

Updated Results 11/22/09

Overview of MLC Decision Tree Analysis and Portfolio Analysis:

Background/context

The Claro Group, LLC (Claro) was asked by Motors Liquidation Corporation (MLC) to conduct a decision-tree/probabilistic analysis of potential future remediation liabilities at certain MLC sites as directed by MLC. The analysis prepared by Claro incorporates consideration of potential future remedial alternatives and outcomes at a given site, incorporating the cost of a given alternative/outcome and the probability of that alternative/outcome occurring. This analytical method is a preferred approach for valuing uncertain future environmental obligations under a variety of scenarios.¹

The MLC sites for which decision-tree/probabilistic analyses were prepared include:

1. Massena (NY)
2. GMPT – Willow Run (Ypsilanti, Michigan)
3. GMNA – Buick City (Flint, Michigan)
4. Delphi Harrison – Moraine (Moraine, Ohio)
5. Delphi Interior – Syracuse (Syracuse, NY)
6. Hyatt Clark Industries (Clark, NJ)

The decision tree/probabilistic analyses for these sites were based on discussions with and original baseline estimates developed by ARCADIS/LFR (ARCADIS) engineers and scientists who are familiar with the sites. These baseline estimates were based on Arcadis' judgment of the most likely remedial technologies, with reasonable but conservative estimates of quantities and durations. The approach Claro undertook is discussed in detail below.

Approach:

Claro employed the following approach in developing the decision analyses:

- Development of site remedial action logic – Consulting with ARCADIS/LFR professionals, Claro developed decision trees that depict potential future outcomes at each site with respect to the following:
 - Remedial actions/investigations – ARCADIS/Claro identified potential remedial investigations and/or actions that may be required to investigate and/or address known, suspected and potential remedial issues. Activities were included if there was a reasonable possibility that activity would ultimately be pursued. This judgment was based on review of site facts, including known site characteristics, site-specific regulatory preferences and general knowledge of regulatory requirements based on comparable sites and site characteristics.
 - Remedial technologies – Where remedial actions are potentially required, ARCADIS/Claro identified the potential remedial technologies that could be employed to address a given contamination of concern. Technologies included were based on technical feasibility, cost-effectiveness and regulatory acceptance. Again, judgment

¹ See ASTM E 2137-06, Standard Guide for Estimating Monetary Costs and Liabilities for Environmental Matters, p. 4 -- "Expected Value" (or probabilistic/decision tree) analysis is a preferred approach compared to following commonly used approaches: Known Minimum Value, Most Likely Value (point estimate); and Range of Values.

was based on site-specific information coupled with experience with similar sites and regulatory agencies.

- o Volumes/duration or other dimension of remediation/activity – Where remedial technologies were anticipated that depend on an uncertain dimension (e.g., cubic yards or tons for excavation, transport and disposal), different quantities were considered based on available information. In some cases, characterization of quantities can be well-defined based on borings and other testing. In other cases quantities are more uncertain and estimates or ranges were based on judgment informed by limited testing or other available information (e.g., depth to groundwater). Estimates for durations of treatment were based on site-specific knowledge or experience at other sites with similar technologies. In certain cases where durations are potentially indefinite, durations were estimated at 50 years to reflect that uncertainty.

The above combined possible future outcomes incorporating major uncertainties were represented in a “decision tree” diagram for each site to represent the logical sequence and potential nature and scope of remedial activities at the site. In some cases the “branches” of the decision tree incorporated alternatives that could be either more expensive or less expensive than the base case.

- Assignment of probabilities – Claro elicited probabilities from ARCADIS/LFR professionals for potential outcomes and/or quantity/duration uncertainties reflected on the decision tree. While subjective, the probabilities assigned explicitly convey MLC’s perspective on the likelihood of certain outcomes. This approach can be contrasted with a point estimate approach where probability is dealt with on an implicit basis (i.e., in reaching a point estimate, a 100% probability is assigned to a given set of alternatives and outcomes).

Claro worked with the ARCADIS/LFR professionals to ensure that probabilities were carefully considered based on review of site conditions, regulatory trends and preferences and technical feasibility and/or knowledge. To add independent review, each site analysis was also subject to review by senior ARCADIS/LFR professionals to ensure that options considered were robust and appropriate given site information as available.

- Costing of potential outcomes – Costs assigned to outcomes were obtained from ARCADIS/LFR and were developed using site-specific cost estimates if available or were based on ARCADIS/LFR experience at similar or other sites. All cost estimates were assigned to specific periods of time so that inflation and discounting adjustments could be made.

