4. Delphi Harrison -- Moraine Site

The MLC Delphi Moraine (Moraine) Site was analyzed utilizing the process as discussed in the Overview section of this report. The details and results of the analysis are discussed and presented below. The decision-tree for the Moraine site is included as Illustration 4A. Also, please reference the ARCADIS/LFR IDEA site summary for a detailed discussion of the Moraine sites operational and remedial history and discussion of a baseline estimate for future activities. The Moraine site includes the former Delphi Harrison Thermal Systems (Delphi Moraine), former Moraine Engine Plant, and the former Moraine Assembly Plant.

4.1 Discussion of remedial alternatives and uncertainties:

Corrective Measures Proposal (CMP)

MLC has submitted a CMP to the USEPA and is awaiting approval. MLC anticipates that it will be required to negotiate the details of the CMP (including terms and environmental covenants) with USEPA and assist with completion of the Statement of Basis. MLC may also agree to conduct additional studies prior to approval of the CMP by the USEPA.

Secondary Source Areas

Beyond primary source areas (AOI-7 and the Moraine Plant Sump), MLC has identified 4 potential source areas for VOCs that may be contributing to groundwater contamination in the upper and lower aquifers: The West Tank Farm; Delphi Oil House; Box Sewer; and a Fill Area.

It is anticipated that MLC will conduct pre-design investigations into these potential source areas with the goal of determining how best to treat the source areas if required (these investigations are not included in the CMP). Beyond the anticipated investigation, MLC believes that one of the following options may be required:

- Address minimal source contribution with existing or other proposed source control systems -- Should investigations determine that the potential sources are minimal contributors to the VOC plume, MLC may be able to best address the minimal source impacts by adding wells to the existing upper aquifer IRZ system that is operational at the site.
- 2 Areas (West Tank Farm and Delphi Oil House) – These 2 areas are believed to be the most likely additional sources of VOCs based on historic analytical data and previous waste management practices in the Frigidaire era. It is possible that a dedicated IRZ and SVE system will need to be installed at these sites to address them as a source
- 4 Areas (2 Areas Above plus Box Sewer and Fill Area) – Beyond the 2 areas mentioned above, these 2 additional areas may also require treatment if they are confirmed as sources of VOCs. The Box Sewer is a long, concrete-lined below grade sewer that would be difficult to treat in-situ. However, using soil analytical results from a previous investigation, there were several areas of elevated concentrations that could be treated using SVE. IRZ and SVE are likely to be utilized for treatment within areas of the Box Sewer and the Fill Area should they be confirmed as a source.

Primary Source (AOI-7)

The CMP submitted to USEPA did not include treatment of soils and groundwater within the Former Oil House Area (AOI-7). However, MLC views this as necessary for some reduction. Treatment of soils will include SVE. SVE treatment durations could last between 3 to 5 years depending on the effectiveness and speed of VOC removal from soils. Treatment of groundwater will include enhanced bio-treatment (IRZ), also consistent with existing treatment being used effectively at the site. IRZ treatment should last approximately 10 years based on existing experience at the site.

Additional Potential Primary Source (Moraine Assembly Plant Sump)

In addition to AOI-7, an SVE/IRZ treatment system within the Moraine Assembly Plant Sump was also included as source removal activity. Similar to AOI-7, SVE durations could be from 3 to 5 years. However, characterization of contaminants in this area is not as well defined as for AOI-7 and there is a possibility that the contemplated SVE/IRZ systems will be smaller or larger in scale due to variances in contaminant dispersion and mass. A pre-design investigation will be conducted that will better characterize the area and determine optimal design parameters.

Landfill L1

While Landfill L1 has not yet been identified as requiring further action, due to its location at the downgradient property boundary, MLC anticipates taking additional samples in the area. An intrusive investigation is anticipated to characterize the landfill contents. Should the samples identify the Landfill as a source, the Landfill will need to be covered with an engineered cap (if only soils above groundwater are a source) or treated and capped (if soils in contact with groundwater are a source). At a minimum, MLC anticipates that a soil cap will be placed on the area for improved drainage.

The other landfills are addressed with O&M described below. Based on groundwater concentrations downgradient of these landfills they are not considered to be a source that would require active remedy.

Lower Aquifer, Pump and Treatment

There are two known plumes migrating off-site and MLC anticipates that it will be required to install a pump and treat system for the lower aquifer to contain contaminants in the lower aquifer from leaving the site. This pump and treat system to be located in proximity to well GM-68D that was contemplated in the CMP.

CMP Barriers – Upper Aquifer

It is also anticipated that as part of the CMP, MLC will be required to expand the IRZ systems that act as barriers to materials leaving the site. This includes expanding RZ-4 and redesign of RZ-2.

OM&M of Barriers and Pump & Treat Systems

Operation, maintenance and monitoring will continue for existing containment and treatment systems and will be expanded to incorporate additional systems as discussed above. The following systems will require OM&M:

- Current IRZ barriers – anticipated to operate between 12 and 20 years
- DN-13 – existing lower aquifer containment well -- anticipated to operate 30 years
- TW-2 – existing upper aquifer containment well with aboveground treatment – anticipated to operate for approximately 5 years at which point it will no longer be necessary due to source control measures being completed for Landfill L1.
- New Upper Aquifer Barrier System – expanded IRZ boundary in upper aquifer – anticipated to operate between 10 and 18 years subsequent to installation in 2011 (2-years) – this system will be operated in concert with the existing IRZ barrier and therefore will operate until that system is shut down.
- New Lower Aquifer Well – new pump & treat containment well – anticipated to be operated between 10 and 18 years after source removal has been proven effective.

Lagoons/Landfills

The closed lagoons and landfills at the site will require maintenance (e.g., mowing, grade maintenance) and monitoring (e.g., groundwater monitoring reports) indefinitely. This also includes site-wide performance monitoring for the active remedial systems. An annual report is due to USEPA and OEPA by March 1st of each year.

Vapor Intrusion

As discussed above, the VOC plume on-site has migrated off-site and is a potential source of VOC vapor intrusion into residences and commercial buildings above the plume. It is likely that investigations will be required both on and off to define the nature and extent of the vapor intrusion. Given that there are no receptors on-site, treatment is not likely, however a vapor mitigation system may be required depending on future use of the existing buildings. Such a system could be passive or active, depending on technical requirements and feasibility. Although unlikely, if vapor intrusion is occurring off-site, treatment may be required at up to 75 homes that are adjacent to and southwest of the property.

4.2 Rationale for probabilities

The following table summarizes the rationale for the probabilities assigned to the alternatives discussed above:

Major Activity	Alternative Description	Probability Assigned	Rationale for Probability
CMP	Accept CMP as currently proposed	50%	EPA has not indicated it is comfortable with current proposal
	EPA requires additional studies beyond current proposal	50%	Reasonably likely that EPA could request additional studies for further work in certain areas.
Secondary Source Areas	Pre-design	100%	Pre-design studies will be required to delineate specific actions required at these sources
Secondary Source Areas	Address sources with current systems	70%	Current systems appear to be effective in treating site contaminants. It is reasonably likely that incremental additions to the existing treatment systems can be made that will address what will likely be minor contamination from secondary sources
	SVE/Treat West Tank Farm and Delphi Oil House	20%	There are 2 potential sources that are reasonably likely to require dedicated treatment based on limited sampling to date.
	SVE/Treat West Tank Farm, Delphi Oil House, Fill Area and Box Sewer Area	10%	It is possible, although unlikely that all 4 potential secondary sources will require dedicated treatment.
Primary Source Area (AOI-7)	SVE 3 years	75%	Based on experience at the site, it is anticipated that SVE will be required for approximately 3 years
	SVE 5 years	25%	It is possible, but unlikely that SVE will be required to 5 years due to unforeseen site conditions
Primary Source Area (AOI-7)	Treat GW (IRZ) 10 yrs	100%	
Potential Primary Source (Moraine Assembly Sump)	Pre-design investigation	100%	Areal extent for treatment of source needs to be defined – pre-design investigation will define source area requiring treatment

