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**MONTGOMERY WATSON**
Mining Group1475 Pine Grove Rd Suite 109
PO Box 774018
Steamboat Springs, Colorado 80477Tel: 970 879 6260
Fax: 970 879 9048

Handwritten: 750 WDF C/12

To:	David Cobrain NMED Stephanie Kruse - NMED	Date:	September 6, 2000
From:	Patrick Corser	Reference:	602
Fax No:	505-827-1544	Charged Amt:	
Subject:	Supporting Information for Closure Costs	No. of Pages:	11 (including cover)

David,

I have included two attachments to this fax that should provide supporting information for the unit rate we used for backfilling the Phase IA excavation for the Triassic Park landfill.

Attachment A includes a summary of three bids we received from general contractors to construct a new landfill cell in Denver. The unit prices for general excavation and stockpiling varied between \$1.44 to 2.03 per cubic yard.

Attachment B includes a summary of unit costs that were obtained from contractors to perform remediation at a mine site in Nevada. On the last page of the summary are the unit costs for construction of a repository for tailings placement. The unit costs for excavation of the repository and filling with waste materials varied between \$2 to 5.40 cubic yard. However, the conditions at the site are very remote and would require a long (close to a mile) haul.

The backfilling plan for the Phase IA landfill at closure consists of hauling materials that were stockpiled from the excavation back into the Phase IA area. The stockpile is expected to be located directly adjacent to the Phase IA landfill and can be placed without any compaction or specialized moisture conditioning (beyond what is required for dust control). Therefore, we believe that the above numbers support the \$2 per cubic yard unit rate that was included in the Triassic Park closure cost estimate

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ATTACHMENT A

Sheet1

**COST PROPOSAL WORKSHEET
LANDFILL PHASE 2 (CELL 2A) EXPANSION**

ITEM NO.		QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization/Demobilization	1	LS	16500	\$ 16,500
* 2	Subgrade Excavation and Trim	46,000	CY	1.5	\$ 69,000
3	Install Compacted Clay Liner	32,000	CY	3	\$ 96,000
4	Install Compacted Clay Temp. Sump Berm	900	CY	3	\$ 2,700
5	Furnish and Install 18" SDR 17 HDPE Sump Riser Pipe	18	LF	10.7	\$ 193
6	Furnish and Install 18" SDR 17 HDPE 150 deg. Elbow	1	LS	595	\$ 595
7	Furnish and Install 18" SDR 17 HDPE Perforated Sump Pipe	15	LF	12.84	\$ 193
8	Furnish and Install 6" Slotted ADS Leachate Collection Pipe	590	LF	1.71	\$ 1,009
9	Furnish and Install Collection Layer Sand/Gravel	4,650	CY	16	\$ 74,400
10	Furnish and Install Sump/Collection Pipe Gravel	85	CY	41.75	\$ 3,549
11	Furnish and Install Filter Geotextile	275,000	SF	0.09	\$ 24,750
12	Install Compacted Fill Berm	1,440	CY	3.96	\$ 5,702
13	Furnish and Install Plywood Strips for Tie-in	720	LF	4.41	\$ 3,175
14	Protective Layer	300	CY	2.99	\$ 897
				TOTAL BID	\$ 298,662

NOTE: Quantities shown above are estimates only. Bidder to make their own quantity estimates based on Construction Drawings and Specifications.

\$ 46,666

COST PROPOSAL WORKSHEET				
LANDFILL PHASE 2 (CELL 2A) EXPANSION				
Revision 2 - July 30, 1998				
	QUANTITY	UNIT	MW UNIT RATE \$/Unit	MW LUMP SUM
Mobilization/Demobilization	1	LS	\$ 10,350	\$ 10,350
Subgrade Excavation and Trim	46,000	CY	\$ 1.44	\$ 66,240
Install Compacted Clay Liner	32,000	CY	\$ 1.56	\$ 49,920
Install Compacted Clay Temp. Sump Berm	900	CY	\$ 5.29	\$ 4,761
Furnish and Install 18" SDR 17 HDPE Sump Riser Pipe	18	LF	\$ 57.50	\$ 1,035
Furnish and Install 18" SDR 17 HDPE 150 deg. Elbow	1	LS	\$ 575.00	\$ 575
Furnish and Install 18" SDR 17 HDPE Perforated Sump Pipe	15	LF	\$ 80.50	\$ 1,208
Furnish and Install 6" Slotted ADS Leachate Collection Pipe	590	LF	\$ 8.80	\$ 5,192
Furnish and Install Collection Layer Sand/Gravel	4,650	CY	\$ 14.20	\$ 66,030
Furnish and Install Sump/Collection Pipe Gravel	85	CY	\$ 35.71	\$ 3,035
Furnish and Install Filter Geotextile	275,000	SF	\$ 0.13	\$ 35,750
Install Compacted Fill Berm	1,440	CY	\$ 7.59	\$ 10,930
Furnish and Install Plywood Strips for Tie-in Protective Layer	720	LF	\$ 2.30	\$ 1,656
Protective Layer	450	CY	\$ 10.47	\$ 4,712
Surveying	1	LS	\$ 18,400	\$ 18,400
Test Pits	1	LS	\$ 575	\$ 575
Construction Total				\$ 280,368.0
Cost per acre (construction only)				\$ 43,807.5
Total COA and CM				\$ 44,793
Cost per acre (COA and CM)				\$ 6,999
Grand Total Lump Sum Bid				\$ 325,161
Cost per Acre (Total)				\$ 50,806
Excavation from Borrow (as required)	1	CY	1.82	
Furnish Offsite Water (as required)	1	MGAL	19.95	

