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# ***Environmental Risk Communications, Inc. 2016 Capabilities***

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***[www.erci.com](http://www.erci.com)***

# ERCI Software and Consulting



- Environmental liability recognition and measurement
  - 4,000 sites since 1994
  - 56 corporate and seaport client portfolios
  - 100+ CPA audits
- Environmental counterparty risk
- Liability validation for auditing, MD&A, expert witness testimony
- Decision analysis
- Database and custom app development for these use scenarios
- Representative Clients:



**DELPHI**



- **GAAP-Compliant Environmental Liability Forecasts**
  - Data depth and rigor: relevant and faithful representations
  - Watch list of future reserve increases
  - Recognition of guarantees, commitments, contingencies, obligations
- **Fair Value Measurement (ASC 820, GASB 72, IFRS 13)**
  - Costing and pricing for MD&A and annual forecasting
  - Identifying counterparties, assessing ability to pay, 24/7 tracking
  - Strategy failure
- **Decision Support and Knowledge Management**
  - Custom software to store, sort and report site history, cost benchmarks, key assumptions, best practices, lessons learned
  - Advanced decision support and scenario cost modeling

# How Our Clients Benefit



## ○ **GAAP-Compliant Liability Forecasts**

- Comprehensive tracking counterparty risks
- More reliable display of environmental liabilities
- Third-party validation of reserve balances, future reserve increases
- MD&A: fair value measurement for buying and selling properties
- Training to contain counterparty risk
- Implementation of fair value measurement

## ○ **Improved Capital Stewardship**

- Prevention of counterparty default losses on environmental liabilities
- Better audit defense
- More reliable recognition and measurement of Obligations, Commitments, Obligations or Guarantees
- Better outcomes from MD&A, including purchase-accounting booking
- Strategic consistency: cost benchmarks, risks, pace to closure, remedial alternatives
- Decision quality: developing new options, accelerate / defer, pricing and choosing best

- Developed Defender in Visual Basic with Crystal Ball®, used to manage 4,000+ unique environmental liabilities. 1994
- Trained and supported 250+ corporate cleanup project managers and auditors. 1994-present
- Developed first Monte Carlo model of a 2,000 site project portfolio. 1995
- Shortest payback period for full Defender deployment: 3 hours. 1998
- Developed one of the first due diligence models to support real-time fair value measurement of an environmental liability portfolio. 1999
- Built and deployed Defender in 90 days to meet external auditor's compliance deadline. 2000
- Developed environmental counterparty tracking systems (ability to pay, probability of default, expected value of default, bankruptcy claim valuation). 2001
- Built "watch list" for estimating and justifying future reserve increases. Derived "bow wave" equations for reserve increase recurrence. 2002
- Co-developed site strategic plan template to quantify liabilities. 2002
- Facilitated benchmarking groups in Superfund, midstream oil/gas, chemicals and automotive industries. 2004, 2008, 2011, 2014-present
- Developed first real-time parametric model for sediment cleanup costs. 2007
- Released first Markov Chain Monte Carlo (MCMC) environmental counterparty tracking system for PRP group managing 100+ years of NPL site work. 2013
- Built catalog of 21 webinars on environmental liabilities, on our YouTube page. 2011-present
- Developed back-testing system for comparing disclosed vs fair value of remediation reserves and asset retirement obligations. 2015

# Audit Experience



Company	Division	Fortune 500 (sales)	Auditor	Audits
	Chevron Environmental Management Co. Chevron Pipe Line Co Chevron Canada, Ltd. Texaco Downstream Properties, Inc.	3	PRICEWATERHOUSECOOPERS	Annual, plus quarterly items
DCP Midstream	 Duke Energy Field Services <i>Natural gas collection and pipelines</i>	>500		Annual
El Paso Corp	 Now part of KinderMorgan <i>Diversified energy company</i>	315	PRICEWATERHOUSECOOPERS	Annual, plus special items
FMC	 Corporate-wide <i>Diversified manufacturer</i>	467		Annual
Hewlett-Packard	 Corporate-wide <i>Computer and microelectronics manufacturer</i>	17		Annual or less (not material)
Northrop Grumman	 Corporate-wide <i>Aerospace and defense</i>	61	and DCAA	Annual
Port of Seattle	 Corporate-wide <i>Regional airport and marine port authority</i>	NA	and State Auditor	Annual
Tesoro Petroleum	 Corporate-wide <i>Oil refinery and marketer</i>	139		Annual, plus special items
TRW Automotive	 Corporate-wide <i>Automotive parts</i>	201		Annual
Univar	 Corporate-wide <i>Chemical processor and distributor</i>	Private		Annual
Delphi	 Corporate-wide <i>Automotive parts</i>	Private		Annual, plus quarterly items

