

Umetco Minerals Corporation



P.O. BOX 1029
GRAND JUNCTION, COLORADO 81502
☎ (970) 245-3700

January 10, 2001

Philip Ting, Chief
Fuel Cycle Licensing Branch
ADDRESSEE ONLY
U.S. Nuclear Regulatory Commission
Mail Stop T-8A33
Washington, DC 20555

Attn: Elaine Brummett

**RE: Gas Hills, License Number SUA-648; Docket #40-0299; Surety Update
Additional Information**

Dear Mr. Ting:

Enclosed please find additional information resulting from review of Umetco's letter dated December 20, 2000 requesting surety adjustments for unit costs associated with erosion protection materials. The information enclosed consists of unit price bid schedules received for the subject work as well as the contract technical specifications to quarry, process and place erosion protection materials.

If you have any questions, comments or require additional documentation, please contact me at 970-256-8889 or 970-245-3700.

Sincerely,

Thomas E. Gieck
Manager of Technical Services
E-mail: gieckte@ucarb.com

Copy: CO Sealy
JS Hamrick
EE Ley
RB Garver
Gas Hills File

*NMSSD/PUBLIC
Rec'd back
from E. Brummett
m 01/18/01*

PROPOSAL

Submitted by: _____

EXHIBIT "A" Unit Price Schedule QUARRYING, PROCESSING and PLACEMENT OF EROSION PROTECTION MATERIAL

Bid Item No.	Description	Spec. Reference	Unit	Quantity	Unit Price	Amount
1	Mobilization and Demobilization	4.2	LS	1	\$ 365,000.00	\$ 365,000.00
2	Furnish and Install Fence at Quarry	5.3.5	LF	4,200	\$ 4.00	\$ 16,800.00
3	Removal of Existing fence	5.3.5	LF	860	\$ 3.00	\$ 2,580.00
4	Topsoil/Subsoil Removal and Stockpiling	5.4.4	CY	50,000	\$ 3.00	\$ 150,000.00
5	Quarrying, Processing, and Delivery of Erosion Protection	5.8				
5A	TYPE A (D ₅₀ =0.5")		tons	150,000	\$ 8.00	\$1,200,000.00
5B	TYPE B (D ₅₀ =3")		tons	204,000	\$ 8.10	\$1,652,400.00
5C	TYPE C (D ₅₀ =6")		tons	206,600	\$ 8.25	\$1,704,450.00
5D	TYPE D (D ₅₀ =16")		tons	37,000	\$ 8.80	\$ 325,600.00
5E	TYPE E (D ₅₀ =20")		tons	2,000	\$ 12.00	\$ 24,000.00
6	Erosion Protection Placement - Above-Grade Tailings	6.3				
6A	TYPE A (D ₅₀ =0.5")		CY	15,400	\$ 2.50	\$ 38,500.00
6B	TYPE B (D ₅₀ =3")		CY	81,400	\$ 2.40	\$ 195,360.00
6C	TYPE C (D ₅₀ =6")		CY	116,800	\$ 2.60	\$ 303,680.00
6D	TYPE D (D ₅₀ =16")		CY	2,800	\$ 5.00	\$ 14,000.00
6E	TYPE E (D ₅₀ =20")		CY	1,400	\$ 6.00	\$ 8,400.00
7	Erosion Protection Placement - Heap Leach	6.3				
7A	TYPE A (D ₅₀ =0.5")		CY	46,100	\$ 2.50	\$ 115,250.00
7B	TYPE B (D ₅₀ =3")		CY	25,000	\$ 2.40	\$ 60,000.00
7C	TYPE C (D ₅₀ =6")		CY	3,600	\$ 2.60	\$ 9,360.00
8	Erosion Protection Placement - GHP No. 2	6.3				
8A	TYPE A (D ₅₀ =0.5")		CY	36,900	\$ 2.70	\$ 99,630.00
8B	TYPE B (D ₅₀ =3")		CY	15,500	\$ 2.80	\$ 43,400.00
8C	TYPE C (D ₅₀ =6")		CY	3,400	\$ 3.00	\$ 10,200.00
9	Erosion Protection Placement - A-9 Repository	6.3				
9A	TYPE A (D ₅₀ =0.5")		CY	12,300	\$ 2.80	\$ 34,440.00
9B	TYPE B (D ₅₀ =3")		CY	29,000	\$ 2.90	\$ 84,100.00
9C	TYPE C (D ₅₀ =6")		CY	29,200	\$ 3.00	\$ 87,600.00
9D	TYPE D (D ₅₀ =16")		CY	24,500	\$ 4.60	\$ 112,700.00
10	Earthwork - Above-Grade Tailings Area	7.1.5				

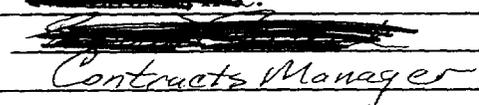
EXHIBIT "A" Unit Price Schedule

Bid Item No.	Description	Spec. Reference	Unit	Quantity	Unit Price	Amount
10A	Clearing for Construction of the Frost Protection Layer, East Canyon Creek Channel Realignment, and Toe Apron		CY	30,000	\$ 1.90	\$ 57,000.00
10B	Frost Protection Fill Obtained from ECC Excavation		CY	80,000	\$ 2.50	\$ 200,000.00
10C	Frost Protection Fill Obtained from Required Grading Excavation		CY	5,000	\$ 2.80	\$ 14,000.00
10D	Frost Protection Fill Obtained from the B-Spoils Borrow Area		CY	84,000	\$ 2.50	\$ 210,000.00
10E	ECC Fill Obtained from required ECC Excavation		CY	5,000	\$ 2.40	\$ 12,000.00
10F	Excavation and Backfill of Above-Grade Tailings Toe Aprons		CY	22,200	\$ 3.30	\$ 73,260.00
11	Earthwork - Heap Leach Area	7.2.4				
11A	Frost Protection Fill Obtained from ECC Excavation		CY	0	\$ 3.30	\$ -
11B	Frost Protection Fill Obtained from B-Spoils Borrow Area		CY	40,000	\$ 2.40	\$ 96,000.00
11C	Excavation and Backfill of Heap Leach and GHP No. 2 Toe Aprons		CY	15,000	\$ 3.50	\$ 52,500.00
12	Earthwork - B-Spoils Area Reclamation	7.3.6				
12A	Unsuitable Excavation - B-Spoils Borrow Area		CY	50,000	\$ 1.30	\$ 65,000.00
12B	Cut and Fill grading of B-Spoils Borrow Area		CY	100,000	\$ 1.50	\$ 150,000.00
12C	Cover Soil Placement		CY	62,500	\$ 1.80	\$ 112,500.00
12D	Agricultural Lime		tons	2,500	\$ 45.00	\$ 112,500.00
12E	Revegetation (Seeding)		AC	155	\$ 300.00	\$ 46,500.00
13	Earthwork - A-9 Area	7.4.2				
13A	Excavation and Backfill of A-9 Toe Aprons		CY	15,000	\$ 3.30	\$ 49,500.00
14	Disposal of Contaminated Soils in A-9 Repository	7.5.1	CY	25,000	\$ 2.00	\$ 50,000.00
15	Abandonment of Heap Leach Drains	8.2	LS	1	\$ 10,000.00	\$ 10,000.00

Total = \$ 7,968,210.00

¹¹ Although utilization of this bid item is not anticipated, conditions encountered during performance of the Work may require its use. Accordingly, the Unit Price for this item shall be included in the bid schedule.

Acknowledgment of Addenda Nos. 1 & 2

~~XXXXXXXXXX, INC.~~

 Contracts Manager
 Firm
 By
 Title

Proposal Exhibit "A" Unit Price Schedule Page 4 of 5
QUARRYING, PROCESSING and PLACEMENT OF EROSION PROTECTION MATERIAL

Revised April 18, 2000

~~XXXXXXXXXX~~ Inc.

Bid Item No.	Description	Spec. Reference	Unit	Quantity	Unit Price	Amount
1	Mobilization and Demobilization	4.2	LS	1	2,867,600.00	2,867,600.00
2	Furnish and Install Fence at Quarry Site	5.3.5	LF	4200	12.26	51,492.00
3	Removal of Existing Fence	5.3.5	LF	860	3.65	3,139.00
4	Topsoil/Subsoil Removal and Stockpiling	5.4.4	CY	50,000	1.01	50,500.00
5	Quarrying, Processing, and Delivery of Erosion Protection	5.8				
5A	TYPE A (D ₅₀ = 0.5")		tons	150,000	9.58	1,437,000.00
5B	TYPE B (D ₅₀ = 3")		tons	204,000	8.77	1,789,080.00
5C	TYPE C (D ₅₀ = 6")		tons	206,600	8.71	1,799,486.00
5D	TYPE D (D ₅₀ = 16")		tons	37,000	16.47	609,390.00
5E	TYPE E (D ₅₀ = 20")		tons	2,000	18.17	36,340.00
6	Erosion Protection Placement - Above-Grade Tailings	6.3				
6A	TYPE A (D ₅₀ = 0.5")		CY	15,400	1.90	29,260.00
6B	TYPE B (D ₅₀ = 3")		CY	81,400	0.69	56,166.00
6C	TYPE C (D ₅₀ = 6")		CY	116,800	0.83	96,944.00
6D	TYPE D (D ₅₀ = 16")		CY	2,800	8.30	23,240.00
6E	TYPE E (D ₅₀ = 20")		CY	1,400	11.74	16,436.00
7	Erosion Protection Placement - Heap Leach	6.3				
7A	TYPE A (D ₅₀ = 0.5")		CY	46,100	0.98	45,178.00
7B	TYPE B (D ₅₀ = 3")		CY	25,000	0.73	18,250.00
7C	TYPE C (D ₅₀ = 6")		CY	3,600	1.51	5,436.00
8	Erosion Protection Placement - GHP No. 2	6.3				
8A	TYPE A (D ₅₀ = 0.5")		CY	36,900	0.88	32,472.00
8B	TYPE B (D ₅₀ = 3")		CY	15,500	0.62	9,610.00
8C	TYPE C (D ₅₀ = 6")		CY	3,400	1.35	4,590.00
9	Erosion Protection Placement - A-9 Repository	6.3				
9A	TYPE A (D ₅₀ = 0.5")		CY	12,300	1.01	12,423.00
9B	TYPE B (D ₅₀ = 3")		CY	29,000	0.62	17,980.00
9C	TYPE C (D ₅₀ = 6")		CY	29,200	0.76	22,192.00
9D	TYPE D (D ₅₀ = 16")		CY	24,500	8.36	204,820.00
10	Earthwork - Above-Grade Tailings Area	7.1.5				

BID PRICES ARE BASED ON THE BID ASSUMPTIONS/CLARIFICATIONS STATED IN THE TECHNICAL PROPOSAL.

Proposal Exhibit "A" Unit Price Schedule Page 4 of 5
QUARRYING, PROCESSING and PLACEMENT OF EROSION PROTECTION MATERIAL

Revised April 18, 2000

~~XXXXXXXXXXXX~~ Co.

Bid Item No.	Description	Spec. Reference	Unit	Quantity	Unit Price	Amount
1	Mobilization and Demobilization	4.2	LS	1		1,040,159 ⁻
2	Furnish and Install Fence at Quarry Site	5.3.5	LF	4200	8 ⁰⁰	33,600 ⁻
3	Removal of Existing Fence	5.3.5	LF	860	2 ⁰⁰	1,720 ⁻
4	Topsoil/Subsoil Removal and Stockpiling	5.4.4	CY	50,000	2 ⁰⁰	100,000 ⁻
5	Quarrying, Processing, and Delivery of Erosion Protection	5.8				
5A	TYPE A (D ₅₀ = 0.5")		tons	150,000	6 ⁰⁰	900,000 ⁻
5B	TYPE B (D ₅₀ = 3")		tons	204,000	6 ⁰⁰	1,224,000 ⁻
5C	TYPE C (D ₅₀ = 6")		tons	206,600	6 ⁴⁰	1,322,240 ⁻
5D	TYPE D (D ₅₀ = 16")		tons	37,000	5 ⁰⁰	185,000 ⁻
5E	TYPE E (D ₅₀ = 20")		tons	2,000	5 ⁰⁰	10,000 ⁻
6	Erosion Protection Placement - Above-Grade Tailings	6.3				
6A	TYPE A (D ₅₀ = 0.5")		CY	15,400	13 ⁷⁵	211,750 ⁻
6B	TYPE B (D ₅₀ = 3")		CY	81,400	10 ¹⁵	826,210 ⁻
6C	TYPE C (D ₅₀ = 6")		CY	116,800	8 ⁰⁰	934,400 ⁻
6D	TYPE D (D ₅₀ = 16")		CY	2,800	22 ⁰⁰	61,600 ⁻
6E	TYPE E (D ₅₀ = 20")		CY	1,400	22 ⁰⁰	30,800 ⁻
7	Erosion Protection Placement - Heap Leach	6.3				
7A	TYPE A (D ₅₀ = 0.5")		CY	46,100	12 ⁰⁰	553,200 ⁻
7B	TYPE B (D ₅₀ = 3")		CY	25,000	7 ⁵⁰	187,500 ⁻
7C	TYPE C (D ₅₀ = 6")		CY	3,600	7 ⁴⁰	26,640 ⁻
8	Erosion Protection Placement - GHP No. 2	6.3				
8A	TYPE A (D ₅₀ = 0.5")		CY	36,900	12 ⁰⁰	442,800 ⁻
8B	TYPE B (D ₅₀ = 3")		CY	15,500	8 ⁰⁰	124,000 ⁻
8C	TYPE C (D ₅₀ = 6")		CY	3,400	8 ⁰⁰	27,200 ⁻
9	Erosion Protection Placement - A-9 Repository	6.3				
9A	TYPE A (D ₅₀ = 0.5")		CY	12,300	12 ⁰⁰	147,600 ⁻
9B	TYPE B (D ₅₀ = 3")		CY	29,000	8 ⁰⁰	232,000 ⁻
9C	TYPE C (D ₅₀ = 6")		CY	29,200	11 ⁰⁰	321,200 ⁻
9D	TYPE D (D ₅₀ = 16")		CY	24,500	11 ⁰⁰	269,500 ⁻
10	Earthwork - Above-Grade Tailings Area	7.1.5				

Proposal Exhibit "A" Unit Price Schedule Page 5 of 5
Revised April 18, 2000

Bid Item No.	Description	Spec. Reference	Unit	Quantity	Unit Price	Amount
10A	Clearing for Construction of the Frost Protection Layer, East Canyon Creek Channel Realignment, and Toe Apron		CY	30,000	3 ⁰⁰	90,000 ⁰⁰
10B	Frost Protection Fill Obtained from ECC Excavation		CY	80,000	2 ⁰⁰	200,000 ⁰⁰
10C	Frost Protection Fill Obtained from Required Grading Excavation		CY	5,000	7 ⁵⁰	37,500 ⁰⁰
10D	Frost Protection Fill Obtained from the B-Spoils Borrow Area		CY	84,000	2 ²⁵	189,000 ⁰⁰
10E	ECC Fill Obtained from required ECC Excavation		CY	5,000	5 ²⁵	26,250 ⁰⁰
10F	Excavation and Backfill of Above-Grade Tailings Toe Aprons		CY	22,200	5 ⁰⁰	111,000 ⁰⁰
11	Earthwork - Heap Leach Area	7.2.4				
11A	Frost Protection Fill Obtained from ECC Excavation		CY	0	N/A	N/A
11B	Frost Protection Fill Obtained from B-Spoils Borrow Area		CY	40,000	1 ⁹⁰	76,000 ⁰⁰
11C	Excavation and Backfill of Heap Leach and GHP No. 2 Toe Aprons		CY	15,000	5 ⁰⁰	75,000 ⁰⁰
12	Earthwork - B-Spoils Area Reclamation	7.3.6				
12A	Unsuitable Excavation - B-Spoils Borrow Area		CY	50,000	1 ⁷⁰	85,000 ⁰⁰
12B	Cut and Fill grading of B-Spoils Borrow Area		CY	100,000	2 ⁰⁰	200,000 ⁰⁰
12C	Cover Soil Placement		CY	62,500	1 ³⁰	81,250 ⁰⁰
12D	Agricultural Lime		tons	2,500	35 ⁰⁰	87,500 ⁰⁰
12E	Revegetation (Seeding)		AC	155	245 ⁰⁰	37,975 ⁰⁰
13	Earthwork - A-9 Area	7.4.2				
13A	Excavation and Backfill of A-9 Toe Aprons		CY	15,000	5 ⁰⁰	75,000 ⁰⁰
14	Disposal of Contaminated Soils in A-9 Repository	7.5.1	CY	25,000	N/A	N/A
15	Abandonment of Heap Leach Drains	8.2	LS	1	10,000 ⁰⁰	10,000 ⁰⁰

Total = 10,594,594⁰⁰

¹⁾ Although utilization of this bid item is not anticipated, conditions encountered during performance of the Work may require its use. Accordingly, the Unit Price for this item shall be included in the bid schedule.

Acknowledgment of Addenda Nos. 1 & 2

~~XXXXXXXXXX~~ Co. Firm
~~XXXXXXXXXX~~ By
ESTIMATOR Title

Proposal Exhibit "A" Unit Price Schedule Page 4 of 5
QUARRYING, PROCESSING and PLACEMENT OF EROSION PROTECTION
MATERIAL

Revised April 18, 2000

~~XXXXXXXXXXXX~~ Inc.

