Alpha Metallurgical Resources, Inc.
Statement of Coal Resources and Reserves for the
Aracoma Complex in Accordance with
United States SEC Standards as of December 31, 2024
Central Appalachian Coal Basin
West Virginia, USA

February 2025

Prepared for:
Alpha Metallurgical Resources, Inc.
340 Martin Luther King Blvd.
Bristol, TN 37620

Prepared by:
MARSHALL MILLER & ASSOCIATES, INC.
582 Industrial Park Road
Bluefield, Virginia 24605
www.mma1.com

Statement of Use and Preparation

This updated Technical Report Summary (TRS) was prepared for the **sole** use of **Alpha Metallurgical Resources, Inc. *(Alpha)*** and its affiliated and subsidiary companies and advisors. Copies or references to information in this report may not be used without the written permission of Alpha.

The report provides a statement of coal resources and coal reserves for Alpha, as defined under the **United States Securities and Exchange Commission (SEC).**

The statement is based on information provided by Alpha and reviewed by various professionals within **Marshall Miller & Associates, Inc. *(MM&A)*.**

MM&A professionals who contributed to the drafting of this report meet the definition of *Qualified Persons (QPs),* consistent with the requirements of the SEC.

The information in this TRS related to coal resources and reserves is based on, and fairly represents, information compiled by the QPs. At the time of reporting, MM&A's QPs have sufficient experience relevant to the style of mineralization and type of deposit under consideration and to the activity they are undertaking to qualify as a QP as defined by the SEC.

Certain information set forth in this report contains "forward-looking information", including production, productivity, operating costs, capital costs, sales prices, and other assumptions. These statements are not guarantees of future performance and undue reliance should not be placed on them. The assumptions used to develop the forward-looking and the risks that could cause the actual results to differ materially are detailed in the body of this report.

Marshall Miller & Associates, Inc. *(MM&A)* hereby consents (i) to the use of the information contained in this report dated December 31, 2024, relating to estimates of coal resources and coal reserves controlled by Alpha, (ii) to the use of MM&A's name, any quotations from or summarizations of this TRS in Alpha's SEC filings, and (iii) to the filing of this TRS as an exhibit to Alpha's SEC filings.

Qualified Person: **/s/ Marshall Miller & Associates, Inc.**

Date: February 13, 2025

Table of Contents

Alpha Metallurgical Resources, Inc.
Statement of Coal Resources and Reserves for the
Aracoma Complex in Accordance with
United States SEC Standards as of December 31, 2024
Central Appalachian Coal Basin
West Virginia, USA

Alpha Metallurgical Resources, Inc.
Statement of Coal Resources and Reserves for the
Aracoma Complex in Accordance with
United States SEC Standards as of December 31, 2024
Central Appalachian Coal Basin
West Virginia, USA

FIGURES (IN REPORT)

TABLES (IN REPORT)

Alpha Metallurgical Resources, Inc.
Statement of Coal Resources and Reserves for the
Aracoma Complex in Accordance with
United States SEC Standards as of December 31. 2024
Central Appalachian Coal Basin
West Virginia, USA

Appendices

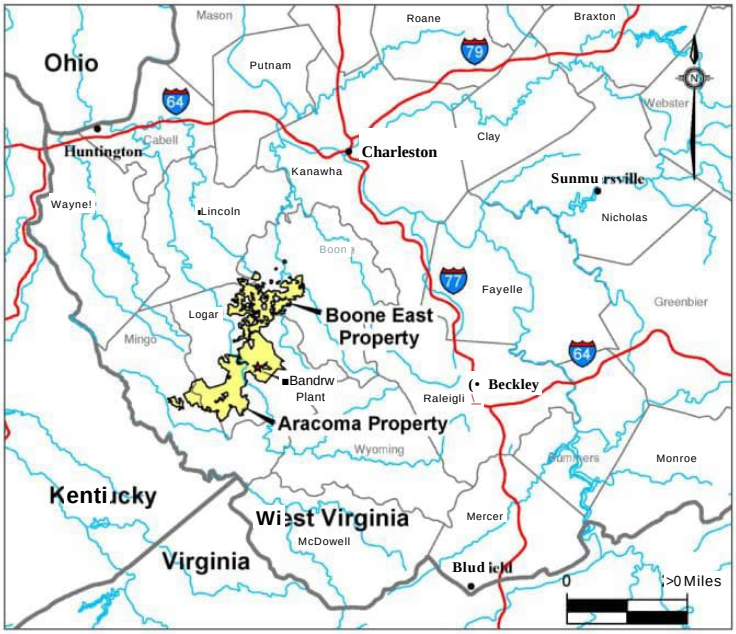
1 Executive Summary

1.1 Property Description

Alpha Metallurgical Resources, inc. ***{Alpha)*** authorized **Marshall Miller & Associates, Inc.** ***(MM&A)*** to prepare this updated Technical Report Summary ***(TRS)*** of its controlled coal reserves located at the **Aracoma Complex** ***(Aracoma)*** in Logan, Boone and Mingo counties, West Virginia. The report provides a statement of coal resources and coal reserves for Alpha, as defined under the **United States Securities and Exchange Commission (SEC).**

Active surface facilities for the operations are located along Rum Creek, a tributary of the Guyandotte River adjacent to a CSX rail line. The Property, which is located about 7 miles south of the town of Logan, West Virginia, the county seat of Logan County, and approximately 70 miles west southwest of Beckley (see *Figure 1-1),* is composed of approximately 101,539 total acres of mineral control, of which nearly all are contained within 10 separate leases.

Figure 1-1: Aracoma Property Location Map



1.2 Ownership

The Aracoma property involves a complex combination of previous ownership. Predecessors of Alpha, namely **Alpha Natural Resources** ***(Alpha)*** and **Massey Energy** ***(Massey)*** previously held mining rights on the majority of the Property.

1.3 Geology

Operations at the Aracoma Mine Complex currently extract coal from the Upper Chilton, Upper Cedar Grove, and No. 2 Gas seams by underground continuous mining method. These seams are all historically utilized as coking coal. Strata on the Property reside in the Pennsylvanian-aged

(approximately 290 to 330 million years ago) Kanawha Formation. Due to the high value of these coking coals, all the seams have been extensively mined in the past. The rock formations between the coal seams are characterized by large proportions of sandstone interspersed with shale units. The coal seams reach the highest structural elevations along the southeastern margin of the Property, generally dipping toward the northwest.

1.4 Exploration Status

The Property has been extensively explored, largely by drilling using continuous coring and rotary drilling methods but also by obtaining coal measurements at mine exposures, and by downhole geophysical methods. A significant amount of historical data was acquired or generated by previous owners of the Property. These sources comprise the primary data used in the evaluation of the coal resources and coal reserves on the Property. MM&A examined the data available for the evaluation and incorporated all pertinent information into this TRS. Where data appeared to be anomalous or not representative, that data was excluded from the digital databases and subsequent processing by MM&A.

Ongoing exploration has been carried out by Alpha since acquiring the Aracoma Complex with the most recent drilling in 2024. The Alpha acquired exploration data has been consistent with past drilling activities.

1.5 Operations and Development

As of December 31, 2024, underground mine operations were active at the Davy Branch Deep Mine in the Upper Chilton seam, the Cedar Grove No. 3 Deep Mine in the Upper Cedar Grove seam, and the Lynn Branch Deep Mine in the No. 2 Gas coal seam. The Cedar Grove No. 2 Deep Mine in the Upper Cedar Grove seam was idled during 2023. These mines produce a High Vol-B metallurgical coal blend.

Based on the mine plans developed as part of this TRS, annual deep mine production peaks at 3.4 million tons in 2025. Underground reserves will be depleted in 2039.

In addition to the mines, the Aracoma Complex also includes the Bandmill Preparation Plant, which is also referred to as the Rum Creek Prep Plant. Last rebuilt in 2010, the plant site includes raw coal

storage, clean coal storage, a centrifugal dryer, a railroad loadout as well as a refuse disposal area. Low density cyclones are used for intermediate separation and froth flotation & spirals are utilized for fine coal separation. The plant has a feed rate capacity of 1,200 raw tons per hour and produces a product with dry quality of 7.46% ash, 0.98% sulfur and 36.8% volatile matter. For the year end 2024 the average utilization rate of the Bandmill Preparation Plant was 66.87%

1.6 Mineral Resource

A coal resource estimate, summarized in *Table 1-1* was prepared as of December 31, 2024, for property controlled by Alpha.

Table 1-1: Coal Resources Summary as of December 31, 2024

Area	Seam	Coal Resource (Dry Tons, In Situ, Mt) Measured	Indicated	Inferred	Total
Inclusive of Reserve/Converted to Reserve					
Davy Branch	Upper Chilton (41000)	9,954,000	2,793,000	0	12,758,000
Hatfield Area	Upper Chilton (41000)	17,538,000	10,930,000	0	28,468,000
Cedar Grove No, 3	Upper Cedar Grove (30100)	17,168,000	3,993,000	0	21,162,000
Laurel Land	Lower Cedar Grove (30000)	5,484,000	2,991,000	0	8,475,000
Lower Cedar Grove No. 3	Lower Cedar Grove (30000)	1,577,000	54,000	0	1,631,000
Beech Branch	Alma (25800)	2,560,000	1,226,000	0	3,787,000
Lynn Branch	No. 2 Gas (24000)	26,042,000	15,067.000	217,000	41,327,000
Boone East	No. 2 Gas (24000)	6,072,000	8,662,000	701,000	15,435,000
Total Inclusive of Reserve/Converted to Reserve		**86,406,000**	**45,717,000**	**918,000**	**133,042,000**
1 Exclusive of Reserve/Not Converted to Reserve					
Boone East	Chilton (47000)	7,306,000	1,990,000	0	9,296,000
Cedar Grove No. 2	Upper Cedar Grove (30100)	12,102,000	9,571,000	180,000	21,853,000
Cedar Grove No. 3	Upper Cedar Grove (30100)	3,414,000	1,355,000	4,000	4,773,000
Rum Creek	No. 2 Gas (24000)	29,760,000	19,508,000	154,000	49,422,000
Boone East	No. 2 Gas (24000)	29,094,000	17,283,000	86,000	46,463,000
Total Exclusive of Reserve/Not Converted to Reserve		**81,676,000**	**49,707,000**	**423,000**	**131,806,000**
Grand Total					
Inclusive of Reserve/Converted to Reserve		86,406,000	45,717,000	918,000	133,042,000
Exclusive of Reserve/Not Converted to Reserve		81,676,000	49,707,000	423,000	131,806,000
Grand Total		**168,082,000**	**95,424,000**	**1,341,000**	**264,848,000**

Note(l): Resource tons are inclusive of reserve tons since they include the in-situ tons from which recoverable coal reserves are derived.
Note (2): Coal resources are reported on a dry basis. Surface moisture and inherent moisture are excluded.
Note (3): The Property contains 131.4 Mt of dry, in-place measured and indicated coal resources exclusive of reserves as of December 31, 2024.
Totals may not add due to rounding.
See Appendix A for more detailed breakdown.

1.7 Mineral Reserve

The Resource estimate outlined in *Table 1-1* **inclusive** of reserves has been used as the basis for this Reserve calculation, which utilizes a reasonable Preliminary Feasibility Study, a Life-of Mine *(LOM)* Mine Plan and practical recovery factors. Production modeling was completed with an effective start date of October 1, 2024.

Factors that would typically preclude conversion of a coal resource to coal reserve, include the following: inferred resource classification; absence of coal quality; poor mine recovery; lack of access; geological encumbrances associated with overlying and underlying strata; seam thinning; structural

complication; and insufficient exploration have all been considered. Reserve consideration excludes those portions of the resource area, which exhibit the aforementioned geological and operational encumbrances.

Proven and probable coal reserves were derived from the defined in-situ coal resource considering relevant processing, economic (including technical estimates of capital, revenue and cost), marketing, legal, environmental, socioeconomic, and regulatory factors. The proven and probable coal reserves on the Property are summarized below in *Table 1-2.*

Table 1-2: Coal Reserves Summary (Marketable Sales Basis) as of December 31, 2024

Area/Mine	Seam	Demonstrated Coal Reserves (Wet Tons, Washed or Direct Shipped)					Quality (Dry Basis)		
		By Reliability Category			By Control Type				
		Proven	Probable	Total	Owned	Leased	Ash%	Sulfur%	VM%
Davy Branch	Upper Chilton (41000)	2,330,000	605,000	2,934,000	0	2,934,000	7	0.9	39
Hatfield	Upper Chilton (41000)	5,105,000	2,663,000	7,768,000	0	7,768,000	7	0.9	36
Cedar Grove No. 3	U. Cedar Grove (30100)	3.078,000	565,000	3,642,000	0	3,642,000	7	1.3	39
Lauren Land	L. Cedar Grove (30000)	1,905,000	1,038,000	2,943,000	0	2,943,000	3	0.7	-
Cedar Grove No. 3	L. Cedar Grove (30000)	539,000	17,000	556.000	54,000	502,000	4	0.6	38
Beech Branch	Alma (25800)	998,000	431,000	1,429,000	0	1,429,000	4	0.9	39
Lynn Branch	No. 2 Gas (24000)	8,826,000	4,931,000	13,757,000	573,000	13,184,000	4	0.8	37
Boone East	No. 2 Gas (24000)	1,748,000	3,275,000	5,023,000	3,976,000	1,048,000	4	0.9	-
Grand Total		24,530,000	13,525,000	38,055,000	4,603,000	33,452,000	5	0.9	37

Notes: Marketable reserve tons are reported on o moist basis, including a combination of surface and inherent moisture. Coal quality is based on a weighted average of laboratory data from core holes. The combination of surface and inherent moisture is modeled at 6.0-percent. Actual product moisture is dependent upon multiple geological factors, operational factors, and product contract specifications and can exceed 8-percent. As such, the modeled moisture values provide a level of conservatism for reserve reporting.
**Volotile Matter analysis is not available for all reserve areas. All Aracoma reserves are priced as a High-Vol. B product.*
Totals may not odd due to rounding.
See Appendix A for more detailed breakdown.

In summary, as of December 31, 2024, Alpha controls a total of 38.06 Mt (moist basis) of marketable coal reserves at Aracoma. Of that total, 64 percent are proven, and 36 percent are probable. Approximately 4.60 Mt are owned, and the remaining 33.45 Mt are leased coal reserves. The maps included in *Appendix C* reflect mining depletion at the time of the resource/reserve calculation taken from Alpha mine maps as of September 30, 2024. Mine depletion tonnages were supplied by Alpha through the end of 2024, and MM&A deducted this historical production from the mapped reserves in order to estimate reserves as of December 31, 2024.

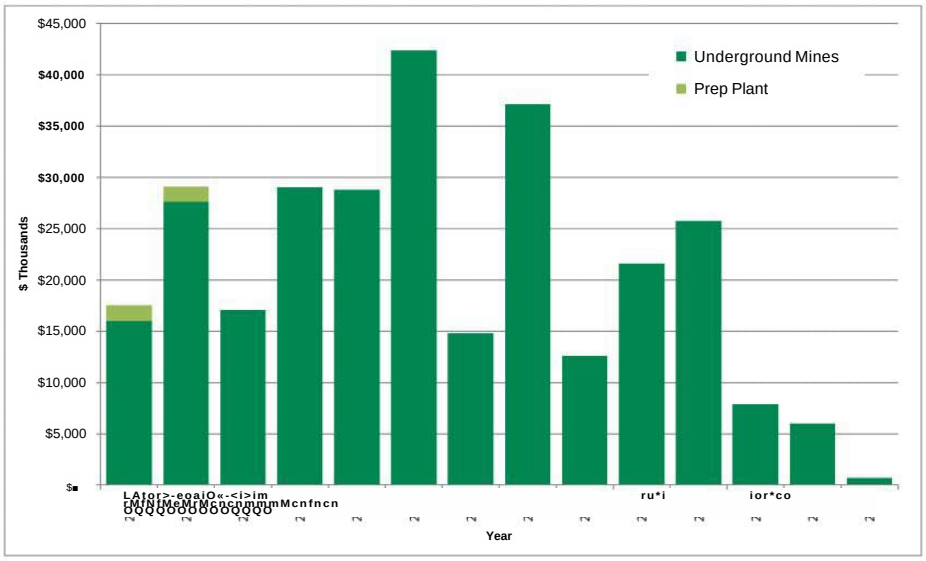
1.8 Capital Summary

Alpha provided MM&A with information related to the number of currently operating production units at Aracoma. MM&A's capital schedules assume that major equipment rebuilds occur over the course of each machine's remaining assumed operating life. Replacement equipment was scheduled based on MM&A's experience and knowledge of mining equipment and industry standards with respect to the useful life of such equipment. As one mine is depleted, the equipment is moved to its replacement.

The capital expenditures tables detail costs for major equipment and infrastructure such as conveyor belt terminal groups. "Other" costs include expenditures for mine access and construction, mine

extension capital and miscellaneous costs, A summary of the estimated capital for the consolidated Aracoma operations is provided in *Figure 1-2* below.

Figure 1-2: Projected Capital Expenditures - Consolidated Aracoma Operations



1.9 Operating Costs

Alpha provided historical costs and budgeted projections of operating costs for its active mines; Davy Branch Deep Mine, Cedar Grove No. 3, and Lynn Branch No. 2 Mine for MM&A's review. MM&A used the historical cost information as a reference and developed a personnel schedule for each mine. Hourly labor rates and salaries were based upon information contained in Alpha's financial summaries. Fringe benefit costs were developed for vacation and holidays, federal and state unemployment insurance, retirement, workers' compensation and pneumoconiosis, casualty and life insurance, healthcare and bonuses. A cost factor for mine supplies was developed that relates expenditures to mine advance rates for roof control costs and other mine supply costs based on the historical cost data provided by Alpha. Other factors were developed for maintenance and repair costs, rentals, mine power, outside services, coal preparation plant processing, refuse handling, coal loading, property taxes, insurance and bonding, and other direct mining costs.

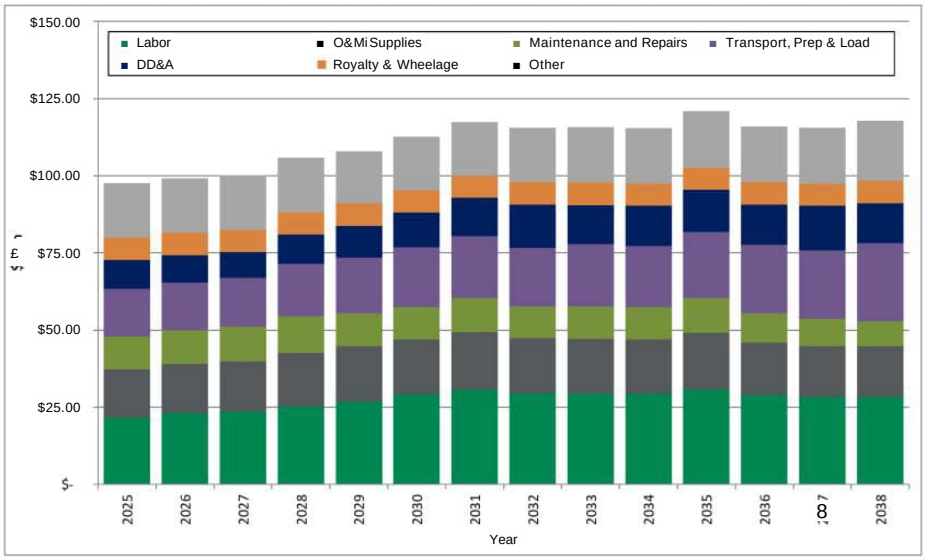
Appropriate royalty rates were assigned for production from leased coal lands and sales taxes were calculated for state severance taxes, the federal black lung excise tax, and federal and state reclamation fees.

Company-wide pricing data as provided by Alpha is described in *Table 16-2.* Note that not all products reflected in *Table 16-2* will apply to every business unit. The pricing data assumes a flat-line long term realization of $169 per short ton port pricing, with an average of $120.33 per ton netback pricing reflective of the high-volatile product currently sold at Aracoma. These estimates are based on long-term pricing published by third party sources and adjusted for quality and transportation. The netback pricing represents adjustments made to published benchmark pricing based on quality and transportation. A large majority of the coal sold by Alpha and their Aracoma business group is shipped internationally as part of blended products from other business units within Alpha or sourced from other companies. These netback adjustments reflect these additional costs carried after the products leave the Aracoma business unit.

leave the Aracoma business unit.

A summary of the projected operating costs for the consolidated Aracoma operations is provided in *Figure 1-3*.

Figure 1-3: Aracoma Operating Costs



1.10 Economic Evaluation

The pre-feasibility financial model prepared for this TRS was developed to test the economic viability of each coal resource area. The results of this financial model are not intended to represent a bankable feasibility study, required for financing of any current or future mining operations contemplated for the Alpha properties, but are intended to establish the economic viability of the estimated coal reserves. Cash flows are simulated on an annual basis based on projected production from the coal reserves and

production rates may differfrom Alpha's own budgetary projections. The discounted cash flow analysis presented herein is based on an effective date of January 1, 2025.

On an un-levered basis, the NPV of the project cash flow after taxes represents the Enterprise Value of the project. The project cash flow, excluding debt service, is calculated by subtracting direct and indirect operating expenses and capital expenditures from revenue. Direct costs include labor, operating supplies, maintenance and repairs, facilities costs for materials handling, coal preparation, refuse disposal, coal loading, reclamation, and general and administrative costs. Indirect costs include statutory and legally agreed upon fees related to direct extraction of the mineral. The indirect costs are the Federal black lung tax, Federal and State reclamation taxes, property taxes, coal production royalties, and income taxes. The Alpha mines' historical costs provided a useful reference for MM&A's cost estimates.

Table 1-3 shows LOM tonnage, P&L, and EBITDA for each Alpha mine at Aracoma.

Table 1-3: Life-of-Mine Tonnage, P&L before Tax, and EBITDA

	LOM Tonnage	LOM Pre-Tax P&L	P&L Per Ton	LOM EBITDA	EBITDA Per Ton
Lynn Branch N2G	14,037	$26,030	$1.85	$219,857	$15.66
Davy Branch UCH	3,052	$56,803	$18.61	$82,647	$27.08
Lauren Land LCG	2,943	$13,683	$4.65	$52,114	$17.71
Lauren Land - Hatfield UCH	7,768	$118,454	$15.25	$189,410	$24.38
UCG No. 3	4,315	$109,377	$25.35	$150,113	$34.79
Alma Beech Br	1,429	$24,265	$16.97	$36,084	$25.24
Boone East N2G	5,257	$43,211	$8.22	$109,643	$20.86
Grand Total	**38,802**	**$391,823**	**$10.10**	**$839,868**	**$21.65**

Note: (1) The financial model contains 0.23 million tons of inferred coal that has been excluded from reserves. LOM tonnage evaluated in the financial model includes 4th quarter 2024 production (513,261 clean tons), which was subtracted from coal reserves in order to make the effective date of the reserves December 31, 2024. Tons that were mined from retreat mining sections or other areas not included in the December 31, 2024 reserves were not subtracted in order to make the effective date of the reserves December 31, 2024.

