



Environmental Risk Communications, Inc.

2026 Capabilities

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ERCI Software and Consulting



- Environmental liability recognition and measurement
 - 5,000 sites since 1994
 - 20 corporate and seaport client portfolios
 - 150+ CPA audits
- Environmental counterparty risk tracking
- Liability validation for auditing, MD&A, expert witness testimony, bankruptcy filings
- Decision analysis
- Database and Excel template development for liability tracking
- Participation in ASTM Standard Development
 - E2173, Standard Guide for Disclosure of Environmental Liabilities
 - E2718, Standard Guide for Financial Disclosures Attributed to Climate Change
 - E3123, Standard Guide for Recognition and Derecognition of Environmental Liabilities
 - E3228, Standard Guide for Environmental Knowledge Management

○ **GAAP-Compliant Environmental Liability Forecasts (ASC 410, GASB 49 and 83, IAS 37)**

- Data depth and rigor: relevant and faithful representations
- Watch list of future reserve increases
- Recognition of asset retirement obligations, remediation obligations, commitments, contingencies, guarantees

○ **Fair Value Measurement (ASC 820, GASB 72, IFRS 13)**

- Costing and pricing for MD&A, due diligence and purchase price allocation
- Identifying counterparties, assessing ability to pay, 24/7 tracking
- Identifying cost of 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

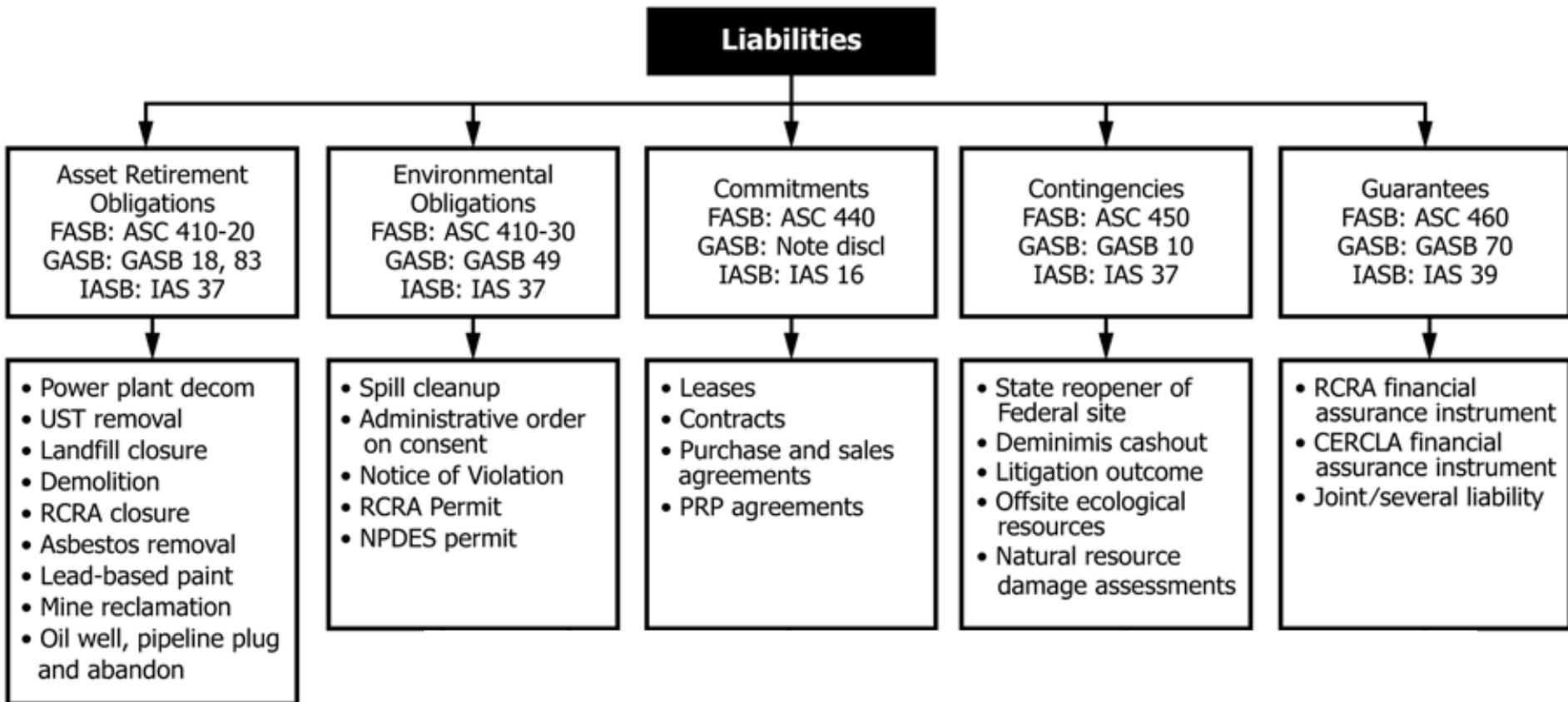
- Developed RemedyDefender™ in Visual Basic with Crystal Ball®, used to manage 4,900 unique environmental liabilities. 1994
- Trained and supported 250+ corporate cleanup project managers and auditors. 1994-
- Developed first Monte Carlo model of a 2,000 site project portfolio. 1995
- Shortest payback 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/deployed Defender in 90 days to meet external auditor 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
- Developed back-testing system for comparing disclosed vs fair value of remediation reserves and asset retirement obligations. 2015
- Developed training and credential at ASTM in environmental liabilities. 2019-