# Five Types of Environmental Liabilities



## Liabilities

**Obligations**  
FASB: ASC 410  
GASB: GASB 49  
IASB: IAS 37

**Guarantees**  
FASB: ASC 460  
GASB: GASB 70  
IASB: IAS 39

**Commitments**  
FASB: ASC 440  
GASB: Note disclosure  
IASB: IAS 16

**Contingencies**  
FASB: ASC 450  
GASB: GASB 10  
IASB: IAS 37

*Asset Retirement*

*Env Remediation*

Five companies sign consent order to study and clean up a site; one dissolves and orphans their share

Fifty companies agree with USEPA to pay for past response costs; by the time the settlement is finalized, only 40 are operating

Oil well owner files Chapter 11 bankruptcy, doesn't plug and abandon wells; reverts to you as previous owner

Your company sells a division and promises to buy back a plant if contamination is found

A State requires a bond for 10 years of OM&M costs on a RCRA closure site; bond value must be updated annually

# Verifiable Counterparty Assumptions



...what you have to know for your liability to be zero

Types of Counterparties	Liability Types > [GAAP Citation >]	Asset Retirement [ASC410-20, GASB18]	Env Remediation [410-30, GASB49]	Commitments [ASC 440]	Contingencies [ASC 450, GASB 10]	Guarantees [ASC 460, GASB70]
	Successor owners and tenants	They will fully fund the assessment and demolition work, some day, or sell to someone who will perform.	They will study and remediate any future spills. They will not sell to a future defaulter.	They will indemnify and defend for any future spills.	They will indemnify and defend for any and all future claims.	They will provide financial assurance for LT monitoring.
	Predecessor owners and tenants	They will promptly pay for their share of future ARO costs, some day.	They will respond to you or regulators investigating past spills, and participate in good-faith negotiations to allocate costs.	They will keep contractual promise to buy back a contaminated property.	They will answer a CERCLA 104(e) info request and join a PRP group to fund study and remediation costs.	They will provide financial assurance for LT monitoring.
	Joint venture partners	They will promptly pay for their share of future ARO costs, some day.	They will promptly pay for their share of future study and remediation costs, some day.	They will document their changes in successors and assigns perpetually.	They will share the stranded costs of other defaulting PRPs, and redo a failed cleanup .	They will document their changes in successors and assigns perpetually.
	PRPs on active CERCLA sites	NA	They will honor the terms of a PRP agreement perpetually.	They will honor the terms of a PRP agreement perpetually.	They will meet all cash calls perpetually.	They will share the cost of EPA financial assurance, if any
	Adjacent property owners sharing pathways/receptors	NA	Contamination from their property will not reach your property. They will pay their share of future study and remediation costs.	NA	They will promptly pay for their share of future study and remediation costs, some day.	NA
	Landfills in use today	NA	NA	They will honor the commitment to indemnify and defend for any future releases.	They will close operating landfills at their cost, including the one(s) with your waste.	Their guarantees will continuously be accepted by State and Fed regulators.
	Insurers of owners, tenants, or vendors	They will promptly pay your eligible claims.	They will promptly pay your eligible claims.	They will promptly pay your eligible claims.	They will promptly pay your eligible claims.	They will promptly pay your eligible claims.