General Assumptions/Guidelines:

Discount and Inflation Rates

For purposes of providing an initial valuation, discount and inflation rates are applied at 4.5% and 3.0% respectively. Ultimately, discount rates will be applied consistent with the approach discussed in Attachment 1, Discount Rate to Adjust for Time Value of Money of MLC Remediation Estimates.

Contingencies

Contingencies have been included on a site specific basis within the base case estimates. For the purposes of this analysis, contingencies estimated for the base case analysis were typically utilized, although in some cases contingencies were reduced where corresponding uncertainties are explicitly reflected in the decision-tree analysis.

Agency Oversight

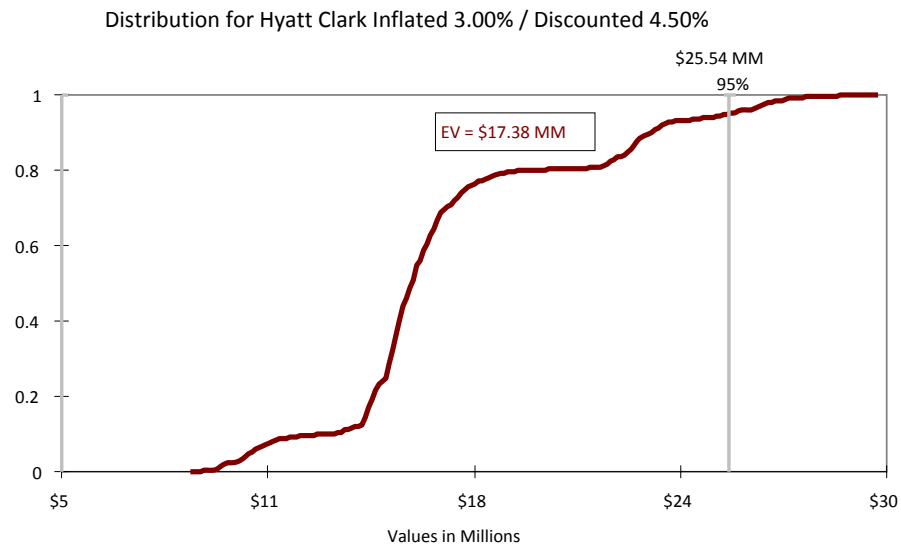
In many cases, MLC’s sites are subject to Federal or State regulatory agency oversight programs which include recovery of oversight costs. An allowance of five percent of the remedial costs has been applied to the 6 decision tree sites to provide for these reimbursements. This is likely an overstatement of oversight costs for years with major remedial construction budgets.

Decision Tree Findings

The following table presents an overview of the results of the analysis:

Site	2009 Dollars			Inflated 3.00% / Discounted 4.50%		
	Remediation Cost Estimate	Expected Value	95th Percentile	Remediation Cost Estimate	Expected Value	95th Percentile
Massena	\$111,731,256	\$109,594,381	\$121,060,632	\$104,662,999	\$101,872,847	\$112,158,680
GMPT - Willow Run	\$28,706,875	\$29,201,422	\$36,988,876	\$25,594,107	\$26,761,431	\$34,015,624
Delphi Moraine	\$27,818,298	\$37,011,624	\$49,760,332	\$25,710,491	\$33,476,131	\$45,324,304
GMNA – Buick City	\$24,732,213	\$28,993,400	\$48,822,080	\$21,620,554	\$26,068,891	\$46,493,980
Hyatt Clark Industries	\$15,519,158	\$21,878,130	\$32,405,858	\$13,419,172	\$17,380,413	\$25,539,994
GM-IFG Syracuse	\$15,086,138	\$16,295,552	\$17,297,280	\$13,029,120	\$14,088,330	\$15,057,997

A cumulative distribution curve for Hyatt Clark is included below for illustration purposes. A similar curve has been created for each site and is included in the detailed site write-ups.



Application of Decision-Tree Analysis Results to MLC Portfolio

MLC also asked Claro to utilize the results of the 6 site uncertainty analysis to analyze uncertainty on the entire MLC portfolio of sites. The analysis incorporated the following steps:

- For each of the 6 decision tree sites, a factor was calculated that relates the simulated 5th percentile, the expected value and the 95th percentile to the corresponding site baseline estimate (i.e., adjustment factor = statistic/baseline)
- The average of each of these values was calculated for the portfolio of 6 sites resulting in a set of adjustment factors for the 5th percentile, expected value and 95th percentile.
- The expected value factor was converted to a Most Likely factor²
- These adjustment factors were applied to each of the remaining sites' baseline estimates, resulting in a calculated 5th percentile, most likely and 95th percentile distribution for each of the remaining sites. The calculated factors to be applied to each baseline estimate are as follows:
 - 5th percentile: 88%
 - Most Likely: 115%
 - 95th percentile: 156%
- A simulation was run, sampling independently from the distributions of the 6 sites (according to their unique distributions) and the remaining sites (according to their estimated triangular distributions) to arrive at an estimated total cost for the portfolio. This simulation was run through thousands of iterations to produce an overall probability weighted cost distribution for the portfolio.