As shown in *Table 1-3,* all of the mines analyzed show positive EBITDA over the LOM. Overall, the Alpha consolidated Aracoma operations show positive LOM P&L and EBITDA of $391.8 million and $839.9 million, respectively.

Alpha's consolidated Aracoma cash flow summary in constant dollars, excluding debt service, is shown in *Table 1-4* below.

Alpha Metallurgical Resources, Inc.
Statement of Coal Resources and Reserves for the
Aracoma Complex in Accordance with
United States SEC Standards as of December 31, 2024
Central Appalachian Coal Basin
West Virginia, USA

Table 1-4: Project Cash Flow Summary ($000)

	Total	YE12/31 2024	YE12/31 2025	YE12/31 2026	YE12/31 2027	YE12/31 2028	YE12/31 2029
Production & Sales tons	38,802	1,018	3,424	3,215	3,160	2,952	**2,906**
Total Revenue	$4,669,088	$122,452	$411,963	$386,809	$380,220	$355,187	$349,696
EBITDA	$839,868	$36,152	$110,279	$96,827	$89,835	$70,453	$65,923
Net Income	$306,635	$25,176	$64,557	$55,973	$51,615	$34,284	$28,936
Net Cash Provided by Operating Activities	$754,679	$23,289	$81,726	$89,194	$80,864	$67,721	$60,496
Purchases of Property, Riant, and Equipment	($290,468)	$0	($17,531)	($29,126)	($17,084)	($29,063)	($28,817)
Net Cash Flow	$464,211	$23,289	$64,195	$60,068	$63,780	$38,658	$31,679

	YE12/31 2030	YE12/31 2031	YE12/31 2032	YE12/31 2033	YE12/31 2034	YE12/31 2035	YE12/31 2036
Production & Sales tons	2,846	2,700	2,815	2,826	2,829	2,709	2,484

Total Revenue	5342,441	5324,900	5338,726	5340,017	5340,436	5325,940	5298,863
EBITDA	$53,831	$41,131	$52,46$	$48,812	$50,604	$34,892	$43,479
Net Income	$17,268	$5,654	$9,378	$9,585	$9,883	($3,787)	$7,173
Net Cash Provided by Operating Activities	$49,900	$42,091	$49,774	$48,835	$49,896	$39,549	$43,281
Purchases of Property, Plant, and Equipment	($42,372)	($14,812)	($37,167)	($12,604)	($21,604)	($25,775)	($7,885)
Net Cash Flow	$7,528	$27,279	$12,607	$36,231	$28,292	$13,775	$35,396

	YE12/31 2037	YE12/31 2038	YE12/31 2039	YE12/31 2040	YE12/31 2041	YE12/31 2042	YE12/31 2043
Production & Sales tons	1,874	1,013	33	0	0	0	0
Total Revenue	$225,549	$121,883	$4,006	$0	$0	**$0**	$0
EBITDA	$35,579	$15,811	($3,099)	($1,769)	($740)	($376)	($145)
Net Income	$6,068	$2,623	($11,688)	($3,454)	($1,444)	($734)	($282)
Net Cash Provided by Operating Activities	$39,854	$11,127	**$10**	($13,305)	($4,816)	($2,969)	($922)
Purchases of Property, Plant, and Equipment	($5,974)	(65)	$0	$0	$0	**$0**	$0
Net Cash Flow	$33,880	$10,472	$10	($13,305)	($4,816)	($2,969)	($922)

	YE12/31 2044	YE12/31 2045	YE12/31 2046	YE12/31 2047	YE12/31 2048	YE12/31 2049	YE12/31 2050
Productions Sales tons	**0**	**0**	0	0	0	**0**	0
Total Revenue	**$0**	**$0**	$0	**$0**	$0	**$0**	$0
EBITDA	**__($75)**	**($0)**	($0)	($0)	($0)	**(SO)..**	($0)
Net Income	**J$147)**	($0)	($0)	($0)	($0)	_ J$°L	ISO)
Net Cash Provided by Operating Activities	($918)	(soi	isn.i	(SO)	($0)	£$oj	ISO)
Purchases of Property, Plant, and Equipment	$0	$0	$0	$0	$0	$o_	$0
Net Cash Flow	($918)	($0)	($0)	($0)	($0)	($0)	($0)

Note: (1) The financial model contains0.23 million tons of inferred coal that has been excluded from reserves. LOM tonnage evaluated in the financial model includes 4"" quarter 2024 production (513,261 clean tons) which was subtracted from coal reserves in order to make the effective date of the reserves December 31, 2024 Tons that were mined from retreat mining sections or other areas not included in the December 31, 2024 reserves were not subtracted in order to make the effective date of the reserves December 31, 2024,

(2) Results shown for 2024 represent 4th quarter only.

Consolidated cash flows are driven by annual sales tonnage, which peaks at 3.4 million tons in 2025. Between the years 2026 and 2036, sales ranges from 2,5 million to 3.2 million tons and between the years 2037-2039, sales range from 0.03 million tons to 1.9 million tons. Projected consolidated revenue peaks at $412.0 million in 2025 and totals $4.7 billion for the project's life.

Consolidated cash flow from operations is positive throughout the projected operating period, with the exception of post-production years, due to end-of-mine reclamation spending. Consolidated cash flow from operations peaks at $81.7 million in 2025 and totals $754.7 million over the project life. Capital expenditures total $121.6 million during the first five years and $290.5 million over the project's life.

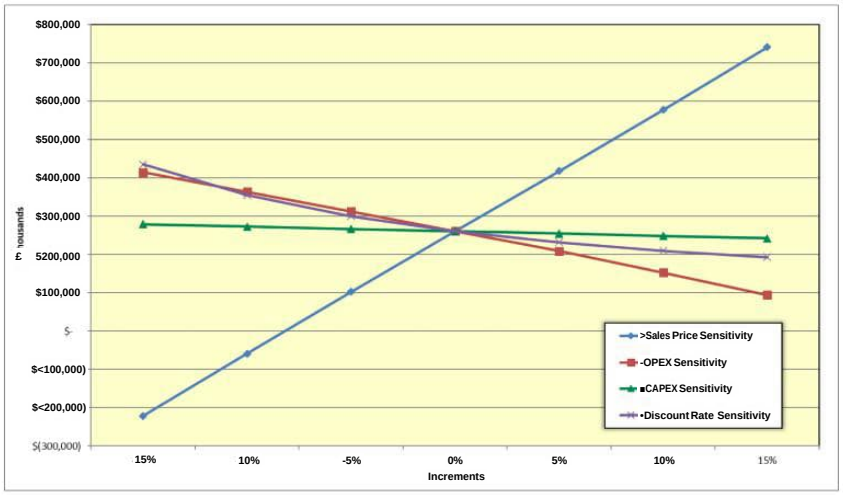
1.10.1 Discounted Cash Flow Analysis

Cash flow after tax, but before debt service, generated over the life of the project was discounted to NPV at a 16.38% discount rate, which represents MM&A's estimate of the constant dollar, risk adjusted WACC for likely market participants if the subject reserves were offered for sale. On an un-levered basis, the NPV of the project cash flows represents the Enterprise Value of the project and amounts to $260.9 million. Alpha is an active producer, and the financial model shows positive net cash flow for each year of the operating life of the Aracoma reserves. The pre-feasibility financial model (+/- 20 percent in accuracy) prepared for the TRS was developed to test the economic viability of each coal resource area. A 5% operating cost contingency was included in the economic analysis. The NPV estimate was made for the purpose of confirming the economics for classification of coal reserves and not for purposes of valuing Alpha or its Aracoma assets. Mine plans were not optimized, and actual results of the operations may be different, but in all cases, the mine production plan assumes the properties are under competent management.

1.10.2 Sensitivity Analysis

Sensitivity of the NPV results to changes in the key drivers is presented in the chart below. The sensitivity study shows the NPV at the 16.38% discount rate when Base Case sales prices, operating costs, capital costs, and discount rate are increased and decreased in increments of 5% within a +/- 15% range.

Figure 1-4: Sensitivity of NPV



As shown, NPV is quite sensitive to changes in sales price, operating cost estimates and the discount rate, and slightly sensitive to changes in capital cost estimates.

1.11 Permitting

Alpha has obtained all mining and discharge permits to operate its active mines and processing, loadout or related support facilities. MM&A is unaware of any obvious or current Alpha permitting issues that are expected to prevent the issuance of future permits. Alpha, along with all coal producers, is subject to a level of uncertainty regarding future clean water permits due to **United States Environmental Protection Agency *(EPA)* and United States Fish and Wildlife (U5FW)** involvement with state programs.

1,12 Conclusion and Recommendations

Sufficient data has been obtained through various exploration and sampling programs and mining

operations to support the geological interpretations of seam structure and thickness for coal horizons situated on the Aracoma Property and reviewed in the study. The data is of sufficient quantity and reliability to reasonably support the coal resource and coal reserve estimates in this TRS.

The geological data and preliminary feasibility study, which consider mining plans, revenue, and operating and capital cost estimates are sufficient to support the classification of coal reserves provided herein.

This geologic evaluation conducted in conjunction with the preliminary feasibility study concludes that the 38.06 Mt of marketable underground coal reserves identified on the Property are economically mineable under reasonable expectations of market prices for metallurgical coal products, estimated operation costs, and capital expenditures.

2 Introduction

2.1 Registrant and Terms of Reference

This report was prepared for the sole use of **Alpha Metallurgical Resources, Inc.** *(Alpha)* and its affiliated and subsidiary companies and advisors.

The report provides a statement of coal reserves for Alpha. Exploration results and Resource calculations were used as the basis for the mine planning and the preliminary feasibility study completed to determine the extent and viability of the reserve. The report provides a statement of coal resources and coal reserves for Alpha, as defined under the **United States Securities and Exchange Commission (SEC).**

Coal resources and coal reserves are herein reported in imperial units of measurement and are rounded to millions of short tons *(Mt).*

2.2 Information Sources

This updated technical report is based on information provided by Alpha and reviewed by MM&A's professionals, including geologists, mining engineers, civil engineers, and environmental scientists. MM&A's professionals hold professional registrations and memberships which qualify them as Qualified Persons in accordance with SEC guidelines.

Sources of data and information are listed below in *Table 2-1:*

Table 2-1: Information Provided to MM&A by Alpha

Category	Information Provided by Alpha	Report Section
Geological	Geologic data including digital databases and original source data including geologist logs, driller's logs, geophysical logs.	9.1
Coal Quality	Database of coal quality information supplemented with original source laboratory sheets where available.	10.1
Mining	Historical productivities and manpower projections.	13.2, 13.4
Coal Preparation	Flow Sheet and other information related to coal processing.	14.1
Waste Disposal	Engineering data and estimates representing remaining capacities for coarse and fine coal waste disposal.	17.2
Costs	Historical and budgetary operating cost information used to derive cost drivers for reserve financial modeling	18.2

Note: While the sources of data listed in Table 2-1 are not exhaustive, they represent a significant portion of information which supports this TRS. MM&A reviewed the provided data and found it to be reasonable prior to incorporating it into the TRS. The TRS contains "forward-looking information" including forecasts of productivity and annual coal production, operating and capital cost estimates, coal sales price forecasts, the assumption that Alpha will continue to acquire necessary permits, and other assumptions. The TRS statements and conclusions are not a guarantee of future performance and undue reliance should not be placed on them. The ability of Alpha to recover the estimated coal reserves is dependent on multiple factors beyond the control of MM&A including, but not limited to geologic factors, mining conditions, regulatory approvals, and changes in regulations. In all cases, the plans assume the Property is under competent management.

2.3 Scope of Assignment

Alpha engaged MM&A to conduct a coal reserve evaluation of the Alpha coal properties as of December 31, 2024. For the evaluation, the following tasks were to be completed:

> Conduct site visits of the mines and mine infrastructure facilities;

> Process the information supporting the estimation of coal resources and reserves into geological models;

> Develop life-of-reserve mine *(LOM)* plans and financial models;

> Hold discussions with Alpha company management; and

> Prepare and issue a Technical Report Summary providing a statement of coal reserves which would include:

- A description of the mines and facilities.
- A description of the evaluation process.

- An estimation of coal reserves with compliance elements as stated under the SEC S-K 1300 regulations that become effective for the first fiscal year commencing on or after January 1, 2021.

2.4 Personal Inspections

MM&A is very familiar with Aracoma, having provided a variety of services in recent years and QP's involved in this TRS have conducted multiple site visits. Most recently a site inspection of the deep mine facilities was conducted on October 5, 2022.

3 Property Description

3.1 Location

The Aracoma Mine Complex is located in the Central Appalachian Basin in southern West Virginia (see *Figure 1-1)* approximately 7 miles south of the town of Logan, West Virginia, the county seat of Logan County and 70 miles west of Beckley, which is the county seat of Raleigh County. Surface facilities for the operation are located in the Guyandotte River drainage basin, central to the active Mines as well as those currently in development. Numerous small communities are present throughout the Property such as the previously mentioned Logan, as well as Stollings, Omar and Barnabus.

The nearest major population centers are Charleston, West Virginia (65 miles north), Bristol, Virginia (140 miles south), Roanoke, Virginia (190 miles east), and Morgantown, West Virginia (220 miles north), and Lexington, Kentucky (190 miles west). The Property is located on the following **United States Geological Survey (USGS)** Quadrangles: Holden, Barnabus, Man, Mallory, Amherstdale, Lorado, Wharton, Clothier, and Logan. The coordinate system and datum used for the model of the Aracoma Mine complex and the subsequent maps were produced in the West Virginia State Plane South system, NAD 27.

3.2 Titles, Claims or Leases

The Property is composed of approximately 101,539 total acres of mineral control, nearly all of which is leased. Alpha's control is comprised of over 10 separate leases with varying expiration dates. Some leases expire over the next several years, but Alpha does not anticipate any challenges related to lease renewal. *Table 3-1* lists the Aracoma mineral leases. MM&A has not carried out a separate title verification for the coal properties and has not verified leases, deeds, surveys, or other property control instruments pertinent to the subject resources. Alpha has represented to MM&A that it controls the mining rights to the reserves as shown on its property maps, and MM&A has accepted these as being a true and accurate depiction of the mineral rights controlled by Alpha. The TRS assumes the Property is developed under responsible and experienced management.

Table 3-1: Mineral Control - Aracoma Complex

Reference File No.	Document Type	Expiration Date [1]	On-going Minimum Royalty [2]	On-going Production Royalty [3]
ADI	Deed	N/A	No	No
AD 2	Deed	N/A	No	No
AD 3	Deed	N/A	No	No
AD 4	Deed	N/A	No	No
ADS	Deed	N/A	No	No
AL1	Lease	12/31/2033	Yes	Yes
AL 2	Lease	2/14/2025	Yes	Yes
AL 3	Lease	6/30/2029	Yes	Yes
AL 4	Lease	7/17/2034	Yes	Yes
AL 5	Lease	8/1/2026	Yes	Yes
AL 6	Lease	12/31/2026	Yes	Yes
AL 9	Lease	9/30/2025	Yes	Yes
AL 10	Lease	9/30/2025	Yes	Yes
AL 11	Lease	10/31/2027	Yes	Yes
AL 12	Lease	4/17/2026	Yes	Yes

(1) For leases with expiration dates. Company has option to renew or expects to renew until all mineable and merchantable coal is exhausted
(2) Minimum royalty payments are generally recoupable againstfuture production royalties.
(3) Royalty rates range from 5% to 8% of gross selling price

3.3 Mineral Rights

Alpha supplied property control maps to MM&A related to properties for which mineral and/or surface property are controlled by Alpha. While MM&A accepted these representations as being true and accurate, through past knowledge of the Property MM&A has no knowledge of past property boundary disputes or other concerns that could impact future mining operations or development potential.

Property control in Appalachia can be intricate. Coal mining properties are typically composed of numerous property tracts which are owned and/or leased from both land holding companies and private individuals or companies. It is common to encounter severed ownership, with different entities or individuals controlling the surface and mineral rights. Mineral control in the region is typically characterized by leases or ownership of larger tracts of land, with surface control generally comprised of smaller tracts, particularly in developed areas.

Control of the surface property is necessary to conduct surface mining but it is not necessary to conduct underground mining aside from relatively limited areas required for seam access or ventilation infrastructure. Alpha's executive management team has a history of mining in Central Appalachia and has conveyed to MM&A that it has been successful in acquiring surface rights where needed for past operations.

3.4 Encumbrances

No Title Encumbrances are known. By assignment, MM&A did not complete a query related to Title Encumbrances.

3.5 Other Risks

There is always risk involved in property control. As is common practice, Alpha, and its predecessors, have had their land teams examine the deeds and title control to minimize this risk. Historically, property control has not posed any significant challenges related to Aracoma's operations.

4 Accessibility, Climate, Local Resources, Infrastructure and Physiography

4.1 Topography, elevation and Vegetation

The topography of the area surrounding the Aracoma mine complex is typical of the Central Appalachian Plateau's physiographic province, being rugged and deeply dissected by V-shaped river valleys and flanked by steep-sided upland regions. Slopes in the area are mostly steep to very steep with some gently sloping with relatively narrow ridges. Surface elevations near the mine complex range from approximately 1,200 feet above sea level at streams to approximately 2,200 feet at ridge tops. The area is heavily vegetated and has a significant amount of hardwood forests. The Property is not situated near any major urban centers.

4.2 Access and Transport

There is general access to the Aracoma property via a well-developed network of primary, secondary, and unimproved roads. Interstates 64 and 77 converge at Beckley, West Virginia, and are the primary roads in the area connecting to Beckley, Charleston, and Huntington, West Virginia, to the West and Lexington, Virginia, to the East. Numerous secondary and unimproved roads provide direct access to the mine property, some being federal-, state-, and town-maintained. These include State Route 119 running east-west from Danville to Logan and State Route 10 running north-south from Logan to Man. These roads typically stay open throughout the year. Within the Property, unimproved roads are utilized to access gas drainage wells and surface based deep mine infrastructure. An Alpha-owned preparation plant and rail loadout are located approximately 12 miles southeast of the town of Logan along the CSX railroad system and serve as the primary transport means of processed coal.

4.3 Proximity to Population Centers

The Aracoma Mine Complex is located near the town of Logan and is primarily in Logan and Boone Counties, West Virginia, with small portions falling in Mingo County. There are no large population centers in proximity. The nearest major population centers are Charleston, West Virginia (65 miles

north), Bristol, Virginia (140 miles south), Roanoke, Virginia (190 miles east), and Morgantown, West Virginia (220 miles north), and Lexington, Kentucky (190 miles west). As of the 2010 census, Logan County had just over 36,700 residents.

4.4 Climate and Length of Operating Season

The climate of the region is classified as humid continental with four distinct seasons: warm summers, cold winters, and moderate fall and spring seasons. Precipitation in the region is consistent throughout the year, approximately 3 to 5 inches per month, with the most rain falling in spring and the early months of summer. Average yearly precipitation is 47 inches. Summer months typically begin in late May and end in early September and range in average temperature from 50 to 83 degrees Fahrenheit. Winters typically begin in mid to late November and run until mid to late March with average temperatures ranging from 23 to 54 degrees Fahrenheit, Precipitation in the winter typically comes in the form of snowfall or as a wintery mix (sleet and snow) with severe snowfall events occurring occasionally. Seasonal variations in climate typically do not affect underground mining in West Virginia. However, weather events could potentially negatively impact efficiency of surface and preparation plant operations on a very limited basis and lasting less than a few days.

4.5 Infrastructure

The Aracoma Mine Complex has sources of water, power, personnel, and supplies readily available for use. Personnel have historically been sourced from the surrounding communities in Logan, Mingo, Wyoming, and Boone Counties and have proven to be adequate in numbers to conduct mining operations. As mining is common in the surrounding areas, the workforce is generally familiar with mining practices, and many are experienced miners. Water is sourced locally from public water sources or rivers, and electricity is sourced from **Appalachian Power,** a subsidiary of **American Electric Power (AfP).** The service industry in the areas surrounding the mine complex has historically provided supplies, equipment repairs and fabrication, etc. Alpha's Bandmill preparation plant services consumers with washed coal, which is transported via the adjacent CSX rail line at the Aracoma loadout. Haul roads, primary roads, and conveyor belt systems account for transport from the various mine sites to the preparation plant.

5 History

5.1 Previous Operation

The Aracoma property involves a complex combination of previous ownership. Coal mining in the area occurred for nearly a century. Predecessors of Alpha, namely **Alpha Natural Resources *(Alpha)*** and **Massey Energy *(Massey)*** previously held mining rights on much of the Property.

Alpha Metallurgical Resources, Inc.
Statement of Coal Resources and Reserves for the
Aracoma Complex in Accordance with
United States SEC Standards as of December 31, 2024
Central Appalachian Coal Basin
West Virginia, USA

5.2 Previous Exploration

Extensive exploration in the form of subsurface drill efforts has been carried out on the Property by numerous entities, most of which efforts were completed prior to the inception of Alpha. Diamond core and rotary drilling are the primary types of exploration on the Property. Data for correlation and mining conditions are derived from core descriptions and geophysical logging (e-logging). Coal-quality analyses were also employed during the core-exploration process. The development of this report included an assessment of over 5,375 coal measurements, largely comprised of exploration drill holes.

Drill records indicate that independent contract drilling operators have typically been engaged to carry out drilling on the Property. Geophysical logging was typically performed by outside logging firms

uui uniting un uie rrupeity. oeupi lyrical tugging web lypicdiiy pciiurineu uy uuL iue lugging 1111115.
MM&A, via its Geophysical Logging Systems subsidiary, has logged a significant number of the past exploration holes, including most of the recently drilled holes. Drill hole locations used in this assessment are shown on the resource and reserve maps included in *Appendix C.*

6 Geological Setting, Mineralization and Deposit

6.1 Regional, Local and Property Geology

The Property lies in the Central Appalachian Coal basin in the Appalachian Plateau physiographic province.

The coal deposits in the eastern US are the oldest and most extensively developed coal deposits in the country. The coal deposits on the Property are Carboniferous in age, being of the Pennsylvanian system. Overall, these Carboniferous coals contain two-fifths of the US's bituminous coal deposits and extend over 900 miles from northern Alabama to Pennsylvania and are part of what is known as the *Appalachian Basin.* The Appalachian Basin is more than 250 miles wide and, in some portions, contains over 60 coal seams of varying economic significance.

Seams and zones of economic significance typically range between 24 and 48 inches in thickness, with relatively little structural deformation. Regional structure is typically characterized by gently dipping strata to the northwest at one to four percent, averaging three percent.