Major Activity	Alternative Description	Probability Assigned	Rationale for Probability
Potential Primary Source (Moraine Assembly Sump)	SVE/Treat Smaller Source Area	25%	Based on pre-design, areal extent of treatment may be 50% smaller than currently estimated – reasonably probable but not likely
	SVE/Treat Base Case	50%	Pre-design is likely to confirm current estimates of areal extent requiring treatment
	SVE/Treat Larger Source Area	25%	Based on pre-design, areal extent of treatment may be 50% larger than currently estimated – reasonably probable, but not likely
SVE/Treat Smaller Source Area, SVE/ Treat Base Case, SVE/Treat Larger Source Area Subset:	*SVE 3 years*	*75%*	*SVE estimated to take 3 years to treat source soils*
	SVE 5 years	*25%*	*There is a possibility that that SVE will take 5 years if site conditions are different than anticipated*
10 Years Groundwater Treatment Sub-Subset:	*Treat GW 10 years*	*100%*	*IRZ treatment is estimated to be required for 10 years based on site experience*
Landfill L1	Investigation	100%	Investigation will be conducted to determine if the LF is a source and to determine if source is in contact with groundwater or not
Landfill L1	Engineered cap	50%	It is anticipated, based on limited borings to date, that LF will be confirmed as a source, but with no contact with groundwater – likely remedy will be engineered cap
	In Situ Treat and Engineered Cap	30%	Alternative reflects low, but still reasonably likely probability that some active treatment (e.g., IRZ) will be required if source found to be in contact with groundwater
	Grade & Soil Cap	20%	There is low probability that minimal source control effort will be required.
Lower Aquifer	Install Pump & Treat	100%	It is expected that wells and treatment system will be installed for containment of plumes in the lower aquifer
CMP Barriers	Install additional IRZ barrier treatment	100%	It is also expected that the current IRZ barrier system will be expanded to prevent migration of VOCs off-site in upper aquifer
OM&M (Barriers and Pump & Treat Systems)	Existing (IRZ) Barriers	100%	The pump & treat and IRZ systems will be operated according to the schedule discussed in section 4.2 above
	DN-13 (Lower Aquifer)	100%	
	TW-2 (Upper Aquifer)	100%	
	Additional Upper Aquifer Barrier	100%	
	Additional Lower Aquifer Pump & Treat	100%	

Major Activity	Alternative Description	Probability Assigned	Rationale for Probability
OM&M (Additional IRZ Barriers and Additional Upper Aquifer Barrier)	Operate IRZ barriers 12 years & additional upper aquifer barriers 10 years	70%	Existing IRZ barriers are anticipated to be operated for another 12 years at which point source control measures are anticipated to have reduced need for containment. Additional IRZ barriers will be operated the same period of time as the existing barriers, however, they are anticipated to be installed in 2 years, so operation period may be 10 years or 18 years
	Operate IRZ barriers 20 years & additional barriers 18 years	30%	Given that the barriers are containment systems, It is possible that source control measures are less effective than anticipated or that regulators will prefer to keep systems operating even if source control measures have been effective. This is seen as a low but reasonably likely probability.
OM&M Additional Lower Aquifer Pump & Treat Subset	*Operate lower aquifer pump & treat 10 years*	*70%*	*It is anticipated that source treatment measures will be effective in 10 year time frame, allowing for shutting off containment system.*
	Operate lower aquifer pump & treat 18 years	*30%*	*There is possibility that source control and treatment measures are not fully effective, requiring prolonged containment O&M.*
Lagoons/LFs	OM&M	100%	Lagoons and Landfills on the site will require OM&M and reporting indefinitely
Vapor Intrusion	On-site -- Investigation	80%	Given high presence of groundwater sources in the upper aquifer, a high likelihood has been assigned to on-site investigation of VI
	On-site -- No Invest.	20%	This outcome is assigned a low probability due to the presence of sources and regulatory interest in VI
On-site – Investigation Subset:	*On-site – Mitigation (Active)*	*10%*	*Given that there are very few receptors at the site, a low probability has been assigned for mitigation activities. If mitigation occurs, the action could be either passive or active with equal likelihood.*
	On-site – Mitigation (Passive)	*10%*	
	On-site – No Mitigation	*80%*	*As discussed immediately above, mitigation of on-site VI is assigned a low probability*
Vapor Intrusion	Off-site -- Investigation	90%	Given that a potential source of VI is migrating off-site, investigation of VI under adjacent residences is likely.
	Off-site – No Invest.	10%	See above

Major Activity	Alternative Description	Probability Assigned	Rationale for Probability
Off-site – Investigation Subset:	*Off-site -- Mitigation*	*10%*	*Unlikely that mitigation will be required. Models are indicating low risk from vapor intrusion.*
	Off-site – No Mitigation	*90%*	*See above.*
Administrative	Agency Oversight	100%	

4.3 Decision Tree Model and Cost Detail

The decision tree depicting the potential future remedial actions as described above is included as figure 4A. Spreadsheet consistency between base logic and scenario cash flows are included as figure 4B.[1]

4.4 Results

The following are key statistics relating to the Moraine analysis based on a 10,000 iteration simulation:

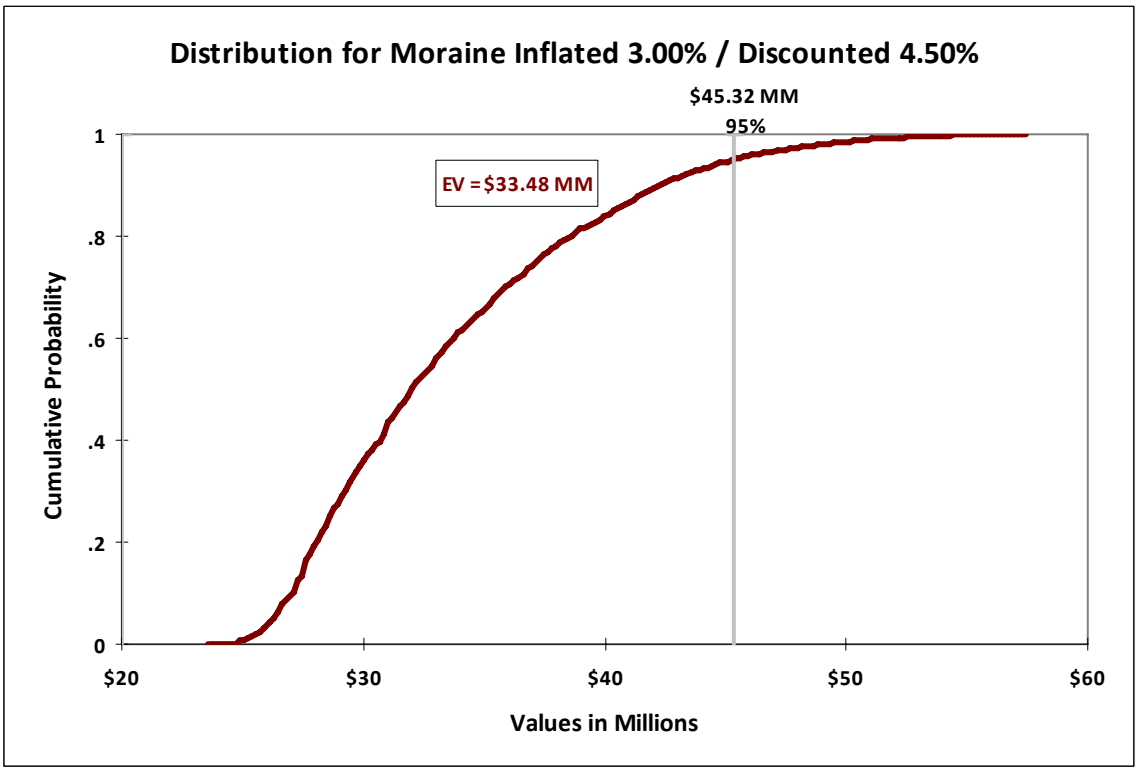
Expected Present Value of future remedial liabilities: **$33,476,131**