Bid Item No.	Description	Spec. Reference	Unit	Quantity	Unit Price	Amount
1	Mobilization and Demobilization	4.2	LS	1	28500.00	28500.00
2	Furnish and Install Fence at Quarry Site	5.3.5	LF	4200	2.00	8400.00
3	Removal of Existing Fence	5.3.5	LF	860	1.00	860.00
4	Topsoil/Subsoil Removal and Stockpiling	5.4.4	CY	50,000	1.25	62500.00
5	Quarrying, Processing, and Delivery of Erosion Protection	5.8				
5A	TYPE A (D ₅₀ = 0.5")		tons	150,000	9.25	1387500.00
5B	TYPE B (D ₅₀ = 3")		tons	204,000	10.40	2121600.00
5C	TYPE C (D ₅₀ = 6")		tons	206,600	12.10	2499860.00
5D	TYPE D (D ₅₀ = 16")		tons	37,000	16.70	617900.00
5E	TYPE E (D ₅₀ = 20")		tons	2,000	16.70	33400.00
6	Erosion Protection Placement - Above-Grade Tailings	6.3				
6A	TYPE A (D ₅₀ = 0.5")		CY	15,400	3.45	53130.00
6B	TYPE B (D ₅₀ = 3")		CY	81,400	3.45	280830.00
6C	TYPE C (D ₅₀ = 6")		CY	116,800	4.00	467200.00
6D	TYPE D (D ₅₀ = 16")		CY	2,800	6.00	16800.00
6E	TYPE E (D ₅₀ = 20")		CY	1,400	6.00	8400.00
7	Erosion Protection Placement - Heap Leach	6.3				
7A	TYPE A (D ₅₀ = 0.5")		CY	46,100	3.45	159045.00
7B	TYPE B (D ₅₀ = 3")		CY	25,000	3.45	86250.00
7C	TYPE C (D ₅₀ = 6")		CY	3,600	6.00	21600.00
8	Erosion Protection Placement - GHP No. 2	6.3				
8A	TYPE A (D ₅₀ = 0.5")		CY	36,900	3.45	127305.00
8B	TYPE B (D ₅₀ = 3")		CY	15,500	3.45	53475.00
8C	TYPE C (D ₅₀ = 6")		CY	3,400	6.00	20400.00
9	Erosion Protection Placement - A-9 Repository	6.3				
9A	TYPE A (D ₅₀ = 0.5")		CY	12,300	3.45	42435.00
9B	TYPE B (D ₅₀ = 3")		CY	29,000	3.45	100050.00
9C	TYPE C (D ₅₀ = 6")		CY	29,200	4.00	116800.00
9D	TYPE D (D ₅₀ = 16")		CY	24,500	6.00	147000.00
10	Earthwork - Above-Grade Tailings Area	7.1.5				

Proposal Exhibit "A" Unit Price Schedule Page 5 of 5
Revised April 18, 2000

Bid Item No.	Description	Spec. Reference	Unit	Quantity	Unit Price	Amount
10A	Clearing for Construction of the Frost Protection Layer, East Canyon Creek Channel Realignment, and Toe Apron		CY	30,000	2.10	63000.00
10B	Frost Protection Fill Obtained from ECC Excavation		CY	80,000	4.05	324000.00
10C	Frost Protection Fill Obtained from Required Grading Excavation		CY	5,000	7.35	36750.00
10D	Frost Protection Fill Obtained from the B-Spoils Borrow Area		CY	84,000	4.60	386400.00
10E	ECC Fill Obtained from required ECC Excavation		CY	5,000	5.40	27000.00
10F	Excavation and Backfill of Above-Grade Tailings Toe Aprons		CY	22,200	9.40	208680.00
11	Earthwork - Heap Leach Area	7.2.4				
11A	Frost Protection Fill Obtained from ECC Excavation		CY	0	4.60	
11B	Frost Protection Fill Obtained from B-Spoils Borrow Area		CY	40,000	3.70	148000.00
11C	Excavation and Backfill of Heap Leach and GHP No. 2 Toe Aprons		CY	15,000	8.85	132750.00
12	Earthwork - B-Spoils Area Reclamation	7.3.6				
12A	Unsuitable Excavation - B-Spoils Borrow Area		CY	50,000	1.35	67500.00
12B	Cut and Fill grading of B-Spoils Borrow Area		CY	100,000	1.00	100000.00
12C	Cover Soil Placement		CY	62,500	0.90	56250.00
12D	Agricultural Lime		tons	2,500	18.00	45000.00
12E	Revegetation (Seeding)		AC	155	300.00	46500.00
13	Earthwork - A-9 Area	7.4.2				
13A	Excavation and Backfill of A-9 Toe Aprons		CY	15,000	8.00	120000.00
14	Disposal of Contaminated Soils in A-9 Repository	7.5.1	CY	25,000	7.00	175000.00
15	Abandonment of Heap Leach Drains	8.2	LS	1	15000.00	15000.00
Total =						10,669,570.00

¹⁾ Although utilization of this bid item is not anticipated, conditions encountered during performance of the Work may require its use. Accordingly, the Unit Price for this item shall be included in the bid schedule.

Acknowledgment of Addenda Nos. 1 & 2

 Firm
 By
 President Title

Proposal Exhibit "A" Unit Price Schedule Page 4 of 5
 QUARRYING, PROCESSING and PLACEMENT OF EROSION PROTECTION
 MATERIAL

Revised April 18, 2000

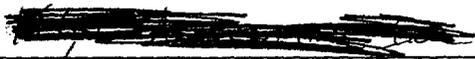
Bid Item No.	Description	Spec. Reference	Unit	Quantity	Unit Price	Amount
1	Mobilization and Demobilization	4.2	LS	1	2,293,500.00	2,293,500.00
2	Furnish and Install Fence at Quarry	5.3.5	LF	4,200	2.95	12,390.00
3	Removal of Existing Fence	5.3.5	LF	860	0.60	516.00
4	Topsoil/Subsoil Removal and Stockpiling	5.4.4	CY	50,000	0.30	15,000.00
5	Quarrying, Processing, and Delivery of Erosion Protection	5.8				
5A	TYPE A (D ₅₀ = 0.5")		tons	150,000	16.00	2,400,000.00
5B	TYPE B (D ₅₀ = 3")		tons	204,000	16.00	3,264,000.00
5C	TYPE C (D ₅₀ = 6")		tons	206,600	16.00	3,305,600.00
5D	TYPE D (D ₅₀ = 16")		tons	37,000	16.00	592,000.00
5E	TYPE E (D ₅₀ = 20")		tons	2,000	16.00	32,000.00
6	Erosion Protection Placement - Above - Grade Tailings	6.3				
6A	TYPE A (D ₅₀ = 0.5")		CY	15,400	3.63	55,902.00
6B	TYPE B (D ₅₀ = 3")		CY	81,400	3.63	295,482.00
6C	TYPE C (D ₅₀ = 6")		CY	116,800	3.63	423,984.00
6D	TYPE D (D ₅₀ = 16")		CY	2,800	12.01	33,628.00
6E	TYPE E (D ₅₀ = 20")		CY	1,400	12.01	16,814.00
7	Erosion Protection Placement - Heap Leach	6.3				
7A	TYPE A (D ₅₀ = 0.5")		CY	46,100	3.63	167,343.00
7B	TYPE B (D ₅₀ = 3")		CY	25,000	3.63	90,750.00
7C	TYPE C (D ₅₀ = 6")		CY	3,600	3.63	13,068.00
8	Erosion Protection Placement - GHP No. 2	6.3				
8A	TYPE A (D ₅₀ = 0.5")		CY	36,900	3.63	133,947.00
8B	TYPE B (D ₅₀ = 3")		CY	15,500	3.63	56,265.00
8C	TYPE C (D ₅₀ = 6")		CY	3,400	3.63	12,342.00
9	Erosion Protection Placement - A-9 Repository	6.3				
9A	TYPE A (D ₅₀ = 0.5")		CY	12,300	3.63	44,649.00
9B	TYPE B (D ₅₀ = 3")		CY	29,000	3.63	105,270.00
9C	TYPE C (D ₅₀ = 6")		CY	29,200	3.63	105,996.00
9D	TYPE D (D ₅₀ = 16")		CY	24,500	12.01	294,245.00
10	Earthwork - Above-Grade Tailings Area	7.1.5				

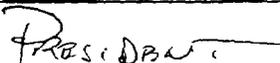
Bid Item No.	Description	Spec. Reference	Unit	Quantity	Unit Price	Amount
10A	Clearing for Construction of the Frost Protection Layer, East Canyon Creek Channel Realignment, and Toe Apron		CY	30,000	1.14	34,200.00
10B	Frost Protection Fill Obtained from ECC Excavation		CY	80,000	1.66	132,800.00
10C	Frost Protection Fill Obtained from Required Grading Excavation		CY	5,000	1.30	6,500.00
10D	Frost Protection Fill Obtained from the B-Spoils Borrow Area		CY	84,000	2.36	198,240.00
10E	ECC Fill Obtained from required ECC Excavation		CY	5,000	1.18	5,900.00
10F	Excavation and Backfill of Above-Grade Tailings Toe Aprons		CY	22,200	1.16	25,752.00
11	Earthwork - Heap Leach Area	7.2.4				
11A	Frost Protection Fill Obtained from ECC Excavation		CY	0	2.03	
11B	Frost Protection Fill Obtained from the B-Spoils Borrow Area		CY	40,000	1.65	66,000.00
11C	Excavation and Backfill of Heap Leach and GHP No. 2 Toe Aprons		CY	15,000	1.10	16,500.00
12	Earthwork - B-Spoils Area Reclamation	7.3.6				
12A	Unsuitable Excavation - B-Spoils Borrow Area		CY	50,000	1.17	58,500.00
12B	Cut and Fill grading of B-Spoils Borrow Area		CY	100,000	1.31	131,000.00
12C	Cover Soil Placement		CY	62,500	1.38	86,250.00
12D	Agricultural Lime		tons	2,500	61.68	154,200.00
12E	Revegetation (Seeding)		AC	155	472.19	73,189.45
13	Earthwork - A-9 Area	7.4.2				
13A	Excavation and Backfill of A-9 Toe Aprons		CY	15,000	1.02	15,300.00
14	Disposal of Contaminated Soils in A-9 Repository	7.5.1	CY	25,000	1.58	39,500.00
15	Abandonment of Heap Leach Drains	8.2	LS	1	13,000.00	13,000.00
Total =						14,821,522.45

1) Although utilization of this bid item is not anticipated, conditions encountered during performance of the Work may require its use.

Accordingly, the Unit Price for this item shall be included in the bid schedule.

Acknowledgement of Addenda Nos. 1 & 2


 _____ Firm

 _____ By

 _____ Title

Proposal Exhibit "A" Unit Price Schedule Page 4 of 5
QUARRYING, PROCESSING and PLACEMENT OF EROSION PROTECTION MATERIAL

Revised April 18, 2000

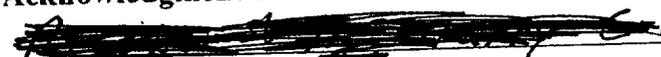
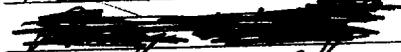
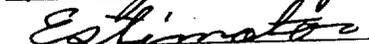
Bid Item No.	Description	Spec. Reference	Unit	Quantity	Unit Price	Amount
1	Mobilization and Demobilization	4.2	LS	1	1,702,335	1,702,335
2	Furnish and Install Fence at Quarry Site	5.3.5	LF	4200	3.05	12810
3	Removal of Existing Fence	5.3.5	LF	860	1.10	946
4	Topsoil/Subsoil Removal and Stockpiling	5.4.4	CY	50,000	1.25	62,500
5	Quarrying, Processing, and Delivery of Erosion Protection	5.8				
5A	TYPE A (D ₅₀ = 0.5")		tons	150,000	14	2,100,000
5B	TYPE B (D ₅₀ = 3")		tons	204,000	8.30	1,693,200
5C	TYPE C (D ₅₀ = 6")		tons	206,600	9.85	1,928,440
5D	TYPE D (D ₅₀ = 16")		tons	37,000	10.75	397,750
5E	TYPE E (D ₅₀ = 20")		tons	2,000	11.85	23,700
6	Erosion Protection Placement - Above-Grade Tailings	6.3				
6A	TYPE A (D ₅₀ = 0.5")		CY	15,400	2	30800
6B	TYPE B (D ₅₀ = 3")		CY	81,400	2.95	240130
6C	TYPE C (D ₅₀ = 6")		CY	116,800	2.30	268640
6D	TYPE D (D ₅₀ = 16")		CY	2,800	3.15	8,820
6E	TYPE E (D ₅₀ = 20")		CY	1,400	7.40	10,360
7	Erosion Protection Placement - Heap Leach	6.3				
7A	TYPE A (D ₅₀ = 0.5")		CY	46,100	2	92,200
7B	TYPE B (D ₅₀ = 3")		CY	25,000	2.10	52,500
7C	TYPE C (D ₅₀ = 6")		CY	3,600	2.10	7,560
8	Erosion Protection Placement - GHP No. 2	6.3				
8A	TYPE A (D ₅₀ = 0.5")		CY	36,900	2.75	101475
8B	TYPE B (D ₅₀ = 3")		CY	15,500	2.90	44950
8C	TYPE C (D ₅₀ = 6")		CY	3,400	2.90	9860
9	Erosion Protection Placement - A-9 Repository	6.3				
9A	TYPE A (D ₅₀ = 0.5")		CY	12,300	2.55	31,365
9B	TYPE B (D ₅₀ = 3")		CY	29,000	2.70	78,300
9C	TYPE C (D ₅₀ = 6")		CY	29,200	2.70	78,840
9D	TYPE D (D ₅₀ = 16")		CY	24,500	4	98,000
10	Earthwork - Above-Grade Tailings Area	7.1.5				

Proposal Exhibit "A" Unit Price Schedule Page 5 of 5
Revised April 18, 2000

Bid Item No.	Description	Spec. Reference	Unit	Quantity	Unit Price	Amount
10A	Clearing for Construction of the Frost Protection Layer, East Canyon Creek Channel Realignment, and Toe Apron		CY	30,000	2 30	69,000
10B	Frost Protection Fill Obtained from ECC Excavation		CY	80,000	2 30	184,000
10C	Frost Protection Fill Obtained from Required Grading Excavation		CY	5,000	1 70	8,500
10D	Frost Protection Fill Obtained from the B-Spoils Borrow Area		CY	84,000	2 35	197,400
10E	ECC Fill Obtained from required ECC Excavation		CY	5,000	1 20	6000
10F	Excavation and Backfill of Above-Grade Tailings Toe Aprons		CY	22,200	2 35	52,170
11	Earthwork - Heap Leach Area	7.2.4				
11A	Frost Protection Fill Obtained from ECC Excavation		CY	0	3-	0
11B	Frost Protection Fill Obtained from B-Spoils Borrow Area		CY	40,000	1 80	72,000
11C	Excavation and Backfill of Heap Leach and GHP No. 2 Toe Aprons		CY	15,000	2 35	35,250
12	Earthwork - B-Spoils Area Reclamation	7.3.6				
12A	Unsuitable Excavation - B-Spoils Borrow Area		CY	50,000	1 10	55,000
12B	Cut and Fill grading of B-Spoils Borrow Area		CY	100,000	1 10	110,000
12C	Cover Soil Placement		CY	62,500	1 05	65,625
12D	Agricultural Lime		tons	2,500	145	362,500
12E	Revegetation (Seeding)		AC	155	550	85,250
13	Earthwork - A-9 Area	7.4.2				
13A	Excavation and Backfill of A-9 Toe Aprons		CY	15,000	2 35	35,250
14	Disposal of Contaminated Soils in A-9 Repository	7.5.1	CY	25,000	1 20	30,000
15	Abandonment of Heap Leach Drains	8.2	LS	1	14750	14750
Total =						10,358,146

¹⁾ Although utilization of this bid item is not anticipated, conditions encountered during performance of the Work may require its use. Accordingly, the Unit Price for this item shall be included in the bid schedule.

Acknowledgment of Addenda Nos. 1 & 2

 Firm
 By
 Estimator Title

Proposal Exhibit "A" Unit Price Schedule Page 4 of 5
QUARRYING, PROCESSING and PLACEMENT OF EROSION PROTECTION MATERIAL
Base Bid

Revised April 18, 2000

Bid Item No.	Description	Spec. Reference	Unit	Quantity	Unit Price	Amount
1	Mobilization and Demobilization	4.2	LS	1	859,383 ⁰⁰	859,383 ⁰⁰
2	Furnish and Install Fence at Quarry Site	5.3.5	LF	4200	3 ⁰⁰	12,600 ⁰⁰
3	Removal of Existing Fence	5.3.5	LF	860	1 ⁰⁰	860 ⁰⁰
4	Topsoil/Subsoil Removal and Stockpiling	5.4.4	CY	50,000	954	47,500 ⁰⁰
5	Quarrying, Processing, and Delivery of Erosion Protection	5.8				
5A	TYPE A (D ₅₀ = 0.5")		tons	150,000	11 ⁰⁰	1,650,000 ⁰⁰
5B	TYPE B (D ₅₀ = 3")		tons	204,000	12 ⁵⁰	2,550,000 ⁰⁰
5C	TYPE C (D ₅₀ = 6")		tons	206,600	13 ⁰⁰	2,685,800 ⁰⁰
5D	TYPE D (D ₅₀ = 16")		tons	37,000	15 ⁰⁰	555,000 ⁰⁰
5E	TYPE E (D ₅₀ = 20")		tons	2,000	15 ⁰⁰	30,000 ⁰⁰
6	Erosion Protection Placement - Above-Grade Tailings	6.3				
6A	TYPE A (D ₅₀ = 0.5")		CY	15,400	3.29	50,666 ⁰⁰
6B	TYPE B (D ₅₀ = 3")		CY	81,400	4.41	358,974 ⁰⁰
6C	TYPE C (D ₅₀ = 6")		CY	116,800	4.41	515,088 ⁰⁰
6D	TYPE D (D ₅₀ = 16")		CY	2,800	6.62	18,536 ⁰⁰
6E	TYPE E (D ₅₀ = 20")		CY	1,400	6.62	9,268 ⁰⁰
7	Erosion Protection Placement - Heap Leach	6.3				
7A	TYPE A (D ₅₀ = 0.5")		CY	46,100	3.29	151,669 ⁰⁰
7B	TYPE B (D ₅₀ = 3")		CY	25,000	4.41	110,250 ⁰⁰
7C	TYPE C (D ₅₀ = 6")		CY	3,600	4.41	15,876 ⁰⁰
8	Erosion Protection Placement - GHP No. 2	6.3				
8A	TYPE A (D ₅₀ = 0.5")		CY	36,900	3.29	121,401 ⁰⁰
8B	TYPE B (D ₅₀ = 3")		CY	15,500	4.41	68,355 ⁰⁰
8C	TYPE C (D ₅₀ = 6")		CY	3,400	4.41	14,994 ⁰⁰
9	Erosion Protection Placement - A-9 Repository	6.3				
9A	TYPE A (D ₅₀ = 0.5")		CY	12,300	3.29	40,467 ⁰⁰
9B	TYPE B (D ₅₀ = 3")		CY	29,000	4.41	127,890 ⁰⁰
9C	TYPE C (D ₅₀ = 6")		CY	29,200	4.41	128,772 ⁰⁰
9D	TYPE D (D ₅₀ = 16")		CY	24,500	6.62	162,190 ⁰⁰
10	Earthwork - Above-Grade Tailings Area	7.1.5				

~~4/25/00~~
4/25/00

Proposal Exhibit "A" Unit Price Schedule
Revised April 18, 2000

Base Bid

Bid Item No.	Description	Spec. Reference	Unit	Quantity	Unit Price	Amount
10A	Clearing for Construction of the Frost Protection Layer, East Canyon Creek Channel Realignment, and Toe Apron		CY	30,000	1.83	54,900 ⁰⁰
10B	Frost Protection Fill Obtained from ECC Excavation		CY	80,000	2.04	163,200 ⁰⁰
10C	Frost Protection Fill Obtained from Required Grading Excavation		CY	5,000	1.68	8,400 ⁰⁰
10D	Frost Protection Fill Obtained from the B-Spoils Borrow Area		CY	84,000	2.41	202,440 ⁰⁰
10E	ECC Fill Obtained from required ECC Excavation		CY	5,000	1.47	7,350 ⁰⁰
10F	Excavation and Backfill of Above-Grade Tailings Toe Aprons		CY	22,200	4.50	99,900 ⁰⁰
11	Earthwork - Heap Leach Area	7.2.4				
11A	Frost Protection Fill Obtained from ECC Excavation		CY	0	2.70	—
11B	Frost Protection Fill Obtained from B-Spoils Borrow Area		CY	40,000	1.23	49,200 ⁰⁰
11C	Excavation and Backfill of Heap Leach and GHP No. 2 Toe Aprons		CY	15,000	4.50	67,500 ⁰⁰
12	Earthwork - B-Spoils Area Reclamation	7.3.6				
12A	Unsuitable Excavation - B-Spoils Borrow Area		CY	50,000	1.15	57,500 ⁰⁰
12B	Cut and Fill grading of B-Spoils Borrow Area		CY	100,000	1.10	110,000 ⁰⁰
12C	Cover Soil Placement		CY	62,500	1.77	110,625 ⁰⁰
12D	Agricultural Lime		tons	2,500	55 ⁰⁰	137,500 ⁰⁰
12E	Revegetation (Seeding)		AC	155	320 ⁰⁰	49,600 ⁰⁰
13	Earthwork - A-9 Area	7.4.2				
13A	Excavation and Backfill of A-9 Toe Aprons		CY	15,000	4.50	67,500 ⁰⁰
14	Disposal of Contaminated Soils in A-9 Repository	7.5.1	CY	25,000	2.51	62,750 ⁰⁰
15	Abandonment of Heap Leach Drains	8.2	LS	1	14,177 ⁰⁰	14,177 ⁰⁰
Total =						11,548,081 ⁰⁰

1) Although utilization of this bid item is not anticipated, conditions encountered during performance of the Work may require its use. Accordingly, the Unit Price for this item shall be included in the bid schedule.

