litigation on the Line 6B spill, insurance companies and insurance buyers are not always in harmony on how GL insurance policies with a pollution exclusion containing exceptions to the exclusion should operate to pay for clean-up expenses. Even insurance companies participating in the same follow form insurance placement can be in disagreement over the insuring agreement and pollution exclusions. This was evidenced by the successful denial of \$85,000,000 of GL coverage within the middle of the \$640,000,000 Enbridge GL insurance program in 2010.

In the event of a pipe line spill from Line 3, both the insuring agreement and pollution exclusion on the GL policy purchased by Enbridge will come into play. Both of these sections of the GL policy can work to limit the coverage provided for a spill event.

In making a coverage determination for a loss event, the insurance company will first determine if there is a covered claim under the policy. In GL insurance, there must be a 3<sup>rd</sup> party claim for Property Damage or Bodily Injury to have a covered claim under the GL insurance policy. Unless there is a claim being made

that the GL policy covers, the exclusions in the policy have no bearing on the coverage provided for the claim.

One of the major areas of controversy over the past 40 years in the insurance business is does strict liability for clean-up costs constitute a liability claim by a 3<sup>rd</sup> party for “property damage” as defined in the GL insurance policy? No one can answer that question in a way that will apply to every case. The consentient answer to the question of; Are clean-up costs Property Damage under a GL policy; is “it depends”.

What the coverage determination depends on is far beyond the scope of this report. The take away for the purposes of this report is that no one can be certain if clean-up costs fit the definition of Property Damage in a standard GL insurance policy. This means an insurance program built solely on the basis of an exception to a pollution exclusion in a GL policy is unpredictable. Therefore, the GL policy provides unreliable coverage for pollution related claims.

The pollution exclusion in a GL insurance policy applies to all claims arising from the emission, discharge, release, or escape of “Pollutants”. A pollution exclusion eliminates the coverage in the insurance policy for 3<sup>rd</sup> party bodily injury and property damage liability claims if the proximate cause of the loss is the release or escape of “Pollutants”.

“Pollutants” is a defined word in the GL insurance policy which essentially boils down to contaminates”.

If a material can contaminate something, it can be a “Pollutant” subject to the pollution exclusion in an insurance policy. The damages caused by an oil spill will definitely fall within multiple parameters of commonly used pollution exclusions.

### **Sudden And Accidental Pollution Insurance?**

A GL policy is really not “pollution insurance” at all. A more accurate description of the insurance coverage provided under a GL insurance policy for a loss caused by pollution would be, “remnant GL coverage for Bodily Injury or Property Damage claims caused by exposure to pollutants”.

The potential coverage under a GL policy for pollution caused damages is remnant coverage because it is what is left over after two or in the case of the GL policies commonly purchased by companies in the oil and gas business, after the effects of three pollution exclusions are taken into account.

There was a point in time where the statement “we have sudden and accident pollution coverage” on a GL policy made more sense than it does today. From 1970 through 1986, GL insurance policies had exceptions to the pollution exclusion for “sudden and accidental” releases of “Pollutants”. In those years, pollution exclusions commonly said that the pollution exclusion in the GL policy would not apply if the dispersal, release or escape of pollutants that caused the insured damage to a 3<sup>rd</sup> party was “sudden and accidental”. Between 1970 to around 1986 the words “sudden and accidental” were actually incorporated into the insurance industry standard pollution exclusion to define when the exclusion applied to a claim or not.

The problem for the insurance companies was “sudden” was an undefined term in the GL policy and

through litigated insurance coverage cases, insurance companies were stuck with paying for claims at superfund hazardous waste sites, where the actual pollution activity went on for decades.

Eventually insurance companies were forced by adverse claim experiences to drop the word “sudden” as a defining exception to the pollution exclusion. To clarify the exception to the pollution exclusion, the words “sudden and accidental” to determine the remnant coverage created by exceptions to the pollution exclusion in GL policies were dropped from common usage by 1986. Today pollution exclusion exceptions usually have defined time elements as discussed above.

The remnant coverage for a pollution event with a “time element” coverage give back is not limited to sudden or quick pollution-- a leak could continue for many days and there may still be coverage if the GL policy had a 30 day “time element” exception to the pollution exclusion.

GL insurance policies with remnant coverage under an exception to the pollution exclusion and EIL insurance should not be confused as being one in the same; genuine EIL insurance, has specified coverages for clean-up costs, damages to natural resources and restoration costs that are not specifically provided for in GL insurance policies. Another distinguishing factor in genuine EIL insurance is that the coverage only applies to losses caused by pollution events.

Regardless of the timing parameters of exceptions to pollution exclusions, an insured still needs a claim for “Property Damage” or “Bodily Injury” as defined in the GL policy to get any claim covered under the policy in the first place. Without a loss meeting the definitions for bodily injury or property damage for a covered claim under the policy, a pollution exclusion and the “time element” exception to the pollution exclusion will have no effect. A spill clean-up meeting the definition of “Property Damage” in a GL policy is not a certainty.

### **The Three Levels Of Pollution Exclusions In The Typical GL Insurance Policies Commonly Sold To Large Companies In The Oil And Gas Business**

This section of my report contains a discussion about the effect of pollution exclusions commonly found in GL insurance policies typically purchased by large firms in the oil and gas business. This discussion is not specific to the insurance policies actually purchased by Enbridge; which were not reviewed for this report.

There will be three separate pollution exclusions in the typical GL insurance policy purchased by large firms in the oil and gas business.

The first exclusion for Bodily Injury or Property Damage arising from a contamination event applies to the entire GL insurance policy. This exclusion in the basic GL insurance policy form is commonly referred to in practice as the “Absolute Pollution Exclusion”.

The second exclusion in the policy relating to contamination events effectively excludes the absolute pollution exclusion if certain time frames (time elements) on the contamination event leading to the 3<sup>rd</sup> party claim for Bodily Injury or Property Damage claim are met. Excluding the exclusion for pollution events that happen in short duration is where the term “sudden and accidental pollution coverage” under GL policies originated. By imposing a double negative, effectively an exclusion to an exclusion, a positive coverage grant is created for the pollution caused loss as defined in the second pollution



exclusion.