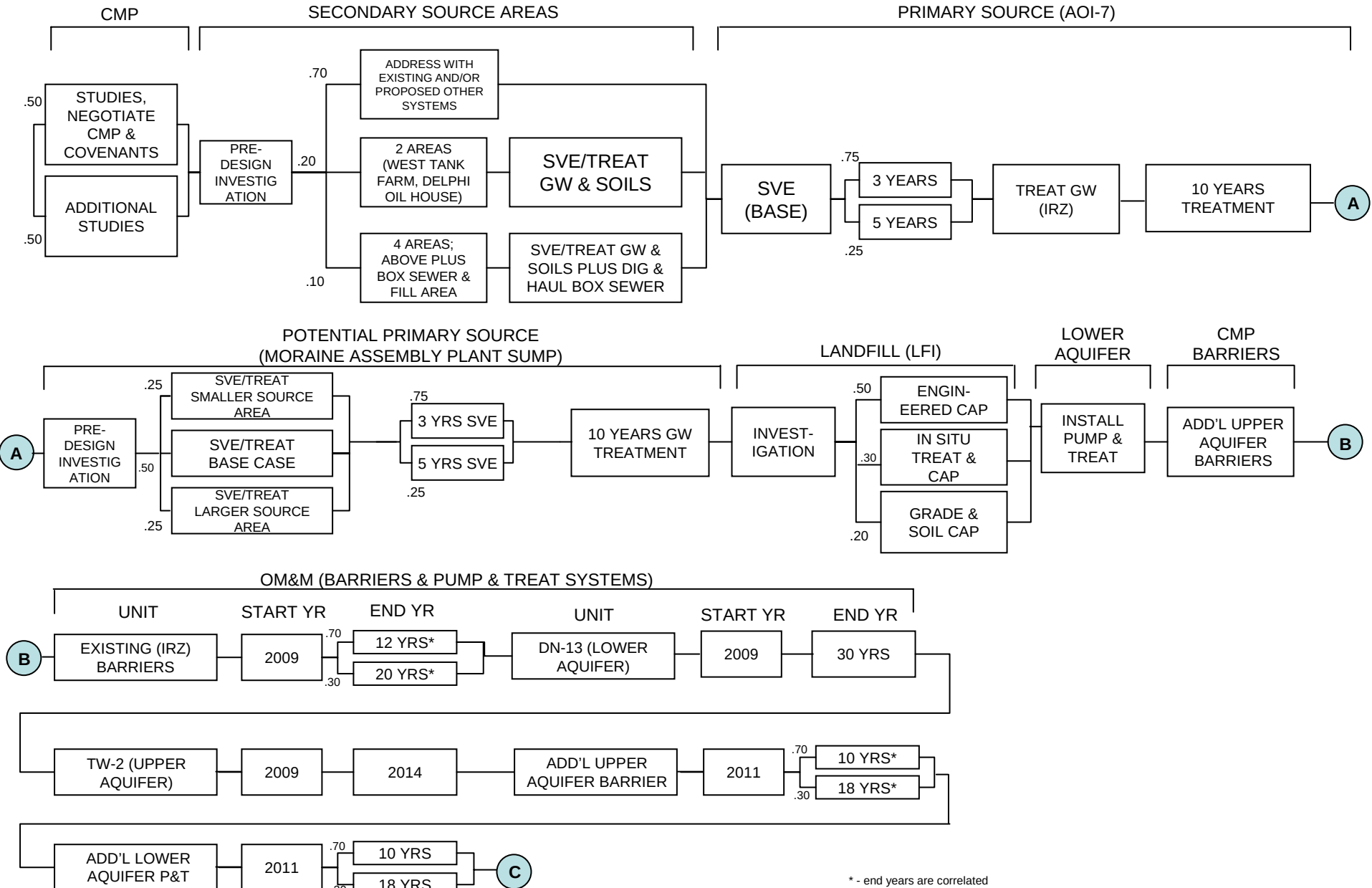
95th percentile of Present Value: **$45,324,304**

The following is a graphic depiction of one simulation of the Moraine decision tree:[2]

[1] Costs shown in figure 4B are associated with one unique path through the decision tree and therefore do not match any specific statistics (e.g. EV).

[2] A simulation is a sample of all possible outcomes and, as such, will not calculate statistics precisely the same as a subsequent or previous simulation. However, the number of iterations (10,000) has been chosen to allow for the results of any given simulation to be representative of the entire range and probabilities of outcomes.


Distribution for Moraine Inflated 3.00% / Discounted 4.50%
$45.32 MM
95%
EV = $33.48 MM
Cumulative Probability
1
.8
.6
.4
.2
0
$20
$30
$40
$50
$60
Values in Millions



* - end years are correlated

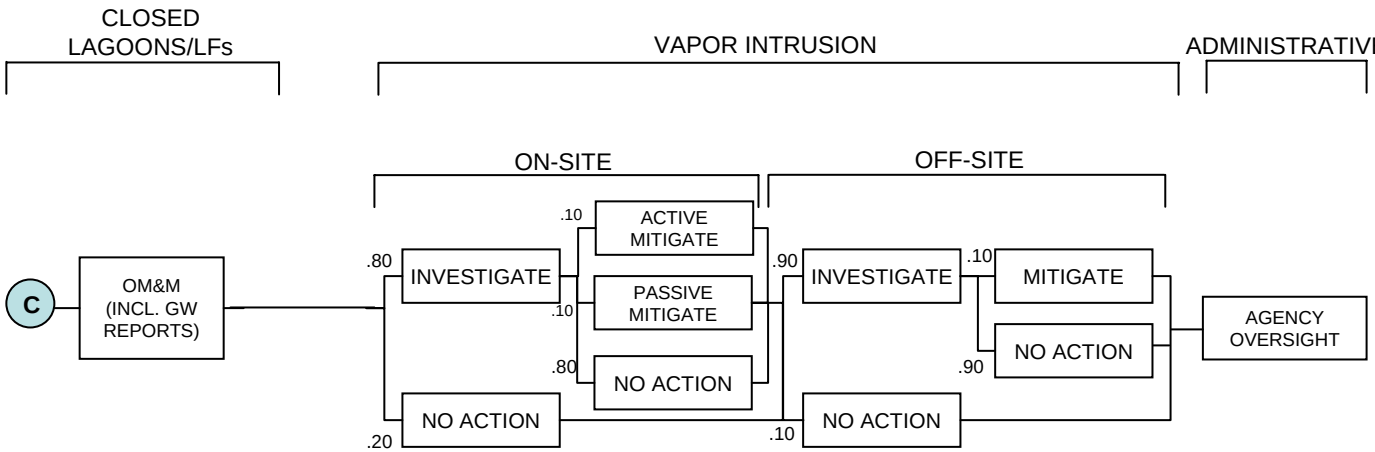

CLOSED LAGOONS/LFs
VAPOR INTRUSION
ADMINISTRATIVE
ON-SITE
OFF-SITE
C
OM&M (INCL. GW REPORTS)
.80
INVESTIGATE
.10
ACTIVE MITIGATE
.10
PASSIVE MITIGATE
.80
NO ACTION
.20
NO ACTION
.90
INVESTIGATE
.10
MITIGATE
.90
NO ACTION
.10
NO ACTION
AGENCY OVERSIGHT