Audit Defense 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	Corporate-wide <i>Natural gas collection and pipelines</i>	>500		Annual
El Paso Corp	Now part of KinderMorgan, Inc. <i>Diversified energy company</i>	315	PRICEWATERHOUSECOOPERS	Annual, plus special items
FMC	Now three publicly-traded companies <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	Now part of Marathon Petroleum <i>Oil refinery and marketer</i>	139		Annual, plus special items
TRW Automotive	Now part of ZF Friedrichshafen <i>Automotive parts</i>	201		Annual
Univar	Now part of Apollo Global Management <i>Chemical processor and distributor</i>	Private		Annual
Delphi	Now part of BorgWarner Inc. <i>Automotive parts</i>	Private		Annual, plus quarterly items

Five Types of Environmental Liabilities



Source: ASTM E3123-17, Section 5, p7

Typical Report of Env Liabilities



Takeaway: remedial and asset retirement obligations are commonly disclosed; commitments, contingencies and guarantees are rarely disclosed

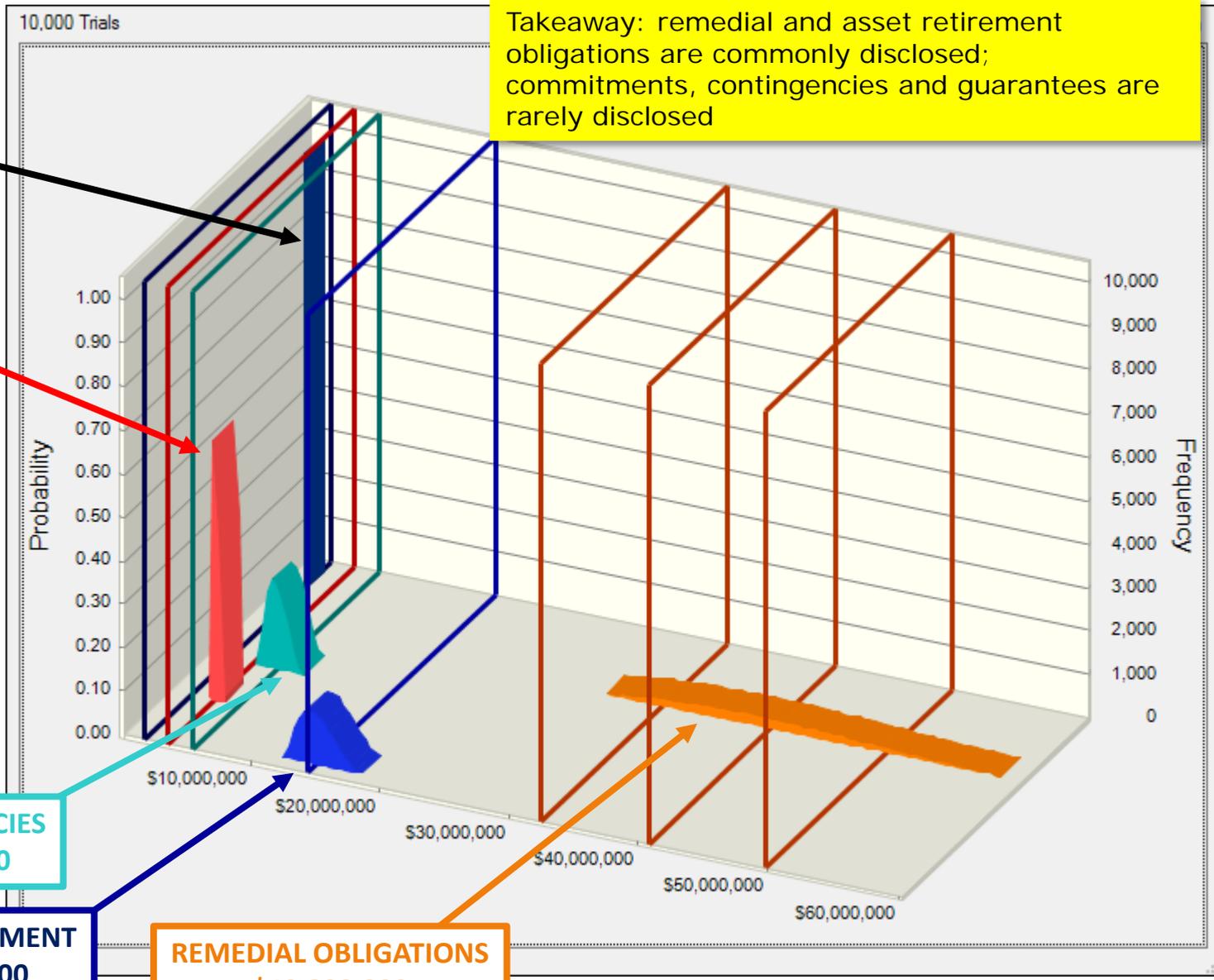