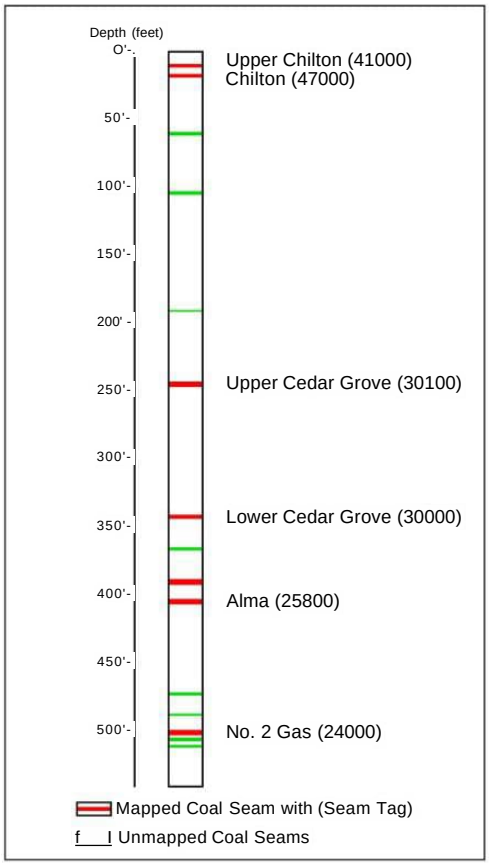
Strata on the Property are of the Pennsylvanian-age Kanawha Formation of the Pottsville Series. The rock formations between the coal seams are characterized by large proportions of sandstone interspersed with shale units.

Seams with remaining reserve or resource potential include, in stratigraphically ascending order the: No. 2 Gas, Alma, Lower Cedar Grove, Upper Cedar Grove Chilton and Upper Chilton.

6.2 Mineralization

The generalized stratigraphic columnar section in *Figure 6-1* demonstrates the vertical relationship of the principal coal seams and rock formations on the Property.

Figure 6-1: Aracoma Stratigraphic Column



(not to scale)

6.3 Deposits

The coal produced at the Aracoma complex is a High-Volatile-B bituminous coal.

Due to the high value of these High volatile coking coals, all the seams have been extensively mined in the past. The coal seams reach the highest structural elevations along the southeastern margin of the

Property, generally dipping toward the northwest. The upper seams of interest are situated above drainage and are accessible via outcrop, the deeper No. 2 Gas seam is below drainage where slope and shaft access are required. The rock formations between the coal seams are characterized by large portions of sandstone with shale units interspersed throughout.

7 Exploration

7.1 Nature and Extent of Exploration

The Property has been extensively explored by subsurface drilling efforts carried out by numerous entities, most of which were completed prior to ownership by Alpha.

Diamond core and rotary drilling are the primary types of exploration on the Property. Data for correlation and mining conditions are derived from core descriptions and geophysical logging (e-logging). Coal-quality analyses were also employed during the core-exploration process.

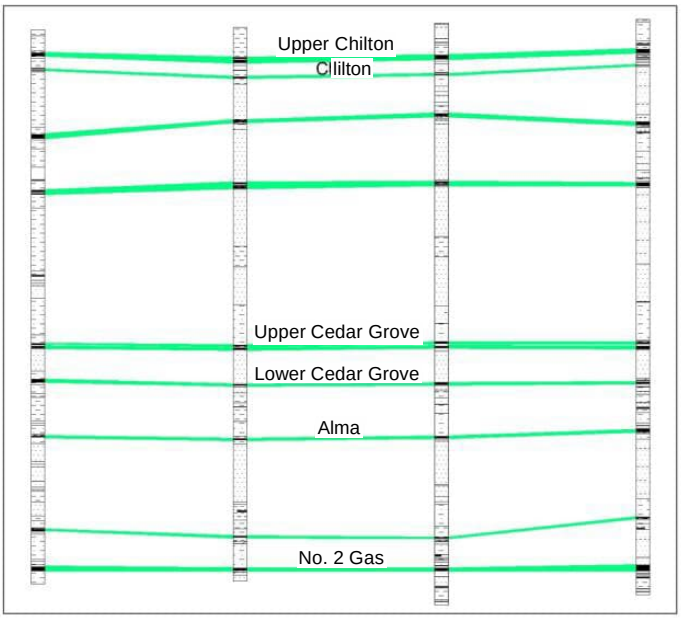
Drill records indicate that independent contract drilling operators have typically been engaged to carry out drilling on the Property. Geophysical logging was typically performed by outside logging firms. MM&A, via its Geophysical Logging Systems subsidiary, has logged a significant number of the past exploration holes, including most of the recently drilled holes.

The location of the drill holes are shown on the maps included in *Appendix C.*

The concentration of exploration varies slightly across the Property. Drilling on the Property is typically sufficient for delineation of potential surface, highwall miner, and deep mineable coal horizons. Core logging is carried out by geologists in cases where roof and floor strata are of particular interest and in cases where greater resolution and geologic detail are needed. In many cases the drill hole data comes from simplified driller's logs, which may lack specific details regarding geotechnical conditions and specific geology, making correlations and floor and roof conditions difficult to determine. Geophysical logging (e-logging) techniques, by contrast, document specific details useful for geologic interpretation and mining conditions. Given the variability of data-gathering methods, *definitive* mapping of future mining conditions may not be possible, but projections and assumptions can be made within a *reasonable* degree of certainty. A significant effort was put into verifying the integrity of the database. Once this was established, stratigraphic columnar sections were generated using cross-sectional analysis to establish or confirm coal seam correlations.

Atypical cross-section is shown in *Figure 7-1.*

Figure 7-1: Aracoma Cross-Section



Due to the long history of exploration by various parties on the Property, a wide variety of survey techniques exist for documentation of data point locations. Many of the older exploration drill holes appear to have been located by survey and more recently completed drill holes are often located by high-resolution Global Positioning System *(GPS)* units. However, some holes appear to have been approximately located using USGS topography maps or other methods which are less accurate. Therefore, discretion had to be used regarding the accuracy for the location and ground surface elevation of some of these older drill holes. In instances where a drill hole location (or associated coal seam elevations) appeared to be inconsistent with the overall structural trend (or surface topography for surface-mineable areas), the data point was not honored for geological modeling. Others with apparently minor variances were adjusted and then used by MM&A.

Surveying of the underground and surface mined areas has been performed by the mine operators and/or their consulting surveyors. By assignment, MM&A did not verify the accuracy or completeness of supplied mine maps but accepted this information as being the work of responsible engineers and surveyors, as required by both State and Federal Law.

MM&A compiled comprehensive topographic map files by selecting the best available aerial mapping for each area and filling any gaps with digital USGS topographic mapping.

7.2 Drilling Procedures

Core drilling methods utilize NX-size (27a inch) or similar-sized core cylinders to recover core samples, which can be used to delineate geologic characteristics, and for coal quality testing and geotechnical logging. For the core holes, the geophysical logs are especially useful in verifying the core recovery of both the coal samples (for assurance that sample is representative of the full seam) and of the roof and floor rock samples (for evaluating ground control characteristics of deep mineable coal seams). In addition to the core holes, rotary drilled holes also exist on most of the Property. Data for the rotary drilled holes is mainly derived from downhole geophysical logs, which are used to interpret coal and rock thickness and depth since logging of the drill cuttings is not reliable.

A wide variety of core-logging techniques exist for the Property. For many of the core holes, the primary data source is a generalized lithology description by the driller, typically supplemented by a more detailed core log completed by a geologist. These drilling logs were provided to MM&A as a geological database. MM&A geologists were not involved in the production of original core logs but did perform a basic check of information within the provided database. Where geophysical logs for such holes are available, they were used by MM&A geologists to verify the coal thickness and core recovery of seams.

7.3 Hydrology

Hydrologic testing and forecasting are necessary parts of the permitting process and as such are routinely considered in the mine planning process.

Aracoma has a lengthy history of operation and three currently active mines with no significant hydrologic concerns or material issues experienced in its history. Future mining is projected to occur in areas exhibiting similar hydrogeological conditions as past mining. Based upon the successful history of the operation with regards to hydrogeological features, MM&A assumes that the operation will not be hindered by such issues in the future.

7.4 Geotechnical Data

Life-of-Mine *(LOM)* Mining plans for potential underground mines were developed by MM&A through incorporation of budget maps from Alpha. Pillar stability was tested by MM&A using the *Analysis of Coal Pillar Stability (ACPS)* software program. MM&A reviewed the results from the ACPS analysis and considered it in the development of the LOM plan. Coal and rock strengths from core testing are used to verify the empirical assumptions integral to ACPS.

8 Sample Preparation Analyses and Security

8.1 Prior to Sending to the Lab

Most of the coal samples have been obtained from the Property by subsurface exploration using core drilling techniques. The protocol for preparing and testing the samples has varied over time and is not well documented for the older holes drilled on the Property. Typical UScore drilling samplingtechnique is for the coal core sample, once recovered from the core barrel, to be described then wrapped in a sealed plastic sleeve and placed into a covered core box, which is the length of the sample so that the core can be delivered to a laboratory in relatively intact condition and with original moisture content. The core identification number and the depth are scribed on the sample box lid to identify the sample. This process has been the norm for both historical and ongoing exploration activities at Aracoma.

This work is typically performed by the supervising driller, geologist or company personnel. Samples are most often delivered to the company by the driller after each shift or acquired by company personnel or representatives. Most of the coal core samples were obtained by previous operators on the Property. MM&Adid not participate In the collection, sampling, and analysis of the majority of core samples within the exploration database. However, it is reasonable to assume, given the sophistication level of the previous operators, that these samples were generally collected and processed under industry best practices. This assumption is based on MM&A's familiarity with the operating companies and the companies used to perform the analysis.

In addition to the steps taken to ensure the accuracy of the historical data as described above, Alpha reports that the company employs a detailed chain of custody process during their current sampling programs. This chain of custody process follows the sample from the time it is drilled until the final quality results are entered into a database for preparation of geologic models.

8.2 Lab Procedures

Coal quality testing has been performed over a large number of years by operating companies using different laboratories and testing regimens. Some of the samples have raw analyses and washabilities on the full seam (with coal and rock parting layers co-mingled) and are mainly useful for characterizing the coal quality for projected production from underground and highwall mining. Other samples have coal and rock analyzed separately, the results of which can be manipulated to forecast either surface or underground mining quality. Care has been taken to use only those analyses that are representative of the coal quality parameters for the appropriate mining type for each sample.

Standard procedure upon receipt of core samples by the testing laboratory is to log the depth and thickness of the sample, then perform testing as specified by a representative of the operating company. Each sample is then analyzed in accordance with procedures defined under **ASTM International** *(ASTM)* standards including but not limited to; washability (ASTM D4371); ash (ASTM

D3174); sulfur (ASTM D4239); Btu/lb. (ASTM D5865); volatile matter (ASTM D3175); and Free Swell Index *(FSI)* (ASTM D720).

9 Data Verification

9.1 Procedures of Qualified Person

MM&A reviewed the Alpha-supplied digital geologic database and supplemented the database with its own in-house records which have been maintained for both Alpha and previous operators of the

Property. The database consists of data records, which include drill hole information for holes that lie within and adjacent to the Property along with records for numerous supplemental coal seam thickness measurements. Once the initial integrity of the database was established, stratigraphic columnar sections were generated using cross-sectional analysis to establish or confirm coal seam correlations. Geophysical logs were used wherever available to assist in confirming the seam correlation and to verify proper seam thickness measurements and recovery of coal samples.

After establishing and/or verifying proper seam correlation, seam data control maps and geological cross-sections were generated and again used to verify seam correlations and data integrity. Once the database was fully vetted, seam thickness, base-of-seam elevation, roof and floor lithology, and overburden maps were independently generated for use in the mine planning process.

Coal quality was analyzed and summarized by MM&A's team of geologists and engineers. Quality was provided by Alpha in various database formats, laboratory data sheets, and also obtained directly from MM&A's files. Care was taken to ensure that sampled data was representative of the mineable section. In instances where minimal representative data was noted, geological tonnages were estimated based upon applying assumed densities of coal and non-coal material to thicknesses expressed in geological database files.

9.2 Limitations

As with any exploration program, localized anomalies, such as a thin coal area or poor mining conditions, cannot always be identified. The greater the density of the samples taken, the less the risk. Once an area is identified as being of interest for inclusion in the mine plan, additional samples are taken to help reduce the risk in those specific areas. In general, provision is made in the mine planning portion of the study to allow for localized anomalies that are typically classed more as a nuisance than a hinderance.

9.3 Opinion of Qualified Person

Sufficient data has been obtained through various exploration and sampling programs and mining operations to support the geological interpretations of seam structure and thickness for coal horizons

situated on the Aracoma Property. The data is of sufficient quantity and reliability to reasonably support the coal resource and coal reserve estimates in this TRS.

10 Mineral Processing and Metallurgical Testing

10.1 Testing Procedures

Basic chemical analyses (both raw and washed quality), petrographic data, rheological data and ash, ultimate and sulfur analysis are available but not summarized for this filing. Available coal quality data sourced from MM&A's vaults (associated with former projects for Alpha and its predecessors) was tabulated by resource area in a Microsoft® EXCEL workbook. Such data contained laboratory sheets which MM&A utilized to confirm that sampled intervals were representative of geological models and confirm that appropriate laboratory procedures were utilized to derive raw and clean coal parameters. Additionally, Alpha provided MM&A with a database of its own in-house coal quality information which did not include backup laboratory information or sampled intervals. MM&A compared wash recovery values from Alpha's dataset to proximal holes with wash recovery data in MM&A's dataset and calculated estimates of wash recovery based upon the relative percentages of coal and rock from lithologic descriptions. In general, MM&A found that Alpha's dataset was representative and appropriate for inclusion in coal quality summaries. Quality tables also provide basic statistical analyses of the coal quality datasets, including average value; maximum and minimum values; and the number of samples available to represent each quality parameter of the seam. Coal samples that were deemed by MM&A geologists to be unrepresentative were not used for statistical analysis of coal quality, as documented in the tabulations.

The amount and areal extent of coal sampling for geological data is generally sufficient to represent the quality characteristics of the coal horizons and allow for proper market placement of the subject coal seams. For some of the coal deposits, there are considerable laboratory data from core samples that are representative of the full extent of the resource area; and for others there are more limited data to represent the resource area. For example, in the active operations with considerable previous mining, there may be limited quality data within some of the remaining resource areas; however, in those cases the core sampling data can be supplemented with operational data from mining and shipped quality samples representative of the resource area.

10.2 Relationship of Tests to the Whole

The extensive sampling and testing procedures typically followed in the Coal Industry result in an excellent correlation between samples and Marketable product. As shipped analyses of the coal from Aracoma were reviewed to verify that the coal quality and characteristics were as expected. The Aracoma Property has a long history of saleable production, under various owners, in the High-volatile metallurgical and thermal markets, confirming exploration results.

Alpha Metallurgical Resources, Inc.
Statement of Coal Resources and Reserves for the
Aracoma Complex in Accordance with
United States SEC Standards as of December 31, 2024
Central Appalachian Coal Basin
West Virginia, USA

10.3 Lab Information

Each sample is analyzed at area Laboratories that operate in accordance with procedures defined under ASTM standards including but not limited to; washability (ASTM D4371); ash (ASTM D3174); sulfur (ASTM D4239); Btu/lb. (ASTM D5865); volatile matter (ASTM D3175); Free Swell Index *(FSI)* (ASTM D720).

10.4 Relevant Results

No critical factors have been found that would adversely affect the recovery of the Reserve. Any quality issues that occur, either localized or generally, are accounted for in the Marketing Study done for this

TRS.

11 Mineral Resource Estimates

MM&A independently created a geologic model to define the coal resources at Aracoma. Coal resources were estimated as of December 31, 2024.

11.1 Assumptions, Parameters and Methodology

Geological data was imported into Carlson Mining' (formerly SurvCADD) geological modelling software in the form of Microsoft' Excel files incorporating drill hole collars, seam and thickness picks, bottom seam elevations and raw and washed coal quality. These data files were validated prior to importing into the software. Once imported, a geologic model was created, reviewed, and verified- with a key element being a gridded model of coal seam thickness. Resource tons were estimated by using the seam thickness grid based on each valid point of observation and by defining resource confidence arcs around the points of observation. Points of observation for Measured and Indicated confidence arcs were defined for all valid drill holes that intersected the seam using standards deemed acceptable by MM&A based on a detailed geologic evaluation and a statistical analysis of all drill holes within the projected reserve areas as described in *Section 11.1.1.* The geological evaluation incorporated an analysis of seam thickness related to depositional environments, adjacent roof and floor lithologies, and structural influences.

After validating coal seam data and establishing correlations, the thickness and elevation for seams of economic interest were used to generate a geologic model. Due to the relative structural simplicity of the deposits and the reasonable continuity of the tabular coal beds, the principal geological interpretation necessary to define the geometry of the coal deposits is the proper modeling of their thickness and elevation. Both coal thickness and quality data are deemed by MM&A to be reasonably sufficient within the resource areas. Therefore, there is a reasonable level of confidence in the geologic interpretations required for coal resource determination based on the available data and the techniques applied to the data.

Table 11-1 below provides the geological mapping and coal tonnage estimation criteria used for the coal resource and reserve evaluation. These cut-off parameters have been developed by MM&A based on its experience with Aracoma properties and are typical of mining operations in the Central Appalachian coal basin. This experience includes technical and economic evaluations of numerous properties in the region for the purposes of determining the economic viability of the subject coal reserves.

Table 11-1: General Reserve & Resource Criteria

Item	Parameters	Technical Notes & Exceptions*
• **General Reserve Criteria**		
Reserve Base Classification	Reserve and Resource	Coal resources as reported are exclusive and inclusive of coal reserves.
Reliability Categories	Reserve (Proven and Probable) Resource (Measured, Indicated & Inferred)	To better reflect geological conditions of the coal deposits, distance between points of observation is determined via statistical analysis
Effective Date of Resource Estimate	December 31, 2024	Coal resources were estimated based upon depletion maps with effective dates of September 31, 2024, with a fourth quarter production depletion adjustment though December 31, 2024
Effective Date of Reserve Estimate	December 31, 2024	Coal reserves were estimated based upon depletion maps with effective dates of September 31, 2024, with a fourth quarter production depletion adjustment though December 31, 2024.
Seam Density	With raw seam analysis: SG = 1.25+(Raw Ash% / 100 In the absence of laboratory data, estimated by (1) assuming specific gravity of 1.30 for coal and 2.25 for rock parting	
• **Underground-Mineable Criteria**		
Map Thickness	Total seam thickness	
Minimum Seam Thickness	30 inches	Minor Exceptions for localized zones of thinner coal
Minimum Mining Thickness	52 inches	
Minimum Total Coal Thickness	27 inches and 30 inches	Minor Exceptions for localized zones of thinner coal
Minimum In-Seam Wash Recovery	Determined as function of seam thickness	
Wash Recovery Applied to Coal Reserves	Based on average yield for drill holes within reserve area, or in the absence of laboratory washability data, based on estimated visual recovery using specific gravities noted above and 95 percent yield on "clean" coal	
Out-of-Seam Dilution Thickness for Run-of-Mine Tons Applied to ROM tonnages	Greater of 2 inches or 52-inch minimum cutting height less seam thickness	
Mine Barrier	200-foot distance from abandoned mines and sealed or pillared areas	
Minimum Reserve Tonnage	400 thousand recoverable tons for individual area (logical mining unit)	
Minimum Overburden Depth	100 feet	
Minimum Interval to Rider Coal	Considered on a case-by-case basis, depending on interval lithology, etc.	
Minimum Interval to Overlying or Underlying Reserves	Considered on a case-by-case basis, depending on interval lithology, extent and type of extraction, etc.	
Minimum Interval to Overlying or Underlying Mined Areas	Considered on a case-by-case basis, depending on interval lithology, extent and type of extraction, etc.	
Adjustments Applied to Coal Reserves	6.5 percent moisture increase; 5 percent preparation plant inefficiency	

Note: Exceptions for application of these criteria to reserve estimation are made as warranted and demonstrated by either actual mining experience or detailed data that allows for empirical evaluation of mining conditions. Final classification of coal reserve is made based on the pre-feasibility evaluation.

11.1.1 Geostatistical Analysis

MM&A completed a geostatistical analysis on drill holes within the reserve boundaries to determine the applicability of the common United States classification system for measured and indicated coal resources. Historically, the United States has assumed that coal within %-mile (1,320 feet) of a point of observation represents a measured resource whereas coal between %-mile (1,320 feet) and %-mile (3,960 feet) from a point of observation is classified as indicated. Inferred resources are commonly assumed to be located between %-mile (3,960 feet) and 3 miles (15,840 feet) from a point of observation. Per SEC regulations, only measured and indicated resources may be considered for reserve classification, respectively, as proven and probable reserves.

MM&A performed a geostatistical analysis test of the Aracoma data set using the Drill Hole Spacing Analysis *(DHSA)* method. This method attempts to quantify the uncertainty of applying a measurement from a central location to increasingly larger square blocks and provides recommendations for determining the distances between drill holes for measured, indicated, and inferred resources.

To perform DHSA the data set was processed to remove any erroneous data points, clustered data points, as well as directional trends. This was achieved through the use of histograms, as seen in *Figure 11-1,* color coded scatter plots showing the geospatial positioning of the borings, *Figure 11-2,* and trend analysis.

