

RAMACO

Brook Mine

Exhibit 67

Brook Mine 2015 Bond

Prepared by:
WWC Engineering

November 2015

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A. Summary

The following summarizes the reclamation performance bond cost estimate for RAMACO's Brook Mine. This bond estimate was established in accordance with Wyoming Department of Environmental Quality/Land Quality Division (WDEQ/LQD) Guideline 12 and includes all activities necessary for complete reclamation of the Brook Mine after the first year of mine production (year 0). This submittal includes all activities necessary for:

- Pit reclamation
- Reclamation of all disturbed lands,
- Environmental monitoring,
- Project management and miscellaneous costs, and
- Labor and equipment overhead and contractor profit.

The submittal presented herein employs assumptions that are based on best professional judgment given the data currently available. The total bond estimate puts the costs to perform the required work by an independent contractor at \$8,593,642 during which the Brook Mine would be reclaimed to a condition agreed upon by WDEQ/LQD that would take the site to its approved postmining land uses.

B. Bond Calculation

A summary of the reclamation bond is provided in Table 1. Reclamation activities included in this summary include area bond, incremental bond and other miscellaneous items associated with surface coal mine bond estimates.

C. Area Bond

The area bond covers the costs of backfilling and final grading pit TR-1 in accordance with the procedures established in the Reclamation Plan of the current permit. Reclamation bond was calculated for the anticipated condition of mining in the end of year 0 (2016) of operations. It is anticipated at this point the box cut for pit TR-1 will have progressed approximately halfway through the mining sequence. It is estimated during this period Carney coal

will have not yet been removed. Exhibit 1 depicts the projected pit configuration for the end of the 2016 year.

Projected bond topography is presented in the Exhibit 2. Overburden and interburden material is anticipated to be composed of reclaimed fill and pit consolidated interburden. The overburden for pit TR-1 is comprised of primarily reclaimed fill from historic mining operations. The reclaimed fill is located from above the bottom of the mined out Monarch coal seam to existing ground. Therefore, only the consolidated interburden material between the bottom of the Monarch seam and the top of the Carney coal seam was swelled for reclamation purposes. A swell factor of 16% was used in accordance with the estimate established in the Mine Plan of the current permit. Reclaimed fill and native overburden volumes were calculated using 3D grid files in AutoCAD. Details of the area bond calculations are provided in Table 2.

Backfill placement will likely be completed by dozer push method and/or push-pull scrapers. Rough grading is not expected as dozers and scrapers are capable of shaping topography to the approximate bond topography. Final grading and miscellaneous excavation and backfill for other areas around the mine will likely be implemented by motor graders and/or scrapers. Cost associated with final grading are depicted in Table 2.

D. Incremental Bond

The incremental bond covers all costs beyond those detailed in the area bond. Costs included in the incremental bond are miscellaneous overburden redistribution, demolition, removal of monitoring structures, scarification of all compacted surfaces, topsoil redistribution, and revegetation.

Minor overburden redistribution will be required for the reclamation of sediment ponds. It is assumed the cost for reclamation of sediment ponds will include the reclamation of the associated collector ditches. Table 3 displays the overburden redistribution calculations. The locations of overburden redistribution areas are depicted in Exhibit 1. Exhibit 2 depicts the bond

topography for the permit area. Dozer and scrapers likely will be used to complete this reclamation activity.

No demolition/removal costs are expected for culverts or other associated mining structures for year 0 of the mining sequence. Table 4 displays demolition costs associated with year 0 of mining.

The details for reclamation of groundwater monitoring, borehole sites and surface water monitoring sites are included in Table 5.

The estimated acreage for scarification of planned disturbance through year 0 is included in Table 6. Scarification of compacted surfaces will likely be completed with a motor grader, in accordance with WDEQ Guideline 12.

The redistribution of topsoil will likely be completed with scrapers and/or a combination of trucks, loaders, and dozers. A topsoil depth of 16 inches was used as the replacement depth for estimating purposes based on the depth presented in the Reclamation Plan. The volumes of topsoil redistribution are provided in Table 7. Topsoil redistribution is depicted in Exhibit 3.

The revegetation of all disturbed areas is detailed in Table 8. Revegetation costs were estimated at \$700 per acre based on other coal bond estimates. Once the mine is in operation a better value will be determined.