Acknowledgment of Addenda Nos. 1 & 2

 Firm
 By
 President Title
 4/25/00

Proposal Exhibit "A" Unit Price Schedule Page 4 of 5
QUARRYING, PROCESSING and PLACEMENT OF EROSION PROTECTION MATERIAL

Revised April 18, 2000

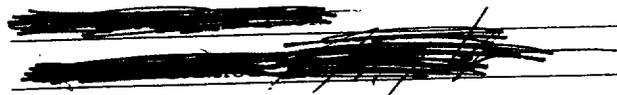
Bid Item No.	Description	Spec. Reference	Unit	Quantity	Unit Price	Amount
1	Mobilization and Demobilization	4.2	LS	1		190,000
2	Furnish and Install Fence at Quarry Site	5.3.5	LF	4200	2.76	11,592
3	Removal of Existing Fence	5.3.5	LF	860	1.38	1,187
4	Topsoil/Subsoil Removal and Stockpiling	5.4.4	CY	50,000	3.68	184,000
5	Quarrying, Processing, and Delivery of Erosion Protection	5.8				
5A	TYPE A (D ₅₀ = 0.5")		tons	150,000	9.36	1,404,000
5B	TYPE B (D ₅₀ = 3")		tons	204,000	9.36	1,909,440
5C	TYPE C (D ₅₀ = 6")		tons	206,600	9.36	1,933,776
5D	TYPE D (D ₅₀ = 16")		tons	37,000	9.36	346,320
5E	TYPE E (D ₅₀ = 20")		tons	2,000	9.36	18,720
6	Erosion Protection Placement - Above-Grade Tailings	6.3				
6A	TYPE A (D ₅₀ = 0.5")		CY	15,400	6.29	96,866
6B	TYPE B (D ₅₀ = 3")		CY	81,400	6.29	512,006
6C	TYPE C (D ₅₀ = 6")		CY	116,800	6.29	734,672
6D	TYPE D (D ₅₀ = 16")		CY	2,800	7.73	21,644
6E	TYPE E (D ₅₀ = 20")		CY	1,400	7.73	10,822
7	Erosion Protection Placement - Heap Leach	6.3				
7A	TYPE A (D ₅₀ = 0.5")		CY	46,100	5.55	255,855
7B	TYPE B (D ₅₀ = 3")		CY	25,000	5.84	146,000
7C	TYPE C (D ₅₀ = 6")		CY	3,600	5.84	21,024
8	Erosion Protection Placement - GHP No. 2	6.3				
8A	TYPE A (D ₅₀ = 0.5")		CY	36,900	5.80	214,020
8B	TYPE B (D ₅₀ = 3")		CY	15,500	6.08	94,240
8C	TYPE C (D ₅₀ = 6")		CY	3,400	6.08	20,672
9	Erosion Protection Placement - A-9 Repository	6.3				
9A	TYPE A (D ₅₀ = 0.5")		CY	12,300	6.37	78,351
9B	TYPE B (D ₅₀ = 3")		CY	29,000	6.37	184,730
9C	TYPE C (D ₅₀ = 6")		CY	29,200	6.37	186,004
9D	TYPE D (D ₅₀ = 16")		CY	24,500	7.52	184,240
10	Earthwork - Above-Grade Tailings Area	7.1.5				

Proposal Exhibit "A" Unit Price Schedule Page 5 of 5
Revised April 18, 2000

Bid Item No.	Description	Spec. Reference	Unit	Quantity	Unit Price	Amount
10A	Clearing for Construction of the Frost Protection Layer, East Canyon Creek Channel Realignment, and Toe Apron		CY	30,000	3.83	114,900
10B	Frost Protection Fill Obtained from ECC Excavation		CY	80,000	3.63	290,400
10C	Frost Protection Fill Obtained from Required Grading Excavation		CY	5,000	4.14	20,700
10D	Frost Protection Fill Obtained from the B-Spoils Borrow Area		CY	84,000	3.73	313,320
10E	ECC Fill Obtained from required ECC Excavation		CY	5,000	4.77	23,850
10F	Excavation and Backfill of Above-Grade Tailings Toe Aprons		CY	22,200	5.15	114,330
11	Earthwork - Heap Leach Area	7.2.4				
11A	Frost Protection Fill Obtained from ECC Excavation		CY	0	3.20	
11B	Frost Protection Fill Obtained from B-Spoils Borrow Area		CY	40,000	3.25	130,000
11C	Excavation and Backfill of Heap Leach and GHP No. 2 Toe Aprons		CY	15,000	4.16	62,400
12	Earthwork - B-Spoils Area Reclamation	7.3.6				
12A	Unsuitable Excavation - B-Spoils Borrow Area		CY	50,000	2.59	129,500
12B	Cut and Fill grading of B-Spoils Borrow Area		CY	100,000	2.75	275,000
12C	Cover Soil Placement		CY	62,500	3.69	230,625
12D	Agricultural Lime		tons	2,500	56.93	142,325
12E	Revegetation (Seeding)		AC	155	316.25	49,019
13	Earthwork - A-9 Area	7.4.2				
13A	Excavation and Backfill of A-9 Toe Aprons		CY	15,000	3.96	59,400
14	Disposal of Contaminated Soils in A-9 Repository	7.5.1	CY	25,000	7.23	180,750
15	Abandonment of Heap Leach Drains	8.2	LS	1		16,100
Total =						\$10,912,800.00

¹⁾ Although utilization of this bid item is not anticipated, conditions encountered during performance of the Work may require its use. Accordingly, the Unit Price for this item shall be included in the bid schedule.

Acknowledgment of Addenda Nos. 1 & 2

 Firm
 By
 OWNER Title

GAS HILLS RECLAMATION PROJECT

**CONSTRUCTION SPECIFICATIONS
FOR
QUARRY, PROCESS and PLACEMENT
OF
EROSION PROTECTION**

Prepared By:

**Umetco Minerals Corporation
March 2000**

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1.0 INTRODUCTION

The work covered by these Specifications consists of reclamation construction on three tailings (11e.(2)) embankments at Umetco Minerals Corporations (Umetco) Gas Hills site in East Gas Hills, Wyoming. Umetco's East Gas Hills site is located in the Gas Hills mining district and Natrona County, Wyoming, close to the Natrona County - Fremont County boundary, approximately 60 miles west of Casper and 50 miles southeast of Riverton.

1.1 General

All work shall be performed in accordance with these Specifications, the Construction Drawings (Drawings) and documented in accordance with the Quality Control Plan. The work will be considered as having been completed upon inspection and written approval by Umetco.

Work shall be conducted in compliance with Umetco Mineral Corporation's Health and Safety Plan for the site. The materials and products used shall be as specified herein for the services intended. Products or materials may be substituted only with the written consent of Umetco.

The method used shall produce satisfactory work for the services intended and shall be in accordance with standard construction industry practices.

1.2 Scope of Work

The Scope of Work consists of:

- Quarry development, quarry operation and processing of specified erosion protection materials.
- Transport of erosion protection materials from the quarry site to Umetco's East Gas Hills site.

- Placement of the erosion protection materials on the reclamation cover and associated hydraulic structures at the three tailings embankments, i.e., Heap Leach, Above-Grade Tailings and A-9 Tailings.
- Earthwork tasks to be completed under this Contract Specifications include:

Heap Leach/GHP NO. 2 Area

- ◇ Complete construction of Frost Protection Layer portion of the reclamation cover in the gap area.
- ◇ Final grading prior to placement of erosion protection materials.
- ◇ Excavation and backfill of toe aprons and channel outlets.

Above-Grade Tailings

- ◇ Complete construction of the Frost Protection Layer portion of the reclamation cover.
- ◇ Excavation of East Canyon Creek channel realignment.
- ◇ Final grading prior to placement of erosion protection materials.
- ◇ Excavation and backfill of toe aprons and channel outlets.

A-9 Area

- ◇ Final grading prior to placement of erosion protection materials.
- ◇ Excavation and backfill of toe aprons and channel outlets.

B-Spoils Area

- ◇ Cut and Fill grading.
- ◇ Cover soil placement and seeding.

- Grout sealing of Heap Leach drain system.

1.3 List of Construction Drawings

The following Drawings and the Rattlesnake Quarry Mining Permit are attached and made a part of these Specifications:

Drawing No.	Title
1 of 16	Site Plan and Location Maps
2 of 16	Above-Grade Impoundment, Erosion Protection, Placement Plan
3 of 16	Above-Grade Impoundment, Erosion Protection, Closure Cover Sections
4 of 16	Above-Grade Impoundment, Erosion Protection, Closure Cover Sections
5 of 16	Above-Grade Impoundment, Erosion Protection, Closure Cover Sections
6 of 16	Above-Grade Impoundment, Erosion Protection, Closure Cover Sections
7 of 16	Heap Leach & GHP No. 2/Mill Area, Erosion Protection, Placement Plan
8 of 16	Heap Leach & GHP No. 2/Mill Area, Erosion Protection, Closure Cover Sections
9 of 16	Heap Leach & GHP No. 2/Mill Area, Erosion Protection, Closure Cover Sections
10 of 16	Heap Leach & GHP No. 2/Mill Area, Erosion Protection, Closure Cover Sections
11 of 16	Heap Leach & GHP No. 2/Mill Area, Erosion Protection, Closure Cover Sections
12 of 16	A-9 Repository, Erosion Protection, Placement Plan
13 of 16	A-9 Repository, Erosion Protection, Closure Cover Sections
14 of 16	A-9 Repository, Erosion Protection, Closure Cover Sections
15 of 16	A-9 Repository, Erosion Protection, Closure Cover Details
16 of 16	A-9 Repository, Erosion Protection, Closure Cover Details
¹⁾ Attached Document	Mine Permit Application, to the State of Wyoming, Department of Environmental Quality (DEQ), for the Rattlesnake Quarry, Gas Hills, Wyoming (Rattlesnake Quarry Mine Permit)

- ¹⁾ The Mine Permit Application for the Rattlesnake Quarry Site is attached in its entirety with applicable portions of the permit made a part of these Specifications. Specific requirements of the permit to be performed by the Contractor are specified herein.

1.4 Specifications and Drawings

Construction Specifications and Construction Drawings which detail the construction activities, outlined in Section 1.2, are provided herein. The Construction Drawings are attached to the Specifications.

Anything mentioned in the Specifications and not shown on the Construction Drawings, or shown on the Construction Drawings and not mentioned in the Specifications, shall be of like effect as if shown and mentioned in both.

In the case of discrepancy either in the Specifications or the Construction Drawings, or if clarifications are desired, the Contractor shall be responsible for prompt written submittal of said discrepancy or clarification to Umetco, who will promptly make a determination in writing. Any adjustment by the Contractor without such written determination shall be at the Contractor's risk and expense. The Contractor shall keep on site at all times a copy of the Construction Specifications, Construction Drawings, Change Orders and other information pertinent to the work.

2.0 GENERAL REQUIREMENTS

2.1 Performance Requirements

2.1.1 Access

The Contractor shall provide and maintain safe access to areas of work for inspection by Umetco or Umetco representatives. The Contractor shall provide qualified supervision at all times to insure Work is accomplished in a safe and healthy workplace.

2.1.2 Maintenance of Haul Roads and Fugitive Dust

The Contractor, at the Contractor's expense, shall maintain haul roads and control fugitive dust emissions by grading, watering or chemical suppression agents approved by Umetco.

To minimize the spread of radioactive materials the haul roads within the East Gas Hills site boundary will be scanned on a frequent basis by Umetco. If radiological scans indicate that a potential exists to spread radioactive materials by construction traffic, Umetco will direct the Contractor to excavate and/or place a layer of clean soils over the area of concern.

2.1.3 Housekeeping and Cleanup

While Work is in progress, the Contractor shall not allow waste material, trash and/or rubbish to accumulate in or about the site. Trash, rubbish, etc., shall be disposed of at the Contractor's expense in accordance with applicable county, state, and federal regulations. The Contractor shall provide written verification that all materials resulting from construction activities, including oil, equipment maintenance waste, and trash have been properly disposed of. Upon completion of the Work, all construction material, machinery and equipment shall be removed from the property.

2.1.4 Environmental Quality, Health and Radiation Protection

Work will be performed in compliance with statutes, rules and regulations, licenses and permits rendered applicable under Source Material License No. SUA-648. Work will be monitored by the Owner in accordance with the sites Radiation Monitoring Procedures. Applicable procedures will be provided to the Contractor. Procedures are available for review at Umetco's Grand Junction and Gas Hills offices prior to bidding.

Reclamation activities at the Gas Hills Facility are to be conducted in accordance with Radioactive Materials License SUA-648. This license requires that all equipment, vehicles and materials meet the established release criteria for fixed and removable surface contamination prior to leaving the site restricted area. These release criteria are intended to control the spread of contamination prior to leaving the site restricted area. These release criteria are intended to control the spread of radioactive materials off-site and keep personal exposure to these radioactive materials as low as reasonably achievable

(ALARA). Radiological scanning procedures are established for this site and will be utilized in execution of project work. These procedures are summarized as follows:

Pre-Entry Surveys

All of the Contractors equipment which will be used at the Gas Hills site will be surveyed for beta/gamma and alpha surface contamination prior to entry into the restricted area. The results of these surveys will be documented and may be reviewed at the Gas Hills site. If the equipment does not pass the established surface contamination criteria limits, Umetco may require the equipment to be decontaminated before entering the restricted area.

Surveys for Conditional Release

All heavy equipment leaving the restricted area will be washed to remove visible soils and materials from tires, treads and/or wheel wells. Heavy equipment will be permitted to leave the site after removal of loose soils and materials. To verify that materials are not being tracked from the restricted area, 10 percent of the equipment will be subject to survey for fixed and removable contamination. Any equipment being transferred from the site for unrestricted release will have to meet all applicable release limits described above for unrestricted release.

Surveys for Unrestricted Release

All equipment, vehicles and parts leaving the restricted area permanently will be surveyed to confirm the presence or absence of surface contamination. All light vehicles, equipment and parts leaving the restricted area will be washed to remove all visible soils and materials. The survey will be an alpha, beta/gamma survey using a Ludlum Model 3 with 44-9 G-M probe, or equivalent, and a removable smear counter for alpha and beta/gamma using a Ludlum 2929 scalar and 43-10-1 scintillator. If surface activities exceed the established release limits, further decontamination will be required until the release limits can be achieved. These surveys will be conducted by the Umetco site Radiation Safety Officer (RSO) or

RSO designees. The surface activity levels for each piece of equipment released for unrestricted use will be documented and signed by the RSO and maintained on file. A copy of the equipment release will accompany all parts, equipment and vehicles not routinely leaving the site.

Storage and handling of hazardous materials, including flammable or combustible liquids, and provisions for prevention shall be in accordance with applicable County, State, Federal Regulations and Umetco policies.

Construction activities will be performed using methods that will prevent entrance or accidental spillage of hazardous or contaminated liquids into nearby gullies or washes.

Best Management Practices (BMP's) will be used to prevent sediment from being transported off-site due to storm-water runoff. BMP's include, but are not limited to, such sediment control practices as interceptor dikes/ditches, filter fences, straw bales, temporary sediment basins, check dams or methods approved by the Umetco project representative.

Reasonable and practical efforts will be made to operate construction equipment in a manner that minimizes emissions of air contaminants. Fugitive dust from unpaved haul roads and other areas of heavy vehicle use will be controlled by sprinkling, vehicle speed and/or dust suppression agents approved by Umetco.

2.2 Utilities

The Contractor shall be responsible for all utilities including, but not limited to , electrical energy, potable water, wash water, telephone and sanitation facilities.

2.3 Surveys

The Contractor shall provide all necessary construction surveys to construct the project from the Owners survey control. The Contractor shall be responsible to verify the validity of survey control points used during construction prior to their use. The Contractor shall be responsible for pre and post mining surveys of the quarry area.

2.3.1 Alignments and Grades

Alignments and Grades shown on the drawings have been developed from the best information available to Umetco. It is expected that actual field conditions may vary from those shown on the Drawings. Necessary field adjustments to alignments and grades will be made by Umetco in the field as conditions warrant.

2.4 Codes and Testing

All materials, equipment, excavation and placement of soils, machinery and work regulations shall comply with these Specifications and with applicable sections of the following standards:

- American Society for Testing Materials (ASTM)
- Occupational Health and Safety Administration (OSHA)
- Umetco Contractor Safety Rules
- Nuclear Regulatory Commission (USNRC)
- Mine Safety and Health Administration (MSHA)
- Bureau of Alcohol, Tobacco and Firearms (BATF)
- Bureau of Land Management (BLM)

2.5 Use of the Umetco's Property

Space on Umetco's property will be allotted to the contractor for staging and storage of equipment, machinery and material. The Contractor's personnel shall enter and leave the area through the entrance/exit designated by the Umetco Representative.