Key assumptions:

The analysis as described above incorporates two key assumptions:

- The averaged factors calculated based on 6 sites analysis are representative of the distribution of costs and uncertainty for each of the remaining sites – some of the remaining sites may, in reality, be more uncertain or less uncertain relative to the 6 sites in aggregate. Given that many of the remaining sites are smaller and, in some cases, more well-defined in terms of remedial activities, this assumption may overstate the remaining site uncertainty and result in a broader overall portfolio distribution than would be obtained if each site's uncertainty were examined in detail.
- Each site is "independent" from the other sites – each site is assumed not to have any dependency or correlation with any uncertainty at other sites. Based on a review of the portfolio, it is MLC's perspective that this assumption is sound and that any dependencies would be small relative to the overall set of uncertainties.

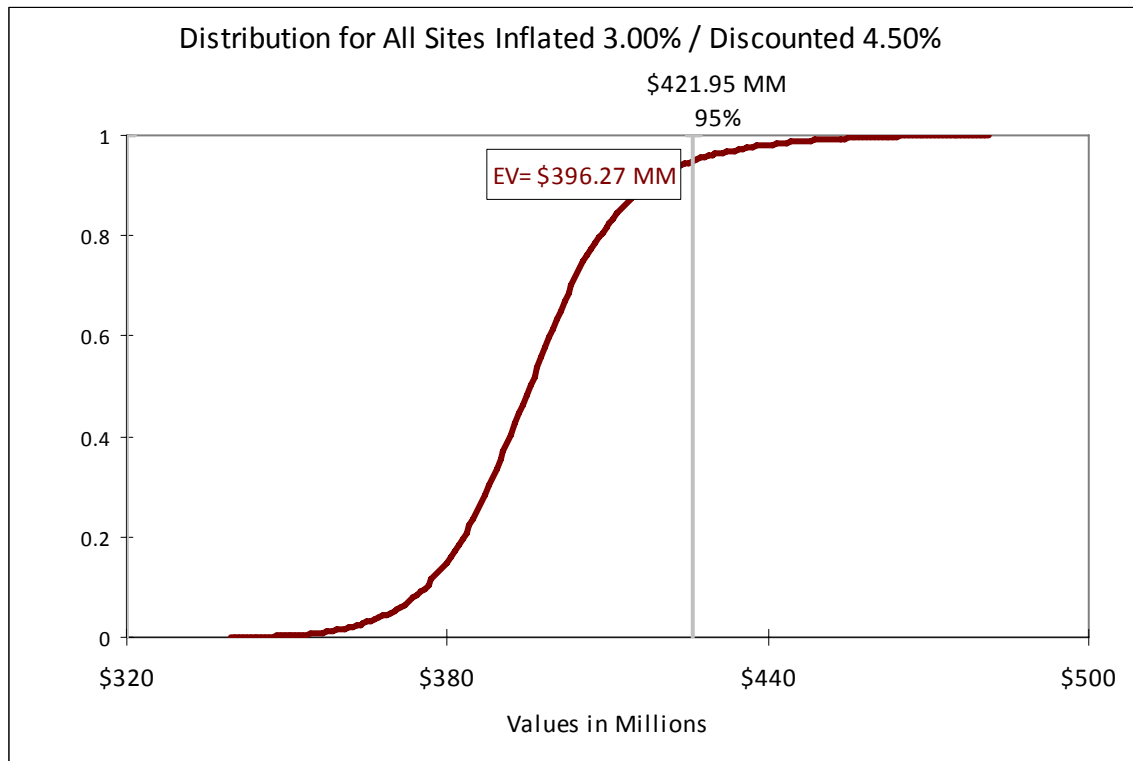
² The EV factor is converted to a ML factor by applying the following formula: $ML = 3(EV) - MAX - MIN$, where ML is factor for Most Likely, EV is factor for expected value, MAX is factor for 95th percentile, and MIN is factor for 5th percentile.

Results:

The results of the portfolio analysis are included below:

Expected Value = \$396,273,185

95th percentile = \$421,954,400



Attachment 1

Discount Rate to adjust for Time Value of Money of MLC Remediation Estimates

Background:

The Claro Group LLC (Claro) has been asked by Motors Liquidation Corporation (MLC) to suggest an appropriate discount rate and inflation rate for adjusting projected future remediation cash flows to present value dollars in the context of GM's and MLC's bankruptcy and reorganization process.

