



July 18, 2012

Mr. Toby F. Edwards
Director
Cumberland Plateau Regional Waste Management Authority
224 Clydesway Drive
Lebanon, Virginia 24226

**Re: Cost Analysis –
Landfill Construction/Operations vs. Transfer Station Construction/Operations
Buchanan County, Dickenson County, and Russell County
JEI Project No. 8481201.01 Task 02, File 30.1**

Dear Toby:

Joyce Engineering, Inc. appreciates the opportunity to provide this cost analysis to the Cumberland Plateau Regional Waste Management Authority. Please note that the opinion of probable costs that have been developed are conceptual in nature and should only be used to provide an order of magnitude cost for comparative purposes.

We sincerely thank you for this opportunity and look forward to continuing our professional relationship with Cumberland Plateau Regional Waste Management Authority. If you have any questions concerning this proposal, please do not hesitate to contact me at (804) 355-4520.

Sincerely,
JOYCE ENGINEERING, INC.

Brian E. Stuver
Client Service Manager

c: Jerry McGraner, P.E. JEI

EXECUTIVE SUMMARY

The purpose of this cost analysis is to provide the Cumberland Plateau Regional Waste Management Authority (CPRWMA) member counties with an opinion of the probable cost for solid waste management and disposal activities since 1993; when each county ceased landfill operations. The cost analysis compares the approximate cost of operating a transfer station versus the cost that could have been incurred if each County had opted to continue landfilling. Had the Counties desired to continue landfilling, the new landfills would have been required to meet the United States Environmental Protection Agencies Subtitle D regulations. These regulations require a landfill to be constructed with a composite liner system and leachate collection system.

A spreadsheet model was used to analyze the financial aspects of each option over a 20-year modeling period (Fiscal Year 93 to Fiscal Year 2012). This evaluation was completed utilizing information supplied by CPRWMA related to current transfer station operations, including Fiscal Year budgets from 2006 – 2011, the Solid Waste Management Plan, and transportation and disposal contracts. Operational costs for the transfer station include the following:

- Personnel
- Scalehouse Operations
- Equipment and Maintenance
- Debt Service

For the landfill option, Joyce Engineering utilized permitting, construction, and operation costs from a municipality run Subtitle D landfill with annual waste generation rates that are comparable to Buchanan and Russell Counties. Given these rates, this analysis estimated that the Counties would construct a new disposal cell every 7 years. Since, Dickenson County's waste generation rates are lower; a new disposal cell would be required every 14 years. Operational costs for the landfill include the following:

- Personnel
- Leachate Collection and Treatment
- Scalehouse Operations
- Equipment and Maintenance
- Environmental Compliance and Monitoring

Based on the financial analysis, if the CPRWMA member Counties had opted to continue landfilling, the total waste management costs to date would be approximately twice the cost of the selected transfer station option. The attached Tables and Charts outline the results of the cost analysis.