Figure 4B

Scenario Cash Flows

Summary

	Scenario	Probability	2009 Dollars	Discounted
CMP				
Studies, Negotiate CMP & Covenants	1	50%	$ 145,000	$ 143,353
Additional Studies	2	50%	$ 345,000	$ 340,483
CMP		**100%**	**$ 145,000**	**$ 340,483**
Secondary Source Areas				
Pre-Design:				
No other option stated	0	0%	$ -	$ -
Pre-Design	1	100%	$ 1,576,541	$ 1,532,172
Secondary Source Pre-Design		**100%**	**$ 1,576,541**	**$ 1,532,172**
Address Secondary Source Areas:				
Address with Existing System	1	70%	$ -	$ -
2 Areas (West Tank Farm & Delphi Oil House)	2	20%	$ 5,747,550	$ 5,382,557
4 Areas (Above plus Box Sewer & Fill Area)	3	10%	$ 9,366,660	$ 8,771,230
Address Secondary Source Areas		**100%**	**$ -**	**$ -**
Primary Source (AOI-7)				
SVE (Base):				
3 yrs	1	75%	$ 2,687,201	$ 2,619,957
5 yrs	2	25%	$ 3,369,201	$ 3,249,841
SVE (Base):		**100%**	**$ 2,687,201**	**$ 2,619,957**
Treat GW (IRZ):				
No other option stated	0	0%	$ -	$ -
Treat AOI-7 GW (IRZ)	1	100%	$ 2,040,000	$ 1,858,620
Treat GW (IRZ)		**100%**	**$ 2,040,000**	**$ 1,858,620**
Potential Primary Source (Moraine Assembly Plant Sump)				
Pre-Design Investigation				
No other option stated	0	0%	$ -	$ -
Pre-Design Investigation	1	100%	$ 200,400	$ 197,523
Pre-Design Investigation		**100%**	**$ 200,400**	**$ 197,523**
SVE Sump:				
SVE/Treat Smaller Source Area + 10 Yrs GW Treatment	1	25%	$ 3,256,441	$ 3,054,004
SVE/Treat Base Area + 10 Yrs GW Treatment	2	50%	$ 4,722,900	$ 4,413,926
SVE/Treat Larger Source Area + 10 Yrs GW Treatment	3	25%	$ 6,059,809	$ 5,662,810
SVE Sump		**100%**	**$ 4,722,900**	**$ 4,413,926**
SVE/Treat Smaller Source Area Subset:				
3 yrs SVE	*1a*	*75%*	*$ 1,996,441*	*$ 1,922,511*
5 yrs SVE	*1b*	*25%*	*$ 2,407,381*	*$ 2,296,601*
SVE/Treat Smaller Source Area Subtotal		*100%*	$ 1,996,441	$ 1,922,511
SVE/Treat Base Area Subset:				
3 yrs SVE	*2a*	*75%*	*$ 2,694,900*	*$ 2,593,475*
5 yrs SVE	*2b*	*25%*	*$ 3,284,900*	*$ 3,130,568*
SVE/Treat Base Area Subtotal		*100%*	$ 2,694,900	$ 2,593,475
SVE/Treat Larger Source Area Subset:				
3 yrs SVE	*3a*	*75%*	*$ 3,479,809*	*$ 3,345,943*
5 yrs SVE	*3b*	*25%*	*$ 4,316,869*	*$ 4,107,941*
SVE/Treat Larger Source Subtotal		*100%*	$ 3,479,809	$ 3,345,943

Figure 4B
Scenario Cash Flows
Summary

	Scenario	Probability	2009 Dollars	Discounted
10 Years GW Treatment Sub-Subset:				
Smaller Area	*1c*	*100%*	$ 1,260,000	$ 1,131,493
Base Area	*2c*	*100%*	$ 2,028,000	$ 1,820,451
Larger Area	*3c*	*100%*	$ 2,580,000	$ 2,316,867
Landfill (LF1)				
LF 1Investigation:				
No other option stated	0	0%	$ -	$ -
LF Investigation	1	100%	$ 279,840	$ 275,823
LF1 Investigation		**100%**	**$ 279,840**	**$ 275,823**
LF1 Cap:				
LF Engineered Cap	1	50%	$ 2,816,974	$ 2,736,685
In Situ Treat & Cap	2	30%	$ 6,473,400	$ 6,011,112
Grade & Soil Cap	3	20%	$ 1,831,646	$ 1,779,440
LF1 Cap		**100%**	**$ 2,816,974**	**$ 2,736,685**
Lower Aquifer				
Install Pump & Treat				
No other option stated	0	0%	$ -	$ -
Install Pump & Treat	1	100%	$ 954,400	$ 927,198
Lower Aquifer		**100%**	**$ 954,400**	**$ 927,198**
CMP Barriers				
CMP Barriers				
No other option stated	0	0%	$ -	$ -
Upper & Lower Aquifer	1	100%	$ 785,680	$ 766,673
CMP Barriers		**100%**	**$ 785,680**	**$ 766,673**
OM&M (Barriers and Pump & Treat Systems)				
Existing (IRZ) Barriers	1	100%	$ 2,750,000	$ 2,525,568
DN-13 (Lower Aquifer)	2	100%	$ 1,209,500	$ 984,703
TW-2 (Upper Aquifer)	3	100%	$ 990,250	$ 953,664
Add'l Upper Aquifer Barrier	4	100%	$ 970,000	$ 883,756
Add'l Lower Aquifer P&T	5	100%	$ 410,000	$ 373,546
OM&M (Barriers and Pump & Treat Systems)			**$ 6,329,750**	**$ 5,721,237**
OM&M Subsets:				
Existing (IRZ) Barriers				
12 yrs	*1a*	*70%*	*$ 2,750,000*	*$ 2,525,568*
20 yrs	*1b*	*30%*	*$ 4,750,000*	*$ 4,124,915*
Existing(IRZ) Barriers Subtotal		*100%*	*$ 2,750,000*	*$ 2,525,568*
DN-13 (Lower Aquifer)				
No other option stated	*0*	*0%*	*$ -*	*$ -*
30 yrs	*2a*	*100%*	*$ 1,209,500*	*$ 984,703*
DN-13 (Aquifer) Subtotal		*100%*	*$ 1,209,500*	*$ 984,703*
TW-2 (Upper Aquifer)				
No other option stated	*0*	*0%*	*$ -*	*$ -*
2014	*3a*	*100%*	*$ 990,250*	*$ 953,664*
TW-2 (Upper Aquifer) Subtotal		*100%*	*$ 990,250*	*$ 953,664*