2.6 Umetco Representative

Umetco's Representative will have the authority, on behalf of Umetco, to give approvals and take action to the extent necessary for the orderly and expeditious execution of the Work. Umetco's Representative shall not have the authority to amend or modify written contracts. In addition to duties and authorities specified in this section and elsewhere in the Contract, Umetco's Representative shall have the authority to suspend Work whenever deemed such action is necessary to secure proper performance of the Work.

2.7 Quality Control/Quality Assurance

Umetco will conduct the necessary Quality Control Testing (QC Testing) to verify earthwork operations are conducted in accordance with the Specifications. A Quality Control Officer (QC Officer), appointed by Umetco, will supervise QC Testing and verification activities for this project. The QC Officer has the authority to reject work not meeting the requirements of the Specifications as well as approve appropriate actions necessary to correct work not constructed in accordance with the specifications. QC Testing will be performed on a regular basis during processing of erosion protection materials, placement of erosion protection materials, placement of required fill soils and placement of cover soils. The Contractor shall remove all surface material and/or provide the necessary access and assistance necessary for the required sampling and testing. QC Tests will be performed in the field on a continuous basis, e.g., field moisture and density for earthwork at a frequency of 1 test per 500 CY, erosion protection materials will be sampled and tested at a frequency of 1 test per 10,000 CY. All placement of cover soils and erosion protection will be visually inspected on a continuous basis to verify conformance with the Specifications. The Contractor shall conduct all operations in a manner that allows safe performance of required QC Testing prior to placement of subsequent lifts or layers.

2.8 Construction Water

Uncontaminated construction water to be utilized for moisture conditioning, dust abatement and quarry operations are available from the two sources described herein.

The Contractor is responsible for haulage of water from these sources for all quarry and construction activities.

Construction water at Umetco's East Gas Hills site will be stored in the construction water pond, shown the Drawings. This pond has a storage capacity of approximately 750,000 gallons of water. The water required to fill and maintain this pond shall come from the A-8 well, as shown on the Drawings. Piping from the A-8 well to the construction water pond is in place, however, an electrical power source to operate the pump at the A-8 well will be the responsibility of the Contractor. The Contractor will be responsible for maintenance and repairs for the pump and water line used to deliver water to the construction water pond. The Contractor shall be responsible for water haulage for all quarry and construction activities. The A-8 well produces water at a rate of approximately 180 gpm. If during construction it is found that this rate is insufficient to meet the needs for construction or the historical well production has declined the Contractor shall utilize the second water source, described below, to supplement the deficiency. Umetco reserves the right to use water from the A-8 well or construction water pond when such use is necessary. If shared use becomes necessary, Umetco will coordinate activities with the Contractor to minimize potential operational impacts.

The second source of construction water is the "Deep Well No. 6" located approximately 3 miles west of the Gas Hills site. The existing facilities associated with this water source include the well pump, electric power, water loading facilities at the well site, and a 6-inch pipeline (fiberglass and thin wall metal) from the well site to a construction water storage pond located near the western access of the Gas Hills site. Power to the well pump will be supplied by Umetco. The existing pipeline may be used by the Contractor and requires installation of a booster pump at the well site. This system is capable of supplying approximately 300 gpm dependent upon the capacity of the well site booster pump. The Contractor shall be responsible for all costs and maintenance associated with installation and operation of the booster pump, pipeline maintenance, i.e., repair of breaks etc., and water loading facilities at the Gas Hills site.

3.0 SUBMITTALS

This section covers submittals required from the Contractor including construction schedules, reporting of required monitoring, approval of construction materials, etc.

3.1 Construction Schedule

Sequencing of various project components is critical to the successful completion of the Work. The Contractor shall develop a detailed construction schedule based on the master project schedule and weather constraints of the site. Placement of fill soils for cover construction must be accomplished when ambient temperatures permit as placement of, or on, frozen soils will not be permitted. Processing and placement of erosion protection materials during freezing temperatures is permitted provided adequate subgrade preparation has been completed prior to the onset of freezing subgrade conditions.

The project work specified herein will occur over several years. The master schedule for completion of the work is provided on Table 3.1-1.

Table 3.1-1

Project Task	Critical Completion Date	Year and Estimated Quantity to be Completed				
		2000 (CY)	2001 (CY)	2002 (CY)	2003 (CY)	2004 (CY)
Above-Grade Tailings	12/31/2002					
Frost Protection Fill	12/31/2002	164,000				
Excavation for ECC Channel Construction	12/31/2002	80,000				
Random fill for Toe Protection	12/31/2002			14,000		
Erosion Protection Materials:	12/31/2002					
Type A (D ₅₀ = 0.5")	12/31/2002	15,400				
Type B (D ₅₀ =3")	12/31/2002		81,400			
Type C (D ₅₀ =6")	12/31/2002	800	111,000	5000		
Type D (D ₅₀ = 18")	12/31/2002					
Type E (D ₅₀ = 20")	12/31/2002	4200				
Heap Leach	12/31/2001					
Frost Protection Fill	12/31/2001	40,000				
Random fill for Toe Protection	12/31/2001	15,000				
Erosion Protection Materials:	12/31/2001					
Type A (D ₅₀ = 0.5")	12/31/2001	46,100				
Type B (D ₅₀ =3")	12/31/2001	25,000				
Type C (D ₅₀ =6")	12/31/2001	3,600				
Seal Drain System	12/31/2001	LS				
GHP No. 2						
Erosion Protection Materials:						
Type A (D ₅₀ = 0.5")						36,900
Type B (D ₅₀ =3")						15,500
Type C (D ₅₀ =6")						3,400
A-9 Repository	12/31/2004					
Erosion Protection Materials:	12/31/2004					
Type A (D ₅₀ = 0.5")	12/31/2004				12,300	
Type B (D ₅₀ =3")	12/31/2004				29,000	
Type C (D ₅₀ =6")	12/31/2004				29,200	
Type D (D ₅₀ = 18")	12/31/2004				24,500	
B-Spoils Area Reclamation						
Cut and Fill Grading		LS				LS
Topsoil		62,500				62,500
Revegetate		LS				LS

Note: Table 3.1-1 addresses only major items of Work and the estimated schedule for completion. Incidental and associated items of work shown in the Bid Schedule are not provided in this Table. Due to the uncertainties associated with the radiological characteristics of this site and final regulatory resolution of the Gas Hills site reclamation plans, modification of the quantities and schedule shown above is likely. Accordingly, Umetco makes no warrantee as to the final quantities or scheduling of activities shown in Table 3.1-1 or the Bid Schedule.

3.2 Submittals

Section Reference	Required Submittal
3.1	Construction Schedule - detailed construction schedule based on Master Schedule shown on Table 3.1-1. Submittal shall include specific work sequence, proposed work hours, etc. Submittal is required 30 days prior to commencement of work.
5.0	Operational Mining Plan - detailed mining plan meeting all specified requirements.
5.1.2	Production Records - tonnage of material removed from the quarry site will be submitted to Umetco.
5.1.3, 5.1.4	Quarry Monitoring Records - spring and seismic monitoring records of quarry blasts will be submitted to Umetco within two days of the detonation. These records will include field notes, photographs, and seismic measurements.
5.1.5	Mining Survey Records - a civil survey of pre-mining topographic conditions will be submitted to Umetco 30 days prior to commencement of work. An annual survey of the quarry area will be submitted to Umetco by July of each year.
5.1.16	Storm Water Pollution Prevention Plan (SWPPP) - a SWPPP will be submitted to Umetco 45 days prior to commencement of work.
5.1.17	Notice of Intent (NOI) - the Contractor shall submit the NOI to Umetco 45 days prior to commencement of work.

4.0 MOBILIZATION AND DEMOBILIZATION

Work covered under this section includes all Mobilization and Demobilization related items. Incidental work not mentioned elsewhere in the Contract Documents are to be included in this Section.

4.1 General

A space at Gas Hills site and Quarry site will be provided for the Contractor's construction staging and equipment storage area. The Contractor is responsible for the security of equipment, materials and instruments brought to the site and accepts the liability of negligent damage or loss of equipment during execution of project Work.

All products shall be stored in the Staging Area in a manner which conforms to federal, state, county and Umetco waste management requirements. The Contractor shall be

responsible for the disposal of waste, used petroleum products, sewage or any other trash or waste materials discarded. The disposal of waste materials generated by the Contractor's operations shall be in accordance with applicable federal, state, county and Umetco waste management requirements. All waste material may be scanned by Umetco for the presence of radiological contamination prior to removal from the restricted area. At Umetco's discretion samples of used oil may be obtained and submitted for laboratory analysis of radiological content prior to shipment for recycling.

Since portions of this project will be performed within the Gas Hills site restricted area, all equipment entering and exiting will be monitored in accordance with paragraph 2.1.4 of these Specifications. Prior to demobilization of any and all equipment from the site a written release shall be provided by the Owner documenting that the subject vehicles have been scanned and released from the site. Parking not to be utilized in construction activities shall be made available outside of the restricted access area.

4.2 Measurement and Payment

The Construction tasks required by these Specifications will involve various types of equipment to be mobilized and demobilized over several construction seasons. Adequate space for storage of equipment during non operational periods is available at the site. Measurement and payment for mobilization and demobilization of equipment necessary to complete the specified Work shall be made in accordance with the provisions of this Section with no additional allowance for seasonal mobilization and demobilization.

Mobilization shall include all costs of preparatory work and operations including, but not limited to, those necessary for the movement of personnel, equipment, supplies, surveys, and incidentals to the project sites; for establishment of temporary offices and other facilities necessary for the execution of project Work. Mobilization shall also include construction of temporary erosion control devises, entry surveys and staging.

Demobilization shall include radiological scanning, decontamination (if necessary), washing and removal of all Contractor's facilities and equipment as well as cleaning, to the satisfaction of Umetco, areas used by the Contractor.

Measurement

Measurement for *Mobilization/Demobilization* will be made in accordance with progress of the project as follows:

Work Completed	Percent of Lump Sum Price for Mobilization and Demobilization
Mobilization of equipment to site.	30%
Completion of 25% of the contract amount.	20%
Completion of 50% of the contract amount.	20%
Completion of 75% of the contract amount.	20%
Completion of Demobilization Activities	10%

Payment

Payment for *Mobilization and Demobilization* shall be made in the portioned increments, shown above, of the Lump Sum price bid for Mobilization and Demobilization. The Lump Sum price bid for Mobilization and Demobilization shall include all costs associated with mobilization and demobilization of equipment, personnel, fuel, supplies, surveys, and incidental items described in this Section.

5.0 EROSION PROTECTION - QUARRING, PROCESSING and TRANSPORTATION of MATERIAL

Erosion Protection materials will be quarried from the Rattlesnake Quarry site located approximately five miles northeast of Umetco's Gas Hills Site. Processed erosion protection materials shall be transported on Natrona County Road CR212 and to Umetco's Gas Hills site and placed in accordance with Section 6.0 of these Specifications.

To the extent practicable, it is the intent of these specifications to minimize stockpiling of processed material by placement directly on the prepared subgrades of the reclamation covers, channels and related areas.

5.1 Permit Requirements

The Rattlesnake Quarry is located on BLM land. Umetco has obtained a Mining Permit from the State of Wyoming, Department of Environmental Quality (DEQ), a Mineral Material Sales contract from the U. S. Bureau of Land Management (BLM) and a Temporary Use Permit from Natrona County for access to the quarry site. All work at the Rattlesnake Quarry site shall be conducted in accordance with these permit requirements including the Stormwater Discharge Permit, Air Quality Permit issued by the DEQ and Temporary Use Permit issued by the Wyoming Office of State Lands and Investments. These permits are described in the DEQ Mining Permit for the Quarry site. In addition, the Contractor in conjunction with Umetco is required to consult with the Natrona County Roads, Bridges and Parks Department regarding the upgrade and maintenance of County Road 212.

The following inspections, reports, monitoring and stipulations described in this section shall be performed by the Contractor unless otherwise specified.

5.1.1 Agency Inspections

The BLM shall inspect the quarry site operations on a monthly basis while the site is active. The Contractor shall provide and maintain safe access to areas of work for inspection by the BLM, DEQ, Umetco or other regulatory agencies.

5.1.2 Production Records

The Contractor shall submit production records to Umetco on a weekly basis. Production records will be summarized by Umetco and provided to the BLM on a quarterly basis which will become public records.

5.1.3 Spring Monitoring

The Contractor shall perform pre-blast and post-blast monitoring of the Little Cross L#1 spring. Monitoring will consist of a visual observation and photographs of the spring

within 24 hours prior to each blast and 24 hours after each blast. The Contractor shall submit these monitoring records to Umetco within two days of a quarry blast. Umetco will maintain records in a chronological file at the Gas Hills site and will be made available for BLM review.

5.1.4 Seismic Monitoring

The Contractor shall provide seismograph monitoring (seismic monitoring) of blasts at the quarry. Seismic monitoring shall focus on the initial test blasts at the quarry during the early stages of mining. Seismic monitoring during the test blasts shall include two seismic monitoring devices to determine distribution and strength of any ground vibrations related to the blasting. One seismic monitoring device will be located northeast of the quarry toward Spring P71762W (Roberts Spring) and the other device will be located toward the south near Spring P71757W (Little Cross L #1). Data from the initial blast monitoring shall be used to determine acceptable and unacceptable levels of vibratory ground motion in accordance with Section 5.5.2 of these Specifications.

Seismic monitoring during the duration of the project will include one seismic device placed between the quarry site and the Little Cross L #1, registered to Clear Creek Land and Cattle Company. Should unacceptable seismograph readings be observed during monitoring, a modified blasting plan to minimize ground vibrations will be developed. Records of ground vibration levels from the seismic monitoring will be provided to Umetco within two days of the quarry blast.

5.1.5 Pre and Post Mining Survey

The Contractor shall perform a pre mining topographical survey and annual surveys thereafter showing the dimensions of excavations and volumes of material removed from the quarry site. The pre mining survey shall be provided to Umetco in an electronic topographic format within 30 days prior to commencement of Work. Annual surveys shall be prepared by the Contractor and submitted to Umetco in July of each year.

5.1.6 Operations Stipulation

Quarry blasting will cease for approximately two weeks in June during the cattle breed back period and again in October when calves are shipped. The exact dates and duration will be coordinated by Umetco with the Clear Creek Cattle Company.

A 30 mph speed limit is established on the access road for all employees and all hauling from the quarry site to County Road 212.

5.1.7 Operations Schedule

Regulatory notification is required if the Contractors operations involves double shifts seven days per week for duration's greater than one month. Accordingly, the Contractor shall at all times keep Umetco apprised of changes to construction schedules.

5.1.8 Topsoil

Topsoil and subsoil will be salvaged and stockpiled from all areas that will be disturbed in the mining area. These areas include access roads, the processing area, material stockpile area, loading areas, sediment settling area, and office area. Topsoil will be segregated from subsoil and placed in separate stockpiles. The Contractor shall use rubber tire scrapers or front end loaders to remove topsoil and subsoil.

Topsoil and subsoil stockpiles shall be seeded during the earliest available growing season. Seeding shall be performed in accordance with Section 5.4.3, Topsoil and Subsoil Pile Seeding.

5.1.9 Entrance Sign

The Contractor shall erect an entrance sign at the quarry site. The sign will contain the following information:

Umetco Minerals Corporation
PO Box 151
Riverton, Wyoming 82501
Telephone Number: 307-457-2311
Authorized Agent: Curtis O. Sealy
Land Quality Division Permit # _____
Contractor name, address and telephone number

5.1.10 Spills

Spills involving 25 gallons or greater of refined crude oil products require Umetco to contact the DEQ, Water Quality Division. Accordingly, the Contractor shall immediately report all spills to Umetco. Spills involving 25 gallons or greater of petroleum products shall be excavated by the Contractor and relocated so materials can be bio-treated or disposed of in a State and Umetco approved landfill. Excavation and disposal of petroleum product spills shall be at the Contractors expense.

5.1.11 Drill Rigs

All drill rigs utilized at the quarry site shall have dust containment collection systems.

5.1.12 Blasters Certification

All blasting work at the quarry site shall be performed by Blasters that are certified as Shotfires in the State of Wyoming.

5.1.13 Explosive Storage

Explosive storage shall comply with BATF, OSHA, MSHA, state regulations.

5.1.14 Noxious Weed Control

The contractor shall control noxious weeds during operation by limited use of chemical herbicides as necessary. The Contractor shall prepare a Pesticide Use Plan (PUC) for approval by the BLM prior to application of herbicides.

5.1.15 Wildlife

The Contractor shall conduct quarry operations in a manner that minimizes disturbance to wildlife in the area. The Contractor shall notify Umetco if a raptors nest is detected within or adjacent to the permit area.

5.1.16 Drainage Control

Stormwater runoff from the quarry site will be routed to a sediment settling area which will be located along the west side of the affected area just east of the Dry Creek haul road. This area will be used to control the transport of sediment from the disturbed site to the drainage areas down gradient of the quarry.

Best Management Practice (BPM) will be used to control storm water runoff from the site. BMP techniques include directing runoff to a common catchment area (the sediment settling area), the use of sediment control logs and fences, plating of the work areas with erosion resistant material, and reseeding the topsoil and subsoil stockpile areas. The Contractor shall prepare a Storm Water Pollution Prevention Plan (SWPPP) and a Notice of Intent NOI) and submit these documents to Umetco 45 days before beginning industrial activities.

5.1.17 Air Permits

The Contractor will meet the requirements of Umetco's Air Permit issued by the DEQ. In addition, the Contractor will obtain the necessary Air Permits needed for the quarry operations; e.g., the rock crusher, prior to commencement of quarry operations.

5.1.18 Notifications

The Contractor will immediately notify Umetco of any unusual occurrences or changes in site conditions. The occurrence or changes include raptor nests, prairie dog towns, oil spills and accidents.

5.2 Access Roads

Improvements to the existing access road, from Natrona County Road 212, known as "Old Dry Creek Road" as well as construction of additional access roads within the permit area will be necessary. Umetco has obtained a Temporary Use Permit (No. 847) from the State of Wyoming, office of State Lands and Investment and a License from the County of Natrona for this purpose.

The Contractor shall salvage and stockpile all topsoil and subsoil and construct the improvements to the existing access road and necessary access roads within the permit boundary. Improvements to the existing access road shall be constructed within the established 50 foot right-of-way limits.

Access road improvements and construction of additional roads within the permit boundary shall be completed in accordance with the lines, grades, and typical sections shown on the drawings. Access and haul road locations within the permit boundary may be modified as necessary to satisfy the Contractors quarry operations with prior Umetco approval.

Surfacing gravel for the access road shall be obtained from outside sources or from reject quarry material with prior Umetco approval. It is anticipated that a sufficient volume of quarry reject materials from quarry operations will be available to gravel the access roads. Utilization of process material for this purpose will only be allowed with prior Umetco approval.