Figure 11-1: Histogram of the Total Seam Thickness for the No. 2 Gas Seam Present in the Aracoma Complex

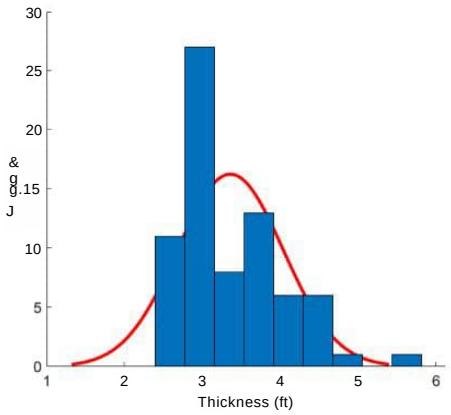
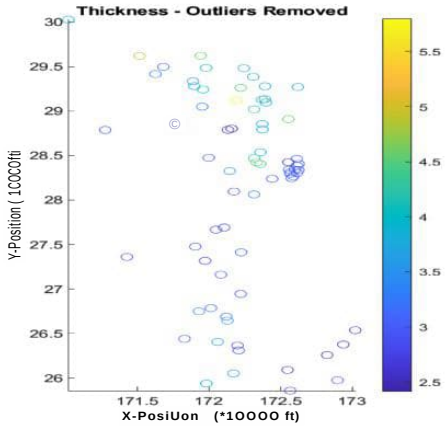


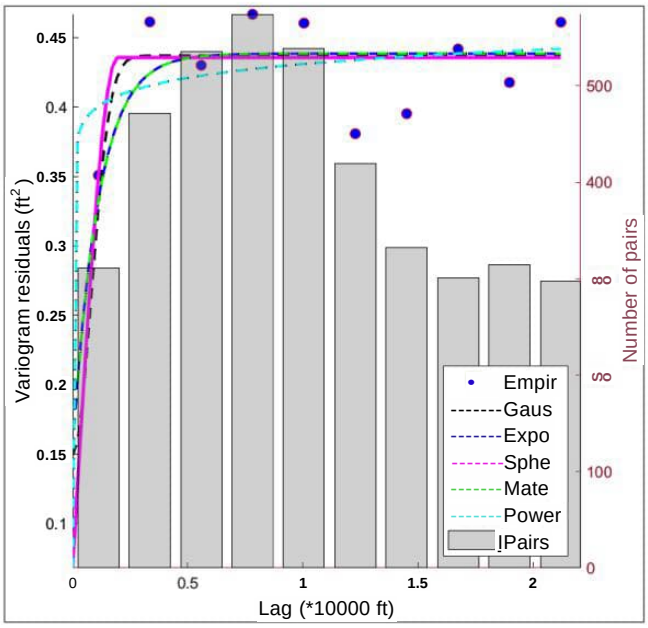
Figure 11-2: Scatter plot of the Total Seam Thickness for the No. 2 Gas Seam Present in the Aracoma Complex



Following the completion of data processing, a variogram of the data set was created, *Figure 11-3.* The variogram plots average square difference against the separation distance between the data pairs. The

separation distance is broken up into separate bins defined by a uniform lag distance (e.g., for a lag distance of 500 feet the bins would be 0 - 500 feet, 501 - 1,000 feet, etc.). Each pair of data points that are less than one lag distance apart are reported in the first bin. If the data pair is further apart than one lag distance but less than two lag distances apart, then the variance is reported in the second bin. The numerical average for differences reported for each bin is then plotted on the variogram. Care was taken to define the lag distance in such a way as to not overestimate any nugget effect present in the data set. Lastly, modeled equations, often spherical, gaussian, or exponential, are applied to the variogram in order to represent the data set across a continuous spectrum.

Figure 11-3: Variogram of the Total Seam Thickness for the No. 2 Gas Seam Present in the Aracoma Complex



The estimation variance is then calculated using information from the modeled variogram as well as charts published by Journel and Huijbregts (1978). This value estimates the variance from applying a single central measurement to increasingly larger square blocks. Care was taken to ensure any nugget effect present was added back into the data. This process was repeated for each test block size.

The final step of the process is to calculate the global estimation variance. In this step the number square blocks that would fit inside the selected study area is determined for each block size that was investigated in the previous step. The estimation variance is then divided by the number of blocks that

would fit inside the study area for each test block size. Following this determination, the data is then transformed back to represent the relative error in the 95th-percentile range.

Figure 11-4 shows the results of the DHSA performed on the No. 2 Gas seam data for the Aracoma Complex. DHSA provides hole to hole spacing values, these distances need to be converted to radius from a central point in order to compare to the historical standards. A summary of the radius data is shown in *Table 11-2*. DHSA prescribes measured, indicated, and inferred drill hole spacings be determined at the 10-percent, 20-percent, and 50-percent levels of relative error, respectively.

Figure 11-4: Result of DHSA for the No. 2 Gas Seam Present in the Aracoma Complex

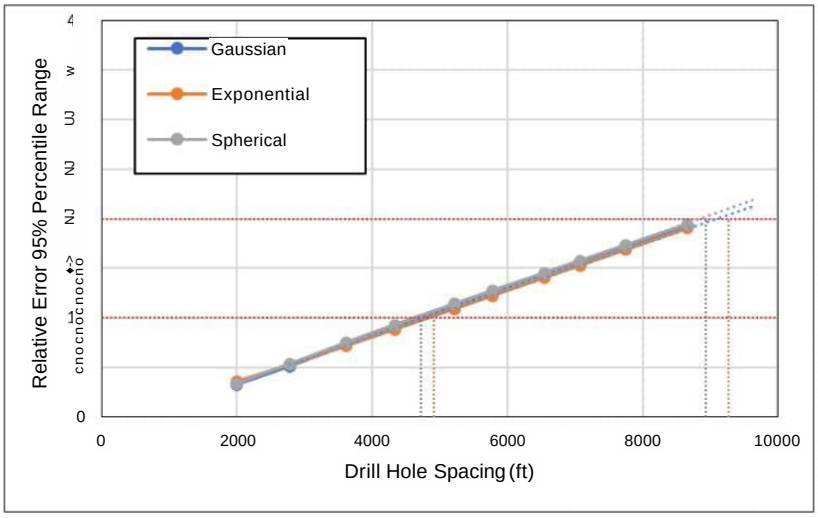


Table 11-2: DHSA Results Summary for Radius from a Central Point

Model:	Measured Radial Distance (10% Relative Error) (Miles)	Indicated Radial Distance (20% Relative Error) (Miles)	Inferred Radial Distance (50% Relative Error) (Miles)
Gaussian:	0.47	0.88	2.11
Spherical:	0.45	0.85	2.08
Exponential:	0.47	0.88	2.11

Comparing the results of the DHSA to the historical standards, it is evident that the historical standards are more conservative than even the most conservative DHSA model with regards to determining measured resources. The Spherical model recommends using a radius of 0.45 miles for measured resources compared to the historical value of 0.25 miles. With respect to indicated resources the DHSA falls in line closely with the historical standards. The Spherical model recommends using a radius of 0.85 miles, while the Gaussian and Exponential models recommend a radius of 0.88 miles. These values

line up closely with the historical radius of 0.75 miles. These results have led the QPs to report the data following the historical classification standards, rather than use the results of the DHSA.

11.2 Resources Exclusive of Reserves

The Aracoma property contains multiple resource blocks which were not deemed to exhibit reserve potential at the time of the study. These resources, formally identified as resources exclusive of reserves, are in the Upper Chilton, Upper Cedar Grove and No. 2 Gas seams. Reasons which may preclude elevation of resources to reserves include, but are not limited to:

1. Unfavorable geology, mine access or social/political constraint that will increase mine operating cost or capital development costs.
    i. *Map 5,* No. 2 Gas seam, shows resource classification for the Rum Creek Area. Geology indicates the roof and floor will be hard cutting and seam splitting that will limit the mine height and equipment size.
    ii. *Map 2,* Upper Cedar Grove, the seam is generally in two benches with a parting of variable thickness. The resource areas are mostly confined to where the mid-seam parting thickness is less than 4.0 feet.
2. Coal quality inconsistent with typical preferred market properties.
    i. Shown on *Map 2,* Upper Cedar Grove seam, the Cedar Grove #2 mine experienced higher than desirable Sulfur content when mining in the portions of Block A2. The remaining portions of coal block are projected to have higher than 1.6% Sulfur and were subsequently designated as resource tons rather than as reserves.
    ii. Shown on *Map* 2, Upper Cedar Grove seam, the Cedar Grove #3 northern blocks are classified as a resource due to lack of coal quality analysis and the potential high sulfur.
3. Isolation of resource blocks in which seam access costs are cost prohibitive at the time of the study.
    i. *Map 6,* Chilton Seam, Blocks BE-A1 through BE-A5 and BE-B through BE-F, have all been classified as resource, as they are isolated and separated by adverse mineral and out crops. The resources have the potential to be surface mined or underground mined or a combination of these methods. The seam is located high on the hills, so the cover is generally shallow and variable.
4. Exclusion from LOM planning by mining operator due to remaining resource blocks which are relatively small, isolated blocks and not currently attractive from an operational perspective.
    i. Portions of the Boone East No. 2 Gas, Blocks BE-A, B, BI, DI, D2, and E- on *Maps 5 and* 7, located immediately north of the reserve block BE-C, have been designated as resource, as they are relatively small, isolated controlled blocks of coal. Additional

mineral control with associated exploration drilling could define a contiguous block suitable for mine development.

11.2.1 Initial Economic Assessment

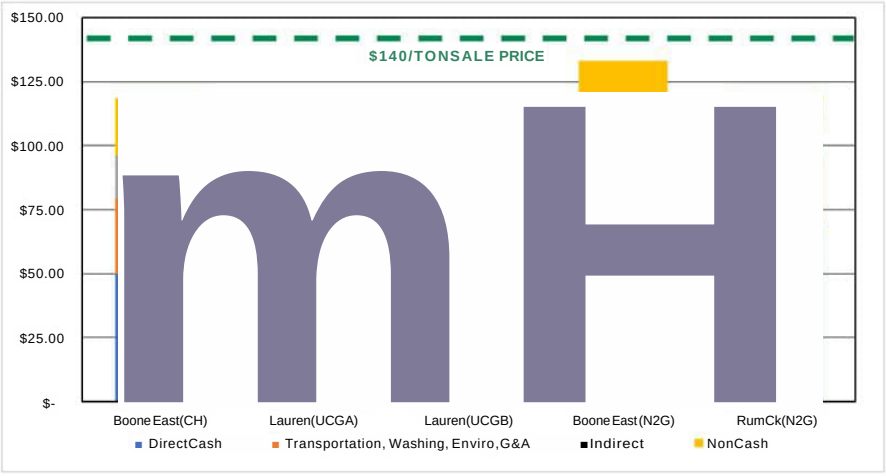
MM&A completed an initial economic assessment to determine the potential economic viability of resources exclusive of reserves (not converted to reserves). MM&A applied relevant technical factors to estimate potential saleable tons without the resource blocks, should the resources be extracted via deep, continuous mining methods. MM&A developed cash cost profiles for the resource blocks, including direct cash costs (labor, supplies, roof control, maintenance and repair, power, and other); washing, trucking, materials handling, general and administrative, and environmental costs: and

indirect cash costs (royalties, production taxes, property tax, insurance). Costs were developed based off relevant cost drivers (per-ft, per-raw-ton, per-clean-ton). Additionally, MM&A estimated capital costs to access resources. Capital costs associated with mine development were amortized across the resource's potential saleable tonnages. Additional non-cash items (depreciation of equipment and depletion) and cash costs were compared to an assumed sale price of $140 per ton netback FOB loadout (approximately $197 per ton U.S. East Coast basis) for high-volatile markets. This resource assumed sales value was developed as a premium to the market-based reserve sales value to properly estimate the sales-related expenses should these resources be extracted during higher-than-average market conditions. Pricing used for the primary product was selected by the QP and deemed reasonable based on a review of historical average pricing for the Aracoma complex coal products over the past 5 years. The results of the analysis are shown below and demonstrate potential profitability on a fully loaded cost basis. Detailed summaries are shown in *Appendix B.*

Table 11-3: Results of Initial Economic Assessment ($/ton)

Mine/Resource Block	Seam	Direct Cash	Transportation, Washing, Enviro, G&A	Indirect	Non-Cash	Total Cost	Fully Loaded P&L
Boone East	Chilton	$50.04	$29.23	$16.95	$22.28	$118.50	$21.50
UCG Lauren Land, Block A2-A3	UCG	$56.93	$24.65	$16.95	$6.49	$105.01	$34.99
UCG Lauren Land, Block B	UCG	$51.98	$27.22	$16.95	$6.49	$102.64	$37.36
N2G BE	N2G	$74.92	$29.72	$11.83	$16.55	$133.02	$6.98
N2G RC	N2G	$69.57	$27.03	$11.83	$11.22	$119.65	$20.35

Figure 11-5: Results of Initial Economic Assessment



11.3 Qualified Person's Estimates

Based on the work previously described and detailed modelling of those areas along with consideration all modifying factors, a coal resource estimate, summarized in *Table 11-4,* was prepared as of December 31, 2024, for property controlled by Alpha.

Table 11-4: Coal Resources Summary as of December 31, 2024

Area	Seam	Coal Resource (Dry Tons, In Situ, Mt) Measured	Indicated	Inferred	Total
Inclusive of Reserve/Converted to Reserve					
Davy Branch	Upper Chilton (41000}	9,964,000	2,793,000	0	12,758,000
Hatfield Area	Upper Chilton (41000}	17,538,000	10,930,000	0	28,468,000
Cedar Grove No. 3	Upper Cedar Grove (30100)	17,168,000	3,993,000	0	21,162,000
Laurel Land	Lower Cedar Grove (30000)	5,484,000	2,991,000	0	8,475,000
Lower Cedar Grove No, 3	Lower Cedar Grove (30000)	1,577,000	54,000	0	1,631,000
Beech Branch	Alma (25800)	2,560,000	1,226,000	0	3,787,000
Lynn Branch	No. 2 Gas (24000)	26,042,000	15,067,000	217,000	41,327,000
Boone East	No. 2 Gas (24000)	6,072,000	8,662,000	701,000	15,435,000
Total Inclusive of Reserve/Converted to Reserve		86,406,000	45,717,000	918,000	133,042,000
[1] Exclusive of Reserve/Not Converted to Reserve					
Boone East	Chilton (47000)	7,306,000	1,990,000	0	9,296,000
Cedar Grove No. 2	Upper Cedar Grove (30100)	12,102,000	9,571,000	180,000	21,853,000
Cedar Grove No. 3	Upper Cedar Grove (30100)	3,414,000	1,355,000	4,000	4,773,000
Rum Creek	No. 2 Gas (24000)	29,760,000	19,508,000	154,000	49,422,000
Boone East	No. 2 Gas (24000)	29,094,000	17,283,000	86,000	46,463,000
Total Exclusive of Reserve/Not Converted to Reserve		81,676,000	49,707,000	423,000	131,806,000

Area	Seam	Coal Resource (Dry Tons, In Situ, Rit) Measured	Indicated	Inferred	Total
Grand Total					
Inclusive of Reserve/Converted to Reserve		86,406,000	45,717,000	918,000	133,042,000
Exclusive of Reserve/Not Converted to Reserve		81,676,000	49,707,000	423,000	131,806,000
Grand Total		168,082,000	95,424,000	1,341,000	264,848,000

Note(l): Resource tons are inclusive of reserve tons since they include the in-situ tons from which recoverable coal reserves are derived.
Note (2): Coal resources are reported on a dry basis. Surface moisture and inherent moisture are excluded.
Note(3): The Property contains 131.4 Mt of dry, in-place measured and indicated coal resources exclusive of reserves as of December 31, 2024.
Totals may not add due to rounding.
See Appendix A for more detailed breakdown.

11.4 Qualified Person's Opinion

\A/hilo thorn ic cnmo ctratiaranh irallv rnntrnllnd coam-thirknocc; v/ari ahilitv di i*=>tn coam cnlit+incr c nrl

channels, etc., MM&A geologists and engineers modeled the deposit and resource areas to reflect realistic mining scenarios, giving special consideration to uncertainties as related to each class of mineral resources such as (1) seam thickness, (2) floor and roof conditions, (3) mining equipment, etc. This statistical study demonstrates that for each configuration of mineable seams, the classification system of **measured (0 - %** mile), **indicated** (% to % mile), and **inferred** (% to 3 miles) is reasonably adequate to predict seam thickness variation for modeling and mining purposes. Based on MM&A's geostatistical analysis, it would be possible to extend the measured, indicated and inferred arcs slightly beyond historically accepted practices due to consistent geological settings. The QP's have again elected not to extend arc distances, introducing a level of conservatism in measured and indicated coal classification.

Based on the data review, the attendant work done to verify the data integrity and the creation of an independent Geologic Model, MM&A believes this is a fair and accurate representation of the Aracoma coal resources.

12 Mineral Reserve Estimates

12.1 Assumptions, Parameters and Methodology

Coal Reserves are classified as *proven* or *probable* considering "modifying factors" including mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors.

- **Proven Coal Reserves** are the economically mineable part of a measured coal resource, adjusted for diluting materials and allowances for losses when the material is mined. It is based on appropriate assessment and studies in consideration of and adjusted for reasonably assumed modifying factors. These assessments demonstrate that extraction could be reasonably justified at the time of reporting.
- **Probable Coal Reserves** are the economically mineable part of an indicated coal resource, and in some circumstances a measured coal resource, adjusted for diluting materials and allowances for losses when the material is mined. It is based on appropriate assessment and studies in

consideration of and adjusted for reasonably assumed modifying factors. These assessments demonstrate that extraction could be reasonably justified at the time of reporting.

Upon completion of delineation and calculation of coal resources, MM&A generated a LOM plan for Aracoma. The footprint of each reserve area is shown on the maps in *Appendix C.* The Mine plan was generated based on budget mine plans provided by Alpha and supplemented with additional projections by MM&A to reflect LOM plans that honor property control limits, geologic mapping, or other factors determined during the evaluation.

Carlson Mining software was used to generate the LOM plan for Aracoma. The mine plan was sequenced based on productivity schedules provided by Alpha. MM&A judged the productivity estimates and plans to be reasonable based on experience and current industry practice.

Raw, ROM production data outputs from LOM plan sequencing were processed into Microsoft ' EXCEL spreadsheets and summarized on an annual basis for processing into the economic model. Average seam densities were estimated to determine raw coal tons produced from the LOM plan. Average mine recovery and wash recovery factors were applied to determine coal reserve tons.

Coal reserve tons in this evaluation are reported at a 6.0-percent moisture and represent the saleable product from the Property.

Pricing data as provided by Alpha from third party sources is described in *Table 16-2.* The pricing data assumes a flat-line mine realization of $169 per short-ton port pricing, with an average of $120.33 per ton netback pricing, reflective of the high-volatile product currently sold at Aracoma.

The coal resource mapping and estimation process, described in the report, was used as a basis for the coal reserve estimate. Proven and probable coal reserves were derived from the defined coal resource considering relevant processing, economic (including technical estimates of capital, revenue, and cost), marketing, legal, environmental, socio-economic, and regulatory factors and are presented on a moist, recoverable basis.

As is customary in the US, the categories for proven and probable coal reserves are based on the distances from valid points of measurement as determined by the QP for the area under consideration. For this evaluation, measured resource, which may convert to a proven reserve, is based on a %-mile radius from a valid point of observation.

Points of observation include exploration drill holes, and mine measurements which have been fully vetted and processed into a geologic model. The geologic model is based on seam depositional modeling, the interrelationship of overlying and underlying strata on seam mineability, seam thickness trends, the impact of seam structure, intra-seam characteristics, etc. Once the geologic model was completed, a statistical analysis, described in *Section 11.1.1* was conducted and a %-mile radius from a valid point of observation was selected to define Measured Resources.

Alpha Metallurgical Resources, Inc.
Statement of Coal Resources and Reserves for the
Aracoma Complex in Accordance with
United States SEC Standards as of December 31, 2024
Central Appalachian Coal Basin
West Virginia, USA

Likewise, the distance between % and % of a mile radius was selected to define Indicated Resources. Indicated Resources may convert to Probable Reserves.

Inferred Resources (greater than a %-mile radius from a valid point of observation) have been excluded from Reserve consideration.

12.2 Mineral Reserves

Aracoma reserves were derived from multiple coal seams of *Figure 7-1* located on the Property. All reserves are planned to be mined by underground mining methods. The above-drainage underground seams include the Uoner Chilton seam at Daw Branch and Hatfield and the Unoer Cedar Grove seam

seams include the Upper Chilton seam at Davy Branch and Hatfield and the Upper Cedar Grove seam at Laurel Branch Mine. Below-drainage underground reserves are in the Lower Cedar Grove seam, the Alma seam at Beech Branch and the No. 2 Gas seam at Boone East, Lynn Branch and Rum Creek. *Table 12-1* shows the demonstrated tonnage by Proven and Probable.

12.2.1 Upper Chilton Seam

The Upper Chilton reserve is contained in two blocks, the active Davy Branch mine block and, to the west, the Hatfield block. Seam thickness is generally between 3 and 4 feet. Localized areas of hard roof and floor are excluded from the reserves.

12.2.2 Upper Cedar Grove Seam

The Upper Cedar Grove (UCG) resource and reserve is also in two blocks, the idle Cedar Grove No. 2 mine block and a separate block, Cedar Grove No. 3 mine to the west. The Cedar Grove No. 3 mine began initial production during the fourth quarter 2022. The reserve is defined by areas with less than 1.70% sulfur and less than 4.0 feet total mid-seam parting thickness. There are no reserves defined in the idle Cedar Grove No. 2 mine block; all reserves are in the west block (No. 3 mine).

12.2.3 Lower Cedar Grove Seam

The Lower Cedar Grove (LCG) reserves are located in two separate blocks. The west block is referred to as the Lauren Land LCG and is an unmined block surrounded by abandoned mines. Access would be through a short slope. Seam thickness ranges from 2.50 to 3.50 feet. The east block is part of the Upper Cedar Grove #3 Mine. The LCG would be mined though the UCG#3 mine along the west margin of the UCG reserve. The LCG will be the more attractive coal seam once the UCG seam parting increases to greater than 4 feet.

12.2.4 Alma Seam

The Alma seam reserve is located in one block south of the Guyandotte River and south of the closed Aracoma Alma No. 1 Mine. The east side of the reserve block outcrops along the river and the west side is slightly below drainage where the reserve will be accessed. The seam thickness is less than 3.0 feet, and the reserve cutoff is 2.5 feet.

12.2.5 No. 2 Gas Seam

The No. 2 Gas seam reserve is in three areas: the active Lynn Branch No. 2 Mine, the Rum Creek area, and the Boone East area. Lynn Branch is the largest block of the No. 2 Gas reserve and is located south and west of the Guyandotte river and south and west of previous mining. Seam thickness is generally greater than 3 feet. Areas with projected low fluidity will be mined with higher fluidity coals. The Rum Creek No 2 Gas is considered strictly a resource due to seam splits to the north, and the resource area is bound by hard roof and floor rock that will limit the mining height. The Boone East reserve is north of Rum Creek. The reserve outcrops on the west side in Mill and Crooked Creeks.

12.3 Qualified Person's Estimates

The coal reserves, as shown in *Table 12-1,* are based on a technical evaluation of the geology and a preliminary feasibility study of the coal deposits. The extent to which the coal reserves may be affected by any known environmental, permitting, legal, title, socio-economic, marketing, political, or other relevant issues has been reviewed rigorously. Similarly, the extent to which the estimates of coal reserves may be materially affected by mining, metallurgical, infrastructure and other relevant factors has also been considered.

The results of this TRS define an estimated 38.06 Mt of proven and probable marketable coal reserves. The maps included in *Appendix C* reflect mining depletion at the time of the resource/reserve calculation taken from Alpha mine maps as of September 30, 2024. Mine depletion tonnages were supplied by Alpha through the end of 2024, and MM&A deducted this historical production from the mapped reserves in order to estimate reserves as of December 31, 2024.