Figure 4B

Scenario Cash Flows
Summary

	Scenario	Probability	2009 Dollars	Discounted
Add'l Upper Aquifer Barrier				
10 yrs	*4a*	*70%*	*$ 970,000*	*$ 883,756*
18 yrs	*4b*	*30%*	*$ 1,746,000*	*$ 1,504,302*
Add'l Upper Aquifer Barrier Subtotal		*100%*	*$ 970,000*	*$ 883,756*
Add'l Lower Aquifer Pump & Treat				
10 yrs	*5a*	*70%*	*$ 410,000*	*$ 373,546*
18 yrs	*5b*	*30%*	*$ 738,000*	*$ 635,839*
Add'l Lower Aquifer Pump & Treat Subtotal		*100%*	*$ 410,000*	*$ 373,546*
Closed Lagoons/LFs				
Closed Lagoons/LFs				
No other option stated	0	0%	$ -	$ -
OM&M (incl. GW Reports)	1	100%	$ 5,040,000	$ 3,545,477
Closed Lagoons/LFs		**100%**	**$ 5,040,000**	**$ 3,545,477**
Vapor Intrusion				
Vapor Intrusion On-Site	1	100%	$ 229,680	$ 223,134
Vapor Intrusion Off-Site	2	100%	$ 1,023,000	$ 1,008,316
Vapor Intrusion			**$ 1,252,680**	**$ 1,231,449**
Vapor Intrusion Investigate Onsite Subsets:				
Investigate Subset:				
Investigate	*1*	*80%*	*$ 229,680*	*$ 223,134*
No action	*2*	*20%*	*$ -*	*$ -*
Investigate Subtotal		*100%*	*$ 229,680*	*$ 223,134*
Mitigate Sub-Subset:				
Active Mitigate	*1a*	*10%*	*$ 14,021,000*	*$ 13,094,468*
Passive Mitigate	*1b*	*10%*	*$ 8,001,000*	*$ 7,562,046*
No Action	*1c*	*80%*	*$ -*	*$ -*
Mitigate Sub-Subtotal		*100%*	*$ -*	*$ -*
Vapor Intrusion Investigate Offsite Subsets:				
Investigate Subset:				
Investigate	*1*	*90%*	*$ 1,023,000*	*$ 1,008,316*
No Action	*2*	*10%*	*$ -*	*$ -*
Investigate Subtotal		*100%*	*$ 1,023,000*	*$ 1,008,316*
Mitigate Sub-Subset:				
Mitigate	*1a*	*10%*	*$ 1,529,625*	*$ 1,432,383*
No Action	*1b*	*90%*	*$ -*	*$ -*
Mitigate Sub-Subtotal		*100%*	*$ -*	*$ -*
Administrative				
No other option stated	0	0%	$ -	$ -
Agency Oversight	1	100%	$ 1,441,568	$ 1,308,361
Agency Oversight		**100%**	**$ 1,441,568**	**$ 1,308,361**
		Moraine	**$ 30,272,935**	**$ 27,475,585**

Figure 4B
Scenario Cash Flows
Nominal, with Built-in Contingency

Year	No.	Contingency	CMP [1]		Secondary Source Areas [2]				Primary Source (AOI-7) [3]			Potential Primary Source Sump (Moraine Assembly Plant Sump) [4]									Landfill (LF1) [5]			
						Treat Secondary Source Areas			SVE Base		Treat GW (IRZ)		SVE/Treat Smaller Area		SVE/Treat Base Area		SVE/Treat Larger Area		10 Yrs GW Treatment				Landfill Cap		
			Studies, Negotiate CMP & Covenants	Add'l Studies	Pre-Design Investigation	Existing System	2 Areas	4 Areas	3 Yrs	5 Yrs	Base Area	Pre-Design	3 Yrs	5 Yrs	3 Yrs	5 Yrs	3 Yrs	5 Yrs	Smaller Area	Base Area	Larger Area	Investigation	Engineered Cap	In Situ Treat & Cap	Grade & Soil Cap [11]
2009	1	0%	$ 50,000	$ 50,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2010	2	0%	$ 75,000	$ 275,000	$ 40,000	$ -	$ -	$ -	$ 1,664,100	$ 1,664,100	$ -	$ 200,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 279,840	$ -	$ -	$ -
2011	3	0%	$ 20,000	$ 20,000	$ 1,536,541	$ -	$ 2,397,750	$ 3,795,900	$ 341,101	$ 341,101	$ 204,000	$ -	$ 1,380,031	$ 1,380,031	$ 1,797,900	$ 1,797,900	$ 2,224,219	$ 2,224,219	$ -	$ -	$ -	$ -	$ 2,816,974	$ 2,693,400	$ 1,831,646
2012	4	0%	$ -	$ -	$ -	$ -	$ 563,880	$ 968,760	$ 341,000	$ 341,000	$ 204,000	$ -	$ 205,470	$ 205,470	$ 307,000	$ 307,000	$ 418,530	$ 418,530	$ 126,000	$ 192,000	$ 258,000	$ -	$ -	$ 378,000	$ -
2013	5	0%	$ -	$ -	$ -	$ -	$ 563,880	$ 968,760	$ 341,000	$ 341,000	$ 204,000	$ -	$ 205,470	$ 205,470	$ 295,000	$ 295,000	$ 418,530	$ 418,530	$ 126,000	$ 204,000	$ 258,000	$ -	$ -	$ 378,000	$ -
2014	6	0%	$ -	$ -	$ -	$ -	$ 563,880	$ 968,760	$ -	$ 341,000	$ 204,000	$ -	$ 205,470	$ 205,470	$ 295,000	$ 295,000	$ 418,530	$ 418,530	$ 126,000	$ 204,000	$ 258,000	$ -	$ -	$ 378,000	$ -
2015	7	0%	$ -	$ -	$ -	$ -	$ 236,880	$ 380,640	$ -	$ 341,000	$ 204,000	$ -	$ -	$ 205,470	$ -	$ 295,000	$ -	$ 418,530	$ 126,000	$ 204,000	$ 258,000	$ -	$ -	$ 378,000	$ -
2016	8	0%	$ -	$ -	$ -	$ -	$ 236,880	$ 380,640	$ -	$ -	$ 204,000	$ -	$ -	$ 205,470	$ -	$ 295,000	$ -	$ 418,530	$ 126,000	$ 204,000	$ 258,000	$ -	$ -	$ 378,000	$ -
2017	9	0%	$ -	$ -	$ -	$ -	$ 236,880	$ 380,640	$ -	$ -	$ 204,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 126,000	$ 204,000	$ 258,000	$ -	$ -	$ 378,000	$ -
2018	10	0%	$ -	$ -	$ -	$ -	$ 236,880	$ 380,640	$ -	$ -	$ 204,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 126,000	$ 204,000	$ 258,000	$ -	$ -	$ 378,000	$ -
2019	11	0%	$ -	$ -	$ -	$ -	$ 236,880	$ 380,640	$ -	$ -	$ 204,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 126,000	$ 204,000	$ 258,000	$ -	$ -	$ 378,000	$ -
2020	12	0%	$ -	$ -	$ -	$ -	$ 236,880	$ 380,640	$ -	$ -	$ 204,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 126,000	$ 204,000	$ 258,000	$ -	$ -	$ 378,000	$ -
2021	13	0%	$ -	$ -	$ -	$ -	$ 236,880	$ 380,640	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 126,000	$ 204,000	$ 258,000	$ -	$ -	$ 378,000	$ -
2022	14	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2023	15	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2024	16	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2025	17	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2026	18	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2027	19	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2028	20	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2029	21	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2030	22	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2031	23	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2032	24	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2033	25	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2034	26	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2035	27	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2036	28	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2037	29	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2038	30	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
		Totals	**$ 145,000**	**$ 345,000**	**$ 1,576,541**	**$ -**	**$ 5,747,550**	**$ 9,366,660**	**$ 2,687,201**	**$ 3,369,201**	**$ 2,040,000**	**$ 200,400**	**$ 1,996,441**	**$ 2,407,381**	**$ 2,694,900**	**$ 3,284,900**	**$ 3,479,809**	**$ 4,316,869**	**$ 1,260,000**	**$ 2,028,000**	**$ 2,580,000**	**$ 279,840**	**$ 2,816,974**	**$ 6,473,400**	**$ 1,831,646**