The third pollution exclusion commonly found in the GL insurance policies purchased by companies in the oil and gas business excludes pollution related claims for damage to the property owned or operated by the named insured. In this case, the 3<sup>rd</sup> pollution exclusion would apply to the Line 3 right of way itself. In effect, this is a triple negative which would produce a net negative coverage grant (exclusion) for pollution claims related to damages to the land of the Line 3 corridor under lease by Enbridge.

The above discussion illustrates how nebulous insurance coverage can be when exceptions to exclusions are relied upon for basic insurance coverage on a pollution event, as opposed to purchasing genuine EIL insurance which is designed for this purpose.

### **A Common Flaw In The Time Element Pollution Exception**

An obvious gap in depending upon a “time element” exception to a pollution exclusion is what if the spill is discovered the day after the defined exception time period. A buried pin hole leak leading to oil migrating to and being transported by ground water could take place over months or years in the remote regions of the Line 3 corridor before the damage is discovered.

In contrast, a good quality EIL policy as specified in Appendix A does not usually limit the duration of a contamination event for the damages arising from pollution to be insured losses.

### **Differences Between GL Insurance And Genuine Environmental Insurance**

For unknown reasons, the terminology “sudden and accidental pollution liability” is still used to describe the remnant insurance coverage created by the “time element” exception to the pollution exclusion in the GL insurance policies commonly purchased by oil and gas companies.

There are fundamental insurance coverage differences between genuine EIL insurance as recommended for Line 3 and GL insurance containing an exception to the pollution exclusion.

Regardless of the brand name of the policy form, the sole purpose of EIL insurance is to fill insurance coverage gaps created by the ever-present pollution exclusions in property and liability insurance policies.

EIL policies cover claims made against the insured for bodily injury, property damages and defense costs. The definitions of these terms in EIL policies mirror the definitions commonly used in GL policies. However, the major difference is where a basic GL policy excludes coverage for claims arising from pollution, an EIL policy *only* insures claims arising from the release or escape pollutants that occur either quickly or over time.

An EIL policy designed specifically to cover claims arising from pollutants provides broader coverage for environmental losses than a GL policy does. A good quality EIL insurance also specifically insures cleanup costs, emergency response costs, restoration costs and natural resources damages within the insuring obligations of the policy. GL policies do not reference these important elements of coverage which will always come into play as a source of damages in a pipeline spill.

## **The Enbridge Indemnification Proposal to The State of Minnesota**

Enbridge Energy Partners, a controlled subsidiary of Enbridge Incorporated, has offered to indemnify The State of Minnesota for any loss The State may incur as a result of Line 3. Being indemnified by Enbridge is good for The State of Minnesota because the indemnity is first dollar protection and makes The State of Minnesota eligible to be an “Additional Insured” on the recommended Liability insurance policies to be carried by Enbridge.

It would be better for The State of Minnesota to have the indemnity for Line 3 coming from Enbridge Incorporated. In the last set of financial reports Enbridge Inc had \$2,028,000,000 in cash and cash equivalents in Canadian dollars on hand and Enbridge Energy partners only had \$108,00,000 in U.S. dollars. In the world of corporate indemnities, access to more cash on hand is better.

## **The State of Minnesota Should Be An Additional Insured Under The Enbridge Liability Insurance Policies**

Being an “Additional Insured” on the Enbridge GL policy is a benefit for The State of Minnesota. By being named as an “Additional Insured” the Enbridge liability insurance would defend The State of Minnesota in the event Enbridge caused damages to a third party and the third party sued The State of Minnesota for its alleged contributory role in the Enbridge created loss event. The State of Minnesota may have have statutory immunity in this situation, but it would still be an added benefit to The State of Minnesota to have the insurance protection of the Enbridge Liability insurance policies.

The benefit of The State of Minnesota being an Additional Insured under the Enbridge GL insurance assumes that there is no “insured versus insured” exclusion on the Enbridge GL insurance policy. If the Enbridge GL insurance policy contained an “insured vs insured” exclusion and The State of Minnesota became an “insured” by being named as an “Additional Insured”, if The State of Minnesota made a claim against Enbridge for some reason, the Enbridge insurance policies would not apply to the claim because in that case example one insured is claiming damages from another insured.

The need to avoid an “insured versus insured” exclusion in the Enbridge liability insurance is anticipated in the recommended insurance requirements in Appendix A.

Being an Additional Insured on the Enbridge GL insurance policy does not:

- Enable The State of Minnesota to make a direct claim for pollution cleanup to the insurance companies insuring Enbridge; nor
- Correct for the inherent risk management deficiencies in relying on a GL policy to pay for pollution claims which was previously discussed.

It is hard to imagine a scenario where The State of Minnesota would ever become part of a claim made against Enbridge. But if it ever did happen, being indemnified by Enbridge and being named as an Additional Insured on the Enbridge insurance covering Line 3 is a good risk management strategy.

## **GL Insurance Alone Is Not A Reliable Source Of Insurance Recovery For Oil Spills**

One common point of contention in insurance coverage litigation involving pollution claims under GL insurance policies over the past 30 years is whether a pollution clean-up order from the government constitutes a claim for “Property Damage” under the definition that term in the GL policy.

Because GL insurance policies only insure 3<sup>rd</sup> party claims for Bodily Injury and Property Damages, GL insurance policies are inherently deficient in their coverage for government ordered clean-up costs, natural resource damages and restoration costs. A genuine EIL policy specifically insures clean-up costs, natural resources damage and restoration costs in addition to bodily injury and property damage liability.

## **The Inherent Danger In Relying On Exceptions To Pollution Exclusions Within A GL Insurance Policy To Pay For Pollution Losses**

The coverage provided by the Enbridge GL insurance for pollution damages could change overnight as determined by precedence case law established in insurance coverage that could be completely unrelated to Enbridge or its insurers.