E. Miscellaneous Contingency Items

In accordance with the recommendations of WDEQ Guideline 12 several additional miscellaneous items will be part of the overall project cost. These costs include: project design by design firm; contractor profit, overhead, mobilization and demobilization; preconstruction investigation and stabilization; project management; on site monitoring; site security and liability insurance; project administration and accounting; and unknown costs. These miscellaneous items are detailed in Table 9.

F. Total Bond Estimate

The total estimated bond for the Brook Mine is depicted in Table 1. This total cost includes all direct and indirect costs in accordance with WDEQ Guideline 12. Exhibit 2 depicts the bond topography following reclamation of the Brook Mine.

Table 1. Reclamation Bond Summary through the end of Year 0 (2016).

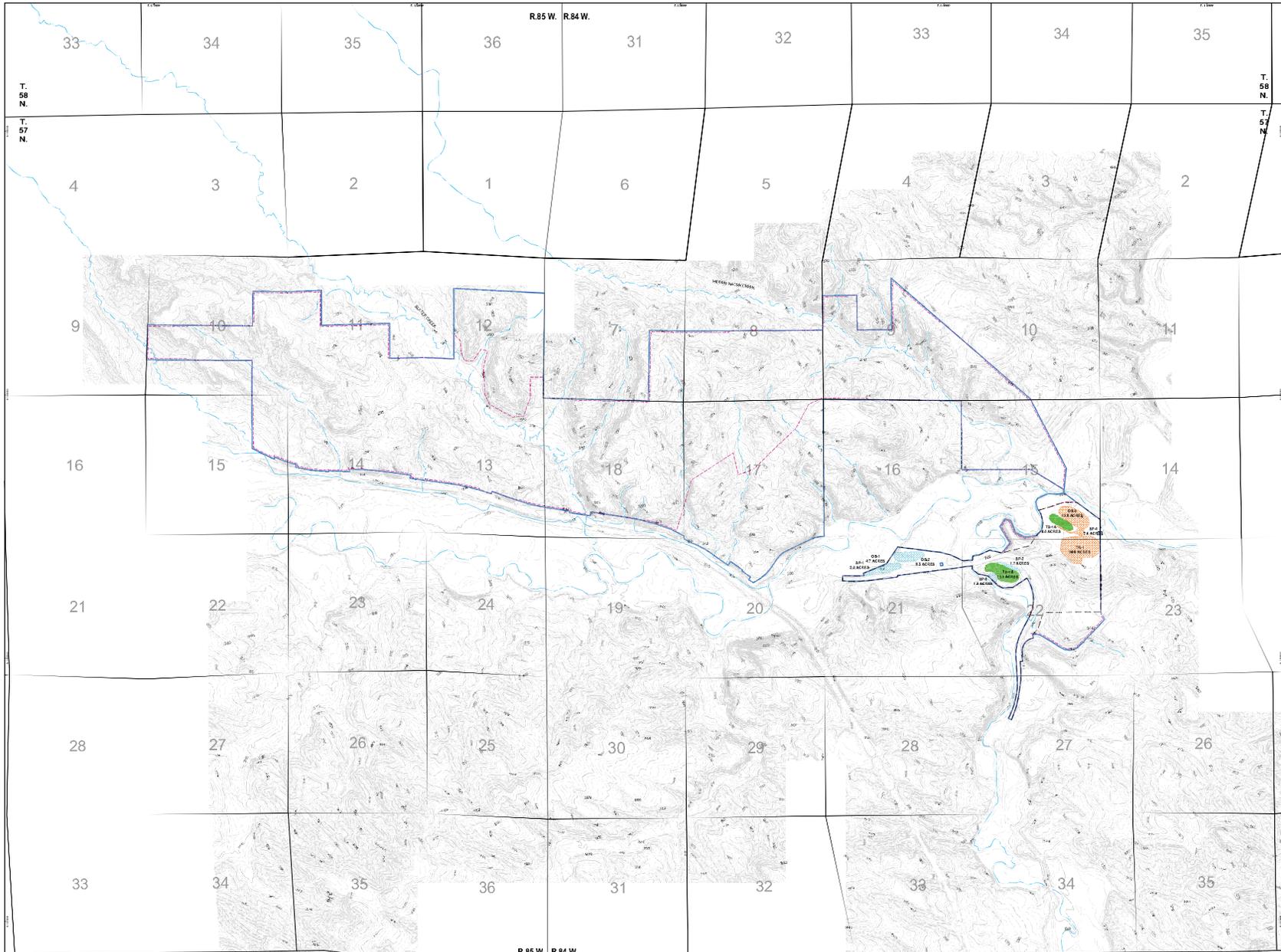
Item	Cost
Area Bond	
Backfill	\$ 6,113,757
Rough Grading Backfill	\$ -
Finish Grading	\$ 2,063
Area Bond Subtotal	\$ 6,115,820
Incremental Bond	
Overburden Redistribution	\$ 137,734
Demolition	\$ -
Environmental Monitoring	\$ 43,366
Scarification	\$ 5,756
Topsoil	\$ 251,338
Revegetation	\$ 56,630
Incremental Bond Subtotal	\$ 494,825
Reclamation Bond Subtotal	\$ 6,610,645
Miscellaneous Contingency	\$ 1,982,997
Total Estimated Bond	\$ 8,593,642