In developing estimates of future environmental remediation obligations, MLC has calculated estimates and resulting cash flows based on constant 2009 dollars. To arrive at an appropriate present value of future cash flows, these cash flows should be adjusted for the time value of money, recognizing that cash flows in future years are subject to inflation of prices of goods and services that are procured. Cash flows will also be subject to the opportunity cost of making other similar investments.

In general, the formula for discount rates incorporating inflation is as follows:

$$1 + R = (1 + i) (1 + r), \text{ where:}$$

R = nominal discount rate;
i = inflation rate; and
r = real discount rate

As such, the present value of a given cash flow (CF) in year N should be calculated using the following formulation:

$$PV (CF_N) = CF_N / (1 + r_N)^N, \text{ assuming current year dollar cash flows, or}$$

$$PV (CF_N) = CF_N (1 + i_N)^N / (1 + R_N)^N, \text{ cash flows adjusted to coincide with the year in which they are spent ("Nominal" cash flows)}$$

Claro's recommendation regarding each of these components is discussed in detail below.

Discount Rate

We understand that MLC will be investing funds committed to remediation in relatively risk-free or risk-free investments. Regardless of investing strategy, Claro views funds committed to remediation projects as subject to very little or no systematic risk relative to the overall financial markets. For instance, technological feasibility, regulatory judgments and/or selections and areal extent of contamination are all independent of financial market movements. As such, there should be little, if any systemic risk premium added to a risk-free carrying cost of funds in arriving at an appropriate discount rate.¹ Given this principle, returns consistent with risk-free investments, such as the US Treasury securities, can be used for calculation of present value.

¹ Remediation cash flows are subject to inflation risk, however inflation risk is implicitly included in the nominal rates of marketable securities.

Most Treasury securities are quoted with nominal rate yields (i.e. interest payments are made in current year dollars). As such, they need to be adjusted for inflation expectations. Quoted nominal rates for Treasury securities are included below:²

Maturity	Nominal Rate, R (%)
1-year	0.36
2-year	0.99
3-year	1.51
5 year	2.41
7-year	3.05
10-year	3.49
20-year	4.26
30-year	4.29

Inflation

Future inflation is uncertain. For reference, Claro has surveyed several benchmarks that could serve as predictors of future inflation, including market indicators, and current forecasts. Each of these approaches and their resulting rates are discussed below:

- Market indicators – observed market difference between nominal rate-paying Treasury securities (T-bills, Treasury Notes and Treasury Bonds) and their corresponding Treasury Inflation Protected Securities (TIPS)

Duration	Treasury Yield (Nominal Rate – R) ³	Treasury Inflation Protected Securities Yield (Real Rate -- r) ⁴	Implied Inflation Rate (i) ⁵
5 years	2.41%	0.80%	1.60%
7 years	3.05%	1.11%	1.93%
10 years	3.49%	1.49%	1.97%
20 years	4.26%	2.08%	2.10%

- Forecasts -- Following are representative forecasts of inflation from commonly referenced sources:⁶
 - Blue Chip Economic Indicators forecast of inflation (CPI)
 - 2010 – 1.9%
 - 2011 – n.a.
 - 2012 – 2013 – n.a.
 - 2014 – 2019 – 2.5%

² Yields as of 10/27/09; see: www.ustreas.gov/offices/domestic-finance/debt-management/interest-rate/yield.shtml.

³ Yields as of 10/27/09; see: www.ustreas.gov/offices/domestic-finance/debt-management/interest-rate/yield.shtml.

⁴ Yields as of 10/27/09; see: www.ustreas.gov/offices/domestic-finance/debt-management/interest-rate/real_yield.shtml.

⁵ Calculated based on formula: inflation (i) = (1+R)/(1+r) – 1.

⁶ See; www.cbo.gov/budget/data/econproj.xls , Table 2-4 [Data as of 10/27/09]

- Congressional Budget Office (CBO) forecast of inflation
 -
 - 2010 – 1.7%
 - 2011 – 1.3%
 - 2012 – 2013 – 1.1%
 - 2014 – 2019 – 1.9%

Current market indicators and forecasts are indicating similar inflation rates, approaching historical rates over the long-term. For purposes of this analysis, Claro believes that CBO forecasts represent an acceptable estimate of future inflation rates for use in present value calculations. For years beyond 2019, we use the 2019 CBO forecast.