Table 12-1: Coal Reserves Summary (Marketable Sales Basis) as of December 31, 2024

		Demonstrated Coal Reserves (Wet Tons, Washed or Direct Shipped)					Quality (Dry Basis)		
		By Reliability Category			By Control Type				
Area/Mine	Seam	Proven	Probable	Total	Owned	Leased	Ash%	Sulfur %	VM%
Davy Branch	Upper Chilton (41000)	2,330,000	605,000	2,934,000	0	2,934,000	7	0.9	39
Hatfield	Upper Chilton (41000)	5,105,000	2,663,000	7,768,000	0	7,768,000	7	0.9	36
Cedar Grove No. 3	U. Cedar Grove (30100)	3,078,000	565,000	3,642,000	0	3.642,000	7	1.3	39
Lauren Land	L. Cedar Grove (30000)	1,905,000	1,038,000	2,943,000	0	2,943,000	3	0.7	-
Cedar Grove No. 3	L Cedar Grove (30000)	539,000	17,000	556,000	54,000	502,000	4	0.6	38
Beech Branch	Alma (25800)	998,000	431,000	1,429,000	0	1,429,000	4	0.9	39
Lynn Branch	No. 2 Gas (24000)	8,826,000	4,931,000	13,757,000	573,000	13,184,000	4	0.8	37
Boone East	No. 2 Gas (24000)	1,748,000	3,275,000	5,023,000	3,976,000	1,048,000	4	0.9	-
Grand Total		24,530,000	13,525,000	38,055,000	4,603,000	33,452,000	5	0.9	37

Notes: Marketable reserve tons are reported on a moist basis, including a combination of surface and inherent moisture. Coal quality is based on a weighted average of laboratory data from core holes. The combination of surface and inherent moisture is modeled at S.O-percent. Actual product moisture is dependent upon multiple geological factors, operational factors, and product contract specifications and can exceed 8-percent. As such, the modeled moisture values provide a level of conservatism for reserve reporting.
**Volatile Matter analysis is not available for all reserve areas. All Aracoma reserves are priced as a High-Vol. B product.*
Totals may not add due to rounding.
See Appendix A for more detailed breakdown.

12.4 Qualified Person's Opinion

The estimate of coal reserves was determined in accordance with the SEC S-K 1300 regulations that became effective for the first fiscal year falling on or after January 1, 2021.

The LOM mining plan for Aracoma was prepared to the level of preliminary feasibility. Mine projections were prepared, and timing scheduled to match production with coal seam characteristics. Production timing was carried out from current locations to depletion of the coal reserve area. Coal reserve estimates could be materially affected by the risk factors described in *Section 22.2.*

Based on the Preliminary Feasibility Study and the attendant Economic Review. MM&A believes this is

a fair and accurate calculation of the Aracoma coal reserves.

13 Mining Methods

Seven underground mining areas were modeled and tested economically. Once the Resources were calculated, mine plans were created to project operating each resource area to depletion, with crews and equipment scheduled to move to subsequent mining areas as depletion occurs. Underground mine operations are projected to be exhausted in 2039. individual mine lives range from 4 to 13 years.

13.1 Geotech and Hydrology

Mining plans for potential underground mines were developed by Alpha and MM&A. Pillar stability was tested by MM&A using the *Analysis of Coal Pillar Stability (ACPS)* software program. MM&A reviewed the results from the ACPS analysis and considered it in the development of the LOM plan.

Hydrology has not been an issue of concern at Aracoma. Based on numerous site visits to the underground operations of the Property by the QP's, it has been determined that this is not a significant concern. Mining of future reserves is projected to occur in areas which exhibit similar hydrogeological characteristics as those formerly mined areas.

13.2 Production Rates

Operations at Aracoma by Alpha and its predecessors have been on-going for many years. The Mine plan and productivity expectations reflect historical performance and efforts have been made to adjust the plan to reflect future conditions. MM&A is confident that the mine plan is reasonably representative to provide an accurate estimation of coal reserves. Mine development and operation have not been optimized within the TRS.

Carlson Mining software was used by MM&A to generate mine plans for the mineable coal seams. Mine plans were sequenced based on productivity schedules provided by Alpha, which were based on

historically achieved productivity levels. All production forecasting ties assumed production rates to geological models as constructed by MM&A's team of geologists and mining engineers.

The Aracoma Mining Complex currently operates three underground mines with a total of eight (8) operating sections. The Cedar Grove #2 mine has been idled and production has shifted to the Cedar Grove #3 Mine. Two continuous miner production sections will operate in the Cedar Grove #3 Mine. The projected underground mines are set up similarly to the currently active operation. Lynn Branch No. 2 (No. 2 Gas seam) will operate four production sections and the Davy Branch Mine (Upper Chilton seam) will operate two production sections.

All sections are configured with dual continuous miners in a super section operation. In all cases, mines are forecasted to produce coal two shifts each day. Production is scheduled Monday through Friday each week, and every other Saturday.

As shown in *Table 13-1,* the seven areas planned for underground mines produce coal until 2039. Clean coal production varies directly with coal thickness.

Table 13-1: Aracoma Complex Underground Mine Production Schedule (x 1,000 Saleable Tons)

Mine Name	2024	2025	2026	2027	2028	2029	2030	2031
Lynn Branch N2G	416	1,503	1,467	1,506	1,371	1,306	**956**	984
Davy Branch UCH	312	907	735	671	426	0	**0**	0
Lauren Land - Hatfield UCH	0	0	0	0	192.1	811	733	749
Lauren Land LCG	0	0	0	0	0	0	0	0
Boone East N2G	0	0	0	0	0	228	**828**	650
Alma Beech Br	0	0	0	0	164	343	329	318
UCG No. 3	290	1,014	1,012	983	799	218	0	0
Total	**1,018**	**3,424**	**3,215**	**3,160**	**2,952**	**2,906**	**2,846**	**2,700**

Mine Name	2032	2033	2034	2035	2036	2037	2038	2039
Lynn Branch N2G	1,058	943	936	915	447	231	0	0
Davy Branch UCH	0	0	0	0	0	0	0	0
Lauren Land - Hatfield UCH	772	770	796	776	775	768	622	6
Lauren Land LCG	34	366	363	349	751	663	391	27
Boone East N2G	677	747	735	**668**	512	212	0	0
Alma Beech Br	275	0	0	0	0	0	0	0
UCG No. 3	0	0	0	0	0	0	**0**	0
Total	**2,815**	**2,826**	**2,829**	**2,709**	**2,484**	**1,874**	**1,013**	**33**

13.3 Mining-Related Requirements

13.3.1 Underground

A mine plan with sequenced mining projections was prepared for each logical mining unit. For each mine plan, the appropriate number of production units is selected for the resource area, and a productivity level assigned, expressed in feet of advance per unit-shift of production. The productivity is based on the equipment and personnel configuration, mining height and expected physical conditions.

13.4 Required Equipment and Personnel

13.4.1 Underground Mines

13.4.1.1 Lynn Branch No. 2 Mine (Map 5)

As noted above, MM&A's model shows the Lynn Branch No. 2 Mine operating four (4) continuous mining sections in the No. 2 Gas seam. This mine produces metallurgical coal from leased mineral property.

Production is scheduled for approximately 265 days each year, which represents production on Monday through Friday plus every other Saturday. On each day, production sections are scheduled to produce

rnrougn t-riaay pius every orner bacuroay. un eacn aay, production sections are scneauiea to produce coal on two shifts. The sections are configured as super sections with two continuous miners used for production on each section. Productivity is planned at the rate of 280 feet of advance per shift of operation.

Principal production equipment per section includes two continuous miners, two roof bolters, four shuttle cars, and one scoop. Coal is extracted from the production face with the continuous miners and hauled to the mine conveyor in shuttle cars. At the conveyor belt, the coal is discharged from the shuttle cars onto a feeder breaker for transfer onto the conveyor. The conveyors carry the coal to the outside, where it is stockpiled. Coal is then transported via highway truck haulage to the Bandmill Preparation Plant where it is processed and loaded onto CSX rail for transport to the consumer.

The Lynn Branch No. 2 Mine is operational at the time of this report; all necessary infrastructure and utilities are in place; all necessary permits have been obtained. Estimated expenditures for site closure and reclamation are included in the financial model for this site.

The mine is scheduled to deplete its mining assignment in 2037.

13.4.1.2 Davy Branch Deep Mine (Map 1)

The Davy Branch Deep Mine is currently operational with two (2) continuous mining sections producing coal in the Upper Chilton seam on leased mineral property. Like the Lynn Branch No. 2 Deep mine operation, coal is extracted from the production face with the continuous miners and hauled to the mine conveyor in shuttle cars. At the conveyor belt, the coal is discharged from the shuttle cars onto a feeder breaker for transfer onto the conveyor. The conveyors carry the coal to the outside, where it is stockpiled. Coal is then transported via highway truck haulage to the Bandmill Preparation Plant where it is processed and loaded into CSX rail for transport to the consumer.

The Davy Branch Deep Mine is also operational at the time of this report with all necessary infrastructure and utilities in place. All necessary permits have been obtained. Estimated expenditures for site closure and reclamation are included in the financial model for this site.

The mine is scheduled to deplete its mining assignment in 2028.

13.4.1.3 Hatfield Upper Chilton (Map 1)

The Hatfield Upper Chilton reserve is in a conceptual stage at this point. A potential portal area was located along the outcrop near County Highway 13. The reserve can support two operating areas for two continuous miner production sections.

The Hatfield Upper Chilton Mine is projected as a two (2) section mine with each working section operated as a super section (two sets of mining equipment operating simultaneously and sharing a common dumping point on the same section, with each set being ventilated by a separate split on intake air). Each super section operates two (2) Continuous Miners, two (2) Roof Bolters, four (4) Shuttle Cars and one (1) scoop. Like the Lynn Branch No. 2 Deep mine operation, coal is extracted from the production face with the continuous miners and hauled to the mine conveyor In shuttle cars. At the conveyor belt, the coal is discharged from the shuttle cars onto a feeder breaker for transfer onto the conveyor. The conveyors carry the coal to the outside, where it is stockpiled. Coal is then transported via highway truck haulage to the Bandmill Preparation Plant where it is processed and loaded into CSX rail for transport to the consumer.

The physical location of the reserve is the furthest from the Bandmill preparation plant with a highway haul of 21.5 miles.

The report includes an initial starting date in 2028 with a second production unit starting a couple of months after in 2028. The mine is scheduled to deplete its mining assignment in 2039.

13.4.1.4 Boone East (No. 2 Gas) (Map 7)

This reserve area is located north of the Bandmill Preparation Plant. A contour faceup would be used to access the coal seam. The reserve block can support two continuous miner units. The Property has had limited mining activity with no undermining and limited overmining.

Peach Creek Road— County Route 12/02 comes directly to the proposed stockpile area. The County Road is a paved road, but only one lane wide traveling through populated areas. The distance to the preparation plant is 13.5 miles.

The Boone East N2G Mine is projected as a two (2) section mine with each working section operated as a super section (two sets of mining equipment operating simultaneously and sharing a common dumping point on the same section, with each set being ventilated by a separate split on intake air). Each super section operates two (2) Continuous Miners, two (2) Roof Bolters, four (4) Shuttle Cars and one (1) scoop. Like the Lynn Branch No. 2 Deep mine operation, coal is extracted from the production face with the continuous miners and hauled to the mine conveyor in shuttle cars. At the conveyor belt, the coal is discharged from the shuttle cars onto a feeder breaker for transfer onto the conveyor. The conveyors carry the coal to the outside, where it is stockpiled. Coal is then transported via highway truck haulage to the Bandmill Preparation Plant where it is processed and loaded into CSX rail for transport to the consumer.

The report includes an initial starting date in 2029 with a second production unit starting a few months later in 2029. The production units complete their assignment in calendar year 2036 and 2037, respectively.

13.4.1.5 Upper Cedar Grove #3 (Map 2)

The Upper Cedar Grove 3 mine started operations in calendar year 2022. As noted above, the mine produces metallurgical grade coal using two (2) active sections with two (2) continuous miners, two (2) roof bolters, four (4) shuttle cars, one (1) belt feeder, and one (1) scoop per section. Coal is extracted from the production face with the continuous miners and hauled to the mine conveyor in shuttle cars.

At the conveyor belt, the coal is discharged from the shuttle cars onto a feeder breaker for transfer onto the conveyor. The conveyors carry the coal to the outside. Coal is then transported via highway trucks for haulage to the Bandmill Preparation Plant where it is processed and loaded into CSX rail for transport to the consumer. Due to the favorable fluidity of this coal, a key factor in determining the coking quality of coal. Alpha uses coal produced from this mine to blend coal from other Alpha mining operations which may show slightly less favorable coking characteristics.

The mine portal area was constructed from a contour bench and is located along West Virginia Route 10, which has been upgraded as a divided 4-lane highway. The haul distance to the Bandmill Preparation Plant is 5.9 miles.

13.4.1.6 Alma Seam at Beech Branch (Map 4)

This reserve area is a small block that can be accessed from an outcrop portal. The mining has been projected as a single super section production unit. Mining would begin in 2028 and the reserve would be depleted in 2032.

The projected faceup from a contour bench is located along West Virginia Route 10, which has been upgraded as a divided 4-lane highway. The haul distance to the Bandmill Preparation Plant is 4.7 miles.

*13.4.1.*7 *Lower Cedar Grove - Lauren Land (Map 3)*

This reserve area is a small block that would be accessed from an abandoned mine bench. The mine would face up in the Upper Split of the Lower Cedar Grove seam and then ramp down in the Lower Cedar Grove seam. This mine would support two continuous miner units beginning in the fourth quarter of 2032 followed by another unit in the first quarter of 2036. The mining boundary will be depleted with a continuous miner unit finishing in 2038 and the remaining unit finishing in 2039.

Run-of-mine coal would be trucked via County Route 13 to the Bandmill Preparation Plant located 18.9 miles away.

13.4.1.8 Lower Cedar Grove #3 (Map 3)

The Lower Cedar Grove (LCG) reserves are located along the western mine limit of the Upper Cedar Grove #3 Mine. The LCG will be accessed through the UCG ***#3*** Mine and will be a continuation of the

#3 Mine, The LCG will be more economical to extract where the UCG mid-seam parting increases to 4 feet. This mine would support one continuous miner units beginning in late-2026. The LCG and UCG mining will be depleted with a continuous miner units finishing in 2028 and 2029, respectively.

14 Processing and Recovery Methods

14.1 Description or Flowsheet

The Aracoma Division currently includes the Bandmill Preparation Plant in addition to the mines. The plant site includes raw coal storage, clean coal storage, a centrifugal dryer, a railroad loadout, and refuse disposal area. Feed rate capacity is 1,200 raw tons per hour and produces a typical product containing 7.46% ash, 0.98% sulfur and 36.8% volatile matter. Primary separation equipment includes heavy media vessels, heavy media cyclones, spirals, and flotation cells, supported by the requisite screens, centrifuges, disk filters, plate presses, sumps, pumps, and distribution systems. Foryear-end 2024 the average utilization rate of the Bandmill Preparation Plant was 66.87%. Additional plate presses have recently been installed to reduce the amount of slurry. Coarse and fine refuse are disposed of in an adjacent combined fill refuse area and impoundment.

Processes and equipment are typical of those used in the coal industry and are in use in nearly all plants in the Central Appalachian Basin.

14.2 Requirements for Energy, Water, Material and Personnel

Personnel have historically been sourced from the surrounding communities in Logan, Mingo, Wyoming, and Boone Counties, and have proven to be adequate in numbers to conduct processing operations at Aracoma. As mining is common in the surrounding areas, the workforce is generally familiar with mining practices, and many are experienced miners.

Water is sourced locally from public water sources or rivers, and electricity is sourced from AEP. The service industry in the areas surrounding the mine complex has historically provided supplies, equipment repairs and fabrication, etc.

15 Infrastructure

Alpha's Bandmill preparation plant services customers with washed coal, which is transported via the CSX rail line at the plant's loadout. Haul roads, primary roads, and conveyor belt systems account for transport from the various mine sites to the preparation plant. This practice will continue for future reserves.

As an active operation, the necessary support infrastructure for Aracoma is in place.

As new areas are developed, the infrastructure requirements will change. These changes have been considered in the LOM plans and financial model.

The underground mining resource areas which are located above drainage will require an access road and mine access development along the outcrop.

Typical mine facilities include a mine office, a change house, supply facilities, mine fan and a stacker conveyor if truck haulage is required.

A Photo of the existing facilities is shown in *Figures 15-1 and 15-2.*

Figure 15-1: Aracoma Surface Facilities

Figure 15-2: Bandmill Preparation Plant

16 Market Studies

16.1 Market Description

The quality characteristics for the subject coal resources and coal reserves have been reviewed in detail by MM&A. The drill hole data were utilized to develop average coal quality characteristics for the mining site. These average coal quality characteristics were then utilized as the basis for determining the various markets into which the saleable coal will likely be placed.

Quality Specifications for the Aracoma High-Volatile B product is as shown in *Table 16-1.*

Table 16-1: Dry Quality Specifications

	2024
Ash (%)	7.46
Sulfur (%)	0.98
Volatile Matter (%)	36.77

The mine production primarily serves the high-volatile metallurgical markets with lesser by-product PCI and thermal coal.

16.2 Price Forecasts

Company-wide pricing data as provided by Alpha from third-party sources is described in *Table 16-2.* Note that not all products reflected in *Table 16-2* will apply to every business unit. The pricing data

assumes a flat-line long-term realization of $169 per short ton port pricing, with an average $120.33 per ton netback pricing reflective of the high-volatile product currently sold at Aracoma. These estimates are based on long-term pricing published by third party sources and adjusted for quality and transportation. The netback pricing represents adjustments made to published benchmark pricing based on quality and transportation. A large majority of the coal sold by Alpha is shipped internationally as part of blended products from other business units within Alpha or sourced from other companies. These netback adjustments reflect these additional costs carried after the products leave the Aracoma business unit.

Table 16-2: Price Forecasts

Coal Quality	Market Pricing Per Ton [1][1][1][2][1]
High-Vol. A	$185
High- Vol. B	$169
Mid-Vol.	$188
Low-Vol.	$189
Thermal	$77

(1) Market pricing shown on U.S. East Coast basis.
(2) Metallurgical and thermal pricing based on 10-year and 3-year average, respectively of forecasted pricing from pricing services.

16.3 Contract Requirements

Some contracts are necessary for successful marketing of the coal. For Aracoma, since all mining, preparation and marketing is done in-house, the remaining contracts required are:

> **Transportation -** Alpha contracts with the CSX Railroad to transport coal to market.

> **Sales -** Sales contracts are a mix of spot and contract sales. With the volatility of the market, long-term contracts are not typically written.

17 Environmental Studies, Permitting and Plans, Negotiations or Agreements with Local Individuals

17.1 Results of Studies

MM&A completed an environmental review in 2011 of the Massey properties acquired by Alpha, including those operations that were active at Aracoma at that time. The environmental review completed by MM&A included site inspections, reviews of historical records, database searches of State and Federal regulatory records and interviews to identify potential recognized environmental conditions *(RFCs)* that may create environmental liability for the sites. While MM&A identified RECs during both studies, MM&A's opinion was that those issues would not preclude the continued or future use of the properties as a coal mining/preparation venture.

Based on this former ESA completed by MM&A, it is MM&A's opinion that Aracoma has a generally typical coal industry record of compliance with applicable mining, water quality, and environmental laws. Estimated costs for mine closure, including water quality monitoring during site reclamation, are included in the financial models.

17.2 Requirements and Plans for Waste Disposal

Disposal philosophy has been modified from previous years with the addition of filter press systems on the refuse fine material circuit. The filter press systems create a dewatered filter cake from the fine refuse disposal stream that can be combined with the coarse refuse material for disposal as a solid material that can be spread with heavy equipment such as dozers.

The Tinsley Branch Refuse Impoundment remains useful as a facility that can accept slurry as an alternative if the filter press system is inoperable, or if circuit water needs to be stored such as when the plant is being idled. The Impoundment has nearly reached its capacity with the surrounding terrain elevation. However, an estimate of storage years is not provided since the facility is used as a backup facility to the actual processing methods.

The Bandmill Hollow impoundment permit approvals remain in place but the permit has been modified to a combined fill. Capital expenditures to construct the refuse facility and its associated facilities have not been spent.

Coarse refuse disposal has been ongoing upstream of the Tinsley Branch Impoundment for several years. The upstream area had been the site of surface mining activity which now provides fill areas for refuse placement. The estimated disposal volume from the mine timing models is approximately 25.5 million cubic yards. Areas available for refuse disposal far exceed the projected volume.

The table below outlines the existing permits that may be used for waste disposal.

Table 17-1: Aracoma Refuse Disposal Summary

Refuse Facility	State SMCRA Permit Number	MSHAID	Refuse Disposal Type	Classified as a Dam	Permit Status	Current Planned Maximum Coarse Life (Approved + Planned)	Current Planned Maximum Fines Life (Approved + Planned)	Est. Coarse/ Combined Refuse Life (Yrs.)	Est. Fine Slurry Refuse Life (Yrs.)
Tinsley Branch Refuse Impoundment (Aracoma)	0-5032-99	1211-WV04-0527-01	Slurry Impoundment-Downstream and Upstream	Yes	Active	0.5	2-5	12	12
Bandmill Hollow Impoundment	0-5002-10	1211-WV04-05086-01	-Combined Refuse Fill	Yes	Not Started	7.5	0	7.5	0

(Aracoma)		[illegible]	[illegible]		[illegible]				
Highland Surface permits	S-5001-94 5-5030-96	1211-WV-40528-01	-Combined Refuse Storage	No	Active	30+	30+	30+	

Note: Estimates of storage years summarized in this table were provided by Alpha and reviewed by MM&A for reasonableness.

17.3 Permit Requirements and Status

All mining operations are subject to federal and state laws and must obtain permits to operate mines, coal preparation and related facilities, haul roads, and other incidental surface disturbances necessary for mining to occur. Permits generally require that the permittee post a performance bond in an amount established by the regulatory program to provide assurance that any disturbance or liability created during mining operations is properly restored to an approved post-mining land use and that all regulations and requirements of the permits are fully satisfied before the bond is returned to the permittee. Significant penalties exist for any permittee who fails to meet the obligations of the permits including cessation of mining operations, which can lead to potential forfeiture of the bond. Any company, and its directors, owners and officers, which are subject to bond forfeiture can be denied future permits under the program.[1]

New permits or permit revisions will occasionally be necessary to facilitate the expansion or addition of new mining areas on the Property, such as amendments to existing permits and new permits for mining of reserve areas. Exploration permits are also required. Property under lease includes provisions for exploration among the terms of the lease. New or modified mining permits are subject to a public advertisement process and comment period, and the public is provided an opportunity to raise objections to any proposed mining operation. MM&A is not aware of any specific prohibition of mining on the subject property and given sufficient time and planning, Alpha should be able to secure new permits to maintain its planned mining operations within the context of current regulations. Necessary permits are in place to support current production on the Property, but future permits are required to maintain and expand production. Portions of the Property are located near local communities. Regulations prohibit mining activities within 300 feet of a residential dwelling, school, church, or similar structure unless written consent is first obtained from the owner of the structure.

[1] Monitored under the Applicant Violator System (AVS) by the Federal Office of Surface Mining.

Where required, Alpha reports that such consents have been obtained where mining is proposed beyond the regulatory limits.