GUARANTEES
\$1,960,000

COMMITMENTS
\$3,800,000

CONTINGENCIES
\$5,600,000

ASSET RETIREMENT
\$14,400,000

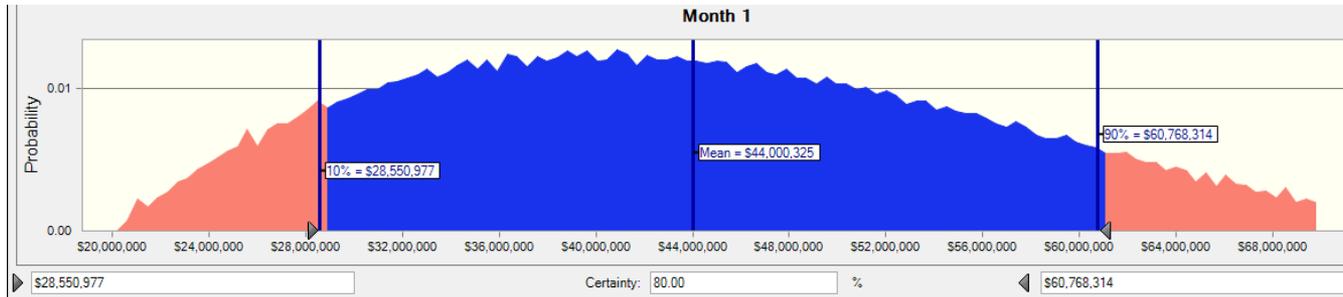
REMEDIAL OBLIGATIONS
\$40,800,000



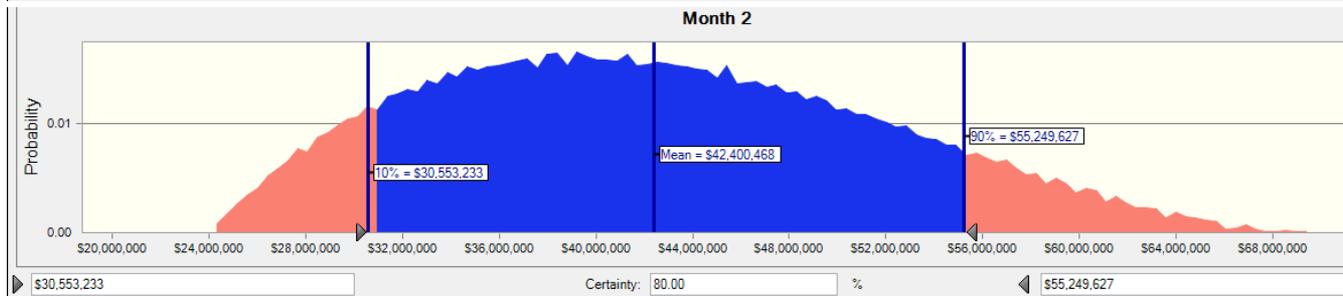
Portfolio Report: Reporting the Ranges



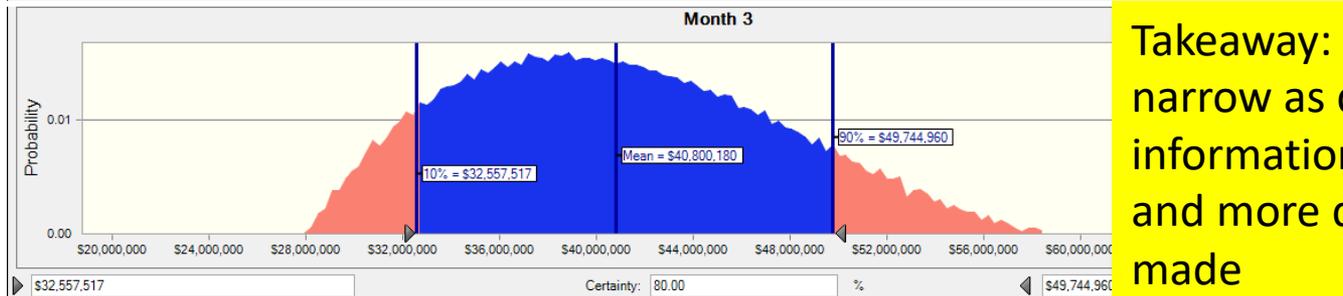
Year 1



Year 2

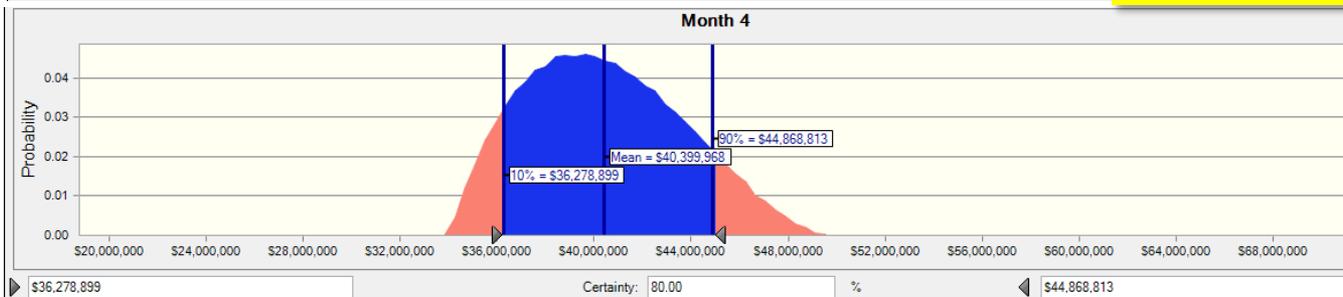


Year 3

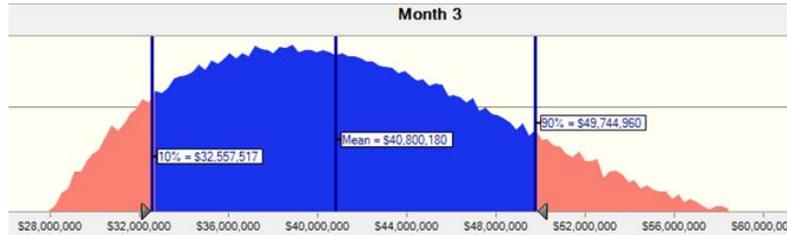


Takeaway: ranges narrow as definitive information is collected and more decisions are made