Improvements to the access road at the intersection of Natrona County Road 212 shall be constructed in accordance with Exhibit 'A' of the access road license from Natrona County and as shown on the drawings.

The Contractor shall be required to maintain the access road to the quarry site and provide maintenance and necessary upgrades, if necessary, on Natrona County Road 212 when erosion protection material is being transported to Umetco's Gas Hills site. The Contractor, at the Contractor's expense, shall maintain haul roads and control fugitive dust emissions by grading, watering or chemical suppression agents approved by Umetco.

5.2.1 Measurement and Payment

Construction of access road and improvements shall be considered incidental to quarry development, operation, processing and delivery of erosion protection materials. No additional measurement or payment will be made for access road construction, constructed improvements to access roads, access road maintenance, maintenance of County Road 212, or gravel surfacing of the access road. Payment for quarry development, operation, processing and placement of erosion protection materials shall be made as Specified in Section 5.8.

5.3 Fencing

Work covered by this Section includes selectively fencing the quarry area to minimize potential endangerment of public safety and animal life. Along with construction of the new quarry fence approximately 860 feet of existing fence will be removed and replaced with the new fence. A 12 foot wide wire gate shall be installed at the location shown on the Drawings.

Umetco will provide the initial survey to establish the location of the new fence alignment as well as identification of the fencing to be removed. Both the northern and southern quarry boundary fences shall be tied into topographic barriers to prevent

movement of livestock into the quarry area. The exact points of these ties will be coordinated with the BLM and the grazing operator at the time of Umetco's initial survey.

5.3.1 Removal of Existing Fence

All fence material to be removed shall be rolled and tied to provide for safe and easy handling. All fence posts, as far as practical shall be removed complete with the base intact. Any posts broken above the ground shall have the base removed from the ground.

5.3.2 New Fence Construction

Fencing shall include barb wire, stays, posts, hardware and all appurtenances and accessories as required for complete installation. The fence will have four strands of barbed wire. Stays shall be four feet in length and centered between posts.

5.3.3 Fence Materials

Barbed wire shall be No. 12 gauge galvanized wire. Barbed wire shall be either 2-point or 4-point.

Wood posts shall be 6-inches by 6-inches in size by 8-foot minimum length. Wood braces shall be 4-inches in size. Both posts and braces shall be constructed of treated lumber.

Tee-posts shall be 6-foot minimum in length, 1.33 lbs. per foot, spaded and coated or painted. Tee-posts are to be located at 15 foot intervals between terminal, corner and pull post assemblies.

Wire ties or clips shall be provided for attaching barbed wire to the tee-posts. Fence wire is to be attached to tee-posts with one wire tie per strand of fence wire per post. Fence wire is to be attached to each wooden post with at least one staple per strand.

The Contractor shall furnish all miscellaneous materials and accessories, ties, clips, anchors and fastenings as required for complete installation.

5.3.4 Installation

The location of fence construction will be established in the field by Umetco. Line posts shall be spaced at intervals not to exceed 15 feet on centers. Corner posts shall be installed at all changes in direction where the deflection angle exceeds 30 degrees. H-Brace assemblies shall be installed between corner and/or terminal posts. Wood H-Brace assemblies are to be installed in all fence laterals exceeding a length of 100 feet and shall be equally spaced with no spacing greater than 100 feet between braces.

New construction fence shall be a four strand fence with four strands of barbed wire as shown in the Rattlesnake Quarry Mine Permit Drawings. The first (lower) strand shall be installed approximately 14-inches above the ground surface, second strand approximately 22-inches above the ground surface (8-inches above the first strand), third strand approximately 30-inches above the ground surface (8-inches above the second strand), and the fourth strand approximately 42-inches above the ground surface (12-inches above the third strand).

5.3.5 Measurement and Payment

Measurement and Payment for *Furnishing and Installation of Fencing* will be made at the unit price bid per linear foot of actual fence installed. Measurements will be made along the top of the fence to the nearest foot. The unit price bid per linear foot of installed fencing shall include all costs associated with labor, materials, tools, equipment, accessories, vegetation clearing, construction of 12 foot gate, construction surveys, and performance of all Work.

Measurement and Payment for *Removal of Existing Fence* will be made at the unit price bid per linear foot of existing fence removed. Measurement will be made along the top of the fence to the nearest foot prior to fence removal. The unit price bid per linear foot of

fence removal shall include all costs associated with labor, materials, tools, equipment, construction surveys and disposal of fencing debris.

5.4 Topsoil and Subsoil Removal

The Contractor shall remove and stockpile all topsoil and subsoil from the Quarry Area, including access roads, Processing Area, Material Stockpile Area, Loading Area, Sediment Catchment Area and Office Areas.

5.4.1 Topsoil Removal Quarry Area

The topsoil/subsoil depths will vary across the quarry site due to minor drainages or sediment deposits that may have occurred in the past. These areas may contain additional volumes of topsoil/subsoil to be used in reclamation of the quarry site. The Contractor will salvage all available soil material from quarry area including associated vegetation and unsuitable rock fragments.

The Contractor shall collect all topsoil and subsoil materials using rubber-tire scrapers or front-end loaders. The materials will be stockpiled in the designated areas within the permit boundary. Topsoil will be stockpiled separately from subsoil and waste rock.

5.4.2 Topsoil and Subsoil Removal from Processing, Material Stockpile, and Loading Areas

The Processing Area, Material Stockpile Area and Loading Area shown in the Rattlesnake Quarry Mine Permit Drawings provides the general dimensions of the area to be used for crushing, screening, stockpiling, and transportation of quarry material.

The Contractor shall remove all topsoil and subsoil in these areas. Topsoil and subsoil shall be stockpiled separately.

5.4.3 Topsoil and Subsoil Pile Seeding

The Contractor shall broadcast certified weed-free seed on the topsoil and subsoil stockpiles with a mixture of one or two quick growing wheat grass species at a rate of 12 pounds per acre in order to stabilize the stockpiles and lessen the potential for invasion of weedy species. Each stockpile will be seeded during the earliest available growing season.

5.4.4 Measurement and Payment

Measurement and Payment for *Topsoil and Subsoil Removal and Stockpiling* will be made at the unit price bid per cubic yard of Topsoil and Subsoil removed and stockpiled in accordance with the Specifications. Measurements will be made for the number of cubic yards of Topsoil and Subsoil placed in the designated stockpiles. The unit price bid per cubic yard of Topsoil/Subsoil Removal and Stockpiling shall include all costs associated with labor, materials, tools, equipment, accessories, surveys, utilized in performance of the Work. Seeding of the Topsoil/Subsoil Piles shall be included incidental to this task and included in the unit price bid for Topsoil/Subsoil Removal and Stockpiling.

5.5 Quarry Operations

The Rattlesnake Quarry contains hard, durable quartzite that meets the Nuclear Regulatory Commission requirements for reclamation activities at Umetco's East Gas Hills facility.

Mining activities at the quarry site will generally include drilling, blasting and excavation of quarry material, processing and storage of the rock, and loading and transportation of the processed erosion protection material.

This Section describes the conceptual Mining Plan developed to obtain the necessary permitting for the Quarry Site. The Contractor shall develop a detailed operational mining plan which satisfies the mining requirements specified herein and described in

additional detail in the Mine Permit. The operational mining plan will be submitted for review and approval by Umetco. Alterations to the quarry configuration shown on the Drawings will not be allowed. However, changes in the layout within the affected area; e.g., the Material Stockpile area, or in quarrying techniques will be considered.

5.5.1 MSHA ID and Training Program

Prior to initiating mining operations at the quarry site the Contractor shall obtain the appropriate MSHA Identification Number (MSHA ID) and develop and conduct an MSHA approved training program (24 hour surface training and/or an annual 8 hour training certificate).

The Contractor shall be responsible for required MSHA notification prior to startup of mining operations and shall provide Umetco written verification of MSHA startup notification.

5.5.2 Conceptual Mining Plan

The overall purpose of this mine plan is to produce the needed materials in a safe and workmanlike manner and to leave the site suitable for reclamation. As such, the conceptual mine plan has been designed to achieve the reclamation objective of mimicking the land forms and appearance of the adjacent cliffs, rock outcrops, and vegetation types. The site of the proposed quarry was specifically selected to minimize the amount of surface area disturbed.

The mining method used at the quarry site will be open-faced quarrying of the Tensleep quartzite. Mining will be entirely from the steeply inclined strata exposed on the rock outcrop. Access will be gained along the north side of the mining area to the top of the slope to be mined, see the Rattlesnake Quarry Mine Permit Drawings. Cross benches will be excavated beginning at the top of the quarry area. This plan anticipates the necessity of blasting to loosen the material and allow excavation with conventional

construction equipment. The excavated material will be transported to the process area for processing.

After processing, the material will be placed in stockpiles according to the required gradation specification for subsequent loading and transportation to Umetco's East Gas Hills facilities and placed in accordance with the requirements of Section 6.

The conceptual mining plan for the Tensleep quartzite anticipates that 4 or 5 benches will be drilled and blasted. Each bench will be 10 to 15 feet in width. These benches will be preferentially removed as quarry activities proceed down the face of the quartzite outcrop. Upon completion, only select bench portions of the highwall will remain for specific reclamation purposes; e.g., raptor nests. The benches will range from 30 to 80 feet in height and from 350 to 500 feet in length and shall be created by sculpting the quarry highwall. Benches will be formed as quarry activities progress down the face of the quartzite outcrop. After completion of quarry activities, there will be no accessible benches. The slope area at the base of the highwall will consist of slopes ranging from 1:1 to 2:1. The slope area will be created by allowing rock debris from the mining operation and from the rock sculpting operation to remain in place on the slope. Rocks on the high wall and slope area will be stained as sculpting of the quarry progresses. The Contractor will consult with Umetco and their consultants throughout the quarry operations to assure that the rock sculpting and staining activities are being conducted properly.

Stain utilized for staining of the quarry highwall shall be Permeon (Artificial Desert Varnish) as manufactured by Advanced Concrete Technologies, 11622 Newport Avenue, Santa Ana CA (714-731-0906) or approved equal.

Standard construction equipment will be used in the quarry operations. Typical equipment used at the site at anytime could include track drill rigs, light vehicles, bulldozers, motor graders, crushers, water trucks, fuel truck, front-end loaders, tracked or

rubber-tire excavators, and rock trucks. Equipment required during excavation of the quartzite includes dozers, front-end loaders and track drills. This equipment will be moved to the quarry on access trails along the north edge of the quarry, as shown on the Rattlesnake Quarry Mine Permit Drawings. These trails will be used for access to specific areas of the quarry during construction. Only minimal blading will be necessary to allow construction equipment to use these trails. Full scale road construction for these trails would result in unnecessary environmental impacts. Rock trucks, scrapers, jaw and cone crushers, screens and belts will likely be used in processing of the material. Front-end loaders, off-highway trucks and/or highway trucks will be required to transport the processed materials to the East Gas Hills site.

5.5.3 Blasting

The blasting requirements specified in this section are included in the quarry site permit requirements and are therefore made a part of these Specifications for performance of the Work.

The blasting requirements contained herein have been designed to protect workers and the public from hazards associated with quarry blasting. The quarry side slopes shall be constructed at an approximate overall 2:1 (2 horizontal : 1 vertical). The rock outcrop to be quarried is about 150 feet in thickness. Blasting will be required to remove the material for crushing and screening.

All blasting shall be accomplished by blasters that are certified as Shotfirers in the State of Wyoming and will be conducted in accordance with all Federal regulations including, but not limited to, MSHA, OSHA, DOT, AFT and Bureau of Mines, as well as all State and local regulations. Initial blasts will be designed based on scale distance factor as stated in Blasting Standards, Chapter 6, Section 4(b), of the LQD Coal Rules and Regulations. These initial blasts will be monitored by seismographs to provide actual site specific peak particle velocity (PPV) and air overpressure levels. Following the initial (or "test") blasts, the site specific information gathered will then be used to establish the

actual blast plan for subsequent individual blasts per Chapter 6, Section 4(b), of the LQD Coal Rules and Regulations. Actual site specific shot designs will be prepared in accordance with all vibration and air overpressure regulations and submitted as required under Chapter 6 of the LQD Coal Rules and Regulations. The site specific shot designs will also assure that blast vibrations will not affect wells or springs in the adjacent area.

The maximum peak particle velocity applicable when seismograph records are provided for each blast are as follows:

Distance (D) from the Blasting Site (feet)	Maximum allowable peak particle velocity (Vmax) for ground vibration (inches/second ¹⁾)	Scaled distance factor to be applied without seismic monitoring ²⁾
0 to 300	1.25	50
301 to 5000	1.00	55
5001 and beyond	0.75	65

¹⁾ Ground vibration shall be measured as the particle velocity. Particle velocity shall be recorded in three mutually perpendicular directions. The maximum allowable peak particle velocity shall apply to each of the three measurements.

²⁾ Applicable to the scaled-distance equation, $W=(D/Ds)^2$ to determine the allowable charge of weight of explosives to be detonated in any eight millisecond period, without seismic monitoring; where W = the maximum weight of explosives, in pounds; D = the distance, in feet, from the blast site to the nearest protected structure; and Ds = the scaled-distance factor, which may initially be approved by the Administrator using the values of scaled-distance factor listed above.

The Contractor shall use the following blasting procedures at the quarry site:

1. The blaster in charge shall conduct a safety meeting with personnel on the job site prior to the blasting. He will ensure that they and any equipment are removed to a safe location prior to blasting. Personnel will be posted to prevent entry of persons to the blast area.
2. Audible warnings will be sounded prior to blasting.
3. Blasting warning signs will be posted as required with notices of 5 minutes, 1 minute, and all clear signals.
4. Explosives will consist of gelatin dynamite primers and ammonium nitrate/fuel oil.
5. All explosives and detonators will be handled in accordance with the manufacturer's instructions.

6. After a blast has been fired, the blaster will perform an inspection to determine that all charges have exploded before any persons are allowed to return to the area. He will correct any misfires in accordance with the requirements of the applicable portions of federal, state, and local safety codes for blasting.
7. All blasts will be designed to minimize fly-rock. Hole direction and spacing, delay sequence and explosive weight per delay will all be considered. When necessary, overburden or earth cover will be utilized as required to prevent unacceptable fly rock.

Benches shall be removed as quarry activities progress down the highwall. After completion of the quarry activities, there will be no accessible benches remaining. Shots shall be designed to minimize drill hole marks after blasting. Contouring, reshaping and rock sculpting shall occur simultaneously with the mining operation. Cut slopes shall be serrated based on the existing joint sets and discontinuities as determined by a geologist experienced in rock sculpting and will have a batter from approximately 2/10:1 to 5/10:1 (horizontal:vertical). The goal of the reshaping is to blend the post-mining topography into the surrounding topography by mimicking existing bluffs south and adjacent to the proposed quarry.

Explosives storage shall comply with Bureau of Alcohol, Tobacco and Firearms (BATF), Occupational Safety and Health Administration (OSHA), and Mine Safety and Health Administration (MSHA) and other applicable local, state and federal regulations.

Dust and other airborne particulates from drilling and crushing will be controlled in accordance with the Department of Environmental Quality regulations. Drill rigs shall have dust containment and collection systems.

5.6 Erosion Protection Material Specifications

This Section describes the material requirements for erosion protection (rock riprap) materials quarried and processed at the quarry site.

The erosion protection materials processed from the quarry site shall be dense, sound, resistant to abrasion and shall be free from cracks, seams, and other defects.

Sampling and testing of rock from the quarry site indicate that the material satisfies the durability requirements stated in Section 5.6.1. However, as with all geologic formations, the potential of encountering various quantities of unsuitable material exists.

5.6.1 Quality Requirements

Umetco will perform quality control testing of erosion protection material to insure and provide the necessary documentation that processed material meets the durability and gradation requirements established for use at the Gas Hills site. Testing will be performed at the quarry site during processing of the material and at the Gas Hills site during placement operations.

Testing of erosion protection materials will be made initially when each type of material is produced. Thereafter, the testing shall be performed at a minimum frequency of one test for each 10,000 cubic yards or fraction thereof produced or placed.

The required Quality Control tests are shown on Table 5.6-1. The scoring criteria to determine rock quality is shown on Table 5.6-2. The Contractor shall make the necessary resources available to assist Umetco in obtaining and testing of erosion protection materials.

TABLE 5.6-1

Test	Designation
Gradation	ASTM C117, ASTM C136
Specific Gravity (Saturated Surface Dry)	ASTM C127
Absorption	ASTM C127
Sodium Sulfate Soundness	ASTM C88 (5 cycles)
Abrasion	ASTM C131 (100 revolutions)
Schmidt Rebound Hardness	ISMR Method
Petrographic Examination	ASTM C295

TABLE 5.6-2

Laboratory Test	Weighting Factor			Score										
	Limestone	Sandstone	Igneous	10	9	8	7	6	5	4	3	2	1	0
				Good			Fair			Poor				
Sp. Gravity	12	6	9	2.75	2.70	2.65	2.60	2.55	2.50	2.45	2.40	2.35	2.40	2.25
Absorption, %	13	5	2	0.10	.30	.50	.67	.83	1.0	1.5	2.0	2.5	3.0	3.5
Sodium Sulfate, %	4	3	11	1	3	5	6.7	8.3	10	12.5	15	20	25	30
L/A Abrasion (100 revs), %	1	8	1	1	3	5	6.7	8.3	10	12.5	15	20	25	30
Schmidt Hammer	11	13	3	70	65	60	54	47	40	32	24	16	8	0
1. Scores were derived from Tables 6.2, 6.5, and 6.7 of NUREG?CR-2642 - "Long-Term Survivability of Riprap for Armoring Uranium Mill Tailings and Covers: A Literature Review," 1982. 2. Weighting Factors are derived from Table 7 of "Petrographic Investigations of Rock Durability and Comparisons of Various Test Procedures," by G.W. DuPuy, <u>Engineering Geology</u> , July 1965. Weighing factors are based on inverse of ranking of test methods for each rock type. Other tests may be used; weighing factors for these tests may be derived using Table 7, by counting upward from the bottom of the table. 3. Test methods should be standardized, if a standard test is available, and should be those used in NUREG?CR-2642, so that proper correlations can be made.														

The score for each test will be determined by multiplying the appropriate weighting factor by the score (0 to 10) based on the specific test results. The final score for each sample is the ratio of the sum of the individual test scores (five tests) to the maximum possible score, expressed as a percentage. To be acceptable, the final score must be no less than 80 percent for riprap material.

Umetco's quality control staff will continuously inspect quarried material prior to final processing of the material and shall notify the contractor of potential problematic durability issues.