For example, on December 30, 2014 the Wisconsin Supreme court determined that manure and nitrates in ground water as a result of farming operations were excluded by the Pollution Exclusion in GL insurance policies commonly sold to farmers. Prior to this decision, the precedent case law in Wisconsin was that manure was a “product” and therefore not excluded as a “pollutant” under the Pollution exclusion in GL insurance policies. As a result of that Wisconsin Supreme Court decision on the GL insurance purchased by one farm, on December 31<sup>st</sup>, 2014, 41,000 farms in Wisconsin were left clearly uninsured under their GL insurance policies for contamination claims arising from manure spreading operations. Line 3 is a lot different from a farm, however this analogy illustrates how insurance coverage litigation involving totally unrelated parties can affect all of the similar insurance policies sold within a State.

The effect of the arbitration panel decision that Enbridge was not entitled to \$85,000,000 of GL coverage for the line 6B spill was not evaluated for this report.

## **GL Insurance Is Missing Essential Coverages To Clearly Insure an Oil Spill Event**

GL insurance coverage even with exceptions to the pollution exclusion contained in virtually all GL policies sold in North America will be missing separately defined coverage parts for:

- Clean-up Costs;
- Natural Resource Damages;
- Emergency Response Costs; and
- Restoration Costs

All of these insurance coverage elements are provided in a good quality EIL insurance policy.

## The Availability Of Government-Backed Oil Spill Funds

After the crude oil spill in Alaska involving the Exxon Valdez, The Oil Pollution Act of 1990 was passed and a federally sponsored fund was created for federal and state trustees to respond to the clean-up costs and victim compensation arising from future oil spills, including spills from pipe lines.

The purpose of the spill fund is to assure that the federal or state authorities have the resources necessary to pay for the costs of an oil spill in the event the party that caused the spill does not have the financial resources to pay for the damages cause by an oil spill. The Oil Pollution Act does not anticipate a role for local governments in spill response.

The Oil Spill Liability Trust Fund (OSLTF) provides up to \$1 billion in cash for clean-up costs and other damages arising from a single pipeline spill. The funds can be accessed by the Federal Government or the State of Minnesota to pay for response costs.

The Oil Spill Liability Trust Fund (OSLTF) will pay for costs incurred from oil spills arising from pipelines. The spill must threaten a waterway to be eligible for the fund. This fund was tapped into by government responders to the Line 6B spill. Because there is so much water present in or near the Line 3 right of way, threatening a water way is highly likely but not certain on a spill from Line 3.

Recoverable cost from the Oil Spill Liability Trust Fund include:

- Removal Costs;
- Real or Personal Damages;
- Loss of Profits and/or Income;
- Loss of subsistence;
- Lost government revenue;
- Increase public services; and
- Up to \$500 million in Natural resource damages compensation.

The trust fund does not distinguish between sudden or gradual spill events.

The Oil Spill Liability Trust Fund is financed by taxes on certain types of unrefined oils, plus fines and penalties imposed by the government on parties responsible for oil spills.

In something peculiar to the definition of the oil that is taxed, tar sands oil is not paying into the fund through taxes. It should be noted that Line 6 B responders did utilize the Trust Fund and those amounts were reimbursed by Enbridge.

Payments from the fund to respond to an oil spill are subject to a limit of \$1 Billion per incident. "Incident" means any occurrence or series of occurrences having the same origin, involving one or more vessels, facilities, or any combination thereof, resulting in the discharge or substantial threat of discharge of oil.

The spill fund is designed to back-stop the responsible party's ability to fund an oil spill clean-up either through cash or insurance recoveries. The parties responsible for the spill must fully reimburse the Oil Spill Liability Trust Fund for any fund monies utilized by The State of Minnesota or by federal government responders to a spill. The funds are still available to responders including The State of Minnesota in the event of the bankruptcy of the party responsible for the oil spill.

Subject to political winds, the future funding or even the existence of the Oil Spill Liability Trust Fund over the term the operational of Line 3 is uncertain.

For More information on the Oil Pollution Act, tar sand oil, taxes and the Oil Spill Liability Trust Fund see Appendix B.

## **Insurance Recommendations And Conclusions**

### **A Long-Term View on Risk Funding Is Needed for Line 3**

Any risk management strategy developed as part of the permitted use of the land for Line 3 needs to anticipate changes in a number of variables, including the future economic viability of the company operating the pipeline.

Insurance has been around for over 400 years, it is a good bet that insurance will exist as a financial product for the entire period Line 3 is operational. Therefore, insurance requirements as a condition of the permit are highly recommended.

The current financial picture of Enbridge and its liability insurance program is not particularly relevant to the actual risk involved operation of Line 3 for decades into the future.

Specified insurances as part of a permit to operate a pipe line create numerous risk management advantages to The State of Minnesota.

- Insurance will automatically adapt to new information on risk over time;
- The limits of insurance can be increased to reflect future loss costs due to the effects of inflation;
- Insurance underwriters will provide an objective 3<sup>rd</sup> party evaluation of the Line 3 risk in particular;
- Insurance underwriters have access to an extremely efficient global knowledge sharing network of hazards which can share knowledge on risks within hours of discovery;
- By accessing one specialized insurance underwriter, the collective best practices of multiple companies in the same business, in this case pipe lines, can be utilized for advanced loss avoidance;
- By requiring insurance for a particular activity, there is no need for the stakeholders in the activity to have expertise in risk evaluation or risk management. The private insurance industry will efficiently take all risk factors into account when offering to insure the activity. By simply requiring robust insurance, the stakeholders access the collective risk management knowledge of thousands of people working in the insurance business in North America alone. A firm like Enbridge would access the global insurance market place for its insurance policies, in which case, all of the knowledge and experience held by the people that work in insuring pipe lines on a global scale would be brought to bear on Line 3 over the life of the permit; and
- Insurance harnesses the efficiency of capital markets to reward safe behavior. Safe firms with low losses pay lower insurance premiums. Higher risk firms pay higher premiums. Extremely risky operations may be or may become uninsurable.