Table 2. Area Bond Estimate

Description	Unit	Base Quantity	Swell Factor	Final Quantity	Unit Cost	Subtotal	Comments
Pit TR-1 Backfill (Reclaimed Fill)	yd ³	1,878,426	100%	1,878,426	\$ 2.21	\$ 4,143,807.76	WDEQ/LQD Guideline 12, Appendix A, 992 Loader and 777 Truck, 1000 ft. distance, level grade. Also includes WDEQ/LQD Guideline 12, Appendix E, D9T Dozer, 200 ft. distance, level grade.
Pit TR-1 Backfill (Consolidated Interburden)	yd ³	769,824	116%	892,996	\$ 2.21	\$ 1,969,948.82	"
Total				2,771,422	\$ 2.21	\$ 6,113,756.58	"
Rough Grading Backfill	ac	-	-	0	\$ 70.92	\$ -	WDEQ/LQD Guideline 12, Appendix M, 854G Rubber Tire Dozer
Final Grading	ac	-	-	26.6	\$ 77.57	\$ 2,063.36	WDEQ/LQD Guideline 12, Appendix G, 16M Motor Grader
Total Area Bond Estimate						\$ 6,115,819.94	

Table 3. Overburden Redistribution Estimate

Description	Unit	Base Quantity	Swell Factor	Final Quantity	Unit Cost	Subtotal	Comments
Sediment Ponds							
Sediment Pond SP-1	yd ³	25,100	100%	25,100	\$ 1.39	\$ 34,964.30	WDEQ/LQD Guideline 12, Appendix E, D9T Dozer, 500 ft. distance, level grade.
Sediment Pond SP-2	yd ³	12,800	100%	12,800	\$ 2.23	\$ 28,595.20	WDEQ/LQD Guideline 12, Appendix C, 637G Scraper, 3,500 ft. distance, level grade.
Sediment Pond SP-4	yd ³	15,400	100%	15,400	\$ 1.39	\$ 21,452.20	WDEQ/LQD Guideline 12, Appendix E, D9T Dozer, 500 ft. distance, level grade.
Sediment Pond SP-5	yd ³	23,600	100%	23,600	\$ 2.23	\$ 52,722.40	WDEQ/LQD Guideline 12, Appendix C, 637G Scraper, 3,500 ft. distance, level grade.
Total				76,900		\$ 137,734.10	
Total Overburden Redistribution Estimate						\$ 137,734.10	



R.85 W. R.84 W.		R.85 W. R.84 W.		R.85 W. R.84 W.	
		R.85 W. R.84 W.			