5.6.2 Gradation Requirements

Erosion protection (rock riprap) materials shall be reasonably well-graded within the limits presented in Table 5.6.2. The sizes are specified in terms of square opening of U.S. Standard Sieves or by the Nominal Sizes of the Materials.

TABLE 5.6.2-1

U.S. Standard Sieve Size (Nominal) (Square Openings)	Percent Passing (by weight)
TYPE A ($D_{50} = 0.5''$)	
1 1/2"	100
1"	50 - 100
3/4"	20 - 100
1/2"	5 - 50
3/8"	0 - 25
#4	0 - 5
TYPE B ($D_{50} = 3''$)	
5"	100
4"	30 - 100
3"	0 - 50
2"	0 - 15
TYPE C ($D_{50} = 6''$)	
10"	100
9"	50 - 100
8"	20 - 100
6"	0 - 50
4"	0 - 15
TYPE D ($D_{50} = 16''$)	
30"	100
24"	50 - 100
18"	20 - 100
12"	0 - 30
8"	0 - 10
TYPE E ($D_{50} = 20''$)	
36"	100
30"	50 - 100
24"	20 - 100
20"	0 - 50
18"	0 - 40
12"	0 - 10

Umetco's quality control staff will include a qualified engineering geologist to monitor materials production. During excavation or blasting and processing of materials, the site will be inspected to ensure material selection procedures are adequate to prevent inclusion of deleterious or unsuitable materials in the processed materials.

5.7 Transport of Erosion Protection Materials

Processed erosion protection material shall be transported to Umetco's Gas Hills site along Natrona County Road CR 212.

The Contractor shall maintain the access road to the quarry site and provide maintenance on Natrona County Road 212 when erosion protection material is being transported to Umetco's Gas Hills site.

Since County Road 212 is a public road the Contractor shall make the necessary arrangements with Natrona County for utilization of haul equipment other than highway legal trucks and shall be responsible for traffic control and applicable signs as required by the County.

5.7.1 Certified Scales

The Contractor shall install and maintain certified scales at the quarry site. A weight ticket shall be provided to Umetco for each truck load of acceptable processed erosion protection (rock riprap) material delivered to the Gas Hills site.

5.8 Measurement and Payment

Measurement for payment shall be made for the number of tons of each type of acceptable erosion protection materials (rock riprap) delivered to Umetco's Gas Hills site.

Payment for Quarrying, Processing and Delivery of Erosion Protection shall be made at the unit price bid per ton of each type of erosion protection material delivered to Umetco's Gas Hills site. The unit price for Quarrying, Processing and Delivery of

Erosion Protection shall include all costs associated with, but not limited to, quarry operation, blasting, processing, transport of material to Umetco's Gas Hills site, monitoring, permitting, reporting, seismic monitoring, pre and post mining surveys, operational stipulations, access road improvements, and certified scale installation. Various project areas included in these Specifications are shown as a conceptual configuration and subject to change as a result of regulatory requirements or design optimization. Umetco reserves the right to modify or delete the planned quantities of erosion protection materials required by these Specifications without payment of additional compensation to the Contractor for deletion or modification of required material quantities. Modifications and/or deletion of planned erosion protection material quantities will be made at the unit price bid for Quarrying, Processing and Delivery of Erosion Protection.

6.0 EROSION PROTECTION PLACEMENT

This Section covers construction (placement) of the erosion protection layer (s) portion of the reclamation covers and associated hydraulic structures, e.g., toe aprons, channels, etc., at Umetco's Gas Hills site.

6.1 Subgrade Preparation

All Earthwork specified in Section 7 shall be completed and accepted prior to final subgrade preparation.

Surfaces to be prepared for placement of erosion protection materials shall be cleared of all rubbish and any other deleterious material. Prior to placement of erosion protection materials, the subsurface shall be graded to within +0.1 feet of the final design elevation established on the drawings or as established by the Engineer in the field. All surfaces prepared to receive erosion protection materials and/or bedding material shall be proof rolled with at least 3 passes of a smooth drum roller or approved equivalent. Proof rolling shall be witnessed by a designated representative of the QC staff. Damage to the prepared subgrade by construction activities or erosional forces, i.e., storm runoff, etc.,

shall be repaired in accordance with these Specifications prior to placement of erosion protection materials.

Frozen or unsuitable materials shall not be used for subgrade preparation. Preparation of the subgrade surface shall be performed when ambient temperatures permits adequate grading and proof rolling of the subgrade as determined by the QC officer. Placement of erosion protection materials on accepted, prepared subgrade surface is permitted provided placement requirements of Section 6.2 can be achieved. Placement of erosion protection materials will not be allowed when snow is present on the subgrade.

6.2 Placement and Compaction

Erosion protection materials shall be placed to the lines and grades established on the drawings or as established by the Engineer in the field.

Type A erosion protection also serves as bedding material for the larger riprap as shown on the drawings. Type A erosion protection shall be placed and graded in a 6-inch lift and shall be rolled with a smooth drum roller or approved equivalent. Where Type A erosion protection or bedding material thickness is six inches or less, the material shall be spread and compacted in one layer.

Erosion protection materials shall be handled, loaded, transported, stockpiled, and placed in a manner that avoids nonconformance with the Specifications due to segregation and degradation, including materials moved to and from stockpiles. Various placement methods used by the Contractor that tend to segregate particle sizes within the layer will not be permitted.

Erosion protection (riprap) material, up to a maximum nominal size of 12-inches, may be placed by end-dumping and spread by bull-dozer, hydraulic excavator or approved equivalent.

Dumped riprap shall be placed to its full course thickness in one operation and in such a manner as to avoid displacing the bedding material or subgrade. The larger stones shall be well distributed throughout the mass. The finished erosion protection (riprap) layer shall be free from pockets of small stones and clusters of larger stones. Placing stone by dumping into chutes or by similar methods will likely cause segregation of the various sizes and will not be permitted. The desired distribution of the various sizes of stones throughout the mass shall be obtained by selective loading of the material at the quarry, by controlled dumping of successive loads during final placing, or by other methods of placement that will produce the specified results. Rearranging of individual stones by mechanical equipment or by hand may be required to the extent necessary to obtain a well-keyed and reasonably well-graded distribution of stone sizes as specified above. Larger pieces of riprap may require individual placement by equipment. Hand arrangement will be required only to the extent necessary to secure acceptable results. Stones shall be selected and positioned so as to produce an essentially solid, densely placed face of rock with all stones firmly wedged in place. Any stones that are not firmly wedged shall be adjusted and additional selected stones inserted or existing stones replaced, so as to achieve a solid interlock.

For erosion protection materials (riprap) placed by clam-shell, hydraulic excavator or similar equipment, hand arrangement will be required only to the extent necessary to secure the results specified herein. Stones shall be selected individually and positioned manually under experienced supervision so as to produce an essentially solid layer with all stones firmly wedged in place. Any stones that are not firmly wedged, in the opinion of the QC Officer, shall be adjusted by crow-bars or similar tools and additional selected stones inserted, or existing stones replaced, so as to achieve solid interlock.

Each layer of erosion protection materials (riprap) shall be track-walked by two passes of Caterpillar D6 bulldozer, smooth drum roller or approved equivalent, unless otherwise approved by the QC Officer. Erosion protection materials (riprap) shall be spread in a

manner that will achieve full coverage and uniformly distributed well-keyed, densely-placed layer.

Construction equipment other than spreading and compaction equipment shall not be allowed to move over the placed erosion protection (riprap) material and bedding layers except at equipment crossovers as designated by the QC Officer. Fill materials shall be placed temporarily at equipment crossovers to prevent degradation of placed riprap materials. Each crossover shall be cleaned of all contaminating materials and approved by the QC Officer before additional materials are placed in these areas. Areas of riprap and bedding layers damaged by construction equipment shall be restored to meet the requirements of the Specifications.

6.2.1 Tolerances

The erosion protection (riprap) layers shall be placed to the limits and thicknesses shown on the Drawings and within the following tolerances:

1. The top of the frost protection or bedding subgrade shall be within +0.1 foot of the design elevation or grade as modified by the Engineer in the field.
2. Top of Type A erosion protection or bedding shall be within ± 0.1 foot of the design elevation or grade as modified by the Engineer in the field.
3. The in-place thickness of erosion protection (riprap) material shall be between 90 percent and 125 percent of the thickness shown on the Drawings.
4. Local irregularities not exceeding the thickness limits above will be permitted provided that such irregularities do not form noticeable mounds, ridges, swales or depressions that in the opinion of the QC Officer could cause concentrations of surface runoff or form ponds or gullies.

5. The erosion protection material placed meets the gradation requirements specified.

6.2.2 Quality Control Testing

The following Quality Control Testing shall be performed on completed erosion protection layers to verify and document compliance with the Specifications.

For placement control purposes, a 50' x 50' or larger, test area shall be constructed for each Type of erosion protection materials (riprap) using material meeting gradation and thickness requirements, as specified. This section will be used to show what material meeting the specifications looks like after placement, and to calibrate "eyes" of inspectors, operators and other interested persons. If properly constructed on the cover subgrade, the section can become part of the completed erosion protection layer. The test area will be constructed and accepted prior to placement of erosion protection materials on the prepared subgrade.

Riprap layer thickness will be directly measured on a specified grid to verify the minimum erosion protection layer thickness requirements have been met. The rock within the grid will be removed to the top of the bedding layer or subgrade and the layer thickness measured to determine the distance from the top of the bedding or subgrade to the top of the riprap layer.

Erosion protection materials segregated or not placed according to the above requirements shall be regraded or adjusted, or removed and replaced using appropriate equipment conforming to requirements of these Specifications.

Materials not meeting the requirements of this Section shall be removed and replaced with specified materials. Rejected materials shall be transported to the quarry site and reprocessed at the Contractor's expense. Umetco may require modification of the

processing and grading operations to ensure that the specified grading requirements are met.

6.3 Measurement and Payment

Measurement for payment for Erosion Protection Placement will be made at the number of cubic yards of erosion protection material placed in each project area in accordance with the Specifications. Measurement for payment will be made to the neat line thickness and grades shown on the Drawings or as modified in writing by the Engineer during execution of the Work. No allowance will be made for overbuilt erosion protection layer thickness unless approved in writing by Umetco. No additional allowance will be made for reprocessing of erosion protection materials delivered to the site and rejected as a result of improper handling, stockpiling, degradation which results in the erosion protection materials which do not conform to the Specifications.

Payment for Erosion Protection Placement will be made at the unit price bid per cubic yard of each type of erosion protection material placed in the applicable project area in accordance with these Specifications. The unit price bid per cubic yard of Erosion Protection Placement shall include all costs associated with subgrade preparation, handling and temporary stockpiling of processed material, receipt of processed erosion protection material delivered to the site, labor, materials, equipment, tools, and accessories utilized in performance of the Work. Various project areas included in these Specifications are shown as a conceptual configuration and subject to change as a result of regulatory requirements or design optimization. Umetco reserves the right to modify or delete the planned quantities of erosion protection material placement required by these Specifications without payment of additional compensation to the Contractor for deletion or modification of required material quantities. Modifications and/or deletion of planned erosion protection material placement quantities will be made at the unit price bid for placement of each type of erosion protection materials.

7.0 EARTHWORK

Earthwork covered by this Section are separated into various project areas and in general consist of the following:

Above-Grade Tailings Area

- Complete construction of the Frost Protection Layer of the reclamation cover.
- Excavation of East Canyon Creek Channel
- Excavation and backfill of toe aprons and channel outlet structures.
- Complete subgrade preparation in accordance with Section 6.1 of these Specifications.

1) Heap Leach Area

- Complete construction of Frost Protection Layer of the reclamation cover in the gap area.
- Complete subgrade preparation in accordance with Section 6.1 of these Specifications.
- Excavation and backfill of toe aprons and channel outlet structures.
- 1) The Drawings and erosion protection material quantities assume a conceptual cover to be constructed over the existing GHP No. 2 Area. Earthwork for construction of the reclamation cover over GHP No. 2 is not included in this contract. The final reclamation cover for GHP No. 2 is dependent upon regulatory termination of the groundwater corrective action plan and the final volume of contaminated materials to be placed in the pond prior to construction of the reclamation cover. Accordingly, the erosion protection material requirements and quantities associated with the GHP No. 2 area are likely to be modified or deleted from these Specifications.

B-Spoils Area

- Cut and fill grading of the B-Spoils Borrow Area.
- Topsoil placement and seeding of the B-Spoils Borrow Area.

2) A-9 Area

- Complete subgrade preparation in accordance with Section 6.1 of these Specifications.
 - Excavation and backfill of toe aprons and channel outlet structures.
- 2) Earthwork for the A-9 area, not included in these Contract Specifications (Scope of Work) include placement of contaminated material in the A-9 repository, construction of the A-9 reclamation cover, backfill of the C-18 pit, and regrading of the North and South Evaporation Ponds. Due to regulatory uncertainties associated with cleanup of contaminated materials and plan optimization, modifications to the erosion protection material requirements for this area are likely. Umetco currently anticipates completion of earthwork in this area prior to the scheduled timeline specified herein for placement of erosion protection materials.

7.1 Above-Grade Tailings Area

This section covers specific earthwork to be completed in the Above-grade Tailings Area of Umetco's Gas Hills site.

7.1.1 Complete Frost Protection Cover Layer

Completion of the Frost Protection Layer of the Above-grade Tailings reclamation cover involves cut and fill grading prior to subgrade preparation for placement of erosion protection materials as required by Section 6.1 of these Specifications.

All areas established by Umetco for cut or fill grading shall be cleared of all rubbish or deleterious material, as directed, prior to excavation or placement of fill. Deleterious soils shall be stockpiled as topsoil in a location designated by Umetco adjacent to the Above-grade Tailings embankment.

Frost protection soils excavated from the existing cover have the potential to contain radiologically elevated soils. If radiologically elevated soils are encountered during excavation, Umetco will direct the Contractor to transport the unsuitable soils to the A-9 Repository in accordance with Section 7.5. Borrow materials necessary to complete the

Frost Protection Cover Layer shall be obtained first from required excavation of the East Canyon Creek Channel as required in Section 7.1.2, then the B-Spoils Borrow Area.

Suitable materials obtained from required excavation of the existing reclamation cover or required excavation of the East Canyon Creek Channel shall consist of clayey and/or silty sand, classified as SC and/or S-SM in accordance with the Unified Soil Classification System. Soils used for construction of the Frost Protection Layer shall be free of lumps or rocks fragments larger than one-half of the lift thickness, brush, roots, sod or other perishable or unsuitable materials.

Borrow soils obtained from the B-Spoils Borrow Area shall meet the material requirements for Frost Protection described above and shall be excavated in accordance with Section 7.1.4.

Frost Protection soils shall be placed in equal continuous layers not exceeding 12-inches compacted depth and compacted to a minimum of 95 percent of maximum density (ASTM D698), and at a water content above minus 2 percent of optimum.

The placement areas and thickness for the Frost Protection layer are shown on the Drawings and will be established by the Engineer in the field. Distribution and gradations of materials in each layer will be, as far as practicable, free of lenses, pockets, streaks, or layers of material differing substantially in texture, gradation or moisture content from surrounding materials.

If the compacted surface of any layer of fill is too dry or smooth to bond properly with the layer of material to be placed thereon, it will be moistened and/or reworked with a harrow, scarifier, or other suitable equipment to a sufficient depth to provide a relatively uniform moisture content and a satisfactory bonding surface before the next layer of earthfill is placed.

If the compacted surface of any layer of earthfill in place is too wet, i.e., due to precipitation, for proper compaction of the earthfill material to be placed thereon, it will be allowed to dry, or reworked with a harrow, scarifier, or other suitable equipment to reduce the moisture content to the required level. The area will then be recompacted to the specified density established in this section.

No material will be placed in the fill layer when the materials on which the new material is to be placed is frozen or when ambient temperatures do not permit the placement or compaction of soils to the specified density without developing frost lenses in the fill.

The top of the Frost Protection layer shall be graded to within +0.1 foot of the design elevations shown on the Drawings or as determined by Umetco in the field. The in-place thickness of the Frost Protection layer shall be equal to or greater than 100 percent of the design thickness shown or established by the Engineer in the field. Verification of the radon barrier layer thickness will be determined by the QC Officer from information collected from QC surveys and test excavations.

If the QC Officer determines from applicable quality control verification survey data that the work is not in compliance with these specifications, the work shall be brought into compliance with the specifications. Quality control testing to verify compliance shall consist of the following:

- Thickness verification
- Moisture and Density
- As- Built Survey
- Desiccation

7.1.2 East Canyon Creek Channel Realignment

Work specified by this Section covers earthwork necessary to complete the East Canyon Creek Channel Realignment.

All areas specified for cut or fill grading shall be cleared of all rubbish or deleterious material prior to excavation or placement of fill. Deleterious soils shall be stockpiled as topsoil in a location designated by Umetco.

The streambed shall be excavated to the lines and grades shown on the Drawings or established by the Engineer in the field. Suitable soils from required excavation shall be used as fill soils to complete construction of the Frost Protection Layer of the Above-grade Tailings and Heap Leach reclamation covers.

Areas within the channel realignment area to receive fill shall be scarified and recompacted to a minimum of 95 percent of the maximum density (ASTM D698) prior to placement of fill soils.

Areas below the design grade shall be filled to design elevations with clean, unfrozen soils obtained from the required channel excavation. Fill soils shall be free of lumped soil, rock fragments larger than one-half of the lift thickness, organic matter, or any other materials that would preclude adequate compaction. Fill materials shall be placed in maximum lift thickness of 12 inches (compacted lift thickness) and shall be compacted to a minimum of 95 percent of the maximum density (ASTM D698) and at a moisture content greater than minus 2 percent of the optimum moisture content.

Backfill of excavations required for placement of the below grade erosion protection material (toe aprons) shall be completed in accordance with the requirements of Section 7.1.3.

7.1.3 Excavation and Backfill of Toe Aprons

Below-grade erosion protection material (toe aprons) shall be constructed to protect the reclaimed tailings embankments and channels from gully headcutting. The location and dimensions of the toe aprons are shown on the Drawings. Requirements for subgrade

preparation and placement of erosion protection material are contained in Section 6 of these Specifications.

Soils excavated for construction of the toe aprons shall be used as backfill once erosion protection materials have been placed and accepted. The Contractor shall minimize the time frame in which excavations for construction of the toe aprons are left open and shall repair, at the expense of the Contractor, damage to open excavations as a result of stormwater runoff, sloughing, etc.

Backfill of the toe apron excavation shall be to the final grades shown on the Drawings or as modified by the Engineer in the field. Backfill soils shall not include lumped soil, rock fragments larger than one-half the lift thickness, organic matter, or any other materials that would preclude adequate compaction. Fill materials used for backfilling shall be placed in maximum lift thickness of 12 inches (compacted thickness) and shall be compacted to a minimum of 95 percent of the maximum density (ASTM D698) at a moisture content greater than minus 2 percent of optimum moisture content.