## **Recommended Types And Amounts Of Liability Insurance**

I recommend that Enbridge procure and maintain the following liability insurance policies purchased from insurance companies with no controlling economic ownership ties to Enbridge over the course of the permit duration:

- GL insurance with a \$100,000,000 per loss limit including a “time element” exception to the pollution exclusion (currently in place);
- EIL insurance with a \$100,000,000 per loss limit of liability;
- Both the GL and EIL policies should include one automatic reinstatement of limits provision or an annual aggregate of twice the per loss limit (\$200,000,000);
- These amounts of insurance should be increased by \$10,000,000 for both the GL and EIL insurance every five years until the Line 3 pipe line is decommissioned;
- The State of Minnesota should be named as an Additional Insured under the GL and EIL policies; and
- Enbridge should provide The State of Minnesota with a certificate of insurance on an annual basis and this insurance certificate should detail all endorsements to the policy as they may appear.

## **Risk Management Objectives In These Recommendations**

There are three risk management objectives in my recommendation that Enbridge maintain true environmental insurance on Line 3:

1. Back stop the primary Enbridge insurance program with broader insuring obligations for environmental risks than a GL insurance policy, which typically only addresses Property Damage and then only if certain “time element” conditions are met to over-ride the “Absolute” pollution exclusion commonly found in GL Insurance policies;
2. Access the independent risk evaluation capability of the environmental insurance underwriting community over the operational life of Line 3;
3. Backstop potentially unrecoverable GL Insurance, the potential inability of Enbridge to pay for a spill clean-up out of profits in the future, or deficiencies in government sponsored oil spill funds; and
4. Create a possible source of cost recovery for the State of Minnesota that will survive as an asset even in the event Enbridge is bankrupt.

The recommended types and limits of liability insurance is readily available in the insurance market place today, and will be available in the foreseeable future at premiums commensurate with the risks insured and loss record of the insurance buyer. A specification for the recommended liability insurance on Line 3 appears in Appendix A.

## **Appendix A: Recommended Liability Insurance Specifications**

### **General Liability Insurance**

Commercial GL Insurance or the equivalent.

Specifically Insuring the operations and completed operations of Line 3.

Coverage shall be provided for Bodily Injury Liability, Property Damage Liability and Defense costs.

The policy shall provide contractual liability coverage.

The pollution exclusion in this policy shall not apply to the escape or release of pollutants or contaminants that begin and are discovered in no less than 14 days and are reported to the insurer within no less than 60 days.

Insurance must be provided by an insurer with an A.M. Best's rating of at least A, XIII or as approved by The State of Minnesota. The insurance companies providing this insurance cannot be controlled, owned or operated by Enbridge.

Coverage shall be extended to The State of Minnesota as an Additional Insured.

This insurance shall be Primary and Non-contributory to any insurance The State of Minnesota may have available.

Any rights of subrogation against The State of Minnesota shall be waived.

The policy cannot contain an "Insured vs. Insured" exclusion applying to The State of Minnesota as an Additional Insured.

The policy shall obligate the insurer through a "notice of cancellation or non-renewal" endorsement to provide 60 days notice of cancellation or nonrenewal to The State of Minnesota.

Minimum Limit of Liability: \$100,000,000 per loss, this limit of liability should be dedicated specifically to Line 3

There shall be a reinstatement of limits purchase option for the insured or an annual aggregate of \$200,000,000

The self-insured retention on this policy cannot exceed \$50,000,000

### **Environmental Impairment Liability Insurance**

Environmental Impairment Liability Insurance, Site Pollution Liability Insurance or the equivalent

Insured Location: The Line 3 pipe line and connected terminals in The State of Minnesota.

If the policy is written on a "Claims Made" basis the "retro date" on the policy must be set to the beginning of the new Line 3 operations, including the testing period. The retro date cannot be advanced on subsequent renewals of the coverage.

Insurance must be provided by an insurer with an A.M. Bests rating of at least A, XII or as approved by The State of Minnesota. The insurance companies providing this insurance cannot be controlled, owned or operated by Enbridge.

Coverages to be included:

- On and off-site Clean-up expenses
- Damages to Natural Resources
- Emergency response cost to at least \$1,000,000
- Bodily Injury Liability
- Property Damage Liability
- Contractual liability naming The State of Minnesota as an Additional Insured
- This policy must be Primary and Noncontributory to any insurance The State of Minnesota may have access to.
- The policy cannot contain an “Insured vs. Insured” exclusion applying to The State of Minnesota as an additional insured.
- This coverage can be excess over other valid and collectable insurance and the deductible or self-insured retention amounts of any valid and collectable underlying insurances

Minimum Limit of Liability: \$100,000,000 per loss dedicated to Line 3

There shall be a reinstatement of limits purchase option for the insured or an annual aggregate of \$200,000,000

A policy with up to a 3 year policy term with one set of the above stated limits of liability is acceptable.

The policy shall obligate the insurer to provide 60 days notices of cancellation or nonrenewal to The State of Minnesota.

This insurance shall be Primary and Non-contributory to any insurance The State of Minnesota may have available.

Any rights of subrogation against The State of Minnesota shall be waived.

The policy cannot contain an “Insured vs. Insured” exclusion applying to The State of Minnesota as an Additional Insured.

Self-Insured Retention

The maximum self-insured retention on this policy shall be \$5,000,000.

The EIL coverage can be excess coverage over other valid and collectable insurance available to Enbridge

#### **Evidence of Insurance**

Upon request by The State of Minnesota, Enbridge shall furnish a certificate of insurance which accurately reflects that the procured insurances fulfill these insurance requirements.



## **Appendix B: Federal Sources of Oil Spill Clean-up Cost and Victim Compensation Funding**

This reference material is derived from <http://www.fas.org/sgp/crs/misc/R43128.pdf>

And has been edited for ease of reference in this report.

### **Oil Sands and the Oil Spill Liability Trust Fund: The Definition of “Oil” and Related Issues for Congress**

**Jonathan L. Ramseur**

Specialist in Environmental Policy

January 22, 2015

“The Oil Spill Liability Trust Fund (OSLTF) provides an immediate source of federal funding to respond to oil spills in a timely manner. Monies from the OSLTF can be used to respond to a wide variety of oil types, including oil sands-derived crude oils.