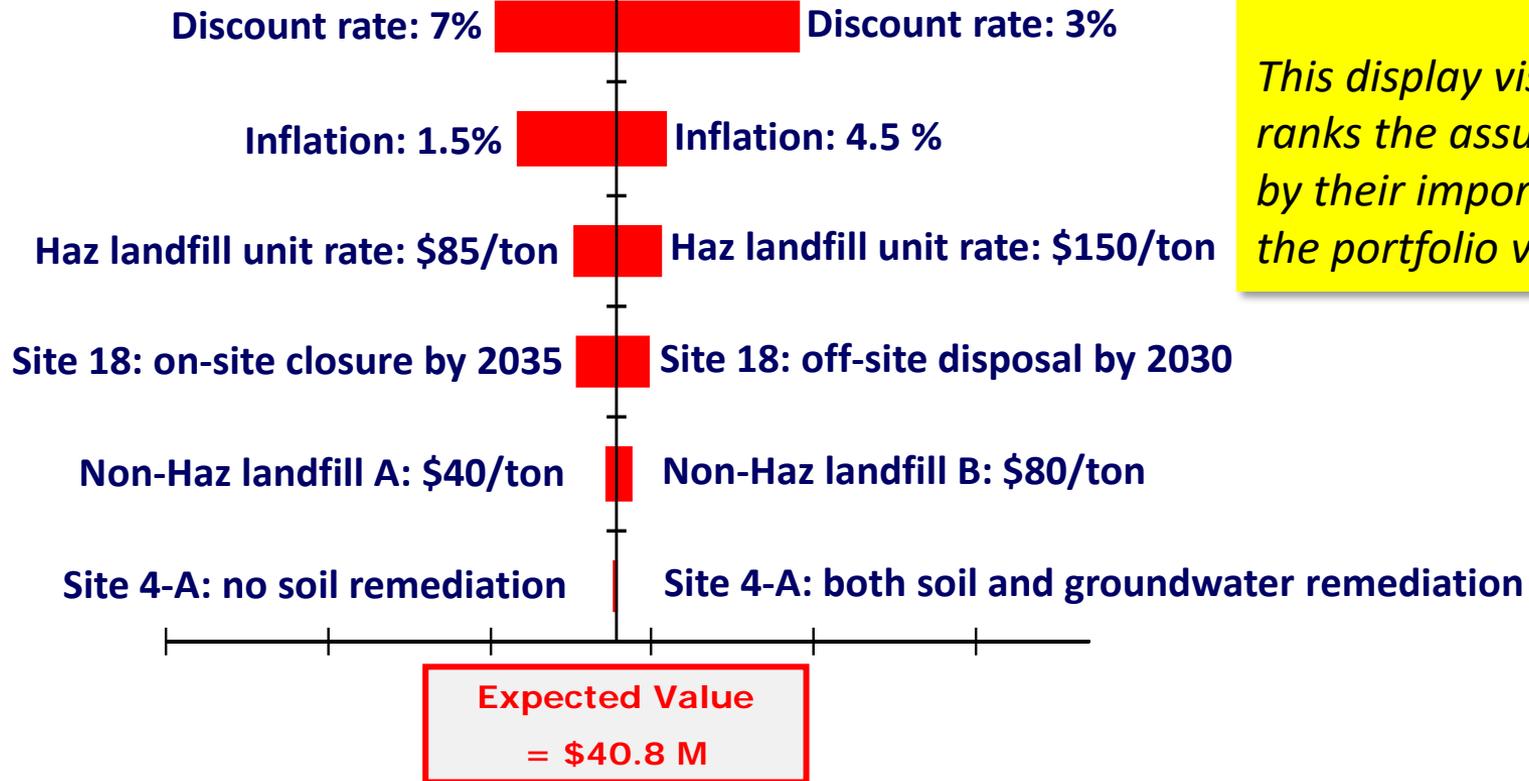
Year 4



Tornado Diagram - Liability Portfolio



Lower Portfolio value <<<>>> Higher Portfolio value



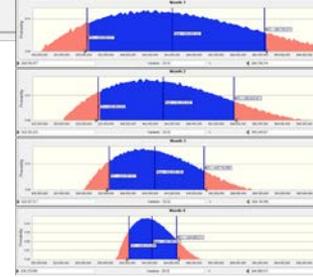
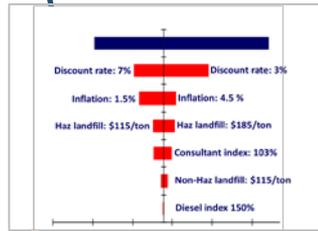
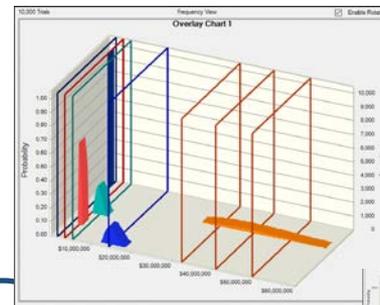
ERCI's experience is that a few portfolio-wide assumptions and a few large sites create most of the uncertainty (risk) in the portfolio.

This display visually ranks the assumptions by their importance to the portfolio value.

Data Pyramid



Portfolio Reports