Sheet

COST PROPOSAL WORKSHEET
LANDFILL PHASE 2 (CELL 2A) EXPANSION

ITEM NO.		QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization/Demobilization	1	LS	34132.27	\$ 34,132
2	Subgrade Excavation and Trim	46,000	CY	2.03	\$ 93,380
3	Install Compacted Clay Liner	32,000	CY	3.1	\$ 99,200
4	Install Compacted Clay Temp. Sump Berm	900	CY	3.62	\$ 3,258
5	Furnish and Install 18" SDR 17 HDPE Sump Riser Pipe	18	LF	10.5	\$ 189
6	Furnish and Install 18" SDR 17 HDPE 150 deg. Elbow	1	LS	583.91	\$ 584
7	Furnish and Install 18" SDR 17 HDPE Perforated Sump Pipe	15	LF	12.6	\$ 189
8	Furnish and Install 6" Slotted ADS Leachate Collection Pipe	590	LF	1.68	\$ 991
9	Furnish and Install Collection Layer Sand/Gravel	4,650	CY	15.83	\$ 73,610
10	Furnish and Install Sump/Collection Pipe Gravel	85	CY	45.75	\$ 3,889
11	Furnish and Install Filter Geotextile	275,000	SF	0.09	\$ 24,750
12	Install Compacted Fill Berm	1,440	CY	3.62	\$ 5,213
13	Furnish and Install Plywood Strips for Tie-in	720	LF	2.61	\$ 1,879
14	Protective Layer	300	CY	2.75	\$ 825
			Total Lump Sum		\$ 342,089
			Cost per acre	6.4 acres	\$ 53,451
15	Excavation from Borrow (as required)	1	CY	\$ 1.58	
16	Furnish Offsite Water (as required)	1	MGAL	\$ 17.35	
17	Excavate Test Pits	1	LS	\$ 744.27	

NOTE: Quantities shown above are estimates only. Bidder to make their own quantity estimates based on Construction Drawings and Specifications.

ATTACHMENT B

Description	Unit	Unit Cost			Unit Cost Comments	Quantity			Quantity Comments
		Low	Likely	High		Low	Likely	High	
Channel Excavation	cy	\$2.00	\$3.00	\$4.00	All costs associated with channel excavation and placement on the top of Pond 3. Most likely costs provide by Canyon Construction. High and low information based on bids provided by other contractors for similar work at different sites.	20,000	31,000	34,000	The channel would start at the downstream toe of the Pond 2 dam and end at the North end of the Pond 3/4 Channel. The channel would be placed at a 2% grade. The north side slope would be excavated at a 3:1 (horizontal:vertical) and the South side slope excavated to a 2:1 (horizontal:vertical).
Riprap Placement	cy	\$20.00	\$35.00	\$40.00	All costs associated with the placement of riprap in the channel. Most likely costs provide by Canyon Construction. High and low information based on bids provided by other contractors for similar work at different sites.	4,500	5,000	5,500	Riprap would be placed in the channel with a thickness of 12 inches. Low quantities were taken from the drawings plus a percentage for likely and high.
Pond 3 Cover Cover Placement	cy	\$2.00	\$2.50	\$4.00	All costs associated with placing two additional feet of cover on Pond 3. Most likely costs provide by Canyon Construction. High and low information based on bids provided by other contractors for similar work at different sites.	18,000	20,000	30,000	Low quantities were taken from drawings, plus a percentage for likely and high. Quantities vary depending upon Alternative.
Revegetation	acre	\$1,000.00	\$1,200.00	\$1,500.00	All costs associated with revegetating Pond 3. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	5	7	10	Low quantities were taken from the drawings plus a percentage for likely and high.
North Side Sump Construction Excavation (sump & piping)	cy	\$5.00	\$10.00	\$15.00	All costs associated with sump and pipe excavation. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	5,000	7,500	10,000	Low quantities based on excavating 10 feet deep at a 1:1 large enough for sump installation and piping, plus a percentage for likely and high.
Sump Installation	each	\$600.00	\$1,000.00	\$2,000.00	All costs associated with sump installation (48 inch HDPE). Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	6	7	8	Likely quantities based on drawings, plus and minus one for high and low respectively.
Gravel Backfill	cy	\$15.00	\$24.00	\$30.00	All costs associated with backfilling against sumps with gravel. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	280	330	370	Low quantities based on volume calculations for above mentioned dimensions and drawings, plus a percentage for likely and high.
Piping Between Sumps	ft	\$10.00	\$12.00	\$15.00	All costs associated with placing 6 inch HDPE pipe between sumps. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	1,400	1,540	1,680	Low quantities based on drawings plus a percentage for likely and high.
South Side Sump Construction Excavation (sump & piping)	cy	\$5.00	\$10.00	\$15.00	All costs associated with sump and pipe excavation. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	5,800	6,400	11,200	Low quantities based on excavating 10 feet deep at a 1:1 large enough for sump installation and piping, plus a percentage for likely and high.
Sump Installation	each	\$600.00	\$1,000.00	\$2,000.00	All costs associated with sump installation (48 inch HDPE). Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	6	7	8	Likely quantities based on drawings, plus and minus one for high and low respectively.