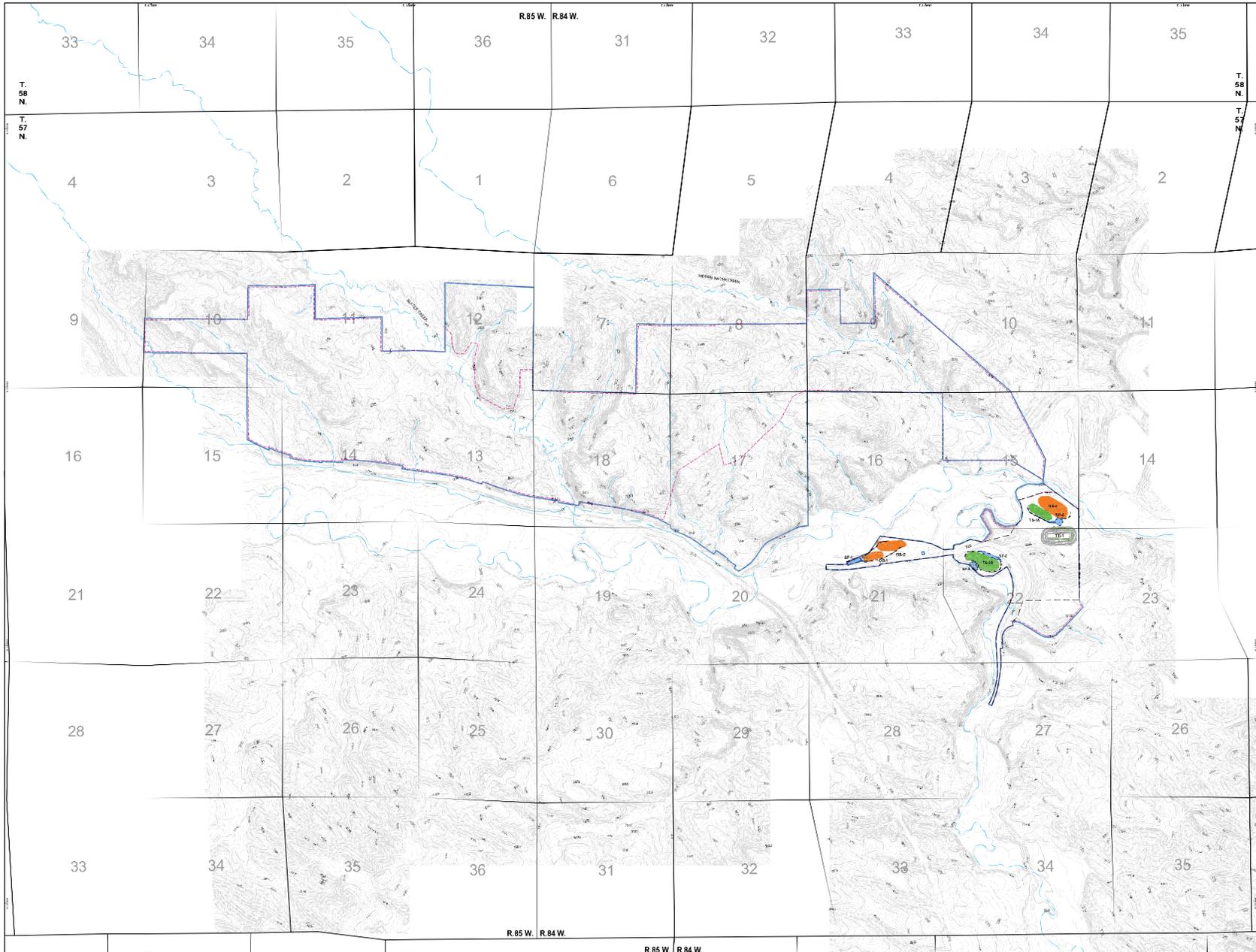
LEGEND

- BROOK MINE SECTION

RAMACO		BROOK MINE	
3100 S.W. 10th Ave. Suite 200 Shelton, VT 05783		3100 S.W. 10th Ave. Suite 200 Shelton, VT 05783	
EXHIBIT 3		2015 BOND	
TOPSOIL REDISTRIBUTION AREAS			
DATE: DCU		DATE: DCU	
DRAWN: JDP		DRAWN: JDP	
BY: JDP		BY: JDP	
DATE: 12/15/15		DATE: 12/15/15	