Buchanan County

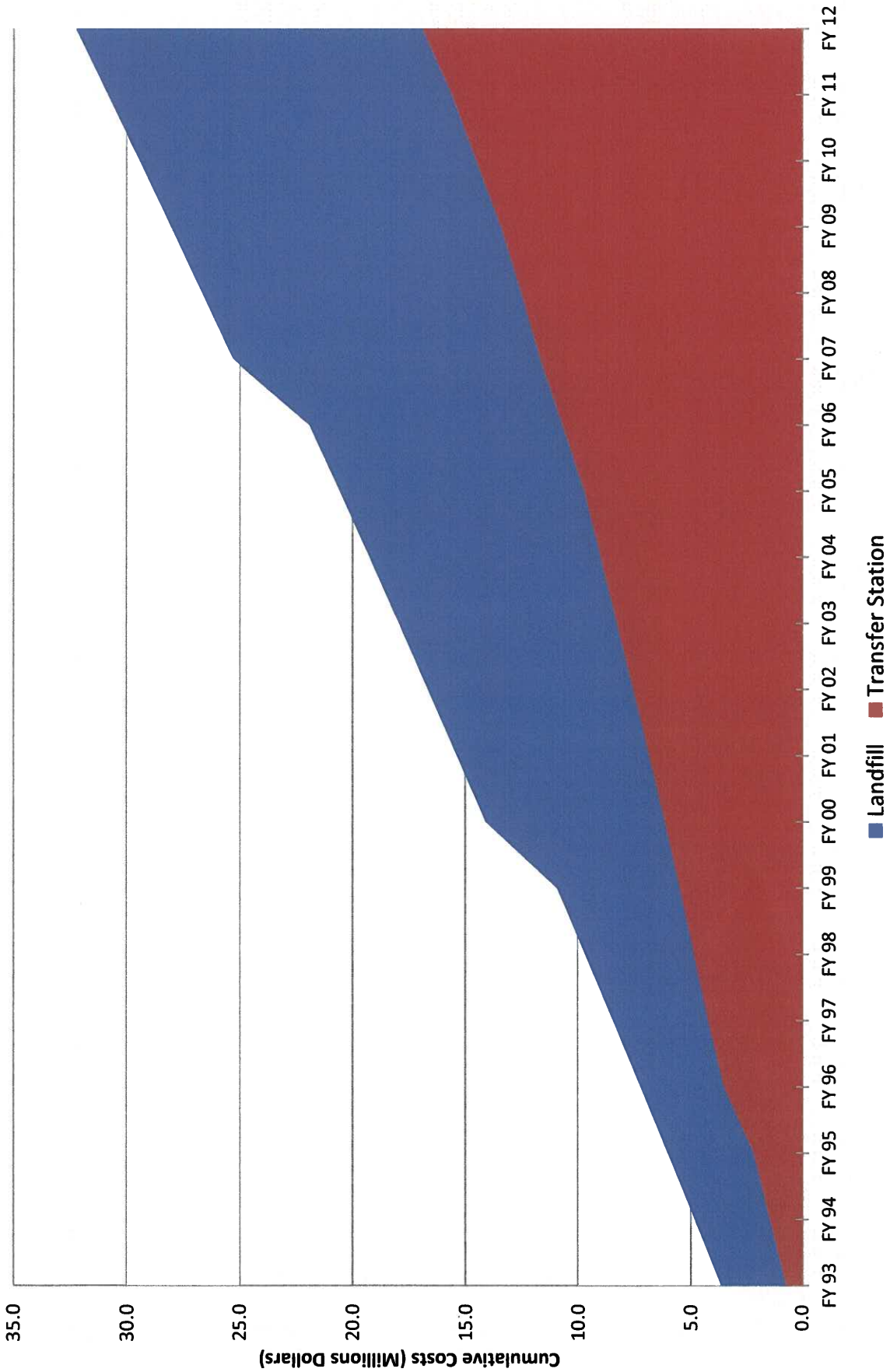
Estimated Cost - Continued Landfilling.

Year	Tonnage	Permitting	Construction	Operation
FY 93	21,427	\$ 290,000	\$ 2,190,000	\$ 1,170,000
FY 94	21,125			\$ 1,180,000
FY 95	20,823			\$ 1,190,000
FY 96	20,521			\$ 1,210,000
FY 97	20,219			\$ 1,220,000
FY 98	16,500			\$ 1,230,000
FY 99	15,813			\$ 1,240,000
FY 00	17,625		\$ 1,930,000	\$ 1,250,000
FY 01	19,431			\$ 1,270,000
FY 02	20,194			\$ 1,280,000
FY 03	20,472			\$ 1,290,000
FY 04	20,635			\$ 1,310,000
FY 05	20,801			\$ 1,320,000
FY 06	20,967			\$ 1,330,000
FY 07	22,000		\$ 2,070,000	\$ 1,350,000
FY 08	17,474			\$ 1,360,000
FY 09	18,885			\$ 1,370,000
FY 10	19,787			\$ 1,390,000
FY 11	19,787			\$ 1,400,000
FY 12	24,787			\$ 1,420,000
Cumulative Total				\$ 32,260,000

Estimated Cost - Transfer Station.

Year	Tonnage	Permitting & Construction	Operation	Transportation & Disposal
FY 93	21,427		\$ 280,000	\$ 460,000
FY 94	21,125		\$ 280,000	\$ 450,000
FY 95	20,823		\$ 280,000	\$ 440,000
FY 96	20,521	\$ 610,000	\$ 280,000	\$ 440,000
FY 97	20,219		\$ 280,000	\$ 430,000
FY 98	16,500		\$ 280,000	\$ 350,000
FY 99	15,813		\$ 280,000	\$ 340,000
FY 00	17,625		\$ 280,000	\$ 380,000
FY 01	19,431		\$ 280,000	\$ 410,000
FY 02	20,194		\$ 280,000	\$ 430,000
FY 03	20,472		\$ 280,000	\$ 440,000
FY 04	20,635		\$ 280,000	\$ 440,000
FY 05	20,801		\$ 280,000	\$ 440,000
FY 06	20,967		\$ 280,000	\$ 680,000
FY 07	22,000		\$ 280,000	\$ 710,000
FY 08	17,474		\$ 260,000	\$ 580,000
FY 09	18,885		\$ 200,000	\$ 710,000
FY 10	19,787		\$ 260,000	\$ 830,000
FY 11	19,787		\$ 250,000	\$ 840,000
FY 12	24,787		\$ 250,000	\$ 1,070,000
Cumulative Total				\$ 16,900,000