Description	Unit	Unit Cost			Unit Cost Comments	Quantity			Quantity Comments
		Low	Likely	High		Low	Likely	High	
4.3 Gravel Backfill	cy	\$15.00	\$24.00	\$30.00	All costs associated with backfilling against sumps with gravel. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	250	330	370	Low quantities based on volume calculations for above mentioned dimensions and drawings, plus a percentage for likely and high.
4.4 Piping Between Sumps	lf	\$10.00	\$12.00	\$15.00	All costs associated with placing 8 inch HDPE pipe between sumps. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	1,400	1,540	1,680	Low quantities based on drawings plus a percentage for likely and high.
<i>Mitt Creek Lining</i>									
Clear and Grub	sf	\$0.02	\$0.05	\$0.10	All costs associated with clearing and grubbing for culvert placement. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	76,700	87,400	98,100	Likely quantities based on drawings, plus and minus a percentage for high and low respectively.
Culvert Installation	lf	\$80.00	\$95.00	\$120.00	All costs associated with culvert installation. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	2,300	2,850	3,080	Likely quantities based on drawings, plus and minus a percentage for high and low respectively.
Headwall Construction	ls	\$1,000.00	\$1,500.00	\$2,000.00	All costs associated with headwall construction. Costs best estimated.	1	1	1	Only one headwall would be needed.
Backfill	cy	\$2.00	\$2.50	\$3.50	All costs associated with backfilling against culvert. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	29,000	32,000	35,500	Likely quantities based on drawings, plus and minus a percentage for high and low respectively.
Channel Shaping	lf	\$0.15	\$0.25	\$0.50	All costs associated with shaping the channel above the culvert. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.		59,300	64,200	Likely quantities based on drawings, plus and minus a percentage for high and low respectively.
Riprap Placement	cy	\$20.00	\$35.00	\$40.00	All costs associated with the placement of riprap in the channel. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	2,200	2,500	2,700	Riprap would be placed in the channel with a thickness of 12 inches. Low quantities were taken from the drawings plus a percentage for likely and high.
California Cross	ls	\$15,000.00	\$20,000.00	\$25,000.00	Costs best estimated.	1	1	1	Only one California Cross would be needed.
<i>Culvert Installation</i>									
Clear and Grub	sf	\$0.02	\$0.05	\$0.10	All costs associated with clearing and grubbing for culvert placement. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	40660	45200	49720	Likely quantities based on drawings, plus and minus a percentage for high and low respectively.
Culvert Installation	lf	\$50.00	\$60.00	\$80.00	All costs associated with culvert installation. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	800	850	900	Likely quantities based on drawings, plus and minus a percentage for high and low respectively.
Headwall Construction	ls	\$1,000.00	\$1,500.00	\$2,000.00	All costs associated with headwall construction. Costs best estimated.	1	1	1	Only one headwall would be needed.
Backfill	cy	\$2.00	\$2.50	\$3.50	All costs associated with backfilling against culvert. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	2100	2300	2600	Likely quantities based on drawings, plus and minus a percentage for high and low respectively.