Calculation of Annual Rates and Adjustment Factors:

Both the inflation and nominal discount rates selected for calculating present value are provided at certain time periods in the future. In order to adjust cash flows in years, rates in intervening periods can be estimated through linear interpolation.⁷ Given these estimated rates, a factor can be calculated in each year that adjusts a cash flow in a given year to present value. Table 1 below shows the calculation of these factors over a 50 year period.

Note that Table 1 assumes mid-year 2009 as base period to which cash flows are present valued. This base period is likely to change (as are rates utilized to perform the calculations) and a revised set of factors can be easily calculated.

⁷ Other approaches to interpolation exist but would not produce materially different results than a linear approach.

Table 1 -- Calculation of Annual Rates and Adjustment Factors

Year	Years From 2009	Interpolated Nominal Rate ⁸	Inflation Rate ⁹	Estimated Real Rate ¹⁰	Adjustment Factor ¹¹
2010	1	0.36%	1.70%	-1.32%	1.0000
2011	2	0.99%	1.30%	-0.31%	1.0000
2012	3	1.51%	1.10%	0.41%	0.9879
2013	4	1.96%	1.10%	0.85%	0.9667
2014	5	2.41%	1.90%	0.50%	0.9753
2015	6	2.73%	1.90%	0.81%	0.9525
2016	7	3.05%	1.90%	1.13%	0.9244
2017	8	3.20%	1.90%	1.27%	0.9038
2018	9	3.34%	1.90%	1.42%	0.8811
2019	10	3.49%	1.90%	1.56%	0.8566
2020	11	3.57%	1.90%	1.64%	0.8365
2021	12	3.64%	1.90%	1.71%	0.8158
2022	13	3.72%	1.90%	1.79%	0.7943
2023	14	3.80%	1.90%	1.86%	0.7723
2024	15	3.88%	1.90%	1.94%	0.7498
2025	16	3.95%	1.90%	2.01%	0.7269
2026	17	4.03%	1.90%	2.09%	0.7036
2027	18	4.11%	1.90%	2.16%	0.6801
2028	19	4.18%	1.90%	2.24%	0.6564
2029	20	4.26%	1.90%	2.32%	0.6326
2030	21	4.26%	1.90%	2.32%	0.6179
2031	22	4.27%	1.90%	2.32%	0.6035
2032	23	4.27%	1.90%	2.32%	0.5894
2033	24	4.27%	1.90%	2.33%	0.5756
2034	25	4.28%	1.90%	2.33%	0.5621
2035	26	4.28%	1.90%	2.33%	0.5489
2036	27	4.28%	1.90%	2.34%	0.5360
2037	28	4.28%	1.90%	2.34%	0.5233
2038	29	4.29%	1.90%	2.34%	0.5109
2039	30	4.29%	1.90%	2.35%	0.4988
2040	31	4.29%	1.90%	2.35%	0.4874
2041	32	4.29%	1.90%	2.35%	0.4762
2042	33	4.29%	1.90%	2.35%	0.4653
2043	34	4.29%	1.90%	2.35%	0.4546
2044	35	4.29%	1.90%	2.35%	0.4442
2045	36	4.29%	1.90%	2.35%	0.4340
2046	37	4.29%	1.90%	2.35%	0.4241
2047	38	4.29%	1.90%	2.35%	0.4144
2048	39	4.29%	1.90%	2.35%	0.4049
2049	40	4.29%	1.90%	2.35%	0.3956
2050	41	4.29%	1.90%	2.35%	0.3865
2051	42	4.29%	1.90%	2.35%	0.3777
2052	43	4.29%	1.90%	2.35%	0.3690
2053	44	4.29%	1.90%	2.35%	0.3606
2054	45	4.29%	1.90%	2.35%	0.3523
2055	46	4.29%	1.90%	2.35%	0.3442
2056	47	4.29%	1.90%	2.35%	0.3363
2057	48	4.29%	1.90%	2.35%	0.3286
2058	49	4.29%	1.90%	2.35%	0.3211
2059	50	4.29%	1.90%	2.35%	0.3137

⁸ Yields for years 1, 2, 3, 5, 7, 10, 20, and 30 are actual Treasury yields as of 10/27/09; other years prior to year 30 are estimated using linear interpolation; years after year 30 are assumed to be constant at the 30-year rate.

⁹ Inflation rates for years 1-10 are forecasts provided by CBO; years 11 and greater are assumed to be 1.9%, consistent with last year of CBO forecast.

¹⁰ Calculated based on formula: real rate (r) = (1+R)/(1+i) - 1.

¹¹ Adjustment factor is calculated as the minimum of 1 or $[1/(1+r_t)^t]$, where t is the number of years from 2009.