Alpha has obtained all mining and discharge permits to operate its mines and processing, loadout or related facilities. MM&A is unaware of any obvious or current Alpha permitting issues that are expected to prevent the issuance of future permits. Aracoma, along with all coal producers, is subject to a level of uncertainty regarding future clean water permits due to **United States Environmental Protection Agency *(EPA)*** and United States Fish and Wildlife (USFW) involvement with state programs.

The mining permits currently held by Aracoma are shown in *Table 17-2.* The information in the table below was taken from the **West Virginia Department of Environmental Protection (*WVDEP)*** website.

Table 17-2: Aracoma Mining Permits

Type	Permit ID	Permit Name	Current Status	Issued Date	Expiration Date	Acres	NPDES No.
SMCRA	US00699	Alma Mine	Active, Reclamation Only	09/10/1999	09/10/2024	48.02	WV1020111
SMCRA	U500500	Bee Hollow Deep Mine	Phase 1 Release	08/17/2000	08/17/2005	4.00	WV1020340
SMCRA	□500308	Cedar Grove	Active, Reclamation Only	08/21/2008	08/21/2028	18.51	WV1029771
5MCRA	U503008	Cedar Grove No 2	Active, Reclamation Only	07/06/2009	07/06/2024	17.13	
SMCRA	□500499	Chilton No. 1/Hernshaw Mine	Inactive	09/10/1999	09/10/2024	33.08	WV1O2O1O2
SMCRA	U500319	Davy Branch Deep Mine	Active, Moving Coal	11/13/2019	11/13/2029	18.33	WV1028553
SMCRA	U500119, □505591	Lynn Branch Mine	Active, Moving Coal	09/06/2019	09/06/2029	20.3/14.7	WV1011073, WV1028537
SMCRA	U502190	Princess Aracoma Deep Mine	Inactive, Reclaimed	07/29/1991	07/29/2026	110.04	
SMCRA	P071800	Bandmill Preparation Plant	Active	1/18/91	1/25/2028	178.32	WV0093211
SMCRA	U061600	Coalburg #3 Mine	Active, Reclamation Only	08/21/1980	12/15/2027	31.11	WV0047074
5MCRA	5501390	Camp Branch Surface Mine	Active, Reclaimed	07/29/1991	07/29/2021	143.22	WV1010689
SMCRA	U500400	Rich Creek Mine Hl	Inactive	09/01/2000	09/01/2025	6.00	WV1020277
SMCRA	□500421	Cedar Grove Mine No. 3	Active, Moving Coal	11/04/2021	11/04/2026	17.18	WV1D31091

Note: Permit status and expiration dates are based on information obtained from regulatory agency website. Permits in reclamation status receive Renewal Waivers and may show expired dates.

17.4 Local Plans, Negotiations or Agreements

MM&A found no indication of agreements beyond the scope of Federal or State Regulations.

17.5 Mine Closure Plans

Applicable regulations require that mines be properly closed, and reclamation commenced immediately upon abandonment. In general, site reclamation includes removal of structures, backfilling, regrading, and revegetation of disturbed areas. Sediment control is required during the establishment of vegetation, and bond release generally requires a minimum five-year period of site maintenance, water sampling, and sediment control following mine completion. This requirement is reduced to two years for certain operations involving re-mining. Reclamation of underground mines

includes closure and sealing of mine openings such as portals and shafts in addition to the items listed above.

Estimated costs for mine closure, including water quality monitoring during site reclamation, are included in the financial models. As with all mining companies, an accretion calculation is performed annually so the necessary Asset Retirement Obligations *(ARO)* can be shown as a Liability on the Balance Sheet.

17.6 Qualified Person's Opinion

The Aracoma comolex is an ooeratins facility: all necessary oermits for current oroduction have been

obtained. MM&A knows of no reason that any permits revisions or new permits that may be required cannot be obtained.

Estimated expenditures for site closure and reclamation are included in the financial model forthis site.

18 Capital and Operating Costs

18.1 Capital Cost Estimate

The production sequence selected for a property must consider the proximity of each reserve area to coal preparation plants, river docks and/or railroad loading points, along with suitability of production equipment to coal seam conditions. The in-place infrastructure was evaluated, and any future needs were planned to a level suitable for a Preliminary Feasibility Study and included in the Capital Forecast.

Alpha provided MM&A with information related to the number of currently operating production units at Aracoma. MM&A's capital schedules assume that major equipment rebuilds occur over the course of each machine's remaining assumed operating life. Replacement equipment was scheduled based on MM&A's experience, knowledge of mining equipment, and industry standards with respect to the useful life of such equipment. As one mine is depleted, the equipment is moved to its replacement.

The capital expenditures tables detail costs for major equipment and infrastructure such as conveyor belt terminal groups. "Other" costs include expenditures for mine access and construction, mine extension capital and miscellaneous costs. A summary of the estimated capital for the consolidated Aracoma operations is provided in *Figure 18-1* below. Total capital by mine is summarized in *Table 18-1*. An additional $3.0 million of capital was added in 2025-2026 for plant upgrades, resulting in a total estimated capital of $290.5 million for the Aracoma Complex.

Figure 18-1: Projected Capital Expenditures - Consolidated Aracoma Operations

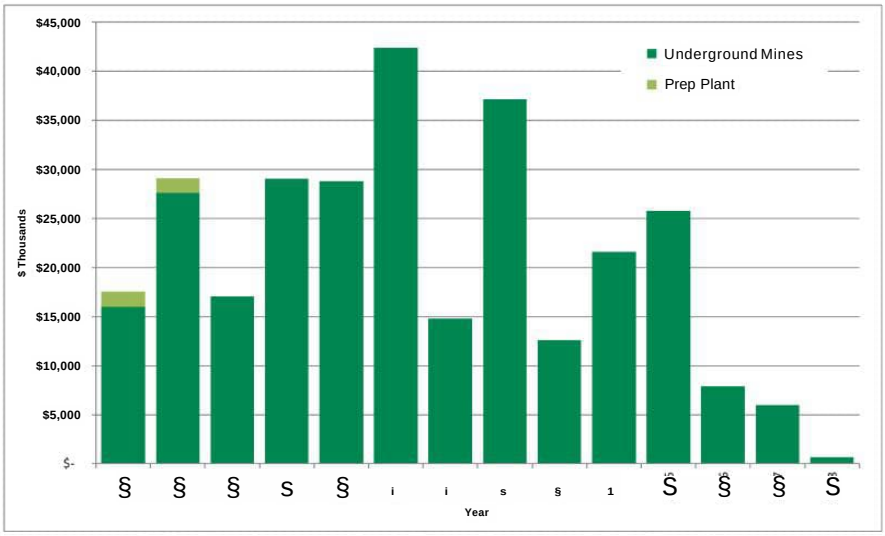


Table 18-1: Summary of Capital Expenditures Schedule by Mine (000)

Item	Total	2024	2025	2026	2027	2028	2029	2030
Lynn Branch N2G	$134,881	$0	$4,064	$19,954	$12,425	$18,937	$10,785	$15,993
Davy Branch UCH	$12,123	$0	$2,571	$3,396	$3,402	$2,754	$0	$0
Lauren Land - Hatfield UCH	$51,316	$0	$0	$0	$0	$2,752	$6,353	$10,368
Lauren Land LCG	$17,511	$0	$0	$0	$0	$0	$0	$0
Boone East N2G	$42,847	$0	$0	$0	$0	$0	$10,644	$10,515
Alma Beech Br	$11,772	SO	SO	$0	$0	$2,530	$1,035	$5,495
UCG No. 3	$16,974	$0	$9,386	$4,241	$1,257	$2,089	SO	$0
Total	$287,423	$0	$16,020	$27,591	$17,084	$29,063	$28,817	$42,372

Item	2031	2032	2033	2034	2035	2036	2037	2038
Lynn Branch N2G	$6,393	$26,782	$3,008	$8,408	$6,626	$1,504	$0	$0
Davy Branch UCH	$0	$0	$0	$0	$0	$0	$0	$0
Lauren Land - Hatfield UCH	$2,085	$4,342	$5,422	$2,542	$9,680	$2,773	$4,342	$655
Lauren Land LCG	$0	$3,690	$911	$3,431	$5,151	$2,696	$1,631	$0
Boone East N2G	$3,622	$2,352	$3,262	$7,222	$4,317	$911	$0	$0
Alma Beech Br	$2,711	SO	$0	$0	$0	$0	$0	$0
UCG No. 3	SO	$0	$0	$0	$0	$0	SO	$0
Total	$14,812	$37,167	$12,604	$21,604	$25,775	$7,885	$5,974	$655

Note: No capital was projected for 4** quarter 2024.

18.2 Operating Cost Estimate

Alpha provided historical costs and budgeted projections of operating costs for its active mines (Cedar Grove #3, Lynn Branch No. 2 and Davy Branch Deep Mine) for MM&A's review. MM&A used the historical cost information as a reference and developed a personnel schedule for the mine. Hourly labor rates and salaries were based upon information contained in Alpha's financial summaries. Fringe benefit costs were developed for vacation and holidays, federal and state unemployment insurance, retirement, workers' compensation and pneumoconiosis, casualty and life insurance, healthcare and

bonuses. A cost factor for mine supplies was developed that relates expenditures to mine advance rates for roof control costs and other mine supply costs based on the historical cost data provided by Alpha. Other factors were developed for maintenance and repair costs, rentals, mine power, outside services, coal preparation plant processing, refuse handling, coal loading, property taxes, insurance and bonding and other direct mining costs.

Appropriate royalty rates were assigned for production from leased coal lands and sales taxes were calculated for state severance taxes, the federal black lung excise tax, and federal and state reclamation fees.

Statutory sales-related costs are summarized in *Table 18-2.*

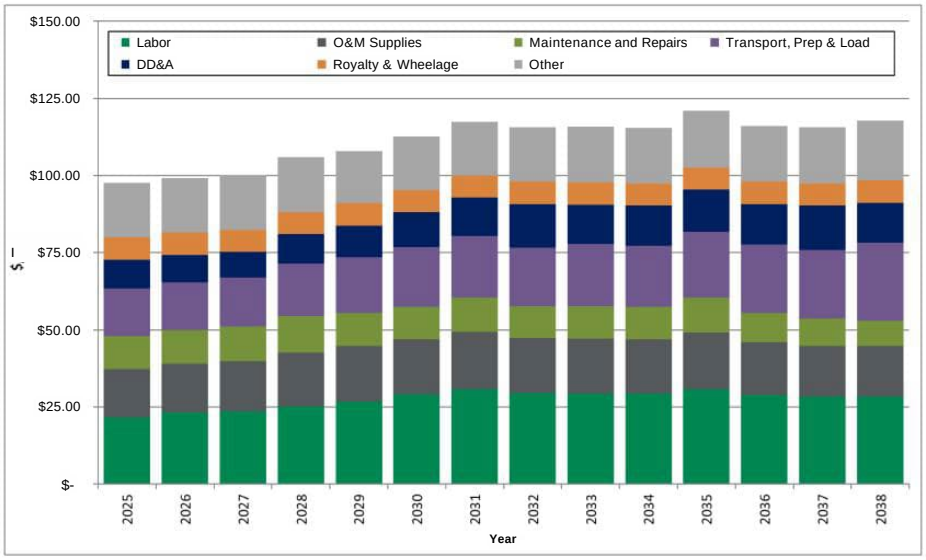
Table 18-2: Estimated Coal Production Taxes and Sales Costs

Description of Tax or Sales Cost	Basis of Assessment	Cost
Federal Black Long Excise Tax— Underground	Per Ton	$1.10
Federal Reclamation Fees - Underground	Per Ton	$0.12
West Virginia Reclamation Tax— Underground	Per Ton	$0,279
West Virginia Severance Tax	Percentage of Revenue	I to 5%
Royalties— Underground	Percentage of Revenue	6.0%

Notes: 1, Federal black lung excise tax is paid only on coal sold domestically, MM&A assumed 50% of sales will be into domestic market.

A summary of the projected operating costs for the consolidated Aracoma operations is provided in *Figure 18-2.*

Figure 18-2: Aracoma Operating Costs



19 Economic Analysis

19.1 Economic Evaluation

19.1.1 Introduction

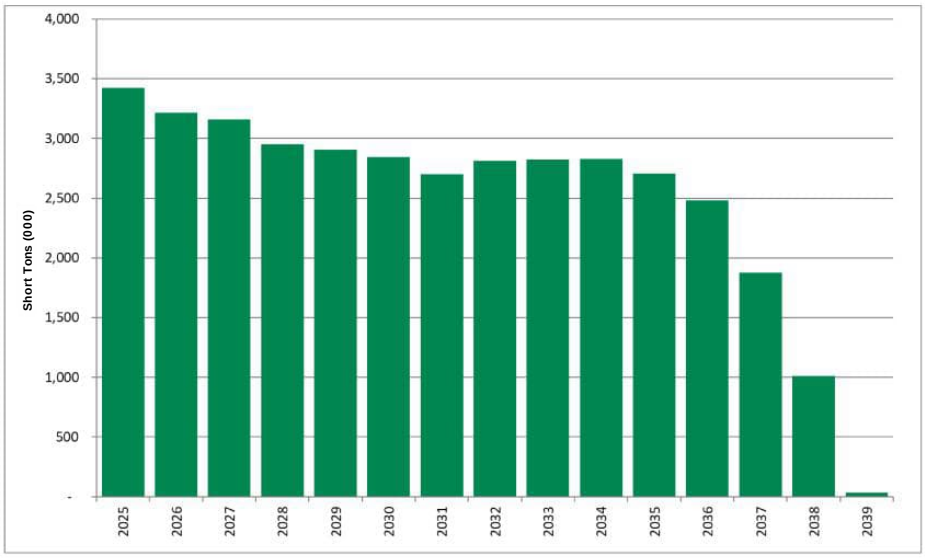
The pre-feasibility financial model prepared for this TR5 was developed to test the economic viability of each coal resource area. The results of this financial model are not intended to represent a bankable feasibility study, required for financing of any current or future mining operations contemplated for the Alpha properties, but are intended to establish the economic viability of the estimated coal reserves. Cash flows are simulated on an annual basis based on projected production from the coal reserves and production rates may differ from Alpha's own budgetary projections. The discounted cashflow analysis presented herein is based on an effective date of January 1, 2025.

On an un-levered basis, the NPV of the project cash flow after taxes represents the Enterprise Value of the project. The project cash flow, excluding debt service, is calculated by subtracting direct and indirect operating expenses and capital expenditures from revenue. Direct costs include labor, operating supplies, maintenance and repairs, facilities costs for materials handling, coal preparation, refuse disposal, coal loading, reclamation and general and administrative costs. Indirect costs include statutory and legally agreed upon fees related to direct extraction of the mineral. The indirect costs

are the Federal black lung tax, Federal and State reclamation taxes, property taxes, coal production royalties, and income taxes. The Alpha mines' historical costs provided a useful reference for MM&A's cost estimates.

The operations are projected on a calendar year basis. MM&A's projection of annual sales tonnage is summarized in the chart below. While all Alpha coal resource properties deemed by MM&A to have potential for classification as coal reserves were evaluated as part of the economic model, some of those resource areas were determined to be uneconomical in the current market and were therefore excluded from coal reserves as discussed below.

Figure 19-1: Projection of Sales Tons



Sales revenue is based on the coal price information provided to MM&A by Alpha. Only the revenue from Alpha's captive mining operations is included in the financial model used for this TRS.

The P&L projections of the individual mines of Alpha's Aracoma operations are then consolidated into a P&L and cash flow schedule for further testing of the economics. Projected debt service is excluded from the P&L and cash flow model in order to determine Enterprise Value of the aggregated entity.

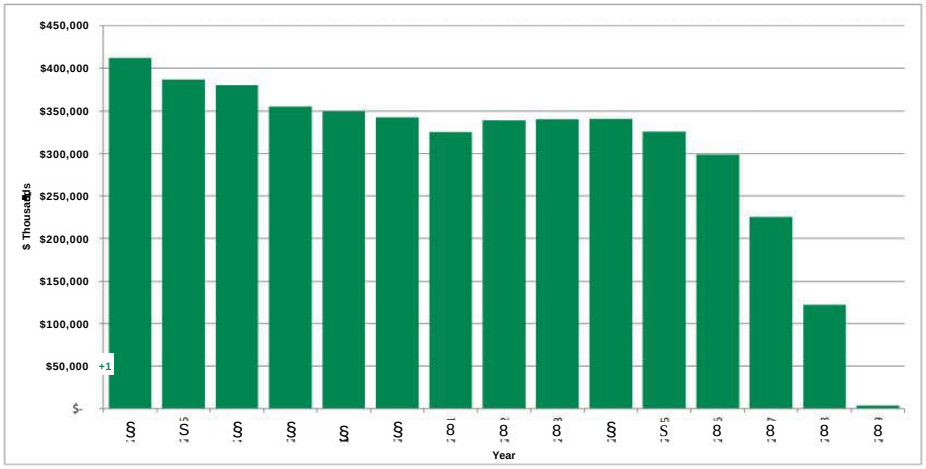
The financial model expresses coal sales prices, operating costs, and capital expenditures in current day dollars without adjustment for inflation. Capital expenditures and reclamation costs are included based on engineering estimates for each mine by year. MM&A also included an estimate of administrative costs in the financial projections.

Alpha will pay royalties for the various current and projected operations. The royalty rates vary by location as provided by Alpha. The royalty rates were assumed to be 6.0% of the sales revenue.

The projection model also includes consolidated income tax calculations at Alpha's Aracoma Division level, incorporating statutory depletion calculations, as well as state income taxes, and a federal tax rate of 21%. To the extent the Alpha mines generate net operating losses for tax purposes, the losses are carried over to offset future taxable income from Alpha mines. The terms "cash flows" and "project cash flows" used in this report refer to after-tax cash flows.

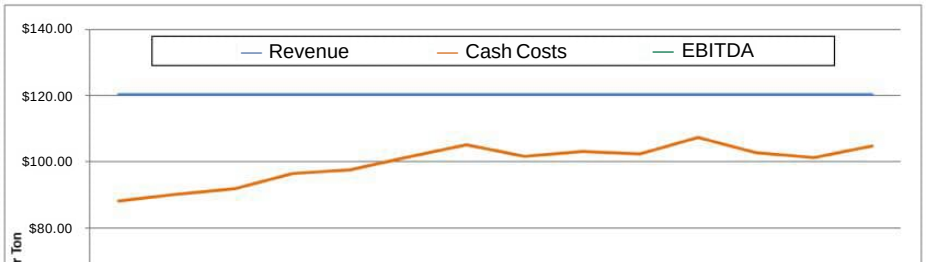
Alpha's projected consolidated annual revenue for the Aracoma operations is shown in the chart below:

Figure 19-2: Consolidated Annual Revenue

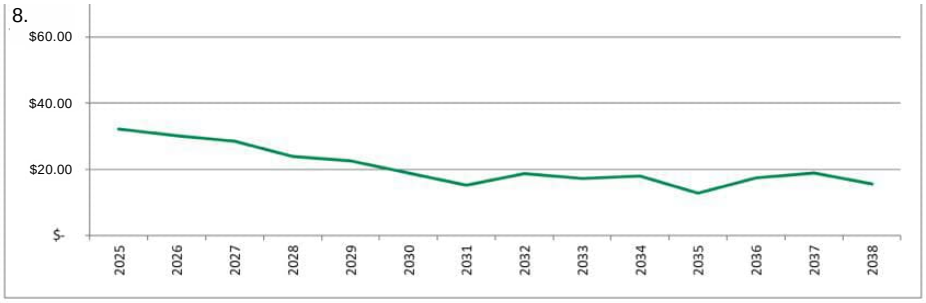


Projected consolidated revenue, cash costs, and EBITDA for the Aracoma operations are expressed in dollars per ton in the graph below.

Figure 19-3: Revenue, Cash Costs, and EBITDA



8.



The above chart shows an assumed revenue of $120 per ton, cash costs of $88 to $105 per ton and EBITDA of $13 to $32 per ton. Positive EBITDA per ton averages $21.65 per ton over the life of the operations.

Table 19-1 shows LOM tonnage, P&L, and EBITDA for each Alpha mine at Aracoma.

Table 19-1: Life-of-Mine Tonnage, P&L before Tax, and EBITDA

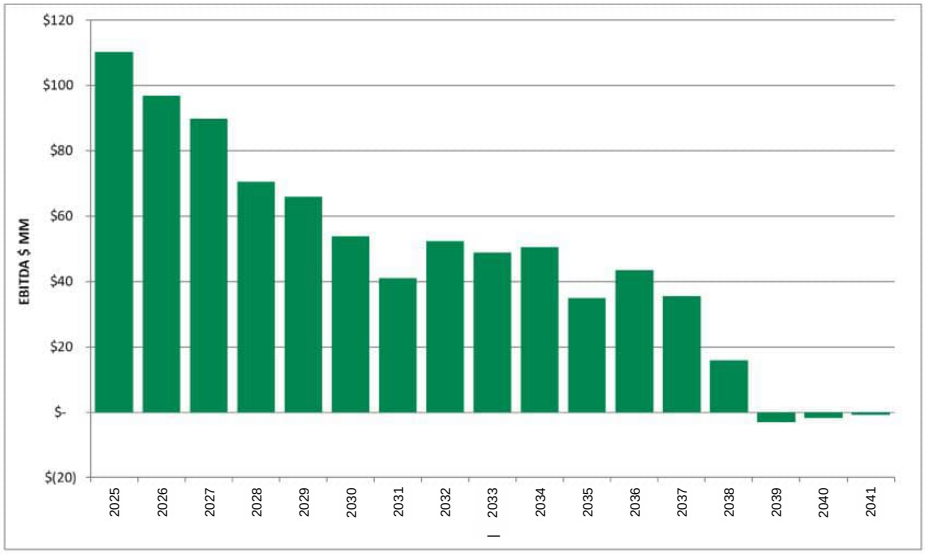
	LOM Tonnage	LOM Pre-Tax P&L	P&L Per Ton	LOM EBITDA	EBITDA Per Ton
Lynn Branch N2G	14,037	$26,030	$1.85	$219,857	$15.66
Davy Branch UCH	3,052	$56,803	$18.61	$82,647	$27.08
Lauren Land LCG	2,943	$13,683	$4.65	$52,114	$17.71
Lauren Land - Hatfield UCH	7,768	$118,454	$15.25	$189,410	$24.38
UCG No. 3	4,315	$109,377	$25.35	$150,113	$34.79
Alma Beech Br	1,429	$24,265	$16.97	$36,084	$25.24
Boone East N2G	5,257	$43,211	$8.22	$109,643	$20.86
Grand Total	**38,802**	**$391,823**	**$10.10**	**$839,868**	**$21.65**

Note: (1) The financial model contains 0.23 million tons of inferred coal that has been excluded from reserves. LOM tonnage evaluated in the financial model includes 4th quarter 2024 production (513,261 clean tons), which was subtracted from coal reserves in order to make the effective date of the reserves December 31, 2024. Tons that were mined from retreat mining sections or other areas not included in the December 31, 2024 reserves were not subtracted in order to make the effective date of the reserves December 31, 2024.