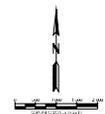
CONFIDENTIAL AND PROPRIETARY

Brook 013427



LEGEND

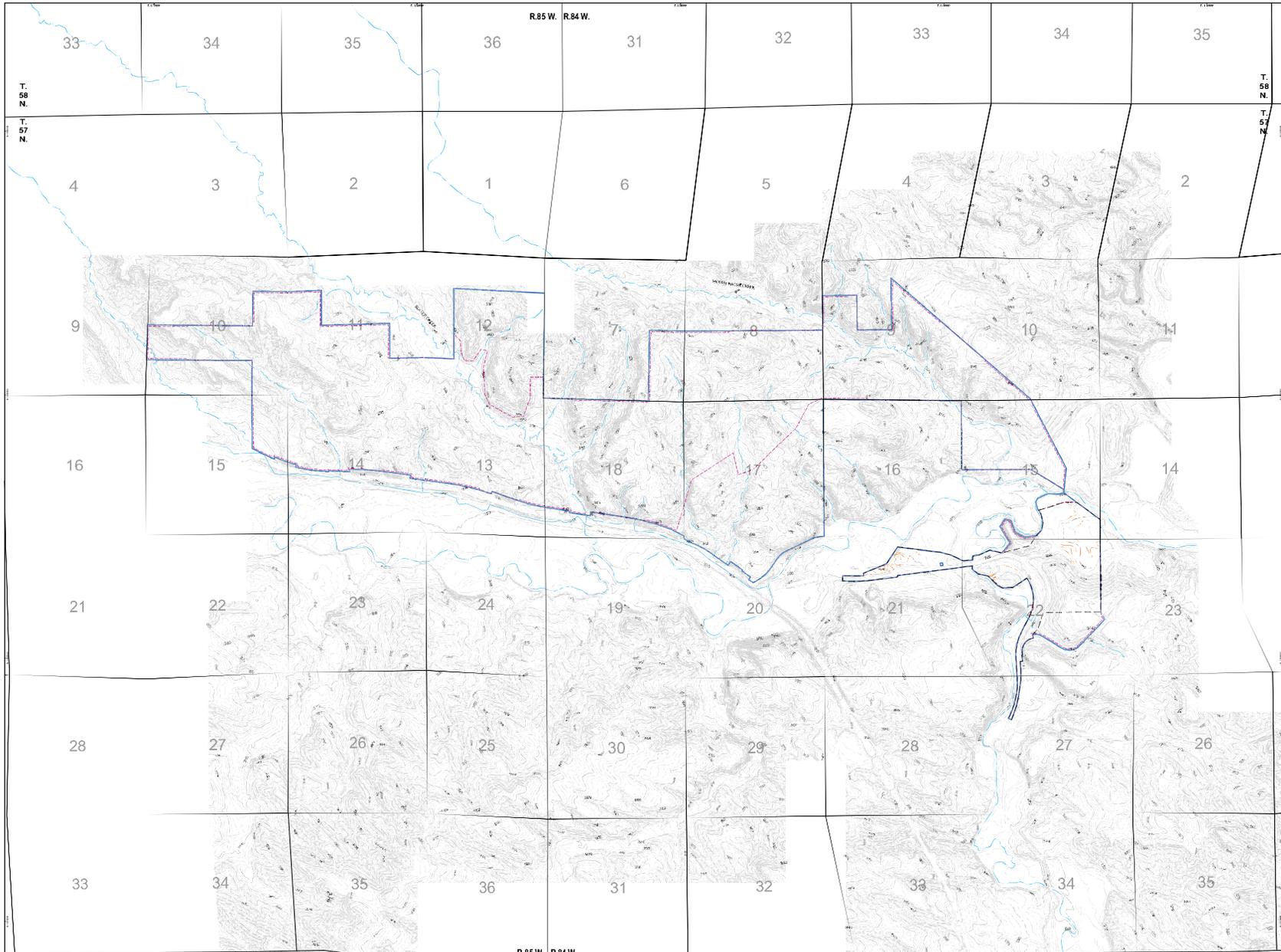
- 100' BUFFER DISTANCE
- 50' BUFFER DISTANCE
- PROPERTY LINE
- 100' DISTURBANCE PERM
- DISTURBANCE PERM
- 100' BUFFER PERM
- 100' BUFFER PERM