Buchanan County Cumulative Costs to Date



Dickenson County

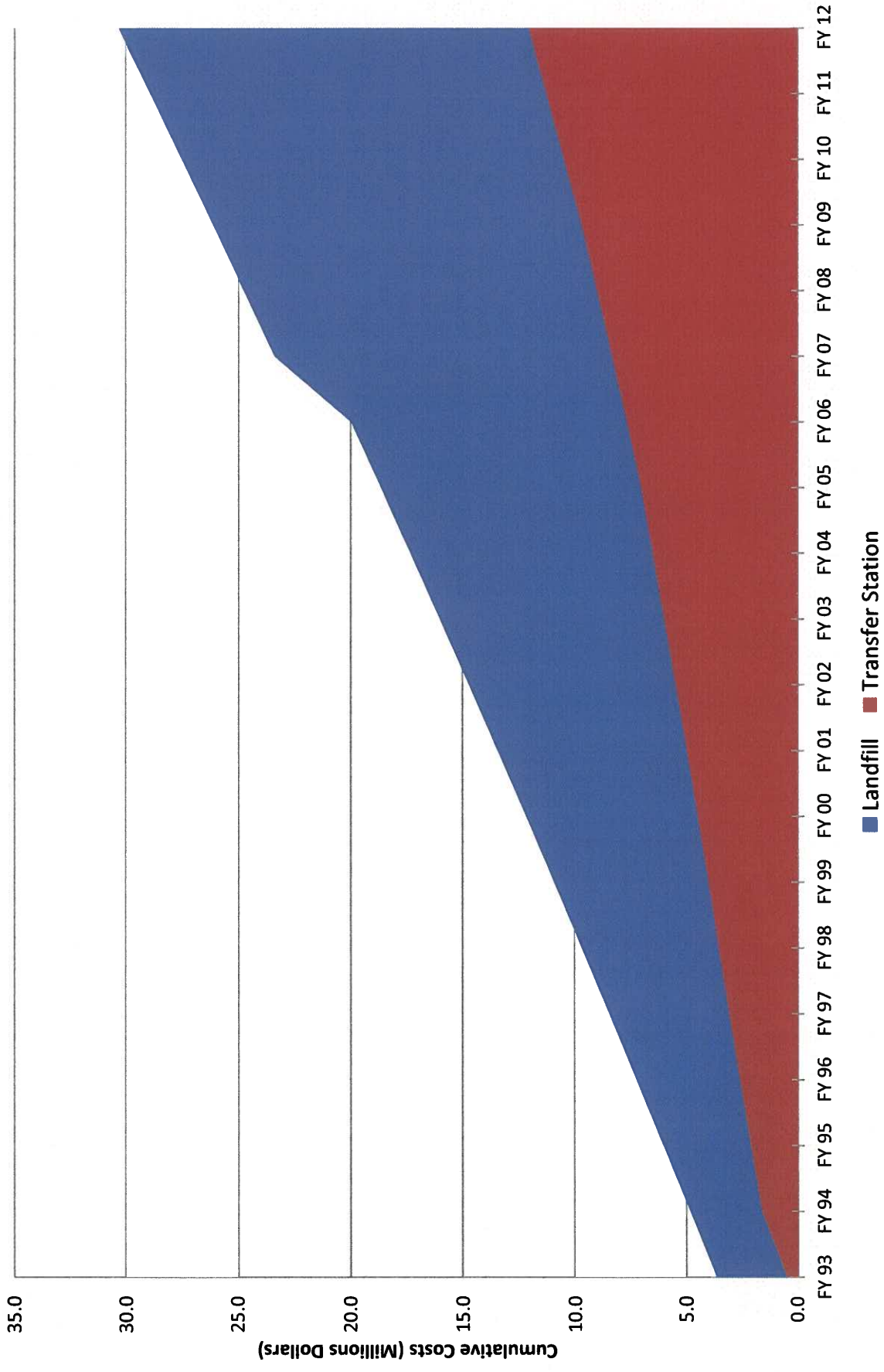
Estimated Cost - Continued Landfilling.

Year	Tonnage	Permitting	Construction	Operation
FY 93	9,761	\$ 290,000	\$ 2,190,000	\$ 1,170,000
FY 94	9,691			\$ 1,180,000
FY 95	9,622			\$ 1,190,000
FY 96	9,553			\$ 1,210,000
FY 97	9,483			\$ 1,220,000
FY 98	8,531			\$ 1,230,000
FY 99	8,281			\$ 1,240,000
FY 00	8,605			\$ 1,250,000
FY 01	9,449			\$ 1,270,000
FY 02	10,151			\$ 1,280,000
FY 03	10,606			\$ 1,290,000
FY 04	10,695			\$ 1,310,000
FY 05	10,784			\$ 1,320,000
FY 06	10,875			\$ 1,330,000
FY 07	11,600		\$ 2,070,000	\$ 1,350,000
FY 08	12,296			\$ 1,360,000
FY 09	13,250			\$ 1,370,000
FY 10	13,307			\$ 1,390,000
FY 11	13,307			\$ 1,400,000
FY 12	13,307			\$ 1,420,000
Cumulative Total				\$ 30,330,000

Estimated Cost - Transfer Station.

