

Landfill Mining

Public Utilities Board
September 11, 2017

Potential Benefits

- **Airspace Recovery**
 - Airspace = Future revenue
- **Reduce Environmental Risks**
 - Ground water contamination
- **Recovered Material Revenue**
 - Paper, plastic, metal, etc.

Assumptions & Risk Factors

- **Processing Capacity**
 - Workforce & equipment
- **Landfill Composition**
 - Core sample material consistency
 - Unknowns (wood, metal, Tetra Pak)
- **Material Condition**
 - Contamination and market potential
- **Material Price Volatility**



Benefits Analysis

Landfill Mining Airspace & Benefits	Original Analysis*	Current Analysis**	
Recovered Airspace	25,308,896	8,708,207	<i>Value based on landfill disposal fees</i>
Reclaimed Land Value	781,035	-	
Avoided Post-Closure	7,736,456	-	
Avoided Closure	3,296,234	-	
<i>Subtotal Additional Benefits</i>	\$ 37,122,621	\$ 8,708,207	

*Project 69% complete after 10 years
 **Project 52% complete after 10 years

Current Assumptions

- Airspace value is a function of material diverted and airspace revenue potential
- Land value is applicable if a land purchase is avoided
- Closure/post-closure costs are only avoided if landfill never closes

Material Sales Analysis

Landfill Mining Commodity Assumptions	Landfill Composition	Sellable Material	Original Proforma Total Revenue
Cardboard	18.0%	60.0%	\$ 1,296,771
Mixed Paper	7.7%	5.0%	\$ 30,818
Mixed Metal	5.0%	50.0%	\$ 520,309
Aluminum Metal	2.0%	50.0%	\$ 1,560,927
Concrete	3.0%	90.0%	\$ 43,696
Rolled Paper - Tetra Pak	-	-	\$ 960,000
Bulky Recoverable Materials	-	-	\$ 9,819,600
Soil	-	-	\$ 537,699
			\$ 14,769,821

Current Assumptions

- UTA landfill composition research is reliable
- Market wants clean material; 30-50% of material will be degraded
- Tetra Pak & bulky materials are complete unknowns
- Original pro forma revenue = **\$44/ton**; Actual FY 15/16 revenue = **\$22/ton**

Final Pro Forma

Landfill Mining Pro Forma 10 Year Totals	Original Analysis*	Current Analysis**
<i>Revenue & Benefits</i>		
Material Sales	14,769,821	1,193,478
Airspace & Benefits	37,122,621	8,708,207
Subtotal Fund Revenues	\$ 51,892,442	\$ 9,901,685
<i>Expenditures</i>		
Personal Services	11,184,029	7,100,207
Materials & Supplies	1,539,026	993,345
Debt Service - Equipment*	5,536,995	3,324,809
Equipment Lease	1,536,160	1,340,000
Fuel & Maintenance	8,950,424	5,503,817
Outside Contract Services	1,343,567	1,343,567
Operational Transfers	4,588,454	3,306,678
Miscellaneous	398,108	994,544
Franchise Fee	738,491	59,674
Subtotal Fund Expenditures	\$ 35,815,254	\$ 23,966,639
Net Benefit / (Loss)	\$ 16,077,188	\$ (14,064,954)
<i>*Project 69% complete after 10 years</i>		
<i>**Project 52% complete after 10 years</i>		

Additional Risks & Challenges

- **Equipment Failure/Replacement**
- **Environmental Risk**
- **Health & Safety**
- **Workforce Loss**
- **Material Testing & Storage**
- **Inventory & Logistics**

Options & Recommendation

- **Option 1: Eliminate landfill mining**
 - Reduce O&M within 6 months
 - Equipment analysis/reduction (department wide)
- **Option 2: Proceed with landfill mining**

Questions?