Source(s):

[1] See Figure 4B-1, pg. 7, "CMP."
[2] See Figure 4B-2(a), pgs. 9-10, "Secondary Source Areas (Pre-Design);" See Figure 4B-2(b), pgs. 11-13, "Secondary Source Areas (2 Areas);" and See Figure 4B-2(c), pgs. 14-16, "Secondary Source Areas (4 Areas)."
[3] See Figure 4B-3, pgs. 17-20, "Primary Source AOI-7 (and Sump)."
[4] See Figure 4B-4, pgs. 21-26, Potential Primary Source Sump."
[5] See Figure 4B-5, pgs. 27-29, "Landfill (LF1)."
[6] See Figure 4B-6, pg. 30, "Lower Aquifer."
[7] See Figure 4B-7, pg. 31, "CMP Barriers."
[8] See Figure 4B-8, pgs. 32-34, "OM&M (Barriers and Pump & Treat Systems)."
[9] See Figure 4B-9, pgs. 35-38, "Closed Lagoons/Landfills."
[10] See Figure 4B-10(a), pg. 39, "Vapor Intrusion (On-site & Off-site Investigation); See Figure 4B-10(b), pg. 40, "Vapor Intrusion (On-site Mitigation);" and See Figure 4B-10(c), pg. 41, "Vapor Intrusion (Off-site Mitigation)."
[11] Based on figures provided by discussion with ARCADIS.

Figure 4B
Scenario Cash Flows
Nominal, with Built-in Contingency

Year	No.	Contingency	Lower Aquifer[6]	CMP Barriers[7]	OM&M (Barriers and Pump & Treat Systems)[8]								Lagoons/ Landfills[9]	Vapor Intrusion[10]					
					Existing (IRZ) Barriers				Add'l Upper Aquifer Barrier		Add'l Lower Aquifer P&T			On-Site				Off-Site	
			Install Pump & Treat	Add'l Upper Aquifer Barriers	12 Yrs	20 Yrs	DN-13 (Lower Aquifer)	TW-2 (Upper Aquifer)	10 Yrs	18 Yrs	10 Yrs	18 Yrs	OM&M (include GW Reports)	Investigation	Mitigate			Investigation	Mitigate	
															Active Mitigate	Passive Mitigate	No Action		Mitigate	No Action
2009	1	0%	$ -	$ -	$ 100,000	$ 100,000	$ 20,500	$ 76,750	$ -	$ -	$ -	$ -	$ 90,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2010	2	0%	$ -	$ 239,400	$ 150,000	$ 150,000	$ 41,000	$ 153,500	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ 1,023,000	$ -	$ -
2011	3	0%	$ 954,400	$ 546,280	$ 250,000	$ 250,000	$ 41,000	$ 299,500	$ 97,000	$ 97,000	$ 41,000	$ 41,000	$ 100,000	$ 229,680	$ 6,851,000	$ 5,131,000	$ -	$ -	$ 540,000	$ -
2012	4	0%	$ -	$ -	$ 250,000	$ 250,000	$ 41,000	$ 153,500	$ 97,000	$ 97,000	$ 41,000	$ 41,000	$ 100,000	$ -	$ 717,000	$ 287,000	$ -	$ -	$ 141,375	$ -
2013	5	0%	$ -	$ -	$ 250,000	$ 250,000	$ 41,000	$ 153,500	$ 97,000	$ 97,000	$ 41,000	$ 41,000	$ 105,000	$ -	$ 717,000	$ 287,000	$ -	$ -	$ 141,375	$ -
2014	6	0%	$ -	$ -	$ 250,000	$ 250,000	$ 41,000	$ 153,500	$ 97,000	$ 97,000	$ 41,000	$ 41,000	$ 100,000	$ -	$ 717,000	$ 287,000	$ -	$ -	$ 141,375	$ -
2015	7	0%	$ -	$ -	$ 250,000	$ 250,000	$ 41,000	$ -	$ 97,000	$ 97,000	$ 41,000	$ 41,000	$ 100,000	$ -	$ 717,000	$ 287,000	$ -	$ -	$ 141,375	$ -
2016	8	0%	$ -	$ -	$ 250,000	$ 250,000	$ 41,000	$ -	$ 97,000	$ 97,000	$ 41,000	$ 41,000	$ 100,000	$ -	$ 717,000	$ 287,000	$ -	$ -	$ 141,375	$ -
2017	9	0%	$ -	$ -	$ 250,000	$ 250,000	$ 41,000	$ -	$ 97,000	$ 97,000	$ 41,000	$ 41,000	$ 100,000	$ -	$ 717,000	$ 287,000	$ -	$ -	$ 141,375	$ -
2018	10	0%	$ -	$ -	$ 250,000	$ 250,000	$ 41,000	$ -	$ 97,000	$ 97,000	$ 41,000	$ 41,000	$ 105,000	$ -	$ 717,000	$ 287,000	$ -	$ -	$ 141,375	$ -
2019	11	0%	$ -	$ -	$ 250,000	$ 250,000	$ 41,000	$ -	$ 97,000	$ 97,000	$ 41,000	$ 41,000	$ 100,000	$ -	$ 717,000	$ 287,000	$ -	$ -	$ -	$ -
2020	12	0%	$ -	$ -	$ 250,000	$ 250,000	$ 41,000	$ -	$ 97,000	$ 97,000	$ 41,000	$ 41,000	$ 100,000	$ -	$ 717,000	$ 287,000	$ -	$ -	$ -	$ -
2021	13	0%	$ -	$ -	$ -	$ 250,000	$ 41,000	$ -	$ -	$ 97,000	$ -	$ 41,000	$ 100,000	$ -	$ 717,000	$ 287,000	$ -	$ -	$ -	$ -
2022	14	0%	$ -	$ -	$ -	$ 250,000	$ 41,000	$ -	$ -	$ 97,000	$ -	$ 41,000	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2023	15	0%	$ -	$ -	$ -	$ 250,000	$ 41,000	$ -	$ -	$ 97,000	$ -	$ 41,000	$ 105,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2024	16	0%	$ -	$ -	$ -	$ 250,000	$ 41,000	$ -	$ -	$ 97,000	$ -	$ 41,000	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2025	17	0%	$ -	$ -	$ -	$ 250,000	$ 41,000	$ -	$ -	$ 97,000	$ -	$ 41,000	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2026	18	0%	$ -	$ -	$ -	$ 250,000	$ 41,000	$ -	$ -	$ 97,000	$ -	$ 41,000	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2027	19	0%	$ -	$ -	$ -	$ 250,000	$ 41,000	$ -	$ -	$ 97,000	$ -	$ 41,000	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2028	20	0%	$ -	$ -	$ -	$ 250,000	$ 41,000	$ -	$ -	$ 97,000	$ -	$ 41,000	$ 105,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2029	21	0%	$ -	$ -	$ -	$ -	$ 41,000	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2030	22	0%	$ -	$ -	$ -	$ -	$ 41,000	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2031	23	0%	$ -	$ -	$ -	$ -	$ 41,000	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2032	24	0%	$ -	$ -	$ -	$ -	$ 41,000	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2033	25	0%	$ -	$ -	$ -	$ -	$ 41,000	$ -	$ -	$ -	$ -	$ -	$ 105,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2034	26	0%	$ -	$ -	$ -	$ -	$ 41,000	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2035	27	0%	$ -	$ -	$ -	$ -	$ 41,000	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2036	28	0%	$ -	$ -	$ -	$ -	$ 41,000	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2037	29	0%	$ -	$ -	$ -	$ -	$ 41,000	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2038	30	0%	$ -	$ -	$ -	$ -	$ 41,000	$ -	$ -	$ -	$ -	$ -	$ 2,125,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
		Totals	**$ 954,400**	**$ 785,680**	**$ 2,750,000**	**$ 4,750,000**	**$ 1,209,500**	**$ 990,250**	**$ 970,000**	**$ 1,746,000**	**$ 410,000**	**$ 738,000**	**$ 5,040,000**	**$ 229,680**	**$ 14,021,000**	**$ 8,001,000**	**$ -**	**$ 1,023,000**	**$ 1,529,625**	**$ -**