**typically reserved today**

**Takeaway: polluters are self-insurers of public policy (“polluter pays”); enforce or forgo your recoveries**

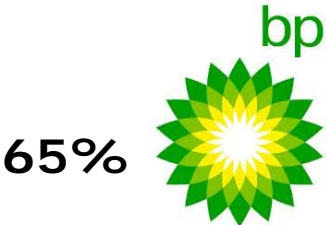


# Counterparties at Macondo Prospect MC252

[*Deepwater Horizon* spill, April 20 to July 15, 2010]



## Well Owners



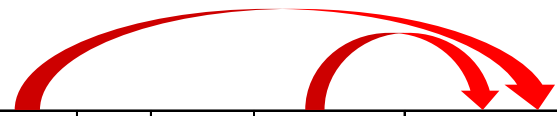
## ○ **Single site**

- Quantify the exposures (PRPs at risk, timeline to prevention)
- Match risk to strategy (observe, insure, liquidate, litigate)
- Document the baseline for auditing and benchmarking

## ○ **Portfolio**

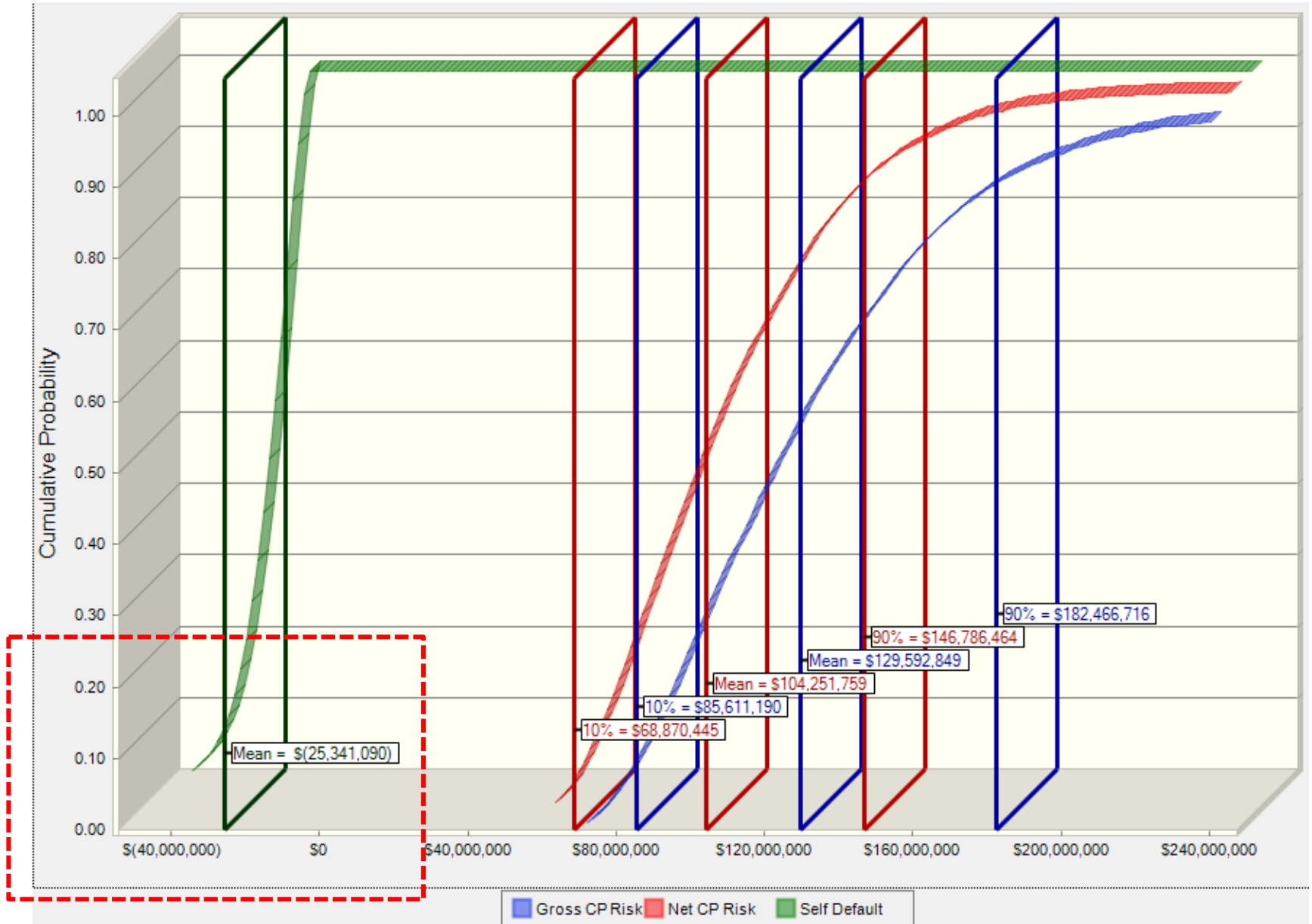
- Confirm reserve values and budgets
- Confirm “watch list” of future reserves
- Answers to key questions
  - “What is the value of indemnifications to us from others? How are they booked?”
  - “How does this compare to the indemnifications we made to others?”
  - “What is the sum of all counterparty risks we have with company XYZ over the next ten years?”
  - “How does that sum compare with the credit limit in place at our operating business units for XYZ?”
  - “Are any indemnifications with XYZ worth cross-cancellation?”