RAMACO		BROOK MINE	
3100 S.W. 10th St., Suite 200 Shelton, VT 05783		3100 S.W. 10th St., Suite 200 Shelton, VT 05783	
REVISIONS		EXHIBIT 1	
NO.	DATE	2015 BOND	
		END OF YEAR 0 DISTURBANCE	
DRW BY	DCU		
CHECKED BY	JSP		
DATE	10/28/15		
BY	REC/309		

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Brook 013428



LEGEND				BROOK MINE SPEC. ENG. CONSULTANTS, INC. 3100 S.W. 10th Ave., Suite 303 Miami, FL 33135
—	—			
—	—		DATE: DCU DRAWN: JSP BY: TSP/ST	

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Brook 013429

Table 4. Demolition Estimate

Description	Unit	Final Quantity	Unit Cost	Subtotal	Comments
Fences	lf	NA	\$ 2.00	-	WDEQ/LQD Guideline 12, Appendix H.
Powerlines	lf	NA	\$ 0.38	-	"
Hard-surfaced roads	ac	NA	\$871.04	-	WDEQ/LQD Guideline 12, Appendix I.
Bridges	ea	NA		-	"
Abandoned Equipment	ea	NA		-	
Railroad	lf	NA	\$ 8.78	-	WDEQ/LQD Guideline 12, Appendix K.
Facility Buildings	-	NA		-	WDEQ/LQD Guideline 12, Appendix K.
Mineral Handling Facilities	-	NA		-	WDEQ/LQD Guideline 12, Appendix K.
Culverts¹					
Culverts	lf	NA	\$ 6.88	-	WDEQ/LQD Guideline 12, Appendix J.
Total Demolition Estimate \$				-	

Notes: ¹Refer to Exhibit 1 for culvert locations.