Year	Tonnage	Permitting & Construction	Operation	Transportation & Disposal
FY 93	9,761		\$ 280,000	\$ 210,000
FY 94	9,691	\$ 650,000	\$ 280,000	\$ 210,000
FY 95	9,622		\$ 280,000	\$ 210,000
FY 96	9,553		\$ 280,000	\$ 210,000
FY 97	9,483		\$ 280,000	\$ 210,000
FY 98	8,531		\$ 280,000	\$ 180,000
FY 99	8,281		\$ 280,000	\$ 180,000
FY 00	8,605		\$ 280,000	\$ 190,000
FY 01	9,449		\$ 280,000	\$ 200,000
FY 02	10,151		\$ 280,000	\$ 220,000
FY 03	10,606		\$ 280,000	\$ 230,000
FY 04	10,695		\$ 280,000	\$ 230,000
FY 05	10,784		\$ 280,000	\$ 230,000
FY 06	10,875		\$ 280,000	\$ 360,000
FY 07	11,600		\$ 280,000	\$ 380,000
FY 08	12,296		\$ 260,000	\$ 410,000
FY 09	13,250		\$ 200,000	\$ 490,000
FY 10	13,307		\$ 260,000	\$ 530,000
FY 11	13,307		\$ 250,000	\$ 540,000
FY 12	13,307		\$ 250,000	\$ 550,000
Cumulative Total				\$ 12,040,000

Dickenson County Cumulative Costs to Date



Russell County

Estimated Cost - Continued Landfilling.

Year	Tonnage	Permitting	Construction	Operation
FY 93	21,427	\$ 290,000	\$ 2,190,000	\$ 1,170,000
FY 94	21,125			\$ 1,180,000
FY 95	20,823			\$ 1,190,000
FY 96	20,521			\$ 1,210,000
FY 97	20,219			\$ 1,220,000
FY 98	24,074			\$ 1,230,000
FY 99	21,739			\$ 1,240,000
FY 00	24,010		\$ 1,930,000	\$ 1,250,000
FY 01	24,010			\$ 1,270,000
FY 02	23,106			\$ 1,280,000
FY 03	22,945			\$ 1,290,000
FY 04	24,432			\$ 1,310,000
FY 05	24,654			\$ 1,320,000
FY 06	24,878			\$ 1,330,000
FY 07	26,000		\$ 2,070,000	\$ 1,350,000
FY 08	21,936			\$ 1,360,000
FY 09	24,819			\$ 1,370,000
FY 10	22,661			\$ 1,390,000
FY 11	22,661			\$ 1,400,000
FY 12	22,037			\$ 1,420,000
Cumulative Total				\$ 32,260,000

Estimated Cost - Transfer Station.

Year	Tonnage	Permitting & Construction	Operation	Transportation & Disposal
FY 93	21,427		\$ 280,000	\$ 460,000
FY 94	21,125	\$ 630,000	\$ 280,000	\$ 450,000
FY 95	20,823		\$ 280,000	\$ 440,000
FY 96	20,521		\$ 280,000	\$ 440,000
FY 97	20,219		\$ 280,000	\$ 430,000
FY 98	24,074		\$ 280,000	\$ 510,000
FY 99	21,739		\$ 280,000	\$ 460,000
FY 00	24,010		\$ 280,000	\$ 510,000
FY 01	24,010		\$ 280,000	\$ 510,000
FY 02	23,106		\$ 280,000	\$ 490,000
FY 03	22,945		\$ 280,000	\$ 490,000
FY 04	24,432		\$ 280,000	\$ 520,000
FY 05	24,654		\$ 280,000	\$ 520,000
FY 06	24,878		\$ 280,000	\$ 760,000
FY 07	26,000		\$ 280,000	\$ 790,000
FY 08	21,936		\$ 260,000	\$ 680,000
FY 09	24,819		\$ 200,000	\$ 870,000
FY 10	22,661		\$ 280,000	\$ 880,000
FY 11	22,661		\$ 250,000	\$ 900,000
FY 12	22,037		\$ 250,000	\$ 890,000
Cumulative Total				\$ 18,070,000

Russell County Cumulative Costs to Date