# ERCI's Counterparty Risk Portfolio Valuation



Site	Recognition Benchmark	Type	Current CP Score (max = 1600)	10-year prob(default)	Risk opens	Risk closes	Loss Given Default	Gross E-CP Risk	Less: Self Default	Net E-CP Risk	
A	Counterparty defaults on new	ASC 410-20 ARO	1586	20%	Now	1/1/2020	\$9,020,000	\$ 1,804,000	\$ (135,300)	\$ 1,668,700	
C	35% counterparty fails	ASC 410-20 ARO	1319	40%	Now	Never	\$11,275,000	\$ 4,510,000	\$ (1,014,750)	\$ 3,495,250	
D	Insurer denies coverage	ASC 410-20 ARO	1138	15%	Now	1/1/2020	\$13,530,000	\$ 2,029,500	\$ (152,213)	\$ 1,877,288	
E	JV partner fails, four sites revert, RCRA closures	ASC 410-20 ARO	752	35%	Now	Never	\$28,187,500	\$ 9,865,625	\$ (2,219,766)	\$ 7,645,859	
E	Insurer for JV denies coverage	ASC 410-20 ARO	1186	50%	Now	1/1/2020	\$28,187,500	\$ 14,093,750	\$ (1,057,031)	\$ 13,036,719	
F	Landfill operator CH11, 11 NPL sites	ASC 410-20 ARO	920	35%	Now	Never	\$45,100,000	\$ 15,785,000	\$ (3,551,625)	\$ 12,233,375	
H	10 AROs for asbestos, enforcement	ASC 410-20 ARO	696	60%	Now	Never	\$22,550,000	\$ 13,530,000	\$ (3,044,250)	\$ 10,485,750	
A	20% counterparty fails by 2020	ASC 410-30 ERL	713	99%	Now	1/1/2021	\$225,500	\$ 223,245	\$ (16,743)	\$ 206,502	
B	GW P&T add'l 5 years	ASC 410-30 ERL	1083	80%	Now	Never	\$2,255,000	\$ 1,804,000	\$ (405,900)	\$ 1,398,100	
B	GW P&T add'l 5 years	ASC 410-30 ERL	1063	75%	Now	Never	\$2,818,750	\$ 2,114,063	\$ (475,664)	\$ 1,638,398	
B	GW P&T add'l 5 years	ASC 410-30 ERL	1465	70%	Now	Never	\$3,382,500	\$ 2,367,750	\$ (532,744)	\$ 1,835,006	
B	20% counterparty fails by 2020	ASC 410-30 ERL	998	20%	Now	1/1/2021	\$2,255,000	\$ 451,000	\$ (33,825)	\$ 417,175	
B	10% counterparty fails by 2015	ASC 410-30 ERL	601	40%	Now	1/1/2016	\$2,818,750	\$ 1,127,500	\$ (39,463)	\$ 1,088,038	
B	25% counterparty fails by 2020	ASC 410-30 ERL	1450	75%	Now	1/1/2021	\$3,382,500	\$ 2,536,875	\$ (190,266)	\$ 2,346,609	
C	Buy back property	ASC 440 Commitment	1472	90%	Now	Never	\$11,275,000	\$ 10,147,500	\$ (2,283,188)	\$ 7,864,313	
G	Low-profile strategy fails	ASC 440 Commitment	1207	33%	Now	Never	\$5,637,500	\$ 1,860,375	\$ (418,584)	\$ 1,441,791	
A	Remedy fails, new remedy	ASC 450 Contingency	1270	50%	Now	Never	\$9,020,000	\$ 4,510,000	\$ (1,014,750)	\$ 3,495,250	
C	Deminimis not pursued	ASC 450 Contingency	1595	80%	Now	Never	\$2,255,000	\$ 1,804,000	\$ (405,900)	\$ 1,398,100	
D	Remedy fails, new remedy	ASC 450 Contingency	1460	33%	Now	1/1/2020	\$4,510,000	\$ 1,488,300	\$ (111,623)	\$ 1,376,678	
F	Counterparty pool shrinks	ASC 450 Contingency	1242	60%	Now	Never	\$22,550,000	\$ 13,530,000	\$ (3,044,250)	\$ 10,485,750	
C	Provide financial assurance for entire group	ASC 460 Guarantees	1180	50%	Now	Never	\$33,825,000	\$ 16,912,500	\$ (3,805,313)	\$ 13,107,188	
<b>SUM</b>								<b>\$ 122,494,983</b>	<b>\$ (23,953,146)</b>	<b>\$ 98,541,837</b>	
								<b>p10</b>	<b>\$ -85,611,190</b>	<b>\$ -(16,740,745)</b>	<b>\$ -68,870,445</b>
								<b>Mean</b>	<b>\$ 129,592,849</b>	<b>\$ (25,341,090)</b>	<b>\$ 104,251,759</b>
								<b>p90</b>	<b>\$ 182,466,716</b>	<b>\$ (35,680,252)</b>	<b>\$ 146,786,464</b>