As shown in *Table 19-1,* all of the mines analyzed show positive EBITDA over the LOM. Overall, the Alpha consolidated Aracoma operations show positive LOM P&L and EBITDA of $391.8 million and $839.9 million, respectively.

A breakdown of projected EBITDA for the consolidated Aracoma operations is shown in the chart below:

Figure 19-4: Annual EBITDA



19.1.2 Cash Flow Summary

Alpha's consolidated Aracoma cash flow summary in constant dollars, excluding debt service, is shown in *Table 19-2* below.

Table 19-2: Project Cash Flow Summary ($000)

	Total	YE12/31 2024	YE12/31 2025	YE12/31 2026	YE12/31 2027	YE12/31 2028	YE12/31 2029
Production & Sales tons	38,802	1,018	3,424	3,215	3,160	2,952	2,906
Total Revenue	$4,669,088	$122,452	$411,963	$386,809	$380,220	35,187	$349,696
EBITDA	$839,868	$36,152	$110,279	$96,827	$89,835	$70,453	$65,923
Net Income	$306,635	$25,176	$64,557	$55,973	$51,615	$34,284	$28,936
Net Cash Provided by Operating Activities	$754,679	$23,289	$81,726	$89,194	$80,864	$67,721	$60,496
Purchases of Property, Plant, and Equipment	($290,468)	$0	($17,531)	($29,126)	($17,084)	($29,063)	($28,817)
Net Cash Flow	$464,211	$23,289	$64,195	$60,068	$63,780	$38,658	$31,679

	YE12/31 2030	YE12/31 2031	YE12/31 2032	YE12/31 2033	YE12/31 2034	YE12/31 2035	YE12/31 2036
Production & Sales tons	**2,846**	2,700	2,815	2,826	2,829	2,709	2,484
Total Revenue	$342,441	$324,900	$338,726	$340,017	$340,436	$325,940	$298,863
EBITDA	$53,831	$41,131	$52,465	$48,812	$50,604	534,892	$43,479
Net Income	$17,268	$5,654	$9,378	$9,585	$9,883	($3,787)	**$7,173**
Net Cash Provided by Operating Activities	$49,900	$42,091	$49,774	$48,835	$49,896	$39,549	**J43,281**
Purchases of Property, Plant, and Equipment	($42,372)	**($14,812)**	**($37,167)**	($12,604)	**($21,604}**	**~($25,775)**	**($7,885)**
Net Cash Flow	$7,528	$27,279	$12,607	$36,231	$28,292	$13,775	$35,396

	YE12/31 2037	YE12/31 2038	YE12/31 2039	YE12/31 2040	YE12/31 2041	YE12/31 2042	YE12/31 2043
Production & Sales tons	1,874	1,013	33	0	0	0	**0**
Total Revenue	$225,549	$121,883	$4,006	$0	$0	$0	**$0**
EBITDA	$35,579	$15,811	($3,099)	(SV6?)	($740)	($376)	($145)

Net Income	$6,068	$2,623	($11,688)	($3,454)	($1,444)	($734)	($282)
Net Cash Provided by Operating Activities	$39,854	$11,127	$10	($13,305)	($4,816)	($2,969)	($922)
Purchases of Property, Plant, and Equipment	($5,974)	($655)	$0	$0	$0	$0	$0
Net Cash Flow	$33,880	$10,472	$10	($13,305)	($4,816)	($2,969)	($922)

	YE12/31 2044	YE12/31 2045	YE12/31 2046	YE12/31 2047	YE12/31 2048	YE12/31 2049	YE12/31 2050
Production & Sales tons	0	0	0	0	0	0	0
Total Revenue	$0	$0	$0	$0	$0	$0	$0
EBITDA	($75)	($0)	($0)	($0)	($0)	($0)	($0)
Net Income	($147)	**($0)**	($0)	($0)	($0)	($0)	($0)
Net Cash Provided by Operating Activities	($918)	($0)	($0)	($0)	($0)	($0)	($0)
Purchases of Property, Plant, and Equipment	$0	SO	SO	SO	$0	50	$0
Net Cash Flow	($918)	**($0)**	($0)	($0)	($0)	($0)	($0)

Note: (1) The financial model contains 0.23 million tons of inferred coal that has been excluded from reserves. LOM tonnage evaluated in the financial model includes 4th quarter 2024 production (513,261 clean tons) which was subtracted from coal reserves in order to make the effective date of the reserves December 31, 2024. Tons that were mined from retreat mining sections or other areas not included in the December 31, 2024 reserves were not subtracted in order to make the effective date of the reserves December 31, 2024.

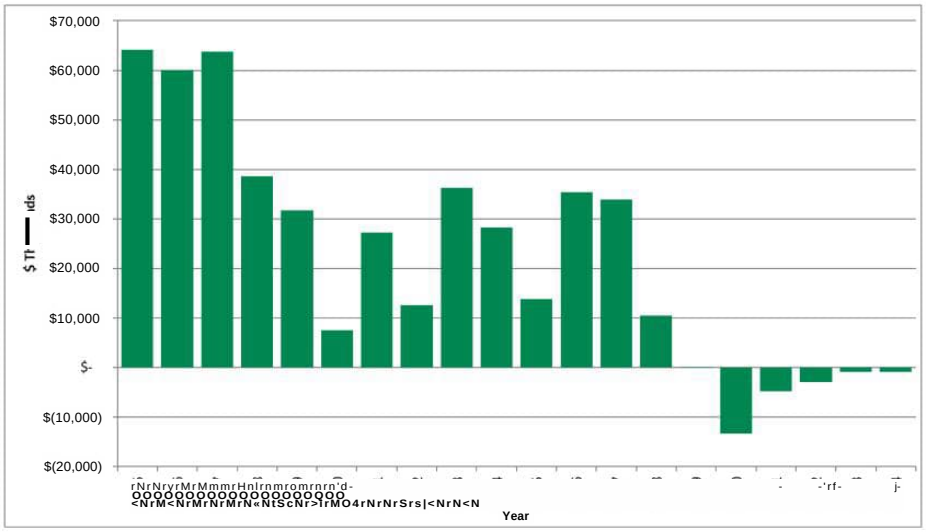
(2) Results shown for 2024 represent 4m quarter only.

Consolidated cash flows are driven by annual sales tonnage, which peaks at 3.4 million tons in 2025. Between the years 2026 and 2036, sales ranges from 2.5 million to 3.2 million tons and between the years 2037-2039, sales range from 0.03 million tons to 1.9 million tons. Projected consolidated revenue peaks at $412.0 million in 2025 and totals $4.7 billion for the project's life.

Consolidated cash flow from operations is positive throughout the projected operating period, with the exception of post-production years, due to end-of-mine reclamation spending. Consolidated cash flow from operations peaks at $81.7 million in 2025 and totals $754.7 million over the project life. Capital expenditures total $121.6 million during the first five years and $290.5 million over the project's life.

Consolidated Aracoma net cash flow after tax, but before debt service, is shown by year in the chart below:

Figure 19-5: Net Cash Flow after Tax (Before Debt Service)



LOM Net cash flow is positive for this project. The cash flows after the year 2039 are generally related to end of mine reclamation expenditures, which are accrued over the life of the mines.

19.1.3 Discounted Cash Flow Analysis

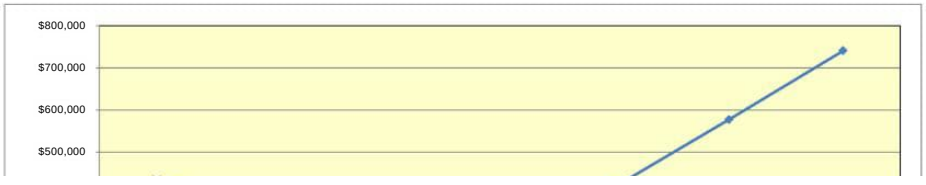
Cash flow after tax, but before debt service, generated over the life of the project was discounted to NPV at a 16.38% discount rate, which represents MM&A's estimate of the constant dollar, risk adjusted WACC for likely market participants if the subject reserves were offered for sale. On an un-levered basis, the NPV of the project cash flows represents the Enterprise Value of the project and amounts to $260.9 million. Alpha is an active producer, and the financial model shows positive net cash flow for each year of the operating life of the Aracoma reserves. The pre-feasibiiity financial model (+/- 20 percent in accuracy) prepared for the TRS was developed to test the economic viability of each coal resource area. A 5% operating cost contingency was included in the economic analysis. The NPV estimate was made for the purpose of confirming the economics for classification of coal reserves and not for purposes of valuing Alpha or its Aracoma assets. Mine plans were not optimized, and actual results of the operations may be different, but in all cases, the mine production plan assumes the properties are under competent management.

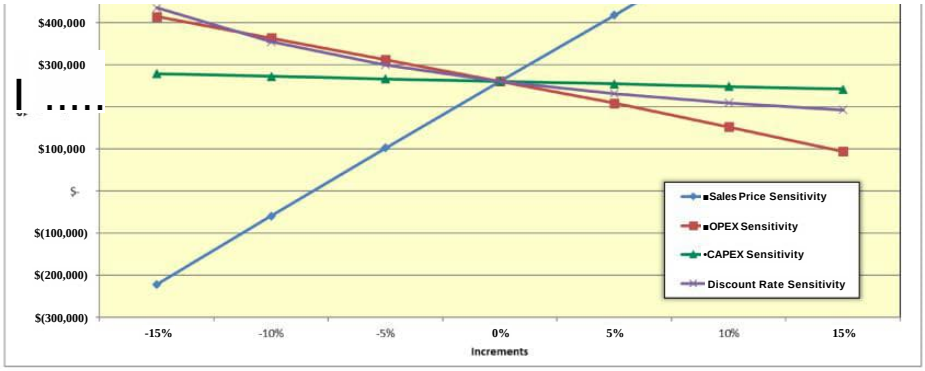
19.1.4 Sensitivity Analysis

Sensitivity of the NPV results to changes in the key drivers is presented in the chart below. The sensitivity study shows the NPV at the 16.38% discount rate when Base Case sales prices, operating

costs, capital costs, and discount rate are increased and decreased in increments of 5% within a +/- 15% range.

Figure 19-6: Sensitivity of NPV





As shown, NPV is quite sensitive to changes in sales price and operating cost estimates, and slightly sensitive to changes in capital cost estimates.

20 Adjacent Properties

20.1 Information Used

No Proprietary information associated with neighboring properties was used as part of this study.

21 Other Relevant Data and Information

MM&A performed a previous evaluation of all the Property in year 2022 for reserves effective as of December 31, 2022, for Alpha based on SEC S-K 1300 regulations. MM&A utilized this former evaluation as the basis for the December 31, 2024 TRS.

22 Interpretation and Conclusions

22.1 Conclusion

Sufficient data has been obtained through various exploration and sampling programs and mining operations to support the geological interpretations of seam structure and thickness for coal horizons situated on the Aracoma Property. The data is of sufficient quantity and reliability to reasonably support the coal resource and coal reserve estimates in this TRS.

The geological data and preliminary feasibility study, which consider mining plans, revenue, and operating and capital cost estimates are sufficient to support the classification of coal reserves provided herein.

This geologic evaluation conducted in conjunction with the preliminary feasibility study is sufficient to conclude that the 38.06 Mt of marketable coal reserves identified on the Property are economically mineable under reasonable expectations of market prices for metallurgical coal products, estimated operation costs, and capital expenditures.

22.2 Risk Factors

Risks have been identified for operational, technical and administrative subjects addressed in the Pre-Feasibility Study. A risk matrix has been constructed to present the risk levels for all the risk factors identified and quantified in the risk assessment process. The risk matrix and risk assessment process are modelled to that presented in the Australian and New Zealand Standard on Risk Management (AS/NZS 4360).

The purpose of the characterization of the project risk components is to inform the project stakeholders of key aspects of the Alpha projects that can be impacted by events whose consequences can affect the success of the venture. The significance of an impacted aspect of the operation is directly related to both the probability of occurrence and the severity of the consequences. The initial risk for a risk factor is herein defined as the risk level after the potential impact of the risk factor is addressed by competent and prudent management utilizing control measures readily available. Residual risk for a risk factor is herein defined as the risk level following application of special mitigation measures if management determines that the initial risk level is unacceptable. Initial risk and residual risk can be quantified numerically, derived by the product of values assigned to probability and consequence ranging from very low risk to very high risk.

The probability and consequence parameters are subjective numerical estimates made by practiced mine engineers and managers. Both are assigned values from 1 to 5 for which the value 1 represents the lowest probability and least consequence, and the value 5 represents the highest probability and greatest consequence. The products that define the Risk Level are classified from very low to very high.

Alpha Metallurgical Resources, Inc.
Statement of Coal Resources and Reserves for the
Aracoma Complex in Accordance with
United States SEC Standards as of December 31, 2024
Central Appalachian Coal Basin
West Virginia, USA

Risk Level Table (R = P x C)

Risk Level (R)
Very Low (1 to 2}
Low (3 to 5)
Moderate (6 to 11)
High (12 to 19)
Very High (20 to 25)

Risk aspects identified and evaluated during this assignment total 13. No residual risks are rated Very High. Three (3) residual risks are rated High. Six (6) of the risk aspects could be associated with

Moderate residual risk. Four (4) of the risk aspects were attributed Low or Very Low residual risks.

22.2.1 Governing Assumptions

The listing of the aspects is not presumed to be exhaustive. Instead that listing is presented based on the experiences of the contributors to the TRS.

1. The probability and consequence ratings are subjectively assigned, and it is assumed that this subjectivity reasonably reflects the condition of the active and projected mine operations.
2. The Control Measures shown in the matrices presented in this chapter are not exhaustive. They represent a condensed collection of activities that the author of the risk assessment section has observed to be effective in coal mining scenarios.
3. Mitigation Measures listed for each risk factor of the operation are not exhaustive. The measures listed, however, have been observed by the author to be effective.
4. The monetary values used in ranking the consequences are generally accepted quantities for the coal mining industry.

22.2.2 Limitations

The risk assessment proposed in this report is subject to the limitations of the information currently collected, tested, and interpreted at the time of the writing of the report.

22.2.3 Methodology

The numerical quantities (i.e., risk levels) attributable to either "initial" or "residual" risks are derived by the product of values assigned to probability and consequence ranging from very low risk to very high risk.

$$R = P \times C$$

Where: R = Risk Level
P = Probability of Occurrence
C - Consequence of Occurrence

The Probability (P) and Consequence (C) parameters recited in the formula are subjective numerical estimates made by practiced mine engineers and managers. Both P and C are assigned integer values ranging from 1 to 5 for which the value 1 represents the lowest probability and least consequence, and the value 5 represents the highest probability and greatest consequence. The products (R = P x C) which define the Risk Level, are thereafter classified from very low to very high.

Risk Level Table

Risk Level (R)
Very Low (1 to 2)
Low (3 to 5)
Moderate (6 to 11)
High (12 to 19)
Very High (20 to 25)

Very high initial risks are considered to be unacceptable and require corrective action well in advance of project development. In short, measures must be applied to reduce very high initial risks to a tolerable level.

As shown and discussed above, after taking into account the operational, technical, and administrative actions that have been applied or are available for action when required, the residual risk can be determined. The residual risk provides a basis for the management team to determine if the residual risk level is acceptable or tolerable. If the risk level is determined to be unacceptable, further actions should be considered to reduce the residual risk to acceptable or tolerable levels to provide justification for continuation of the proposed operation.

22.2.4 Development of the Risk Matrix

Risks have been identified for the technical, operational, and administrative subjects addressed in the TRS. The risk matrix and risk assessment process are modelled to that presented in the Australian and New Zealand Standard on Risk Management (AS/NZS 4360).

22.2.4.1 Probability Level Table

Table 22-1: Probability Level Table

Category	Probability Level (P)		
1	Remote	Not likely to occur except in exceptional circumstances.	<10%
2	Unlikely	Not likely to occur; small in degree.	10 ■ 30%
3	Possible	Capable of occurring.	30 - 60%
4	Likely	High chance of occurring in most circumstances.	60 - 90%
5	Almost Certain	Event is expected under most circumstances; impossible to avoid.	>90%

The lowest rated probability of occurrence is assigned the value of 1 and described as remote, with a

Hie mwesu idieu piuuduimy ui utcuiienue is dssigiieu uie vdiue ui ± dim uesuiueu as icrriuue, wim d likelihood of occurrence of less than 10 percent. Increasing values are assigned to each higher probability of occurrence, culminating with the value of 5 assigned to incidents considered to be almost certain to occur.

22.2,4.2 Consequence Level Table

Table 22-2 lists the consequence levels.

Table 22-2: Consequence Level Table

Correlation of Events in Key Elements of the Project Program to Event Severity Category							
Category	Severity of the Event	Financial Impact of the Event	Unplanned Loss of Production (Impact on Commercial Operations)	Events Impacting on the Environment	Events Affecting the Program's Social and Community Relations	Resultant Regulatory / Sovereign Risk	Events Affecting Occupational Health & Safety
1	**Insignificant**	< USD $0.5 million	< 12 hours	Insignificant loss of habitat; no irreversible effects on water, soil and the environment.	Occasional nuisance impact on travel.		Event recurrence avoided by corrective action through established procedures (Engineering, guarding, training).
2	**Minor**	USD $0.5 million to $2.0 million	< 1 day	No significant change to species populations; short-term reversible perturbation to ecosystem function.	Persistent nuisance impact on travel. Transient adverse media coverage.		**First aid - lost time.** Event recurrence avoided by corrective action thought established procedures.
3	**Moderate**	USD $2.0 million to $10.0 million	< 1 week	Appreciable change to species population; medium-term (5–10 years) detriment to ecosystem function.	Measurable impact on travel and water/air quality. Significant adverse media coverage / transient public outrage.	Uncertainty securing or retaining essential approval / license. Change to regulations (tax; bonds; standards).	**Medical Treatment -** permanent incapacitation Avoiding event recurrence requires modification to established corrective action procedures.
4	**Major**	USD $10.0 million to $50.0 million	1 to 2 weeks	Change to species population threatening viability; long-term (>10 years) detriment to ecosystem function.	Long-term, serious impact on travel and use of water resources; degradation of air quality; sustained and effective public opposition.	Suspension / long-delay in securing essential approval / license. Change to laws (tax; bonds; standards).	**Fatality.** Avoiding event recurrence requires modification to established corrective action procedures and staff retraining.
5	**Critical**	>USD $50.0 million	>1 month	Species extinction; irreversible damage to ecosystem function.	Loss of social license.	Withdraw / failure to secure essential approval / license.	**Multiple fatalities.** Avoiding event recurrence requires major overhaul of policies and procedures.

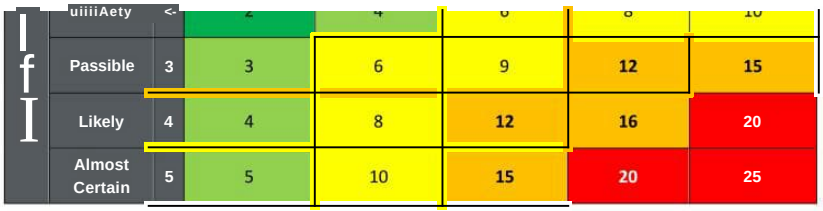
The lowest rated consequence is assigned the value of 1 and is described as Insignificant Consequence with parameters that include non-reportable safety incidents with zero days lost accidents, no environmental damage, loss of production or systems for less than 12 hours and cost of less than USD $0.5 million. Increasing values are assigned to each higher consequence, culminating with the value of 5 assigned to critical consequences, the parameters of which include multiple-fatality accidents, major environmental damage, and loss of production or systems for longer than one month and cost of greater than USD $50.0 million.

Composite Risk Matrix R = P x C and Color-Code Convention

The risk level, defined as the product of probability of occurrence and consequence, ranges in value from 1 (lowest possible risk) to 25 (maximum risk level). The values are color-coded to facilitate identification of the highest risk aspects.

Table 22-3: Risk Matrix

PxC = R		Consequence (C)				
		Insignificant	Minor	Moderate	Major	Critical
		1	2	3	4	5
Remote	1	1	2	3	4	5
£ 1Unlikely			4	6	8	10



22.2.5 Categorization of Risk Levels and Color Code Convention

Very high risks are considered to be unacceptable and require corrective action. Risk reduction measures must be applied to reduce very high risks to a tolerable level.

22.2.6 Description of the Coal Property

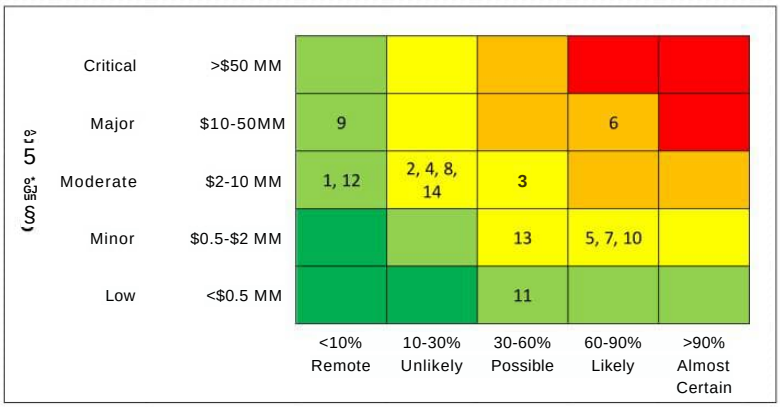
The Aracoma Complex *(Aracoma)* is located in Logan, Mingo, Boone and McDowell Counties, West Virginia and is an active operation with three underground mines. The active underground operations within the Aracoma Mine Complex (Lynn Branch #2, Davy Branch Deep Mine, and Cedar Grove #3) utilize continuous mining production sections. The Cedar Grove No. 2 Deep Mine in the Upper Cedar Grove seam was idled during 2024. This method provides continuity, preserving skilled work groups

and enabling effective utilization of existing production equipment. The active and projected mines are located above and below drainage and as such are accessed via a combination of drifts and box cuts.

22.2.7 Summary of Residual Risk Ratings

Each risk factor is numbered, and a risk level for each is determined by multiplying the assigned probability by the assigned consequence. The risk levels are plotted on a risk matrix to provide a composite view of the Alpha risk profile. The average risk level is 6.6, which is defined as Moderate.

Table 22-4: Risk Assessment Matrix



22.2.8 Risk Factors

A high-level approach is utilized to characterize risk factors that are generally similar across a number of the active and proposed mining operations. Risk factors that are unique to a specific operation or are particularly noteworthy are addressed individually.

22.2.8.1 Geological and Coal Resource

Coal mining is accompanied by risk that, despite exploration efforts, mining areas will be encountered where geological conditions render extraction of the resource to be uneconomic, or that coal quality characteristics disqualify the product for sale into target markets.