However, the OSLTF arguably plays a backup role in terms of response funding during many oil spills. The responsible party for an oil spill often provides the primary source of response (i.e., cleanup) funding, and the federal government may recover costs or damages paid from the OSLTF. This was the case with the Enbridge leak in Line 6 B no federal dollars were used. Thus, the financial impact to the trust fund could be minimal if the majority of its payments are reimbursed by the responsible parties. Nonetheless, the liability of responsible parties may be limited under certain conditions. In those situations, the OSLTF could effectively pay—up to a per-incident cap of \$1 billion.”

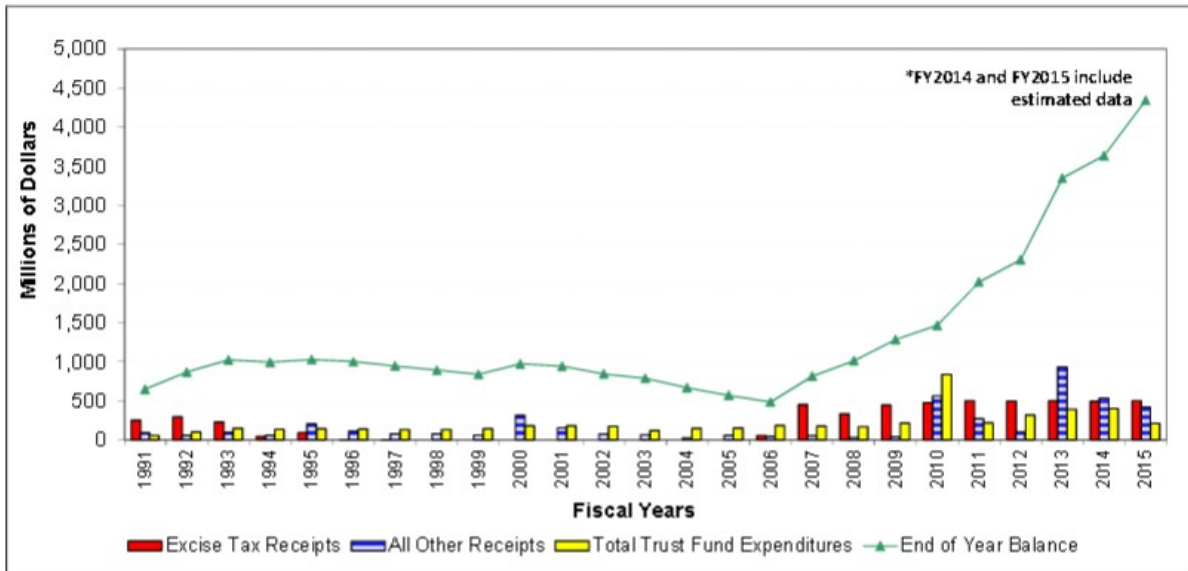
#### **Uses of the Fund**

“Pursuant to OPA Section 1012, the trust fund may be used for several specific purposes:

- payment of removal costs, including monitoring removal actions, incurred by federal or state government;
- payment of the costs incurred by the federal and state trustees of natural resources for assessing the injuries to natural resources caused by an oil spill, and developing and implementing the plans to restore or replace the injured natural resources;
- payment of parties’ claims for uncompensated removal costs, and for uncompensated damages.”

## The Oil Spill Liability Trust Fund

**Figure 2. Oil Spill Liability Trust Fund**  
Receipts, Expenditures, and End-of-Year Balances



**Source:** Prepared by CRS; data from annual Office of Management and Budget, Budget of the United States Government, Appendices.

**Notes:** The initial gap between the end-of-year balance (line) and the receipts-expenditures columns is due to the FY1991 starting balance of \$358 million. The relative increases in “other receipts” in 1995 and 2000 are due to transfers from the Trans-Alaska pipeline fund of \$119 million and \$182 million, respectively. The increases in expenditures and “other receipts” between 2010 and 2013 are related to the 2010 *Deepwater Horizon* oil spill.

As **Figure 2** indicates, the “other receipts” category has contributed a substantial portion of revenues in recent years, the vast majority stemming from the 2010 *Deepwater Horizon* oil spill. Other receipts include earned interest on the unexpended trust fund balance, fees from fines and penalties, and cost recovery from responsible parties. The trust fund is likely to receive additional revenues related to that incident, particularly from anticipated Clean Water Act civil penalties on BP.

## Appendix C

### Curriculum Vitae

David J Dybdahl Jr. CPCU, ARM, MBA  
December 2016

#### Personal Information

**Address** 4901 Pine Cone Circle  
Middleton, Wisconsin 53562

#### Contacts

Direct line (608) 836-9567  
Mobile (608) 513-6101  
Home (608) 798-1676  
E-mail dybdahl@armr.net

#### II. Work Experience

##### 1999 to Present

##### **American Risk Management Resource Network, LLC. Principal,**

ARMR.Network is a specialty environmental insurance brokerage firm and Managing General Agency with underwriting authority of \$5,000,000. Our customized insurance products are sold through hundreds of insurance agencies in the United States and Canada. Over the past 32 years I have worked on the placement of literally thousands of environmental insurance policies both as the placing broker and as the Global Environmental Practice Leader of Willis, the third largest insurance brokerage firm in the world.

Insurance and risk management consulting assignments at ARMR.Network include; writing the insurance specifications and conducting the insurance compliance reviews for the bidders on five hundred million dollars of fixed price environmental remediation services, serving as an expert witness on disputed environmental insurance claims with amounts in dispute measured in the tens of millions of dollars, compiling the history of the environmental insurance market complete with reconstructive pricing and underwriting guidelines for individual risks from 1980 to date, creating business plans for environmental insurance sales in insurance brokerage firms, developing new insurance products complete with policy forms, pricing models and underwriting guidelines, environmental risk management consulting on insurance issues associated with mold damages, proof of financial responsibility financial product efficacy analysis for the federal government, facilitating culture change in insurance brokerage operations and internet based knowledge sharing platforms.