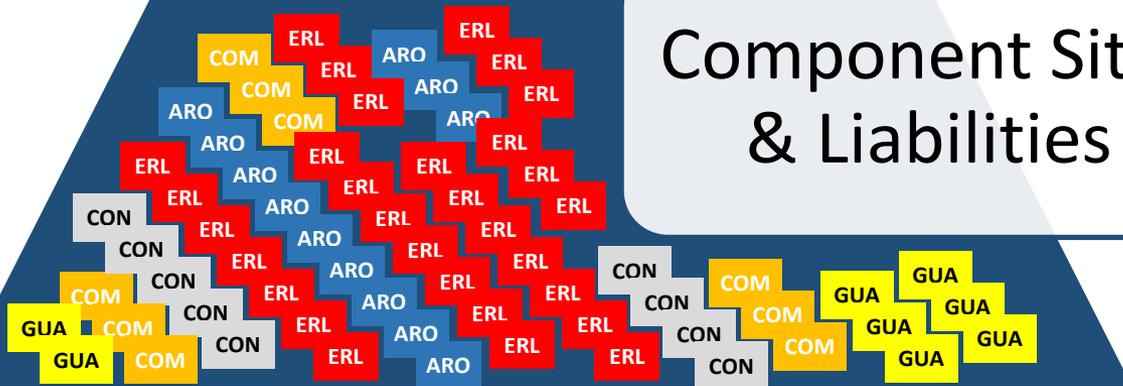


Portfolio-wide Assumptions

Lookup Table - Level 1 inputs	Optimistic	Expected Value	Pessimistic
Level 1 inputs			
Inflation Assumption	1.50%	2.50%	3.50%
Discount Assumption	4.00%	5.50%	7.00%
Construction Equipment Index	98%	100%	103%
Environmental Engineering Index	98%	100%	110%
Lab Cost Index	98%	100%	115%
Diesel Fuel Index	90%	100%	150%
Incinerator (per ton)	\$ 120.00	\$ 170.00	\$ 205.00
Hazardous Waste Landfill (per ton)	\$ 85.00	\$ 125.00	\$ 150.00
Solid Waste Landfill (per ton)	\$ 40.00	\$ 60.00	\$ 80.00