Source(s):

1 See Figure 4B-1, pg. 7, "CMP."
2 See Figure 4B-2(a), pgs. 9-10, "Secondary Source
3 See Figure 4B-3, pgs. 17-20, "Primary Source AOI
4 See Figure 4B-4, pgs. 21-26, Potential Primary Sou
5 See Figure 4B-5, pgs. 27-29, "Landfill (LF1)."
6 See Figure 4B-6, pg. 30, "Lower Aquifer."
7 See Figure 4B-7, pg. 31, "CMP Barriers."
8 See Figure 4B-8, pgs. 32-34, "OM&M (Barriers an
9 See Figure 4B-9, pgs. 35-38, "Closed Lagoons/Lan
10 See Figure 4B-10(a), pg. 39, "Vapor Intrusion (On
11 Based on figures provided by discussion with ARC

Figure 4B
Scenario Cash Flows
Discounted, with Built-in Contingency

Year	No.	Discount Factor	CMP		Secondary Source Areas				Primary Source (AOI-7)				Potential Primary Source Sump (Moraine Assembly Plant Sump)										Landfill (LF1)				
			Studies, Negotiate CMP & Covenants	Add'l Studies	Pre-Design Investigation	Treat Secondary Source Areas			SVE Base			Treat GW (IRZ)	Pre-Design	SVE/Treat Smaller Area		SVE/Treat Base Area		SVE/Treat Larger Area		10 Yrs GW Treatment			Investigation	Landfill Cap		
						Existing System	2 Areas	4 Areas	3 Yrs	5 Yrs	Base Area			3 Yrs	5 Yrs	3 Yrs	5 Yrs	3 Yrs	5 Yrs	Smaller Area	Base Area	Larger Area		Engineered Cap	In Situ Treat & Cap	Grade & Soil Cap
2009	1	1.0000	$ 50,000	$ 50,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2010	2	0.9856	$ 73,923	$ 271,053	$ 39,426	$ -	$ -	$ -	$ 1,640,213	$ 1,640,213	$ -	$ -	$ 197,523	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 275,823	$ -	$ -	$ -	$ -
2011	3	0.9715	$ 19,430	$ 19,430	$ 1,492,746	$ -	$ 2,329,409	$ 3,687,709	$ 331,379	$ 331,379	$ 198,186	$ -	$ -	$ 1,340,697	$ 1,340,697	$ 1,746,656	$ 1,746,656	$ 2,160,824	$ 2,160,824	$ -	$ -	$ -	$ -	$ 2,736,685	$ 2,616,632	$ 1,779,440
2012	4	0.9576	$ -	$ -	$ -	$ -	$ 539,945	$ 927,639	$ 326,526	$ 326,526	$ 195,341	$ -	$ -	$ 196,748	$ 196,748	$ 293,969	$ 293,969	$ 400,765	$ 400,765	$ 120,652	$ 183,850	$ 247,049	$ -	$ -	$ 361,955	$ -
2013	5	0.9438	$ -	$ -	$ -	$ -	$ 532,195	$ 914,324	$ 321,839	$ 321,839	$ 192,537	$ -	$ -	$ 193,924	$ 193,924	$ 278,423	$ 278,423	$ 395,012	$ 395,012	$ 118,920	$ 192,537	$ 243,503	$ -	$ -	$ 356,759	$ -
2014	6	0.9303	$ -	$ -	$ -	$ -	$ 524,555	$ 901,199	$ -	$ 317,219	$ 189,773	$ -	$ -	$ 191,141	$ 191,141	$ 274,427	$ 274,427	$ 389,342	$ 389,342	$ 117,213	$ 189,773	$ 240,007	$ -	$ -	$ 351,639	$ -
2015	7	0.9169	$ -	$ -	$ -	$ -	$ 217,197	$ 349,012	$ -	$ 312,666	$ 187,049	$ -	$ -	$ -	$ 188,397	$ -	$ 270,488	$ -	$ 383,753	$ 115,530	$ 187,049	$ 236,562	$ -	$ -	$ 346,591	$ -
2016	8	0.9037	$ -	$ -	$ -	$ -	$ 214,079	$ 344,002	$ -	$ -	$ 184,364	$ -	$ -	$ -	$ 185,693	$ -	$ 266,605	$ -	$ 378,245	$ 113,872	$ 184,364	$ 233,167	$ -	$ -	$ 341,616	$ -
2017	9	0.8908	$ -	$ -	$ -	$ -	$ 211,007	$ 339,064	$ -	$ -	$ 181,718	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 112,238	$ 181,718	$ 229,820	$ -	$ -	$ 336,713	$ -
2018	10	0.8780	$ -	$ -	$ -	$ -	$ 207,978	$ 334,197	$ -	$ -	$ 179,109	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 110,626	$ 179,109	$ 226,521	$ -	$ -	$ 331,879	$ -
2019	11	0.8654	$ -	$ -	$ -	$ -	$ 204,992	$ 329,400	$ -	$ -	$ 176,539	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 109,039	$ 176,539	$ 223,269	$ -	$ -	$ 327,116	$ -
2020	12	0.8530	$ -	$ -	$ -	$ -	$ 202,050	$ 324,672	$ -	$ -	$ 174,004	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 107,473	$ 174,004	$ 220,064	$ -	$ -	$ 322,420	$ -
2021	13	0.8407	$ -	$ -	$ -	$ -	$ 199,150	$ 320,012	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 105,931	$ 171,507	$ 216,906	$ -	$ -	$ 317,792	$ -
2022	14	0.8287	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2023	15	0.8168	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2024	16	0.8050	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2025	17	0.7935	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2026	18	0.7821	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2027	19	0.7709	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2028	20	0.7598	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2029	21	0.7489	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2030	22	0.7381	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2031	23	0.7275	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2032	24	0.7171	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2033	25	0.7068	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2034	26	0.6967	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2035	27	0.6867	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2036	28	0.6768	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2037	29	0.6671	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2038	30	0.6575	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
		Totals	$ 143,353	$ 340,483	$ 1,532,172	$ -	$ 5,382,557	$ 8,771,230	$ 2,619,957	$ 3,249,841	$ 1,858,620	$ -	$ 197,523	$ 1,922,511	$ 2,296,601	$ 2,593,475	$ 3,130,568	$ 3,345,943	$ 4,107,941	$ 1,131,493	$ 1,820,451	$ 2,316,867	$ 275,823	$ 2,736,685	$ 6,011,112	$ 1,779,440

Source(s):

- See pgs. 5-6 (Nominal, with Built-in-Contingency) and pg. 42 (Discount Factor)