Consulting projects have been completed for a broad range of clients including the US EPA, US Justice Department, US Army Corps of Engineers, US Army Environmental Center, Los Angeles County School District, The California Solid Waste Board, Arthur J Gallagher, Wells Fargo, The World Bank and numerous other fact and expert witness assignments associated with environmental insurance.

##### 1999 to Present

##### **The Society of Environmental Insurance Professionals, Founder**

The Society of Environmental Insurance Professionals was created in 1999 to enhance the use of environmental insurance as a risk management tool. I created the organization by developing the business plan and soliciting the cooperation and financial support from the leading underwriters and brokers of environmental insurance. ERRA produces educational seminars on current environmental risk management issues, produces newsletters, and hosts an internet based environmental risk resources library.

ERRA is a federally registered not for profit 501, c. 3. educational organization and has been approved in over thirty states for continuing education credits in insurance and law.

##### **2002 International Risk Group, President**

IRG is the insurance branch of a leading brownfield development corporation.

### **2001 Aon, Mid-West Environmental Insurance Director**

I worked as an environmental risk management resource in the environmental practice of the second largest insurance brokerage firm in the world.

### **1990 to 1999**

#### **Willis Global Environmental Practice, Managing Director**

I created the first functioning fully staffed environmental resource group in a major brokerage firm. The Willis Environmental Practice served as a technical resource to the insurance brokers of Willis. Our activities in the environmental practice included broker training, joint client calls, gathering market intelligence, assembling pricing benchmarks, trouble shooting on difficult insurance placements and claim issues, managing insurance company relationships, and quality assurance on hundreds of environmental insurance placements. Over this time period the Global Environmental Practice at Willis produced over \$250,000,000 in environmental insurance premiums for thousands of clients.

Willis pioneered the development of multi-disciplined technical resource supported environmental insurance production in the insurance brokerage industry. Employing environmental engineers, lawyers, industrial hygienists and environmental insurance experts, the environmental practice was able to deliver the specialized environmental risk management expertise to the field offices which enabled Willis brokers to develop innovative solutions to environmental risk management problems.

During this time frame the book of environmental business grew from less than one million dollars in commissions in 1990 to over fourteen million dollars in 1999. The Willis environmental practice consistently outperformed the overall environmental insurance industry in terms of growth on an annual basis. The basic design of the multi-disciplined resource supported environmental practice has set the standard for the insurance brokerage industry and has been copied by the major competitors of Willis.

Significant environmental insurance placement innovations that were pioneered in the Willis Environmental Practice between 1990-1999 included designing and placing the insurance on the Clean-Up of Chernobyl on a wrap up for contractors working for the World Bank in London, designing the first contractor controlled, fully insured liability buy out for a superfund site, insuring the Clean-Up of the Oak Ridge, TN. nuclear weapons facility for Bechtel, insuring the Clean-Up of the Hanford, WA nuclear weapons facility for Fluor Daniel, insuring the design professional liability and environmental liabilities of the Los Angeles County Mass Transit Authority subway/light rail construction project and designing and implementing the first contract specific, fully cost reimbursed environmental liability insurance wrap up programs for EPA superfund contractors.

### **1998 to 1999**

#### **Willis Corroon America, Chief Knowledge Officer**

I worked on a team to create a corporate knowledge sharing culture and intranet platform at Willis. In this role I was the corporate staff person in charge of coordinating all of the specialty Practice Groups within the firm. As the Chief Knowledge Officer I served on the twenty person executive committee of Willis Corroon Americas.

### **1983 to 1990**

#### **Corroon and Black, Insurance Brokers, Vice President**

As a retail insurance broker in Milwaukee, Wisconsin I built and serviced a multi-line book of commercial insurance business. Most accounts were in the environmental services sector with a particular emphasis on EPA Superfund contractors and waste transporters.

From 1985 through 1989 I qualified for the "Exceptional Producer" award, the company's highest sales performance award. Only 1% of the sales force qualified for this award in five consecutive years.

In 1986 I developed the first professional liability insurance policy to specifically insure environmental loss exposures for engineers working on environmental remediations.

In 1986 I pioneered the development of the Contractors Pollution Liability product line working as a consultant to the EPA's Superfund Contractors Indemnification Task Force.

**1982 to 1983**

**Frank B Hall, Insurance Broker, Producer**

This was an all lines insurance production position. I specialized in group programs for environmental insurance.

**1980 to 1982**

**Risk Treatment Services, Consultant**

RTS performed captive management services for twelve Colorado based captive insurance companies. My responsibilities there included review of state financial filings for insurance company operations and feasibility studies.

As an insurance consultant to Johns Manville in asbestos litigation in 1981 I reconstructed their insurance program from 1932 to 1980 and answered interrogatories for the ensuing insurance coverage litigation. Insurance archiving for historical insurance coverage on toxic tort claims later became a profession onto its self.

**III. Recent Consulting, Expert and Fact Assignments**

Review the procurements of Fixed Price Remediation's for the US Army Environmental Center. The contract value was \$500,000,000. Washington DC and Omaha.

Develop a business plan to create a specialty wholesale insurance broker on a national scale, projects in Colorado and Illinois.

Insurance Product Development: develop risk evaluation models, design insurance policy forms and underwriting guidelines for environmental insurance covering mold and products liability related damages. New York.

Evaluated cost proposals for fixed price remediation insurance packages, private clients in Texas and California

Expert on insurance coverage issues related to cost cap/stop loss environmental insurance policies, two cases, New Jersey/ California

The availability and pricing of environmental insurance on a property transfer in 1995, Illinois

The availability of environmental insurance from 1987 to 1995 for insurance recovery allocations on uninsured years, Alabama

The availability of environmental insurance from 1987 to 1997 for uninsured years, Washington

The availability of environmental insurance on a property transfer in 1997 and 1998, risk advisors professional liability claim for \$189,000,000, California

Environmental insurance coverage and cost comparison between bidders for a brownfield development, premiums ranged from \$14,000,000 to \$90,000,000, California

Analyze carrier insolvency and the efficacy of proof of financial responsibility mechanisms. Washington, DC , U.S. Environmental Protection Agency/ U.S. Department Of Justice

Analyze the efficacy of proof of financial responsibility mechanisms. Washington, DC US EPA/US DOJ, California Solid Waste Board

Alleged brokerage negligence in the procurement of closure and long term care insurance. South Carolina

Defend alleged broker negligence in the procurement of environmental insurance. California, Missouri, Florida

Provide insurance coverage litigation support for a disputed cost cap insurance claim. Federal Court, New York, Insurance coverage litigation support on a cost cap policy Illinois, Engineers Professional Liability insurance coverage litigation, New Jersey.