NA: Not Available

Table 5. Environmental Monitoring Reclamation Costs ¹

Groundwater Monitoring and Borehole Sites					
Location ID	Depth (ft)	Unit Cost	Site Cost ²	Seed Cost ²	Subtotal
SM 578510-CRN-1	91	\$ 2.50	\$ 25.00	\$ 5.00	\$ 257.50
SM 578510-MST-1	146	\$ 2.50	\$ 25.00	\$ 5.00	\$ 395.00
SM 578511-CRN-1	128	\$ 2.50	\$ 25.00	\$ 5.00	\$ 350.00
SM 578511-MST-1	157	\$ 2.50	\$ 25.00	\$ 5.00	\$ 422.50
SM 578512-CRN-1	62	\$ 2.50	\$ 25.00	\$ 5.00	\$ 185.00
SM 578512-MST-1	114	\$ 2.50	\$ 25.00	\$ 5.00	\$ 315.00
SM 578513-CRN-1	116	\$ 2.50	\$ 25.00	\$ 5.00	\$ 320.00
SM 578513-MST-1	142	\$ 2.50	\$ 25.00	\$ 5.00	\$ 385.00
SM 578418-CRN-1	153	\$ 2.50	\$ 25.00	\$ 5.00	\$ 412.50
SM 578418-MST-1	183	\$ 2.50	\$ 25.00	\$ 5.00	\$ 487.50
SM 578409-CRN-1	109	\$ 2.50	\$ 10.00	\$ 2.00	\$ 284.50
SM 578409-CRN-OB-1	110	\$ 2.50	\$ 10.00	\$ 2.00	\$ 287.00
SM 578409-MST-1	122	\$ 2.50	\$ 10.00	\$ 2.00	\$ 317.00
SM 578409-MST-OB-1	122	\$ 2.50	\$ 10.00	\$ 2.00	\$ 317.00
SM 578409-UNB-1	142	\$ 2.50	\$ 10.00	\$ 2.00	\$ 367.00
SM 578415-CRN-MST	182	\$ 2.50	\$ 50.00	\$ 10.00	\$ 515.00
SM 578512-AL-1	22	\$ 2.50	\$ 50.00	\$ 10.00	\$ 115.00
SM 578513-AL-1	22	\$ 2.50	\$ 50.00	\$ 10.00	\$ 115.00
SM 578418-AL-1	27	\$ 2.50	\$ 50.00	\$ 10.00	\$ 127.50
R-13-011	222	\$ 2.00	\$ 50.00	\$ 10.00	\$ 504.00
R-13-012	202	\$ 2.00	\$ 50.00	\$ 10.00	\$ 464.00
R-13-016	904	\$ 2.00	\$ 50.00	\$ 10.00	\$ 1,868.00
R-13-018	141	\$ 2.00	\$ 50.00	\$ 10.00	\$ 342.00
R-13-019	210	\$ 2.00	\$ 50.00	\$ 10.00	\$ 480.00
R-13-020	302	\$ 2.00	\$ 50.00	\$ 10.00	\$ 664.00
R-13-023	202	\$ 2.00	\$ 50.00	\$ 10.00	\$ 464.00
R-13-024	983	\$ 2.00	\$ 50.00	\$ 10.00	\$ 2,026.00
R-13-025	422	\$ 2.00	\$ 50.00	\$ 10.00	\$ 904.00
R-13-026	842	\$ 2.00	\$ 50.00	\$ 10.00	\$ 1,744.00
Ambre 01	429	\$ 2.00	\$ 50.00	\$ 10.00	\$ 918.00
Ambre 02	120	\$ 2.00	\$ 50.00	\$ 10.00	\$ 300.00
Ambre 03	96	\$ 2.00	\$ 50.00	\$ 10.00	\$ 252.00
Ambre 04	120	\$ 2.00	\$ 50.00	\$ 10.00	\$ 300.00
Ambre 05	385	\$ 2.00	\$ 50.00	\$ 10.00	\$ 830.00
Ambre 06	421	\$ 2.00	\$ 50.00	\$ 10.00	\$ 902.00
Ambre 07	290	\$ 2.00	\$ 50.00	\$ 10.00	\$ 640.00
Ambre 09	421	\$ 2.00	\$ 50.00	\$ 10.00	\$ 902.00
Ambre 10	325	\$ 2.00	\$ 50.00	\$ 10.00	\$ 710.00
Ambre 11	501	\$ 2.00	\$ 50.00	\$ 10.00	\$ 1,062.00
R-12006	300	\$ 2.00	\$ 50.00	\$ 10.00	\$ 660.00
R-12008	201	\$ 2.00	\$ 50.00	\$ 10.00	\$ 462.00
R-12009A	65	\$ 2.00	\$ 50.00	\$ 10.00	\$ 190.00
R-12010	120	\$ 2.00	\$ 50.00	\$ 10.00	\$ 300.00
R-12011	92	\$ 2.00	\$ 50.00	\$ 10.00	\$ 244.00
R-12012	136	\$ 2.00	\$ 50.00	\$ 10.00	\$ 332.00
R-12013	300	\$ 2.00	\$ 50.00	\$ 10.00	\$ 660.00
R-12014	220	\$ 2.00	\$ 50.00	\$ 10.00	\$ 500.00

Table 5. Environmental Monitoring Reclamation Costs Cont. ¹

Groundwater Monitoring and Borehole Sites					
Location ID	Depth (ft)	Unit Cost	Site Cost ²	Seed Cost ²	Subtotal
R-12015	221	\$ 2.00	\$ 50.00	\$ 10.00	\$ 502.00
R-12018D	142	\$ 2.00	\$ 50.00	\$ 10.00	\$ 344.00
R-12019D	140	\$ 2.00	\$ 50.00	\$ 10.00	\$ 340.00
Sub-total					\$ 26,785.00
22% contingency					\$ 5,892.70
Groundwater Monitoring and Borehole Site Total:					\$ 32,677.70
Surface Water Monitoring Sites					
SM578418-SW-1					\$ 2,672.16
SM578512-SW-1					\$ 2,672.16
SM578409-SW-1					\$ 2,672.16
SM578415-SW-1					\$ 2,672.16
Surface Water Monitoring Site Total:					\$ 10,688.64
Total Environmental Monitoring Estimate:					\$ 43,366.34

Notes:¹ Bond estimate based on WDEQ Guideline 12.

² Site and seed cost divided among well clusters.