Figure 4B
Scenario Cash Flows
Discounted, with Built-in Contingency

Year	No.	Discount Factor	Lower Aquifer	CMP Barriers	OM&M (Barriers and Pump & Treat Systems)								Lagoons/ Landfills	Vapor Intrusion							
					Existing (IRZ) Barriers				Add'l Upper Aquifer Barrier		Add'l Lower Aquifer P&T			On-Site				Off-Site			
			Install Pump & Treat	Add'l Upper Aquifer Barriers	12 Yrs	20 Yrs	DN-13 (Lower Aquifer)	TW-2 (Upper Aquifer)	10 Yrs	18 Yrs	10 Yrs	18 Yrs	OM&M (include GW Reports)	Investigation	Mitigate			Investigation	Mitigate		
															Active Mitigate	Passive Mitigate	No Action		Mitigate	No Action	
2009	1	1.0000	$ -	$ -	$ 100,000	$ 100,000	$ 20,500	$ 76,750	$ -	$ -	$ -	$ -	$ 90,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
2010	2	0.9856	$ -	$ 235,964	$ 147,847	$ 147,847	$ 40,411	$ 151,297	$ -	$ -	$ -	$ -	$ 98,565	$ -	$ -	$ -	$ -	$ 1,008,316	$ -	$ -	
2011	3	0.9715	$ 927,198	$ 530,709	$ 242,874	$ 242,874	$ 39,831	$ 290,964	$ 94,235	$ 94,235	$ 39,831	$ 39,831	$ 97,150	$ 223,134	$ 6,655,732	$ 4,984,756	$ -	$ -	$ 524,609	$ -	
2012	4	0.9576	$ -	$ -	$ 239,388	$ 239,388	$ 39,260	$ 146,984	$ 92,883	$ 92,883	$ 39,260	$ 39,260	$ 95,755	$ -	$ 686,565	$ 274,818	$ -	$ -	$ 135,374	$ -	
2013	5	0.9438	$ -	$ -	$ 235,952	$ 235,952	$ 38,696	$ 144,875	$ 91,549	$ 91,549	$ 38,696	$ 38,696	$ 99,100	$ -	$ 676,710	$ 270,873	$ -	$ -	$ 133,431	$ -	
2014	6	0.9303	$ -	$ -	$ 232,565	$ 232,565	$ 38,141	$ 142,795	$ 90,235	$ 90,235	$ 38,141	$ 38,141	$ 93,026	$ -	$ 666,997	$ 266,985	$ -	$ -	$ 131,516	$ -	
2015	7	0.9169	$ -	$ -	$ 229,227	$ 229,227	$ 37,593	$ -	$ 88,940	$ 88,940	$ 37,593	$ 37,593	$ 91,691	$ -	$ 657,423	$ 263,153	$ -	$ -	$ 129,628	$ -	
2016	8	0.9037	$ -	$ -	$ 225,937	$ 225,937	$ 37,054	$ -	$ 87,663	$ 87,663	$ 37,054	$ 37,054	$ 90,375	$ -	$ 647,986	$ 259,375	$ -	$ -	$ 127,767	$ -	
2017	9	0.8908	$ -	$ -	$ 222,693	$ 222,693	$ 36,522	$ -	$ 86,405	$ 86,405	$ 36,522	$ 36,522	$ 89,077	$ -	$ 638,685	$ 255,652	$ -	$ -	$ 125,933	$ -	
2018	10	0.8780	$ -	$ -	$ 219,497	$ 219,497	$ 35,997	$ -	$ 85,165	$ 85,165	$ 35,997	$ 35,997	$ 92,189	$ -	$ 629,517	$ 251,982	$ -	$ -	$ 124,126	$ -	
2019	11	0.8654	$ -	$ -	$ 216,346	$ 216,346	$ 35,481	$ -	$ 83,942	$ 83,942	$ 35,481	$ 35,481	$ 86,538	$ -	$ 620,481	$ 248,365	$ -	$ -	$ -	$ -	
2020	12	0.8530	$ -	$ -	$ 213,241	$ 213,241	$ 34,971	$ -	$ 82,737	$ 82,737	$ 34,971	$ 34,971	$ 85,296	$ -	$ 611,575	$ 244,800	$ -	$ -	$ -	$ -	
2021	13	0.8407	$ -	$ -	$ -	$ 210,180	$ 34,470	$ -	$ -	$ 81,550	$ -	$ 34,470	$ 84,072	$ -	$ 602,796	$ 241,287	$ -	$ -	$ -	$ -	
2022	14	0.8287	$ -	$ -	$ -	$ 207,163	$ 33,975	$ -	$ -	$ 80,379	$ -	$ 33,975	$ 82,865	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
2023	15	0.8168	$ -	$ -	$ -	$ 204,189	$ 33,487	$ -	$ -	$ 79,225	$ -	$ 33,487	$ 85,760	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
2024	16	0.8050	$ -	$ -	$ -	$ 201,258	$ 33,006	$ -	$ -	$ 78,088	$ -	$ 33,006	$ 80,503	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
2025	17	0.7935	$ -	$ -	$ -	$ 198,370	$ 32,533	$ -	$ -	$ 76,967	$ -	$ 32,533	$ 79,348	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
2026	18	0.7821	$ -	$ -	$ -	$ 195,522	$ 32,066	$ -	$ -	$ 75,863	$ -	$ 32,066	$ 78,209	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
2027	19	0.7709	$ -	$ -	$ -	$ 192,716	$ 31,605	$ -	$ -	$ 74,774	$ -	$ 31,605	$ 77,086	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
2028	20	0.7598	$ -	$ -	$ -	$ 189,949	$ 31,152	$ -	$ -	$ 73,700	$ -	$ 31,152	$ 79,779	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
2029	21	0.7489	$ -	$ -	$ -	$ -	$ 30,705	$ -	$ -	$ -	$ -	$ -	$ 74,889	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
2030	22	0.7381	$ -	$ -	$ -	$ -	$ 30,264	$ -	$ -	$ -	$ -	$ -	$ 73,814	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
2031	23	0.7275	$ -	$ -	$ -	$ -	$ 29,829	$ -	$ -	$ -	$ -	$ -	$ 72,755	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
2032	24	0.7171	$ -	$ -	$ -	$ -	$ 29,401	$ -	$ -	$ -	$ -	$ -	$ 71,710	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
2033	25	0.7068	$ -	$ -	$ -	$ -	$ 28,979	$ -	$ -	$ -	$ -	$ -	$ 74,215	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
2034	26	0.6967	$ -	$ -	$ -	$ -	$ 28,563	$ -	$ -	$ -	$ -	$ -	$ 69,666	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
2035	27	0.6867	$ -	$ -	$ -	$ -	$ 28,153	$ -	$ -	$ -	$ -	$ -	$ 68,666	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
2036	28	0.6768	$ -	$ -	$ -	$ -	$ 27,749	$ -	$ -	$ -	$ -	$ -	$ 67,681	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
2037	29	0.6671	$ -	$ -	$ -	$ -	$ 27,351	$ -	$ -	$ -	$ -	$ -	$ 66,709	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
2038	30	0.6575	$ -	$ -	$ -	$ -	$ 26,958	$ -	$ -	$ -	$ -	$ -	$ 1,148,988	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
		Totals	**$ 927,198**	**$ 766,673**	**$ 2,525,568**	**$ 4,124,915**	**$ 984,703**	**$ 953,664**	**$ 883,756**	**$ 1,504,302**	**$ 373,546**	**$ 635,839**	**$ 3,545,477**	**$ 223,134**	**$ 13,094,468**	**$ 7,562,046**	**$ -**	**$ 1,008,316**	**$ 1,432,383**	**$ -**	

Source(s):
- See pgs. 5-6 (Nominal, with Built-in-C