# ERCI's Counterparty Risk Portfolio Valuation



# ERCI Views on Counterparty Risk Trends



	2005	2015
<p><b><u>Lower average scores</u></b>                      ✓ Downward trend is continuing                      “diminishing”</p>	<p>A bell-shaped curve with a vertical line at the peak. Three points are marked: 'a' (green) on the left tail, 'b' (red) at the peak, and 'c' (blue) on the right tail.</p>	<p>A bell-shaped curve with a vertical line at the peak. Points 'a' (green), 'b' (red), and 'c' (blue) are shown. Arrows indicate movement: a green arrow points from a grey 'a' to a green 'a' on the left; a red arrow points from a grey 'b' to a red 'b' at the peak; a blue arrow points from a grey 'c' to a blue 'c' on the right.</p>
<p><b><u>No longer stable</u></b>                      ✓ Larger companies used to be stable; now all are in flux                      “wobbly”</p>	<p>A bell-shaped curve with a vertical line at the peak. A single point 'b' (red) is marked at the peak.</p>	<p>A bell-shaped curve with a vertical line at the peak. A point 'b' (red) is at the peak. Arrows show movement from grey 'b' points to the red 'b' at the peak.</p>
<p><b><u>Moving across a wider range</u></b>                      ✓ Larger swings are normal                      ✓ Unusual directions/velocity                      “erratic”</p>	<p>A bell-shaped curve with a vertical line at the peak. A point 'b' (red) is marked at the peak.</p>	<p>A bell-shaped curve with a vertical line at the peak. A point 'b' (red) is at the peak. Red arrows show wide, erratic movement from grey 'b' points on both tails towards the red 'b' at the peak.</p>
<p><b><u>Moving more often</u></b>                      ✓ More frequent swings are now normal                      “volatile”</p>	<p>A bell-shaped curve with a vertical line at the peak. A point 'b' (red) is marked at the peak.</p>	<p>A bell-shaped curve with a vertical line at the peak. A point 'b' (red) is at the peak. Multiple grey 'b' points are shown on both tails with red arrows pointing towards the peak. Dashed red arrows with question marks indicate frequent, uncertain swings.</p>

**Takeaways: expect more issues; continuous monitoring and shorter action cycle.**

# Takeaways on Counterparty Risk

- **Riskier economy, more dynamic than ever**
  - PRPs in top quartile of creditworthiness tend to remain there
  - PRPs in other credit classes tend to last 10 years or less
- **Larger promises from and to counterparties**
  - Increasing regulation worldwide adds to costs
- **Time creates counterparty risk**
  - Extended allocation negotiations
  - “No look” agreements in M&A
  - Temporary lack of regulatory enforcement
  - PRPs maintaining low profile, or dissolving
- **Nonperformance is an option – if you let it happen**
  - Consequence is material: 50% of a typical PRP group is gone in less than ten years
  - Any PRP group can lose any PRP...at any time
  - If a counterparty prevents a liability coming to you, your strategy depends on their health