Table 6. Scarification Estimate

Description	Unit	Final Quantity	Unit Cost	Subtotal	Comments
Currently affected area	ac	0	\$ 71.15	\$ -	WDEQ/LQD Guideline 12, Appendix P.
Planned disturbance through Year 1	ac	80.9	\$ 71.15	\$ 5,756.04	"
Total Scarification Estimate				\$ 5,756.04	

Table 7. Topsoil Estimate

Description	Unit	Base Quantity	Unit	Final Quantity ¹	Unit Cost	Subtotal	Comments
pit TR-1	ac	26.6	yd ³	57,220	\$ 1.73	\$ 98,901.14	WDEQ/LQD Guideline 12, Appendix C, 637G Scraper, 1,500 ft. average distance, level grade with 15% increase for topsoil.
Sediment Ponds							
SP-1	ac	2.4	yd ³	5,163	\$ 3.17	\$ 16,386.30	WDEQ/LQD Guideline 12, Appendix C, 637G Scraper, 5,000 ft. distance, level grade with 15% increase for topsoil.
SP-2	ac	1.7	yd ³	3,657	\$ 1.26	\$ 4,617.55	WDEQ/LQD Guideline 12, Appendix C, 637G Scraper, 500 ft. distance, level grade with 15% increase for topsoil.
SP-4	ac	2.0	yd ³	4,302	\$ 1.26	\$ 5,432.42	WDEQ/LQD Guideline 12, Appendix C, 637G Scraper, 500 ft. distance, level grade with 15% increase for topsoil.
SP-5	ac	1.5	yd ³	3,227	\$ 1.26	\$ 4,074.31	WDEQ/LQD Guideline 12, Appendix C, 637G Scraper, 500 ft. distance, level grade with 15% increase for topsoil.
Overbuden Stock Piles							
OB-1	ac	4.7	yd ³	10,110	\$ 2.97	\$ 30,066.79	WDEQ/LQD Guideline 12, Appendix C, 637G Scraper, 4,500 ft. distance, level grade with 15% increase for topsoil.
OB-2	ac	8.5	yd ³	18,284	\$ 2.97	\$ 54,376.11	WDEQ/LQD Guideline 12, Appendix C, 637G Scraper, 4,500 ft. distance, level grade with 15% increase for topsoil.
OB-3	ac	13.8	yd ³	29,685	\$ 1.26	\$ 37,483.67	WDEQ/LQD Guideline 12, Appendix C, 637G Scraper, 500 ft. distance, level grade with 15% increase for topsoil.
Total Topsoil Estimate \$						251,338.30	

Note: ¹ Topsoil depth of 16 inches was used based on Reclamation Plan for volume calculations in all areas.

Table 8. Revegetation Estimate

Description	Unit	Final Quantity	Unit Cost	Subtotal	Comments
Planned disturbance through Year 1	ac	80.9	\$700.00	\$ 56,630.00	Estimate including revegetation of topsoil piles footprints.
Total Revegetation Estimate				\$ 56,630.00	

Table 9. Miscellaneous Contingency Items

Item	Cost	Description
Independent design firm for final reclamation design	\$ 60,000.00	WDEQ/LQD Guideline 12, LQD and WMA agreed to flat \$250,000 for project design regardless of project size. Cost reduced based on project size.
Contractor profit, overhead, mobilization and demobilization costs	\$ 892,437.04	WDEQ/LQD Guideline 12, LQD is presently using 13.5 percent for these items.
Preconstruction investigation and stabilization	\$ 99,159.67	WDEQ/LQD Guideline 12, LQD is presently using 1.5 percent for these items.
Independent firm to manage the final reclamation project (3.4 percent)	\$ 224,761.92	WDEQ/LQD Guideline 12, Appendix R sliding scale.
On site monitoring program for ten years after completion of final reclamation project	\$ 66,106.45	WDEQ/LQD Guideline 12, LQD is presently using 1 percent for these items.
Costs for on site security during the final reclamation project and liability insurance cost during the final reclamation project and over the full bonding period (1 year).	\$ 250,000.00	WDEQ/LQD Guideline 12, LQD and WMA agreed to \$250,000 per year of project life would be adequate.
Long-term administration and accounting cost	\$ 60,000.00	WDEQ/LQD Guideline 12, LQD and WMA agreed to range of \$315,000 to \$505,000 depending on project size. Cost reduced based on project size.
Unknown costs	\$ 330,532.24	WDEQ/LQD Guideline 12, LQD is presently using 5 percent for these items.
Total Contingency Estimate	\$ 1,982,997.31	