Component Sites & Liabilities

- ARO Asset Retirement Obligations
- ERL Environmental Remediation Liabilities
- COM Commitment
- CON Contingency
- GUA Guarantee



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

ERCI Views on Counterparty Risk Trends



	2020	2026
<p><u>Lower average scores</u> ✓ Downward trend is continuing “diminishing”</p>		
<p><u>No longer stable</u> ✓ Larger companies used to be stable; now all are in flux “wobbly”</p>		
<p><u>Moving across a wider range</u> ✓ Larger swings are normal ✓ Unusual directions/velocity “erratic”</p>		
<p><u>Moving more often</u> ✓ More frequent swings are now normal “volatile”</p>		

Takeaways: expect material issues from counterparties more frequently; respond to need for shorter reaction time with proactive monitoring

Takeaways on Counterparty Risk



- **Riskier economy, more dynamic than ever**
 - Top quartile of creditworthiness tends to be stable
 - Bottom 10% holds 90% of the risk
 - Privately-held companies hold undisclosed risks
- **Growing commitments to/from counterparties**
 - Creates off balance sheet risks
 - Growing risks in asset retirement, sustainability, ESG
- **Time creates counterparty risk**
 - “No look” agreements on properties
 - Temporary lack of regulatory enforcement resources
 - PRPs maintaining low profile, or dissolving
- **Nonperformance risks – if you let them happen**
 - Any PRP group can lose any PRP...at any time
 - 25% of a typical PRP group is bankrupt in 17 years
 - 50% have modified corporate structure in nine years

How to Manage Counterparty Risk



○ **Single site**

- Quantify the exposures (PRPs at risk, timeline to prevention)
- Document the baseline costs for auditing, benchmarking
- Set triggers for actions (observe, insure, liquidate, litigate)
- Identify entities, analyze credit scores to determine urgency

○ **Portfolio of sites (next page)**

- Confirm reserve values and budgets
- Confirm “watch list” of future reserves
- Identify entities, analyze credit scores to determine urgency
- 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 company XYZ?”
 - “Are any indemnifications with XYZ worth cross-cancellation?”

ERCI Audit Trail for Counterparty Risk



Measurement basis

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	\$ 9,800,000	\$ (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	\$ 1,804,000	\$ (1,057,031)	\$ 13,036,719
F	Landfill operator CH11, 11 NPL sites	ASC 410-20 ARO	920	35%	Now	Never	\$45,100,000	\$ 13,530,000	\$ (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		\$ 223,245	\$ (16,743)	\$ 206,502
B	GW P&T add'l 5 years	ASC 410-30 ERL	1083	80%	Now	Never		\$ 1,804,000	\$ (405,900)	\$ 1,398,100
B	GW P&T add'l 5 years	ASC 410-30 ERL	1063	75%	Now	Never	\$3,382,500	\$ 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	Never	\$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
SUM								\$ 122,494,983	\$ (23,953,146)	\$ 98,541,837

Key
CP = counterparty
E-CP = environmental counterparty

Reporting values >

p10	\$ 85,611,190	\$ (16,740,745)	\$ 68,870,445
Mean	\$ 129,592,849	\$ (25,341,090)	\$ 104,251,759
p90	\$ 182,466,716	\$ (35,680,252)	\$ 146,786,464

How Our Clients Benefit



○ **GAAP-Compliant Liability Forecasts**

- Reliable recognition, measurement, display and disclosure of environmental liabilities
- Third-party validation of reserve balances, future reserve increases
- MD&A: fair value measurement for buyers and sellers
- Measurement and containment counterparty risk
- Implementation of fair value measurement

○ **Improved Capital Stewardship**

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