Description	Unit	Unit Cost			Unit Cost Comments	Quantity			Quantity Comments
		Low	Likely	High		Low	Likely	High	
Channel Shaping	sf	\$0.15	\$0.25	\$0.60	All costs associated with shaping the channel above the culvert. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	27200	30200	33300	Likely quantities based on drawings, plus and minus a percentage for high and low respectively.
Riprap Placement	cy	\$20.00	\$35.00	\$40.00	All costs associated with the placement of riprap in the channel. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	1100	1200	1300	Riprap would be placed in the channel with a thickness of 12 inches. Low quantities were taken from the drawings plus a percentage for likely and high.
Diversion Structure	ls	\$2,000.00	\$5,000.00	\$8,000.00	All costs associated with diversion structure construction. Costs best estimated.	1	1	1	Only one diversion structure would be needed.
Collection Trench Construction Excavation	cy	\$10.00	\$20.00	\$30.00	All costs associated with trench excavation. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	120	150	200	Quantities best estimated.
Pipe Placement	#	\$10.00	\$12.00	\$16.00	All costs associated with placing a 4 inch perforated HDPE pipe. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	425	450	475	Likely quantities based on drawings, plus and minus a percentage for high and low respectively.
Filter Fabric Placement	sf	\$0.15	\$0.20	\$0.35	All costs associated with filter fabric placement on top of gravel. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	3800	3800	4000	Likely quantities based on drawings and best estimated, plus and minus a percentage for high and low respectively.
Backfill Trench	cy	\$15.00	\$24.00	\$30.00	All costs associated with backfilling trench with gravel. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	120	150	200	Likely quantities based on drawings and best estimated, plus and minus a percentage for high and low respectively.
Lagoon Construction Excavation	cy	\$1.50	\$2.50	\$4.00	All costs associated with lagoon excavation. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	7800	8700	9670	Likely quantities based on drawings, plus and minus a percentage for high and low respectively.
Rough Grading	sf	\$0.16	\$0.50	\$0.77	All costs associated with final lagoon grading. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	28000	31000	3400	Likely quantities based on drawings, plus and minus a percentage for high and low respectively.
Channel Grading	sf	\$0.15	\$0.25	\$0.60	All costs associated with channel grading. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	3700	4200	4600	Likely quantities based on drawings, plus and minus a percentage for high and low respectively.
Riprap Placement	cy	\$20.00	\$35.00	\$40.00	All costs associated with the placement of riprap in the channel. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	150	150	170	Riprap would be placed in the channel with a thickness of 12 inches. Low quantities were taken from the drawings plus a percentage for likely and high.
Reroute Pond 4 Drain Excavation of Tailings	ls	\$1,500.00	\$2,000.00	\$2,500.00	Costs best estimated.	1	1	1	Lump sum



Description	Unit	Unit Cost			Unit Cost Comments	Quantity			Quantity Comments
		Low	Likely	High		Low	Likely	High	
Excavation	cy	\$2.00	\$4.00	\$8.00	All costs associated with tailings excavation. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	750,000	1,500,000	2,000,000	Quantities best estimated.
Stream Restoration	acre	\$1,000.00	\$1,200.00	\$1,600.00	All costs associated with amending and revegetating removal area, and restoring historical stream channel. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	25	30	40	Quantities best estimated.
Cell Construction Excavation	cy	\$2.30	\$3.00	\$5.40	All costs associated with cell excavation. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	600000	750000	1000000	Quantities best estimated.
Subgrade Preparation	sf	\$0.05	\$0.10	\$0.20	All costs associated with subgrade preparation. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.				Quantities best estimated.
Leak Detection/Collection	sf	\$0.30	\$0.60	\$0.70	All costs associated with leak detection/collection system consisting of a geocomposite drainage layer. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.				Quantities best estimated.
Primary Liner	sf	\$0.75	\$1.00	\$1.30	All costs associated with constructing a primary liner consisting of a GCL and geomembrane. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.				Quantities best estimated.
Drainage Material Placement	cy	\$20.00	\$24.00	\$30.00	All costs associated with placing a sand layer 12 inches thick. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.				Quantities best estimated.
Waste Material Placement	cy	\$2.00	\$2.50	\$3.50	All costs associated with tailings placement within the repository. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.	750,000	1,500,000	2,000,000	Quantities best estimated.
Cap Placement	sf	\$1.00	\$1.50	\$2.00	All costs associated with constructing a cover system consisting of a GCL and geocomposite drainage layer. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.				Quantities best estimated.
Cover Soil Placement	cy	\$2.00	\$2.50	\$8.00	All costs associated with placing a cover soil on the repository. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.				Quantities best estimated.
Revegetation of Cap	acre	\$1,000.00	\$1,200.00	\$1,600.00	All costs associated with placing a revegetating cover surface. Likely costs based on information provided by Canyon Construction. High and low information based on information provided by other contractors for similar work at different sites.				Quantities best estimated.