#### **IV. Publications**

R&R Magazine, A \$20K Vase Broken: Where is Your Insurance Coverage?, November 2016  
International Risk Management Institute, Changing Environmental Insurers: Use Caution, October 2016

R&R Magazine, Modern Marketing of Insurance Agencies, September 2016

International Risk Management Institute, A Big Picture on Environmental Insurance, July 2016

R&R Magazine, Knowing the Risks & reaping the Rewards of Biohazard Cleanup, July 2016

R&R Magazine, Working with Restoration Networks, June 2016

R&R Magazine, Lower Insurance Costs by Working with Restoration Networks, April 2016

IA Magazine, What to Look for in an Environmental Liability Insurance Policy, January 2016

IA Magazine, 8 Environmental Coverage Mistakes-and How to Avoid Them, January 2016

R&R Magazine, The Best Risk Management Tool for Mold Remediation, December 2015

International Risk Management Institute, Environmental Insurance: Just the Facts, October 2015

R&R Magazine, The Bright Future of Roofing Restoration, October 2015

International Risk Management Institute, A User's Guide to Pollution Exclusions and Environmental Insurance, September 2015

R&R Magazine, Part Two: Fixing Gaps in Your Liability Insurance Policies, August 2015

R&R Magazine, Part One: Fixing Gaps in Your Liability Insurance Policies, July 2015

International Risk Management Institute, Avoiding Common Insurance Certificate Errors, July 2015

R&R Magazine, Managing the Risks of Disinfectants, May 2015

R&R Magazine, How to Get Paid When Lenders Are Loss Payees, March 2015

International Risk Management Institute, State Supreme Court Changes the Game on Pollution Exclusions and Environmental Insurance, March 2015

IA Magazine, Pollution Exclusions Hit the Family Farm, February 2015

R&R Magazine, Insuring Bio-Remediation Work, January 2015

International Risk Management Institute, Insurance Coverage for Losses Arising from the Ebola Virus, December 2014

R&R Magazine, The Super Bright Future of Restoration Contracting, October 2014

R&R Magazine, Roof Repair Leads to \$1 Million Mold Claim: An Insurance Claim Case Study, October 2014

Property Casualty 360, What Every Adjuster Should Know About Fungi/Bacteria Exclusions, September 2014

International Risk Management Institute, Contractors Environmental Liability Insurance: Claims-Made versus Occurrence, July 2014

International Risk Management Institute, Common Myths about Contractors Environmental Insurance, June 2014

R&R Magazine, Having Trouble Getting Paid for Category 3 Water Jobs? Part II, May 2014

R&R Magazine, Having Trouble Getting Paid for Category 3 Water Jobs?, March 2014

International Risk Management Institute, Rational CPL Insurance Specifications, March 2014

R&R Magazine, Why Every Restoration Firm Needs Professional Liability Insurance, February 2014

International Risk Management Institute, Contractual Risk Transfer for Contamination Risks, January 2014

R&R Magazine, Beware! Your Category 3 Water Jobs Are Likely Uninsured, November 2013

R&R Magazine, A Two-Step Solution to Managing the Risk of Subcontractors, September 2013

International Risk Management Institute, Revealing the Dark Secrets of Category 3 Water Exclusions, September 2013

R&R Magazine, Roofing: A New Opportunity for Professional Restorers?, July 2013

R&R Magazine, Bailees Insurance: What Every Restoration Firm Needs to Know, May 2013

R&R Magazine, Who's Got Your Back?, March 2013

R&R Magazine, The IICRC Standards: An Important Risk Management Tool, January 2013

R&R Magazine, Tis' the Season for Insurance Renewal, November 2012

R&R Magazine, Helping with the Hurricane Sandy Aftermath? Here's Insurance Information You Need to Know, November 2012

R&R Magazine, A Cleaning/Restoration Contractor's Insurance Needs: Debunking the Urban Myths, October 2012

R&R Magazine, Managing Risks in Contracts, July 2012

Brownfields Insurance Article, History and Uses of Environmental Risk Insurance, July 2012

R&R Magazine, Marketing Your Restoration Business through Claims Networks, May 2012

R&R Magazine, Risk Management and Insurance Mega Trends in 2012, January 2012

R&R Magazine, Are You Feeling Lucky?, November 2011

R&R Magazine, A perfect Insurance Storm is Brewing: Brace for a Wild Ride, May 2011

Environmental Claims Journal, Dirt is a Pollutant, Water is too!, March 2011

Business Insurance Magazine, Environmental Liability Cover Creates Certainty in M&A Deals, February 2011

R&R Magazine, Special Insurance Needs For Cleaning, Drying and Restoration Contractors, January 2011

R&R Magazine, Buy Your Insurance Like a Pro, October 2010

R&R Magazine, Things Your Insurance Agent Has Not Told You, August 2010

R&R Magazine, 5 Ways Adjusters and Contractors Can Stay in Sync, March 2010

R&R Magazine, Chinese Drywall: Unprecedented Growth and Risk for Restorers, January 2010

R&R Magazine, Should I Make A Claim On My Liability Insurance?, September 2009

R&R Magazine, Macro Insurance Industry Trends and the Restoration Contractor, August 2009

IICRC S520 Standard and Reference Guide for Professional Mold Remediation 2<sup>nd</sup> edition Institute of Inspection, Cleaning and Restoration Certification, August 2008

The Risk Report *Environmental Risks, Insurance, and Pitfalls* volume XXXI No.4 International Risk Management Institute, Inc. 2008