7.1.4 Borrow Soils Obtained from B-Spoils Borrow Area

Borrow materials used for construction of Frost Protection Layers shall be free of lumps or rocks larger than one-half of the specified lift thickness, brush, roots, sod or other perishable or unsuitable materials.

A significant volume of soils obtained from the B-Spoils Borrow Area have radiological characteristics which are unsuitable for cover construction. Radiologically elevated soils contained in the B-Spoils Borrow Area consist of naturally occurring materials which are not "11e.(2)" contaminated materials to be disposed of. Borrow excavations will be continuously monitored by Umetco in the field. Determination will be made on a load by load basis as to the radiological and characteristic suitability of the borrow materials. A procedure will be developed with the Contractor and Umetco site personnel that provides

for continuous monitoring of the excavation while minimizing, to the extent practicable, disruption of the borrow operation.

For the most part radiologically elevated (naturally occurring) materials which are present in the B-Spoils Borrow Area occur in isolated pods and at times small clusters of loosely cemented rock. Upon initial scanning of this material it may appear that the radiologically elevated materials are wide spread and unsuitable for cover construction while post handling measurements may indicate that the radiological characteristics of the material are suitable.

To optimize the use of material from the B-Spoils Borrow Area, the Contractor will be required to mix or blend borrow soils during or prior to excavation. Previous experience with this material has demonstrated that excavation and loading of soils using elevating (paddle wheel) scrapers works extremely well. Alternative methods for blending of these soils, other than the use of elevating scrapers, may be proposed by the Contractor and utilized provided acceptable (like) results are obtained. The goal of mixing and blending is, to the extent practical, excavate and load borrow materials in a manner that results in the placement of a homogenous soil for cover construction.

Unsuitable materials excavated at Umetco's direction from the B-Spoils Borrow Area will be placed or stockpiled in accordance with Section 7.3.1.

7.1.5 Measurement and Payment

Due to the uncertainties associated with the radiological characteristics of materials for required excavations and borrow soils, Umetco makes no warrantee as to the final quantities of earthwork. Various pay items have been included in these Specifications to address unforeseen soil conditions even though it is not likely these pay items will be necessary. The combined estimated quantities provided in the bid schedule provide an accurate representation of the total magnitude of earthwork to be performed. However, the actual portions of suitable and unsuitable materials to be handled have been estimated

based on engineering judgment and experience at this site. Accordingly, no adjustment will be made in Unit Prices Bid for a particular item of earthwork as a result of significant increase or decrease in the estimated quantities provided.

Measurement and payment for earthwork specified in Section 7.1, Above-Grade Tailings Area, shall be made as follows:

A) Clearing for Construction of the Frost Protection Layer, East Canyon Creek Channel Realignment, and Toe Apron:

Measurement - Measurement for payment for *Clearing for Construction of the Frost Protection Layer, East Canyon Creek Channel Realignment, and Toe Apron* shall be made for the number of cubic yards of topsoil cleared and stockpiled in accordance of with the Specifications or as directed by the Engineer in the field. Measurement will be made for the number of cubic yards placed in the stockpile based on post clearing quantity surveys of the topsoil stockpile. Quantity determinations from surveys shall be computed using average end area or prismatic computation methods.

Payment - Payment for *Clearing for Construction of the Frost Protection Layer, East Canyon Creek Channel Realignment, and Toe Apron* will be made at the applicable unit price bid for the number of cubic yards cleared and stockpiled in accordance with the Specifications. The unit price bid for Clearing shall include all costs associated with stripping, excavation, hauling, stockpile placement, labor, equipment, tools, surveys, and accessories utilized in performance of the Work.

B) Frost Protection Fill Obtained from ECC Excavation:

Measurement - Measurement for payment for *Frost Protection Fill Obtained from ECC Excavation* will be made for the number of cubic yards excavated from the East Canyon Creek Channel realignment and placed as part of the Frost Protection Layer of the Above-Grade reclamation cover. Measurement will be made for the number of cubic yards placed in accordance with the Specifications based on quantity surveys

of, or portions of, the completed Frost Protection Layer. Quantity determinations from Surveys shall be computed using average end area or prismatic computation methods.

Payment - Payment for *Frost Protection Fill Obtained from ECC Excavation* will be made at the applicable unit price bid for the number of cubic yards excavated and placed in accordance with the Specifications. The unit price bid for placement of Frost Protection Fill Obtained from ECC Excavation shall include all costs associated with excavation, hauling, placement of fill soils, labor, equipment, tools, surveys, and accessories utilized in performance of the Work.

C) Frost Protection Fill Obtained from Required Grading Excavation:

Measurement - Measurement for payment for *Frost Protection Fill Obtained from Required Grading Excavation* will be made for the number of cubic yards excavated from required grading of the Above-grade reclamation cover and placed as part of the Frost Protection layer. Measurement will be made for the number of cubic yards placed and compacted in accordance with the Specifications based on quantity surveys of, or portions of, the completed Frost Protection layer. Quantity determinations from surveys shall be computed using average end area or prismatic computation methods.

Payment - Payment for *Frost Protection Fill Obtained from Required Grading Excavation* will be made at the applicable unit price bid for the number of cubic yards excavated and placed in accordance with the Specifications. The unit price bid for placement of Frost Protection Fill Obtained from Required Grading Excavation shall include all costs associated with excavation, hauling, placement of fill soils, labor, equipment, tools, surveys, and accessories utilized in performance of the Work.

D) Frost Protection Fill Obtained from the B-Spoils Borrow Area:

Measurement - Measurement for payment for *Frost Protection Fill Obtained from the B-Spoils Borrow Area* will be made for the number of cubic yards excavated from the B-Spoils Borrow Area and placed as part of the Frost Protection layer. Measurements will be made for the number of cubic yards placed and compacted in accordance with the Specifications based on quantity surveys of, or portions of, the completed Frost Protection layer. Quantity determinations from surveys shall be computed using average end area or prismatic computation methods.

Payment - Payment for *Frost Protection Fill Obtained from the B-Spoils Borrow Area* will be made at the applicable unit price bid for the number of cubic yards excavated and placed in accordance with the Specifications. The unit price bid for placement of Frost Protection Fill Obtained from the B-Spoils Borrow Area shall include all costs associated with excavation, hauling, placement of fill soils, labor, equipment, tools, surveys, and accessories utilized in performance of the Work.

E) ECC Fill Obtained from required ECC Excavation:

Measurement - Measurement for payment for *ECC Fill Obtained from required ECC Excavation* will be made for the number of cubic yards excavated from the East Canyon Creek Channel realignment and placed as required fill or ECC toe apron backfill. Measurement will be made for the number of cubic yards of fill or toe apron backfill placed and compacted in accordance with the Specifications based on quantity surveys of, or portions of, the completed East Canyon Creek channel realignment. Quantity determinations from surveys shall be computed using average end area or prismatic computation methods.

Payment - Payment for *ECC Fill Obtained from required ECC Excavation* will be made at the applicable unit price bid for the number of cubic yards excavated and placed in accordance with the Specifications. The unit price bid for placement of ECC Fill Obtained from required ECC Excavation shall include all costs associated

with excavation, hauling, placement of fill soils, labor, equipment, tools, surveys, and accessories utilized in performance of the Work.

F) Excavation and Backfill of Above-Grade Tailings Toe Aprons:

Measurement - Measurement for payment for *Excavation and Backfill of Above-Grade Tailings Toe Aprons* will be made for the number of cubic yards excavated and backfilled for construction of the Toe Apron. Measurement will be made for the number of cubic yards of fill or backfill placed and compacted in accordance with the Specifications based on quantity surveys of , or portions of, the completed toe apron. Quantity determinations from surveys shall be computed using average end area or prismatic computation methods.

Payment - Payment for *Excavation and Backfill of Above-Grade Tailings Toe Aprons* will be made at the applicable unit price bid for the number of cubic yards excavated and placed in accordance with the Specifications. The unit price bid for Excavation and Backfill of Above-Grade Tailings Toe Aprons shall include all costs associated with excavation, hauling, stockpile, placement of backfill, labor, equipment, tools, surveys and accessories utilized in performance of the Work.

7.2 Earthwork - Heap Leach Area

This Section covers specific earthwork to be completed in the Heap Leach and GHP No. 2 Areas of Umetco's East Gas Hills site.

The Drawings, erosion protection material quantities, and earthwork quantities assume a conceptual cover constructed over the existing GHP No. 2 Area. Earthwork for construction of the reclamation cover over GHP No. 2 is not included in these Contract Specifications. The final reclamation cover for GHP No. 2 is dependent upon regulatory termination of the groundwater corrective action plan and the final volume of contaminated materials to be placed in the pond prior to construction of the reclamation cover. Accordingly, the earthwork requirements specified in this Section for the GHP

No. 2 area assume the conceptual reclamation cover is constructed and cover only the earthwork items associated with placement of erosion protection materials.

7.2.1 Complete Frost Protection Cover Layer in Heap Gap Area

Completion of the Frost Protection layer in the heap gap area involves placement of Frost Protection Soil utilizing materials obtained from required excavation of the ECC Channel realignment or soil obtained from the B-spoils borrow area.

Suitable soils obtained from required excavation of the East Canyon Creek Channel relocation or the B-Spoils borrow area shall consist of clayey and/or silty sand, classified as SC and/or S-SM in accordance with the Unified Soil Classification System. Soils used for construction of the Frost Protection layer shall be free of lumps or rock fragments larger than one-half of the lift thickness, brush, roots, sod , or other perishable or unsuitable materials.

Frost Protection soils shall be placed in equal continuous layers not exceeding 12-inches compacted depth and compacted to a minimum of 95 percent of maximum density (ASTM D698), and at a water content above minus 2 percent of optimum.

Borrow soils obtained from the B-Spoils Borrow Area shall meet the requirements for Frost Protection soils described above and shall be excavated in accordance with Section 7.2.2.

The placement areas and thickness for the Frost Protection layer are shown on the Drawings and will be established by the Engineer in the field. Distribution and gradations of materials in each layer will be, as far as practicable, free of lenses, pockets, streaks, or layers of material differing substantially in texture, gradation or moisture content from surrounding materials.

If the compacted surface of any layer of fill is too dry or smooth to bond properly with the layer of material to be placed thereon, it will be moistened and/or reworked with a harrow, scarifier, or other suitable equipment to a sufficient depth to provide a relatively uniform moisture content and a satisfactory bonding surface before the next layer of earthfill is placed.

If the compacted surface of any layer of earthfill in place is too wet, i.e., due to precipitation, for proper compaction of the earthfill material to be placed thereon, it will be allowed to dry, or reworked with a harrow, scarifier, or other suitable equipment to reduce the moisture content to the required level. The area will then be recompact to the specified density established in this section.

No material will be placed in the fill layer when the materials on which the new material is to be placed is frozen or when ambient temperatures do not permit the placement or compaction of soils to the specified density without developing frost lenses in the fill.

The top of the Frost Protection layer shall be graded to within +0.1 foot of the design elevations shown on the Drawings or as determined by Umetco in the field. The in-place thickness of the Frost Protection layer shall be equal to or greater than 100 percent of the design thickness shown. Verification of the radon barrier layer thickness will be determined by the QC Officer from information collected from QC surveys and test excavations.

If the QC Officer determines from applicable quality control verification survey data that the work is not in compliance with these specifications, the work shall be brought into compliance with the specifications. Quality control testing to verify compliance shall consist of the following:

- Thickness verification
- Moisture and Density
- As- Built Survey
- Desiccation

7.2.2 Borrow Soils Obtained from B-Spoils Borrow Area

Borrow materials used for construction of Frost Protection Layers shall be free of lumps or rocks larger than one-half of the specified lift thickness, brush, roots, sod or other perishable or unsuitable materials.

A significant volume of soils obtained from the B-Spoils Borrow Area have radiological characteristics which are unsuitable for cover construction. Radiologically elevated soils contained in the B-Spoils Borrow Area consist of naturally occurring materials which are not "11e.(2)" contaminated materials to be disposed of. Borrow excavations will be continuously monitored by Umetco in the field. Determination will be made on a load by load basis as to the radiological and characteristic suitability of the borrow materials. A procedure will be developed with the Contractor and Umetco site personnel that provides for continuous monitoring of the excavation while minimizing, to the extent practicable, disruption of the borrow operation.

For the most part radiologically elevated (naturally occurring) materials which are present in the B-Spoils Borrow Area occur in isolated pods and at times small clusters of loosely cemented rock. Upon initial scanning of this material it may appear that the radiologically elevated materials are wide spread and unsuitable for cover construction while post handling measurements may indicate that the radiological characteristics of the material are suitable.

To optimize the use of material from the B-Spoils Borrow Area, the Contractor will be required to mix or blend borrow soils during or prior to excavation. Previous experience with this material has demonstrated that excavation and loading of soils using elevating

(paddle wheel) scrapers works extremely well. Alternative methods for blending of these soils, other than the use of elevating scrapers, may be proposed by the Contractor and utilized provided acceptable (like) results are obtained. The goal of mixing and blending is, to the extent practical, excavate and load borrow materials in a manner that results in the placement of a homogenous soil for cover construction.

Unsuitable materials excavated at Umetco's direction from the B-Spoils Borrow Area will be placed or stockpiled in accordance with Section 7.3.1.

7.2.3 Excavation and Backfill of Toe Aprons

Below-grade erosion protection material (toe aprons) shall be constructed to protect the reclaimed tailings embankments and channels from gully headcutting. The location and dimensions of the toe aprons are shown on the Drawings. Requirements for subgrade preparation and placement of erosion protection material are contained in Section 6 of these Specifications.

Soils excavated for construction of the toe aprons shall be used as backfill once erosion protection materials have been placed and accepted. The Contractor shall minimize the time frame in which excavations for construction of the toe aprons are left open and shall repair, at the expense of the Contractor, damage to open excavations as a result of stormwater runoff, sloughing, etc.

Backfill of the toe apron excavation shall be to the final grades shown on the Drawings or as modified by the Engineer in the field. Backfill soils shall not include lumped soil, rock fragments larger than one-half the lift thickness, organic matter, or any other materials that would preclude adequate compaction. Fill materials used for backfilling shall be placed in maximum lift thickness of 12 inches (compacted thickness) and shall be compacted to a minimum of 95 percent of the maximum density (ASTM D698) at a moisture content greater than minus 2 percent of optimum moisture content.

7.2.4 Measurement and Payment

Due to the uncertainties associated with the final configuration of the GHP No. 2 Area and radiological characteristics of materials for required excavations and borrow soils, Umetco makes no warranty as to the estimated quantities of earthwork. Various pay items have been included in these Specifications to address unforeseen soil conditions even though it is not likely these pay items will be utilized. The combined estimated quantities provided in the bid schedule provide an accurate representation of the total magnitude of earthwork to be performed. However, the actual portions of suitable and unsuitable materials to be handled have been estimated based on engineering judgment and experience at this site. Accordingly, no adjustment will be made in the Unit Prices Bid for a particular item of earthwork as a result of significant increase or decrease in the estimated quantities provided.

Measurement and payment for earthwork items specified in Section 7.2, Heap Leach Area, shall be made as follows:

A) Frost Protection Fill Obtained from ECC Excavation:

Measurement - Measurement for payment for *Frost Protection Fill Obtained from ECC Excavation* will be made for the number of cubic yards excavated from the East Canyon Creek Channel realignment and placed as part of the Frost Protection Layer of the Heap Leach reclamation cover. Measurement will be made for the number of cubic yards placed in accordance with the Specifications based on quantity surveys of, or portions of, the completed Frost Protection Layer. Quantity determinations from Surveys shall be computed using average end area or prismatic computation methods.

Payment - Payment for *Frost Protection Fill Obtained from ECC Excavation* will be made at the applicable unit price bid for the number of cubic yards excavated and placed in accordance with the Specifications. The unit price bid for placement of Frost Protection Fill Obtained from ECC Excavation shall include all costs associated

with excavation, hauling, placement of fill soils, labor, equipment, tools, surveys, and accessories utilized in performance of the Work.

B) Frost Protection Fill Obtained from B-Spoils Borrow Area:

Measurement - Measurement for payment for *Frost Protection Fill Obtained from the B-Spoils Borrow Area* will be made for the number of cubic yards excavated from the B-Spoils Borrow Area and placed as part of the Frost Protection layer. Measurements will be made for the number of cubic yards placed and compacted in accordance with the Specifications based on quantity surveys of, or portions of, the completed Frost Protection layer. Quantity determinations from surveys shall be computed using average end area or prismatic computation methods.

Payment - Payment for *Frost Protection Fill Obtained from the B-Spoils Borrow Area* will be made at the applicable unit price bid for the number of cubic yards excavated and placed in accordance with the Specifications. The unit price bid for placement of Frost Protection Fill Obtained from the B-Spoils Borrow Area shall include all costs associated with excavation, hauling, placement of fill soils, labor, equipment, tools, surveys, and accessories utilized in performance of the Work.

C) Excavation and Backfill of Heap Leach and GHP No. 2 Toe Aprons:

Measurement - Measurement for payment for *Excavation and Backfill of Heap Leach and GHP No. 2 Toe Aprons* will be made for the number of cubic yards excavated and backfilled for construction of the Toe Apron. Measurement will be made for the number of cubic yards of fill or backfill placed and compacted in accordance with the Specifications based on quantity surveys of, or portions of, the completed toe apron. Quantity determinations from surveys shall be computed using average end area or prismatic computation methods.

Payment - Payment for *Excavation and Backfill of Heap Leach and GHP No. 2 Toe Aprons* will be made at the applicable unit price bid for the number of cubic yards

excavated and placed in accordance with the Specifications. The unit price bid for Excavation and Backfill of Heap Leach Toe Aprons shall include all costs associated with excavation, hauling, stockpile, placement of backfill, labor, equipment, tools, surveys, and accessories utilized in performance of the Work.

7.3 Earthwork - B-Spoils Borrow Area Reclamation

This Section covers specific earthwork to be completed in the B-Spoils Borrow Area of Umetco's East Gas Hills site.

7.3.1 Unsuitable Excavation from B-Spoils Borrow Area

Unsuitable materials for construction of Frost Protection Layers excavated at Umetco's direction from the B-Spoils Area will be placed or stockpiled at specific locations established by Umetco within the limits of the B-Spoils Borrow Area. Although these materials are not suitable for construction of repository cover construction they will be utilized as part of the cut and fill grading of the B-Spoils Borrow Area Reclamation specified in Section 7.3.2.

7.3.2 Cut and Fill Grading of B-Spoils Borrow Area

The Contractor shall perform cut and fill grading to the lines and grades established on the Drawings or as modified by the Engineer in the field.