Practical Risk Management Environmental Insurance, June 2008

Practical Risk Management Underground Storage Tank Insurance, June 2008

Scotsman Guide, On the Lookout for Insurance Exclusions, April 2008

Restoration Industry, GL Insurance & Mold, April 2008

R&R Magazine, Ten Ways To Save Money And Buy Better Insurance, March 2007

Mold and Water Intrusion: Successfully Litigating Mold Claims Massachusetts Continuing Legal Education, Inc, 2006

Association of Specialists in Cleaning and Restoration, There Is Less Gold in Mold for Restoration Contractors, August 2006

Scotsman Guide, Staying off Mold, Co-author, August 2006

Cleaning Specialist Magazine, Mold Risk Management for Restoration Contractors, March 2006

John Liner Letter How Lenders Were Left Unsecured For Mold Related Damages  
November 2006

Surplus Lines Insurance Products, Environmental Insurance, American Institute for Chartered Property and Casualty Underwriters. 2006



Cleaning Specialist Magazine, Insurance and the Restoration Contractor, April 2005

Cleaning Specialist Magazine, Mold Forces Restoration Contractors to Face a New insurance Reality, March and April 2005 editions

Commercial Liability Risk Management and Insurance, CPCU Textbook, Chapter 11, Environmental Insurance, 1999, 2002, revised in 2005

Associate In Risk Management textbook, I was the contributing author on the Environmental Loss Control chapter, which is part of the course material for the Associate in Risk Management professional designation revised in 2005.

Environmental Claims Journal, A User's Guide to Real Environmental Insurance, Article 23/Vol. 12, No. 4, June 2004

Environmental Claims Journal, The Risk Advisors Survival Guide to Mold Exclusions, winter 2003

CPCU Agent and Broker Solutions, Mold Exclusions + Broker E and O Exposure, June/ August/September 2003 editions

Journal of Property Management, Under Coverage, Mold and Terrorism Exclusion's, May /June 2003

Coverage Corner, EIL, Society of Environmental Insurance Professionals, Spring 2001

The Effects of Technology on Traditional Roles and Relationships in the Insurance Industry, CPCU Society, 1999, Information Technology Section

IICRC S500 Standard and Reference Guide for Professional Water Damage Restoration 2<sup>nd</sup> edition Institute of Inspection, Cleaning and Restoration Certification, 1999

John Liner Review, Pollution Exclusions and Environmental Insurance, 1994

Associated General Contractors Environmental Risk Management Handbook, Insurance Issues chapter, 1993

Design Professionals Handbook of Business and Law, Part VI Dealing with Hazardous Waste and Environmental Issues, co-author, 1991

Environmental Risk Management – A Desk Reference, Chapter 24, an Integrated Risk Financing Approach to Remedial Action Contracting, 1991

Risk Management Magazine, Action-Reaction, Why the insurance industry will not be able to avoid superfund claims with new pollution exclusions. 1987

I am widely quoted as an authority in environmental insurance and have been quoted in the Wall Street Journal, New York Times, Business Insurance, National Underwriter, Independent Agent, Rough Notes and numerous other trade publications.

## VI. Educational Back Ground

School Attended	Major	Degree	Year
American Institute For CPCU	Chartered Property And Casualty Underwriter	CPCU*	1985
Insurance Institute Of America	Associate in Risk Management	ARM*	1981
University of Wisconsin Madison **	Risk Management and Finance	MBA	1981
University of Wisconsin Madison	Risk Management	BBA	1978

\* I have since become the contributing author of the text book materials on environmental insurance and risk management for these and related course offered by the Institute to insurance professional courses.

\*\* I created the environmental risk management and insurance module for the liability insurance and risk management course in the School of Business at UW-Madison. I have presented this lecture at the UW for thirty-five consecutive years.

## VII. Teaching Positions and Lectures

University of Wisconsin School of Business, Guest lecturer 1981-2017

Insurance Agent Continuing Education approved provider in multiple states

CPCU, Instructor, Accounting and Finance, 1985, 1986, (Award Winning)

Denver College, Introduction to Accounting, 1982

**Lectures** (not a comprehensive list, I have presented over 300 lectures at conferences and for insurance agents, architects and lawyers continuing education credits)

Sustainability Risk Management, Risk and Insurance Management Society annual meeting 2008

Environmental Risk Management, UW-Madison Fluno Executive Education Center- two-day conference 2007.

Wisconsin Associated General Contractors seminars, Mold Related Insurance issues, February, September 2003

Environmental Bankers Association, 1997, 1999, 2001, 2003, 2004 summer meetings, Environmental Insurance topics related to lenders.

University of Wisconsin- Extension, Madison, College of Engineering, four guest lectures on environmental insurance and risk management issues related to water intrusion in buildings.

EPA-National Brownfields Convention, 2002, the Use of Environmental Insurance in Environmental Legacy Solutions

CPCU, National Teleconference- E-Commerce and the Insurance Industry

University of Wisconsin-Madison, Business School, Risk Management and Insurance Department, I have been a guest lecturer for twenty-eight consecutive years on environmental risk management topics.

Vanderbilt University, MBA Course, Environmental Insurance and Risk Management, four presentations

Risk and Insurance Management Society (RIMS) National Conventions, nine presentations. Rims local chapters, five presentations. In 2007 the first presentation to national RIMS on the topic of Sustainability Risk Management.

The Society of CPCU, National Convention two presentations, 1994 Environmental Insurance, 2003 Managing Mold Risks in a Post Exclusion Era

## **VI. Insurance Industry Committees**

Lead environmental insurance resource for the 100,000+ member Independent Insurance Agents and Brokers Association

Member of the Board of Directors of the 55,000+ member Institute of Inspection Cleaning and Restoration Certification

Chairman of the National Association of Insurance Brokers, Environmental Sub Committee on Superfund reform.

Participant in the US EPA insurance industry committee on Pollution Prevention

Member of the US EPA technical review panel on contractor indemnification

CPCU, National Public Relations Committee Task Force 2007  
Milwaukee Chapter, Public Relations Director, (Award Winning) 1986