The Contractor shall be aware that old mining debris such as tires, old pieces of equipment, wood, metal, etc., although not expected, may be encountered. If encountered, they will be disposed of as directed by the Engineer. Any on-site potentially hazardous material unearthed by the Contractor shall be brought to the immediate attention of Umetco.

The contractor shall be aware that large rocks and boulders may be encountered during excavation. These rocks and boulders shall be pushed together forming "Habitat Piles" as

directed by the Engineer. All large rocks and boulders determined to be unsuitable for "Habitat Piles" shall be disposed of as directed by the Engineer.

When placing excavated materials as part of cut and fill grading, each lift shall be placed in approximately horizontal layers, leveled and smoothed using suitable leveling equipment to a thickness of approximately 12 inches uncompacted. The Contractor shall conduct the placement in such a manner, as approved by the Engineer, to obtain the maximum wheel rolling by earth hauling equipment as practical. Equipment shall be routed over these layers to distribute the equipment traffic evenly over the exposed fill areas. Accurate trimming of fill slopes will not be required but the slopes shall be constructed reasonably close (+ 0.5 feet) to the established lines and grades as shown on the Drawings or as established by the Engineer in the field.

7.3.3 Drainage Channel Construction

The drainage channel shall be constructed to the lines and grades shown on the Drawings or as modified by the Engineer in the field.

Where fill materials are needed, within the channel section, soils shall be constructed in 12 inch maximum lifts and compacted to at least 95% of the maximum density (ASTM D698) at a moisture content necessary to achieve the required density. Cut areas within the channel section shall be proof rolled with at least 3 passes of a smooth drum roller or equivalent approved by the Engineer.

7.3.4 Cover Soil Placement

Cover soils consist of native topsoil and subsoil suitable for the growth of grass or other cover crops. Cover soils to be placed over the regraded B-Spoils area are located in stockpiles within the B-Spoils area construction limits.

The Contractor shall excavate cover soils from the existing stockpiles and place to the limits and thickness established by the Engineer in the field. The Engineers discretion

regarding the extent of coversoil placement will be based on the volume and quality of coversoils available.

7.3.5 Revegetation

This work shall consist of furnishing all labor, equipment and materials necessary to complete the application and incorporation of agricultural lime, disking and seeding and all other associated agronomic activities required by these Specifications.

7.3.5.1 Agricultural Lime

The agricultural lime shall be applied after the area has been graded and cover soil placed in accordance with Section 7.3.4.

Agricultural lime shall be spread evenly on the soil surface at a rate established by the Engineer. Agricultural lime shall be uniform in composition and shall contain a minimum calcium carbonate equivalence of eighty percent (80%), and it shall have a maximum particle size of one hundred (100) mesh (U.S. Standard Sieve).

The Contractor may use spent lime which is a by-product of the sugar beet processing industry as long as it meets these Specifications and is uniform in composition. It shall be the responsibility of the Contractor to ensure that the agricultural lime material does not contain large segregated quantities of soil.

Agricultural lime shall be applied to the soil surfaces on the areas designated by the Engineer at the rates designated by the Engineer. Application equipment shall be specifically designed for such work and operated by experienced personnel.

Incorporation of applied agricultural lime into the soil shall be accomplished by disking, or other approved methods, within 12 hours after application to the soil surface. The Contractor is responsible for all lime which is lost due to wind or water erosion or mis-handling of materials on-site. Disking shall be to a minimum depth of 6 inches parallel

with the contour using a double gang disk with a minimum diameter of 24 inches, or any other implement which is suitable for completion of this work and is approved by the Engineer. The disking operation shall produce soil conditions which provide a suitable seed bed acceptable for plant growth. The Contractor is advised that multiple passes by the disk may be necessary in order to achieve adequate incorporation or acceptable seed bed as required by these specifications.

7.3.5.2 Seeding

Seeding shall be completed in accordance with these Specifications after disking has been completed by the Contractor and accepted by the Engineer.

The following seed mixture shall be applied to all areas to be reclaimed within the project area. Material substitutions will not be allowed unless the Contractor can demonstrate to the satisfaction of the Engineer that the specified species or variety is not obtainable. All substitutions must be approved by the Engineer prior to mixing of the seed.

Scientific Name	Common Name	lbs. PLS/Acre
Agropyron smithii	Western Wheatgrass	4.00
Agropyron dasystachyum	Thickspike Wheatgrass	3.00
Agropyron riparium	Streambank Wheatgrass	3.00
Oryzopsis hymenoides	Indian Ricegrass	3.00
Festuca ovina	Sheep Fescue	1.00
Sporobolus cryptandrus	Sand Dropseed	0.50
Chrysothamnus nauseosus	Rubber Rabbitbrush	0.50
Artemisia tridentata	Big Sagebrush	0.25
Atriplex confertifolia	Shadscale Saltbrush	1.00
Atriplex gardneri	Gardner Saltbrush	1.00
Astragalus cicer	Cicer Milkvetch	1.00
Ceratoides lanata	Winterfat	1.00
Linum lewisii	Lewis Flax	0.50

The total percentage (%) of crop seed shall not exceed three percent (3%) by weight. The species and varieties of seed, or blends of seeds, shall furnish the Pure Live Seed (PLS) at the rates as called for in the above seed mixture. No seed which has less than eighty five

percent (85%) pure seeds or less than eighty percent (80%) live seed shall be used unless otherwise approved by the Engineer.

Seeding shall be completed in accordance with these Specifications after disking has been completed by the Contractor and accepted by the Engineer.

Prior to general seeding activities, test plots shall be established for the initial seeding in order to calibrate the mechanical seeder and ensure proper seed application rate. Initial calibration is the responsibility of the Contractor and shall be done in the presence of the Engineer. Maintaining the proper seed application rate shall be the responsibility of the Contractor. Periodic calibration tests of the seeding equipment may be required as determined necessary by the Engineer.

The specified seed mix shall be uniformly distributed with a mechanical device specifically designed for such work and the ground thoroughly raked or dragged immediately after seeding to cover the seed with approximately (0.25") inch of soil. Raking or dragging will be done parallel to the contour with suitable equipment approved by the Engineer.

7.3.6 Measurement and Payment

Measurement and payment of earthwork specified in Section 7.3, B-Spoils Area Reclamation, shall be made as follows:

A) Unsuitable Excavation - B-Spoils Borrow Area:

Measurement - Measurement for payment for *Unsuitable Excavation - B-Spoils Borrow Area* shall be made for the number of cubic yards of unsuitable soil excavated from the B-Spoils Borrow Area and stockpiled or placed at locations within the B-Spoils Borrow Area as directed by Umetco. Quantities for this item will be based on either load count of unsuitable material relocated within the B-Spoils area or survey measurement of lift or stockpile of material placed in the B-Spoils Borrow Area.

Appropriate load factors (volume of unsuitable material per load) will be determined and approved in writing by Umetco for all various equipment transporting material within the Borrow Area prior to performance of work. Verification of load factors will be made by Umetco during execution of work with subsequent adjustment to the load factors if necessary. No allowance will be made for overbuild or temporary stockpiling of material prior to placement unless otherwise approved in writing by Umetco.

Payment - Payment for *Unsuitable Excavation - B-Spoils Borrow Area* shall be made for the number of cubic yards of soils excavated, transported and placed within the B-Spoils Borrow Area. The unit price bid per cubic yard shall include all costs associated with excavation of unsuitable material, stripping of topsoil, stockpiling, transportation, surveys, and placement as directed by Umetco in the field.

B) Cut and Fill Grading of B-Spoils Borrow Area :

Measurement - Measurement for payment for *Cut and Fill Grading of B-Spoils Borrow Area* will be made for the number of cubic yards excavated and placed as required. Measurement will be made for the number of cubic yards placed and compacted in accordance with the Specifications based on quantity surveys of, or portions of, the completed grading of the B-Spoils Borrow Area. Quantity determinations from surveys shall be computed using average end area or prismatic computation methods.

Payment - Payment for *Cut and Fill Grading of the B-Spoils Borrow Area* will be made at the applicable unit price bid for the number of cubic yards placed in accordance with the specifications. The unit price bid for Cut and Fill Grading of the B-Spoils Borrow Area shall include all costs associated with excavation, hauling, placement of fill soils, labor, equipment, tools, surveys, and accessories utilized in performance of the Work. No additional allowance will be made for additional compaction requirements in the channel area.

C) Cover Soil Placement:

Measurement - Measurement for payment for *Cover Soil Placement* will be made for the number of cubic yards of cover soil placed in accordance with the Specifications. Measurement will be made for the number of cubic yards placed and compacted in accordance with the Specifications based on quantity surveys of, or portions of, the completed area of cover soil placement. Quantity determinations from surveys shall be computed using average end area or prismatic computation methods.

Payment - Payment for *Cover Soil Placement* will be made at the applicable unit price bid for the number of cubic yards of coversoils placed in accordance with the Specifications. The unit price bid for Cover Soil Placement shall include all costs associated with excavation of cover soils from stockpiles, hauling, placement, labor, equipment, tools, surveys, and accessories utilized in performance of the Work.

D) Agricultural Lime:

Measurement - Measurement for payment for *Agricultural Lime* will be made for the number of tons of Agricultural Lime incorporated (disked) into the cover soils in accordance with the Specifications. Quantity determinations will be made based on weight tickets of agricultural lime delivered to the site less calculated loss due to wind, water erosion, or mis-handling of materials on-site, if applicable.

Payment - Payment for *Agricultural Lime* will be made at the number of tons of agricultural lime delivered to the site and incorporated into the cover soils in accordance with the Specifications. The unit price bid for Agricultural Lime shall include all costs associated with material procurement, hauling, handling, spreading, disking, labor, equipment, tools, surveys, and accessories utilized in performance of the Work.

E) Revegetation (Seeding):

Measurement - Measurement for payment for *Revegetation (Seeding)* will be made at the applicable unit price bid for the number of acres seeded in accordance with the Specifications. Measurement will be made for the number of acres seeded in accordance with the Specifications based on area surveys. The total area seeded will be measured to the nearest tenth acre.

Payment - Payment for *Revegetation (Seeding)* will be made at the applicable unit price bid for the number of acres seeded in accordance with the Specifications. The unit price bid for *Revegetation (Seeding)* shall include all costs associated with seed procurement, transportation, handling, application, labor, equipment, surveys, tools and accessories utilized in performance of the Work.

7.4 Earthwork - A-9 Area

This Section covers specific earthwork to be completed in the A-9 Area of Umetco's East Gas Hills site.

The Drawings, erosion protection quantities, and earthwork quantities assume a conceptual reclamation cover constructed on the A-9 Repository, backfill of the C-18 pit and grading of the North and South Evaporation ponds. Earthwork associated with reclamation cover on the A-9 Repository, backfill of the C-18 pit and grading of the North and South Evaporation ponds is not included in these Contract Specifications. The final reclamation cover configuration for the A-9 Repository cover is dependent upon regulatory resolution of radiological background values for this site with subsequent determination of the final volume of waste materials to be placed in the A-9 Repository prior to cover construction. Accordingly, the earthwork requirements specified in this Section for the A-9 Area assume the conceptual reclamation cover is constructed and cover only the earthwork items associated with placement of erosion protection material.

7.4.1 Excavation and Backfill of Toe Aprons

Below-grade erosion protection material (toe aprons) shall be constructed to protect the reclaimed tailings embankments and channels from gully headcutting. The location and dimensions of the toe aprons are shown on the Drawings. Requirements for subgrade preparation and placement of erosion protection material are contained in Section 6 of these Specifications.

Soils excavated for construction of the toe aprons shall be used as backfill once erosion protection materials have been placed and accepted. The Contractor shall minimize the time frame in which excavations for construction of the toe aprons are left open and shall repair, at the expense of the Contractor, damage to open excavations as a result of stormwater runoff, sloughing, etc.

Backfill of the toe apron excavation shall be to the final grades shown on the Drawings or as modified by the Engineer in the field. Backfill soils shall not include lumped soil, rock fragments larger than one-half the lift thickness, organic matter, or any other materials that would preclude adequate compaction. Fill materials used for backfilling shall be placed in maximum lift thickness of 12 inches (compacted thickness) and shall be compacted to a minimum of 95 percent of the maximum density (ASTM D698) at a moisture content greater than minus 2 percent of optimum moisture content.

7.4.2 Measurement and Payment

Due to the uncertainties associated with the final configuration of the A-9 Area, Umetco makes no warrantee as to the estimated quantities of earthwork. Accordingly, no adjustment will be made in the Unit Prices Bid for a particular item of earthwork as a result of significant increase or decrease in the estimated quantities provided herein.

Measurement and payment for earthwork items specified in Section 7.4 shall be made as follows:

A) Excavation and Backfill of A-9 Toe Aprons:

Measurement - Measurement for payment for *Excavation and Backfill of A-9 Toe Aprons* will be made for the number of cubic yards excavated and backfilled for construction of the Toe Aprons. Measurement will be made for the number of cubic yards of fill or backfill placed and compacted in accordance with the Specifications based on quantity surveys of, or portions of, the completed toe aprons. Quantity determinations from surveys shall be computed using average end area or prismatic computation methods.

Payment - Payment for *Excavation and Backfill of A-9 Toe Aprons* will be made at the applicable unit price bid for the number of cubic yards excavated and placed in accordance with the Specifications. The unit price bid for Excavation and Backfill of the A-9 Toe Aprons shall include all costs associated with excavation, hauling, stockpile, placement of backfill, labor, equipment, tools, surveys, and accessories utilized in performance of the Work.

7.5 Disposal of Contaminated Soils in A-9 Repository

Performance of required excavation at this site may result in the discovery of soils that are radiologically unsuitable for cover construction or the specified use of the excavated soils. Radiologically elevated soils encountered in performance of required excavation may be characteristic of 11e.(2) (tailings) contaminated materials as determined by Umetco.

It is not anticipated that significant volumes of 11e.(2) characteristic material will be encountered in required excavation. Excavations will be continuously monitored by Umetco in the field. The determination will be made on a load by load basis as to the radiological and characteristic suitability of excavated material. A procedure will be developed with the Contractor and Umetco site personnel that provides for continuous monitoring of the excavation while minimizing, to the extent practicable, disruption of the excavation operation.

Contaminated soils, as determined by Umetco, will be disposed of in the A-9 Repository to the lines and grades established by Umetco in the field. Dependent upon the extent and nature of contaminated materials encountered during performance of required excavation it may be necessary for the Contractor to dedicate specific pieces of equipment to excavation and transport of contaminated materials to the A-9 Repository. Equipment used for excavation and transport of contaminated materials to the A-9 Repository will be monitored to ensure suitable materials and clean areas of the site are not affected. It is likely that equipment transporting contaminated material to the A-9 Repository will need to be decontaminated prior to entering or hauling suitable materials. Umetco will determine on a case by case basis as to the need and extent of equipment decontamination required.

7.5.1 Measurement and Payment

Due to the uncertainties associated with the volume of contaminated material to be placed in the A-9 Repository, Umetco makes no warrantee as to the estimated quantities for this item of work. Accordingly, no adjustment will be made in the Unit Prices Bid for a particular item of earthwork as a result of significant increase or decrease in the estimated quantities provided herein.

Measurement and payment for earthwork items specified in Section 7.5 shall be made as follows:

Disposal of Contaminated Soils in A-9 Repository:

Measurement - Measurement for payment for *Disposal of Contaminated Soils in A-9 Repository* shall be made for the number of cubic yards of unsuitable material excavated from required excavation and placed in the A-9 Repository. Quantities for this item will be based on either load count of unsuitable material transported to the A-9 Repository or survey measurement of lift or stockpile of material placed in the A-9 Repository. Appropriate load factors (volume of unsuitable material per load) will

be determined and approved by Umetco for the various types of equipment transporting material to the A-9 Repository prior to performance of the work. Verification of load factors will be made by Umetco during execution of work with subsequent adjustment to the load factors, if necessary. No allowance will be made for overbuild or temporary stockpiling of material prior to placement unless otherwise approved in writing by Umetco.

Payment - Payment for *Disposal of Contaminated Soils in A-9 Repository* will be made for the number of cubic yards of soil excavated, transported and placed in the A-9 Repository as directed by Umetco. The unit price bid for disposal of Contaminated Soils in the A-9 Repository shall include all costs associated with excavation, stockpiling, transportation, decontamination, surveys, and placement to the lines and grades established by Umetco in the field.

8.0 ABANDONMENT OF THE HEAP LEACH DRAINS

The drain system for the Heap Leach embankment shall be abandoned by grouting prior to placement of erosion protection materials. The drain system consists of a series of perforated pipes beneath the original Heap Leach embankment which are connected to 3 collection pipes which will be grouted.

Grouting of the 3 collection pipes shall be accomplished in accordance with the following procedure or alternative methodology proposed by the Contractor and approved by Umetco.

8.1 Grouting Plan

The 3 solid collection pipes shall be excavated, 4 to 5 feet in depth, at the location determined by Umetco for abandonment. This location will be near the toe of the reclaimed Heap Leach facility. Two of the collection pipes are currently dry, the third discharges less than 0.25 gpm. The collection lines shall be excavated and removed from the point of abandonment to the existing discharge location, approximately 2000 feet.

The grout shall be injected from both a primary line and a secondary line. The primary line will be attached to an injection nipple located just inside the downstream end of the drain pipe. The secondary line will be inserted into the drain pipe as far as possible. The secondary grout line will be 1-inch in diameter and will be placed first. It will be inserted from the downstream end of the drain pipe and into the drain pipe as far as possible by means of pushing by hand. After the secondary line has been installed, a bulkhead will be placed at the downstream end of the drain pipe. The primary grout line will be attached to a 1-inch injection nipple which will be placed through the bulkhead.

The grout will be placed from the downstream end of the pipe first and will proceed upstream to avoid the entrapment of air. Thus, grout will be injected through the primary grout line which is attached to the nipple and located just inside the bulkhead. Grout will be injected through this primary line until the grout reaches the end of the secondary grout line. Then, the secondary grout line will be used to inject grout to the rest of the drain pipe. The secondary grout line will remain in-place and will be filled with grout. This procedure will be performed at each of the drain lines. The minimum volume of grout to be injected into each of the three collection pipes shall be equal to the volume necessary to fill a 300 foot length of 4-inch diameter pipe or pressure refusal as established by the Engineer in the field.

This placement procedure will allow for pumping and monitoring the progression of the grout. However, if access does not permit the placement of the secondary grout line, the grout will be injected from the primary grout line at the bulkhead.

The injection grout shall be a combination of fly ash, cement and water which produces a flowable fill. The grout shall consist of a Type F fly ash cement slurry with low shrinkage. The water content of the injection grout will be approved by the Engineer in the field.

8.2 Measurement and Payment

Measurement and payment for *Abandonment of Heap Leach Drains* will be made at the Lump Sum price bid and shall include all costs associated with access excavations, materials, equipment, labor, tools necessary to complete the drain abandonment procedures in accordance with the Specifications.