Offsetting the geological and coal resource risk are the size of the controlled property which allows flexibility in the selection of mine areas away from areas where coal quality and mineability are less favorable. In addition, many of the underground mines are designed to operate with multiple production sections each, which lessens the immediate impact when one section encounters difficulties. The large reserve areas also provide a mitigation strategy of varying the timing of development of mines to offset expected or encountered adverse conditions, thereby maintaining

consistent production and quality. This flexibility requires additional extension or development cost but increases performance consistency.

The larger reserve areas will be developed with multiple production sections and the small, replacement production reserve areas provide ready access to alternative locations if geological and coal resource characteristics require abandonment of an active production area.

Table 22-5: Geological and Coal Resource Risk Assessment (Risks 1 and 2)

Aspect	Impact	Control Measures	Initial Risk Level	Mitigation Measures	Residual Risk Level

			P	C	R		P	C	R
Recoverable coal tons recognized to be significantly less than previously estimated.	Reserve base is adequate to serve market commitments and respond to opportunities for many years. Local adverse conditions may increase frequency and cost of production unit relocations.	Previous and ongoing exploration and extensive regional mining history provide a high level of confidence of coal seam correlation, continuity of the coal seams, and coal resource tons.	1	4	4	Optimize mine plan to increase resource recovery: develop mine plan to provide readily available alternate mining locations to sustain expected production level.	1	**3**	**3**
Coal quality locally proves to be lower than initially projected.	If uncontrolled, production and sale of coal that is out of specification can result in rejection of deliveries, cancellation of coal sales agreements and damage to reputation.	Exploration and vast experience and history in local coal seams provide confidence in coal quality; limited excursions can be managed with careful product segregation and blending.	2	**5**	**10**	Develop mine plan to provide readily available alternate mining locations to sustain expected production level; modify coal sales agreements to reflect coal quality.	2	**3**	**6**

22.2.8.2 Environmental

Water quality and other permit requirements are subject to modification and such changes could have a material impact on the capability of the operator to meet modified standards or to receive new permits and modifications to existing permits. Permit protests may result in delays or denials to permit applications.

Environmental standards and permit requirements have evolved significantly over the past 50 years and to-date, mining operators and regulatory bodies have been able to adapt successfully to evolving environmental requirements.

Table 22-6: Environmental (Risks 3 and 4)

Aspect	Impact	Control Measures	Initial Risk Level			Mitigation Measures	Residual Risk Level		
			P	C	R		P	C	R
Environmental performance standards are modified in the future,	Delays in receiving new permits and modifications to existing permits; cost of testing and treatment of water and soils	Work with regulatory agencies to understand and influence final standards; implement testing, treatment and other actions to comply with new standards.	3	4	12	Modify mining and reclamation plans to improve compliance with new standards while reducing cost of compliance.	3	3	9
New permitsand permit modifications are increasingly delayed or denied.	Interruption of production and delayed implementation of replacement production from new mines.	Comply quickly with testing, treatment and other actions required; continue excellent compliance performance within existing permits.	2	4	8	Establish and maintain close and constructive working relationships with regulatory agencies, local communities and community action groups.	2	3	6

22.2.8.3 Regulatory Requirements

Federal and state health and safety regulatory agencies occasionally amend mine laws and regulations, The impact is industry wide. Mining operators and regulatory agencies have been able to adapt successfully to evolving health and safety requirements.

Table 22-7: Regulatory Requirements (Risk 5)

Aspect	Impact	Control Measures	Initial Risk Level			Mitigation Measures	Residual Risk Level		
			P	C	R		P	C	R
Federal and state mine safety and health regulatory agencies amend mine laws and regulations.	Cost of training, materials, supplies and equipment; modification of mine examination and production procedures; modification of mining plans.	Participate in heangngs and workshops when possible to facilitate understanding and implementation; work cooperatively with agencies and employees to facilitate implementation of new laws and regulations.	4	3	12	Familiarity and experience with new laws and regulations results in reduced impact to operations and productivity and improved supplies and equipment options.	4	2	8

22.2.8.4 Market and Transportation

Most of the current and future production is expected to be directed to domestic and international metallurgical markets. Historically the metallurgical markets have been cyclical and highly volatile.

Table 22-8: Market and Transportation (Risk 6)

Aspect	Impact	Control Measures	Initial Risk Level			Mitigation Measures	Residual Risk Level		
			P	C	R		P	C	R
Volatile coal prices drop precipitously.	Loss of revenue adversely affects profitability; reduced cash flow may disrupt capital expenditures plan.	Cost control measures implemented; capital spending deferred.	4	5	20	High-cost operations dosed, and employees temporarily furloughed.	4	4	16

Occasional delay or interruption of rail, river and terminals service may be expected. The operator can possibly minimize the impact of delays by being a preferred customer by fulfilling shipment obligations promptly and maintaining close working relationships.

Table 22-9: Market and Transportation (Risk 7)

Aspect	Impact	Control Measures	Initial Risk Level			Mitigation Measures	Residual Risk Level		
			P	C	R		P	C	R
Rail or river transport is delayed; storage and shipping	Fulfillment of coal sates agreements delayed;	Provide adequate storage capacity at mines;	4	3	12	Provide back-up storage ac ity along with	4	2	8

access at river and ocean terminals is not available.	limited coal storage at mines may increase cost of rehandling; production may be temporarily idled.	coordinate continuously with railroad and shipping companies to respond quickly and effectively to changing circumstances.				personnel, equipment and rehandle plan to sustain production and fulfill sales obligations timely.		

22.2.8.5 Mining Plan

Occupational health and safety risks are inherent in mining operations. Comprehensive training and retraining programs, internal safety audits and examinations, regular mine inspections, safety meetings, along with support of trained fire brigades and mine rescue teams are among activities that greatly reduce accident risks. Employee health monitoring programs coupled with dust and noise monitoring and abatement reduce health risks to miners.

As underground mines are developed and extended, observation of geological, hydrogeological and geotechnical conditions lead to modification of mine plans and procedures to enable safe work within the mine environments.

Highlighted below are selected examples of safety and external factors relevant to Alpha's operations.

22.2.8.5.1 Methane Management

Coalbed methane is present in coal operations below drainage. Often the methane concentration in shallow coal seams is at such low levels that it can be readily managed with frequent testing and monitoring, vigilance in mine ventilation and routine ventilation surveys. Very high methane concentrations may be present at greater depths. High methane concentrations may require degasification of the coal seam to assure safe mining. Methane is not expected to be present in most of the Aracoma property.

Table 22-10: Methane Management (Risk 8)

Aspect	Impact	Control Measures	Initial Risk Level			Mitigation Measures	Residual Risk Level		
			P	C	R		P	C	R
Methane hazard is present in mines operating below drainage.	Injury or loss of life; possible ignition of gas and mine explosion; potential loss of mine and equipment temporarily or permanently; additional mine fan, mine power, ventilation, monitoring and examination requirements.	Low to moderate levels can be managed with frequent examinations, testing and monitoring within the mine ventilation system. Excellent rock dust maintenance minimizes explosion propagation risk should an ignition occur.	2	5	10	Very high-level methane concentrations may require coal seam degasification and gob degasificalion where pillar extraction methods are employed.	2	3	6

22.2.8.5.2 Mine Fires

Mine fires, once common at mine operations, are rare today. Most active coal miners have not encountered a mine fire. Vastly improved mine power and equipment electrical systems, along with safe mine practices reduce mine fire risks. Crew training and fire brigade support and training improve response for containment and control if a fire occurs. Spontaneous combustion within coal mines, which is the source of most fires that occur today, is not expected to commonly occur at the Alpha property. When spontaneous combustion conditions are present, monitoring systems are employed for early detection and mine plans are designed to facilitate isolation, containment and rapid extinguishment.

Table 22-11: Mine Fires (Risk 9)

Aspect	Impact	Control Measures	Initial Risk Level			Mitigation Measures	Residual Risk Level		
			P	C	R		P	C	R
Mine fire at underground operation or plant stockpile fire.	Injury or loss of life; potential loss of mine temporarily or permanently; damage to equipment and mine infrastructure.	Inspection and maintenance of mine power, equipment and mine infrastructure; good housekeeping; frequent examination of conveyor belt entries: prompt removal of accumulations of combustible materials.	1	5	5	If spontaneous combustion conditions are present, enhanced monitoring and examination procedures will be implemented; mine design will incorporate features to facilitate isolation, containment and extinguishment of spontaneous combustion locations.	1	4	4

22.2.8.5.3 Ground Control

Underground mining exposes miners to the risks of roof falls and rib rolls. Ground control-based risks can be mitigated through effective roof control plans which are supplemented with a strong understanding of future geotechnical conditions. Foremen and crews should be trained to examine the roof, rib and floor conditions and identify pending and immediate hazards. Multiple publicly available software programs can be used to assess pillar sizing and stability.

Table 22-12: Ground Control (Risk 10)

Aspect	Impact	Control Measures	Initial Risk Level			Mitigation Measures	Residual Risk Level		
			P	C	R		P	C	R
Ground control issues cause roof failures, rib rolls, floor heave, etc.	Injury or loss of life; catastrophic damage to equipment; production interruption.	Regular inspection for change and signs of failure. Dynamic design of roof control plan and safely measures to honor observed conditions and exploration-based information; conservative pillar design.	4	3	12	Multiple operating sections to mitigate any lost production; availability of new working areas in case abandonment of section is required; availability of alternative roof control technologies in case of abrupt changes in mining	4	2	8

conditions.

22.2.8.5.4 Availability of Supplies and Equipment

The industry has periodically experienced difficulty receiving timely delivery of mine supplies and equipment. Availability issues often accompanied boom periods for coal demand. Any future delivery of supplies and equipment delays are expected to be temporary with limited impact on production.

Table 22-13: Availability of Supplies and Equipment (Risk 11)

Aspect	Impact	Control Measures	Initial Risk Level			Mitigation Measures	Residual Risk Level		
			P	C	R		P	C	R
Disruption of availability for supplies and equipment.	Temporary interruption of production.	Force majeure provision in coal sales agreements to limit liability for delayed or lost sales.	3	2	6	Work closely with customers to assure delayed coal delivery rather than cancelled sales; monitory external conditions and increase inventory of critical supplies; accelerate delivery of equipment when possible.	3	1	3

22.2.8.5.5 Labor

Work stoppage due to labor protests are considered to be unlikely and accompanied by limited impact should it occur. Strong employee relations and communications limit the exposure to outside protesters. Loss of supervisors and skilled employees to retirement is inevitable; the impact can be lessened with succession planning, training and mentorship of new employees.

Table 22-14: Labor - Work Stoppage (Risk 12)

Aspect	Impact	Control Measures	Initial Risk Level			Mitigation Measures	Residual Risk Level		
			P	C	R		P	C	R
Work stoppage due to slowdowns or secondary boycott activity.	Loss of production and coal sales: damaged customer and employee relations; reputation loss.	Maintain excellent employee relations and communications; maintain frequent customer communications.	2	3	6	Develop plan for employee communications and legal support to minimize impact of secondary boycott activities.	1	3	3

Table 22-15: Labor - Retirement (Risk 13)

Aspect	Impact	Control Measures	Initial Risk Level			Mitigation Measures	Residual Risk Level		
			P	C	R		P	C	R
Retirement of supervisors and skilled employees.	Loss of leadership and critical skills to sustain high levels of safety, maintenance and productivity.	Monitor demographics closely and maintain communications with employees who are approaching retirement age: maintain employee selection and training programs.	3	3	9	Maintain selection of candidates and implementation of in-house or third-party training for electricians and mechanics: develop employee mentoring program.	3	2	6

22.2.8.6 Comprehensive Health and Safety

While largely incorporated in mine plan-based risk factors, effective health and safety programs reduce the risk of accidents, associated loss of production and fines. Currently, coal mining and processing requires a robust health and safety team, consisting of executive level health and safety roles, regional health and safety managers, and multiple operational level health and safety coordinators.

Table 22-16: Health and Safety (Risk 14)

Aspect	Impact	Control Measures	Initial Risk Level			Mitigation Measures	Residual Risk Level		
			P	C	R		P	C	R
Failure to attain operations safety standards and associated occurrence of accidents	Injuries and possible loss of life; damage to morale and workforce confidence; loss of production and diminished productivity; regulatory issues, closures and fines; reputation loss	Safety and loss control awareness training to help employees recognize hazardous conditions and actions: frequent job observations and feedback; periodic employee performance reviews	2	5	10	Senior management's active participation in safety process; utilization of motivational methods to reinforce company's values and commitment to safely; regular comprehensive safety audits to assure safety standards are maintained.	2	3	6

Alpha Metallurgical Resources, Inc.
Statement of Coal Resources and Reserves for the
Aracoma Complex in Accordance with
United States SEC Standards as of December 31, 2024
Central Appalachian Coal Basin
West Virginia, USA

23 Recommendations

Alpha should continue to work both internally and with outside assistance to further define their Resource Base and to Optimize the LOM Plan.

24 References

Publicly available information from various State and Federal agencies was used where relevant.

JOURNEL, A.G., & HUIJBREGTS, CH, J., 1978: Mining Geostatistics, The Blackburn Press Caldwell, New Jersey.

25 Reliance on Information Provided by Registrant

A summary of the information provided by Alpha relied upon by MM&A for the purposes of this TRS is provided in *Table 25-1.*

Table 25-1: Information from Registrant Relied Upon by MM&A

Category	Information Provided by Alpha	Report Section
Marketing	Long-term price forecast used in financial projections	16.2
Legal	Mineral control and surface control rights as shown on maps	3.2, 3.3
Environmental	Permit and bonding information	17.3

APPENDIX

A

SUMMARY TABLES

Alpha Metallurgical Resources, Inc.

SEC Technical Report - Aracoma Complex

Summary of Coal Resource (Short Tons) • Effective December 31, 2024

Appendix A -Table 1

Area	Seam	Coal Resource (Dry Tons, In Situ)									Quality (Dry Basis)		
		By Reliability Category					By Control Type		By Permit Status				
		Measured	Indicated	Total	Inferred	Grand Total	Owned	Leased	Permitted	Not Permitted	Ash%	Sulfur%	VM%
Boone East	Chilton (47000)	7,306,000	1,990,000	9,296,000	0	9,296,000	9,296,000	0	0	9,296,000	23	0.6	0
Cedar Grove No. 2	Upper Cedar Grove (30100)	12,102,000	9,571,000	21,673,000	180,000	21,853,000	0	21,673,000	16,546,000	5,127,000	51	2.9	0
Cedar No, 3 Mine	Upper Cedar Grove (30100)	3,414,000	1,355,000	4,769,000	4,000	4,773,000	0	4,769,000	4,122,000	646,000	51	2.9	0
Rum Creek	No. 2 Gas (24000)	29,760,000	19,508,000	49,268,000	154,000	49,422,000	0	49,268,000	Ol	49,268,000	13	0.7	32
Boone East	No. 2 Gas (240001	29.094.000	17.283.000	46.377.000	86.000	46.463.000	37.296.000	9.081.000	0	46.377.000	77	1 1	n

Total	[illegible]	81,676,000	49,707.000	131,383,000	423,000	131,806,000	46,692,000	84,791,000	20,668,000	110,715,000	[illegible]	1.2	32

Note (1): Resource tons ore Exclusive of Reserve/Not Converted to Reserve tons (not converted to reserve).

Note (2): Cool resources ore reported on a dry basis. Surface moisture and inherent moisture are excluded.

Totals may not add due to rounding.

Alpha Metallurgical Resources, Inc,

SEC Technical Report - Aracoma Complex

Summary of Coal Reserves (Short Tons) • Effective December 31, 2024

Appendix A - Table 2

		Demonstrated Coal Reserves (Wet Tons, Washed or Direct Shipped, xl,000)											Quality (Dry Basis)		
		By Reliability Category			By Mining Type		By Control Type		Permit Status		By Market				
Area/Mine	Seam	Proven	Probable	Total	Surface	UG	Owned	Leased	Permitted	Not Permitted	Thermal	Met	Ash%	Sulfur%	VM%
Davy Branch	Upper Chilton (41000)	2,330,000	605,000	2,934,000	0	2,934,000	0	2,934,000	2,924,000	10,000	0	2,934,000	7	0.9	39
Hatfield Area	Upper Chilton (41000)	5,105,000	2,663,000	7,768,000	0	7,768,000	0	7,768,000	0	7,768,000	0	7,768,000	7	0.9	36
Cedar Grove No. 3	Upper Cedar Grove (30100)	3,078,000	565,000	3,642,000	0	3,642,000	0	3,642,000	3,625,000	17,000	0	3,642,000	7	1.3	39
Lauren Land	Lower Cedar Grove (30000)	1,905,000	1,038,000	2,943,000	0	2,943,000	0	2,943,000	0	2,943,000	0	2,943,000	3	0-7	-
Cedar Grove No. 3	Lower Cedar Grove (30000)	539,000	17,000	556,000	0	556,000	54,000	502,000	0	556,000	0	556,000	4	0.6	38
Beech Branch	Alma (25800)	998,0D0	431,000	1,429,000	0	1,429,000	0	1,429,000	0	1,429,000	0	1,429,000	4	0.9	39
Lynn Branch	No. 2 Gas (24000)	8,826,000	4,931,000	13,757,000	0	13,757,000	573,000	13,184,000	13,757,000	0	0	13,757,000	4	0.8	37
Boone East	No. 2 Gas (24000)	1,748,000	3,275,000	5,023,000	0	5,023,000	3,976,000	1,048,000	0	5,023,000	0	5,023,000	4	0.9	-
Grand Total		24,530,000	13,525,000	38,055,000	0	38,055,000	4,603,000	33,452,000	20,307,000	17,748,000	0	38,055,000	5	0.9	37

Notes: Marketable reserve tons are reported on a moist basis, including a combination of surface and inherent moisture. Coal quality is based on a weighted average of laboratory data from core holes The combination of surface and inherent moisture is modeled at 6.0-percent. Actual product moisture is dependent upon multiple geologicalfactors, operationalfactors, and product contract specifications and can exceed 8-percent. As such, the modeled moisture values provide a level of conservatismfor reserve reporting.

'Volatile Matter analysis is not availablefor all reserve areas. All Aracoma reserves are priced as a High-Vol B product.

Totals may not add due to rounding.

APPENDIX

B

INITIAL ECONOMIC ASSESSMENT, RESOURCES EXCLUSIVE OF RESERVES


MARSHALL MILLER
&ASSOCIATES®

Alpha Metallurgical Resources, LLC

Initial Economic Assessment, Resources Exclusive of Reserves (per Ton)

Appendix 8: Aracoma Complex

Seam:	Chilton Aracoma	Upper Cedar Grove Aracoma	Upper Cedar Grove Aracoma	No.2 Gas Aracoma	No.2 Gas Aracoma
Area:	Boone East Chilton	UCG#2 Blocks A2-A3	UCGP3 Block B	N2G Boone East	N2G Rum Creek
In-Place Resource Tons	9,296,143	21,852,520	4,772,514	46,462,578	49,422,129
Potentially Recoverable Tons*	2,025,891	4,547,947	952,313	9,934,907	10,567,736
Mining Method	Deep - CM	Deep - CM	Deep - CM	Deep - CM	Deep - CM
Assumed Sales Realization at Plant**	$ 140	$ 140	$ 140	$ 140	$ 140
Iniital Capex Estimate to Access Resources***	$ 32,000,000	$ -	$ -	$ 100,000,000	$ 50,000,000
Direct Mining Costs:					
Labor*—*	$ 26.57	$ 24.40	$ 22.36	$ 32.21	$ 30.42
Supplies, Excluding Roof Control	5 7.25	$ 6.66	$ 6.10	$ 12.04	$ 11.37
Roof Control	$ 6.57	$ 6,03	$ 5.53	$ 12.04	$ 11,37
M&R	$ 5.99	$ 12.30	$ 11.16	$ 14.10	$ 12.42
Power	$ 0.96	S 1.98	$ 1.79	$ 1.41	$ 1.24
Other	$ 2.70	$ 5.55	$ 5.04	$ 3.12	$ 2.75
Total Direct Cash Costs	$ 50.04	$ 56.93	$ 51.98	$ 74.92	$ 69.57
Transporation, Washing, Environmental & G&A Costs:					
Coal Prep—*	$ 6.41	$ 13.18	$ 11.96	$ 9.40	$ 8.28
Materials Handling	$ 1.50	$ 1.50	$ 1.50	$ 1.50	$ 1.50
Raw Coal Trucking****'	$ 15.47	$ 4.12	$ 7.92	$ 13.22	$ 11.65
Clean Coal Trucking	$ 1.25	S 1.25	$ 1.25	$ 1.25	$ 1.25
Enviro**—•*	S 0.35	S 0.35	$ 0.35	$ 0.35	$ 0.35
G&A	$ 4.25	$ 4.25	$ 4.25	$ 4.00	$ 4.00
Total Transporation, Washing, Environmental & G&A Costs:	$ 29.23	$ 24.65	$ 27.22	$ 29.72	$ 27.03
Indirect Cash Costs					
Royalty	$ 8.40	$ 8.40	$ 8.40	$ 8.40	$ 8.40
Black Lung Excise Tax	$ 0.55	$ 0.55	$ 0.55	$ 0.55	$ 0.55
SMCRA	$ 0.12	$ 0.12	$ 0.12	$ 0.12	$ 0.12
State Severance	$ 7.00	$ 7.00	$ 7.00	$ 1.40	$ 1.40
Property Tax & Insurance	$ 0.88	S 0.88	$ 0.88	$ 1.36	$ 1.36
Total Indirect Cash Costs	$ 16.95	$ 16.95	$ 16.95	$ 11.83	$ 11.83
Non Cash Costs					
Amoritiztion of Development Capital	$ 15.80	$ -	$ -	$ 10.07	S 4.73
Depreciation of Initial Equipment and Sustaining Capital	$ 5.49	$ 5.49	$ 5.49	$ 5.49	$ 5.49
Depletion	$ 1.00	$ 1.00	$ 1.00	$ 1.00	$ 1.00
Total Non Cash	$ 22.28	S 6.49	$ 6.49	$ 16,55	$ 11.22
1Total Cash Cost	5 96.21	$ 98.52	$ 96.15	$ 116.47	$ 108.43
EBITDA	$ 43.79	$ 41.48	$ 43.85	$ 23.53	$ 31.57
Fully Loaded Cost	$ 118.50	$ 105.01	$ 102.64	$ 133.02	$ 119.65
Fully Loaded P&L	$ 21.50	$ 34.99	$ 37.36	$ 6.98	$ 20.35
Passes Resource Initial Economic Assessment?	YES	YES	YES	YES	YES

'Potentially recoverable tons are calculated by applying appropriate modifying factors to in-place resource tonnages

**Sales realization represents estimated long range sales price.

**'No initial capital required where resources are accessible from existing mines.

****Labor rates are driven based off of super section productivities assuming 250 to 300 feet per unit shift per section.

*****Processing assumed to occur at Bandmill plant.

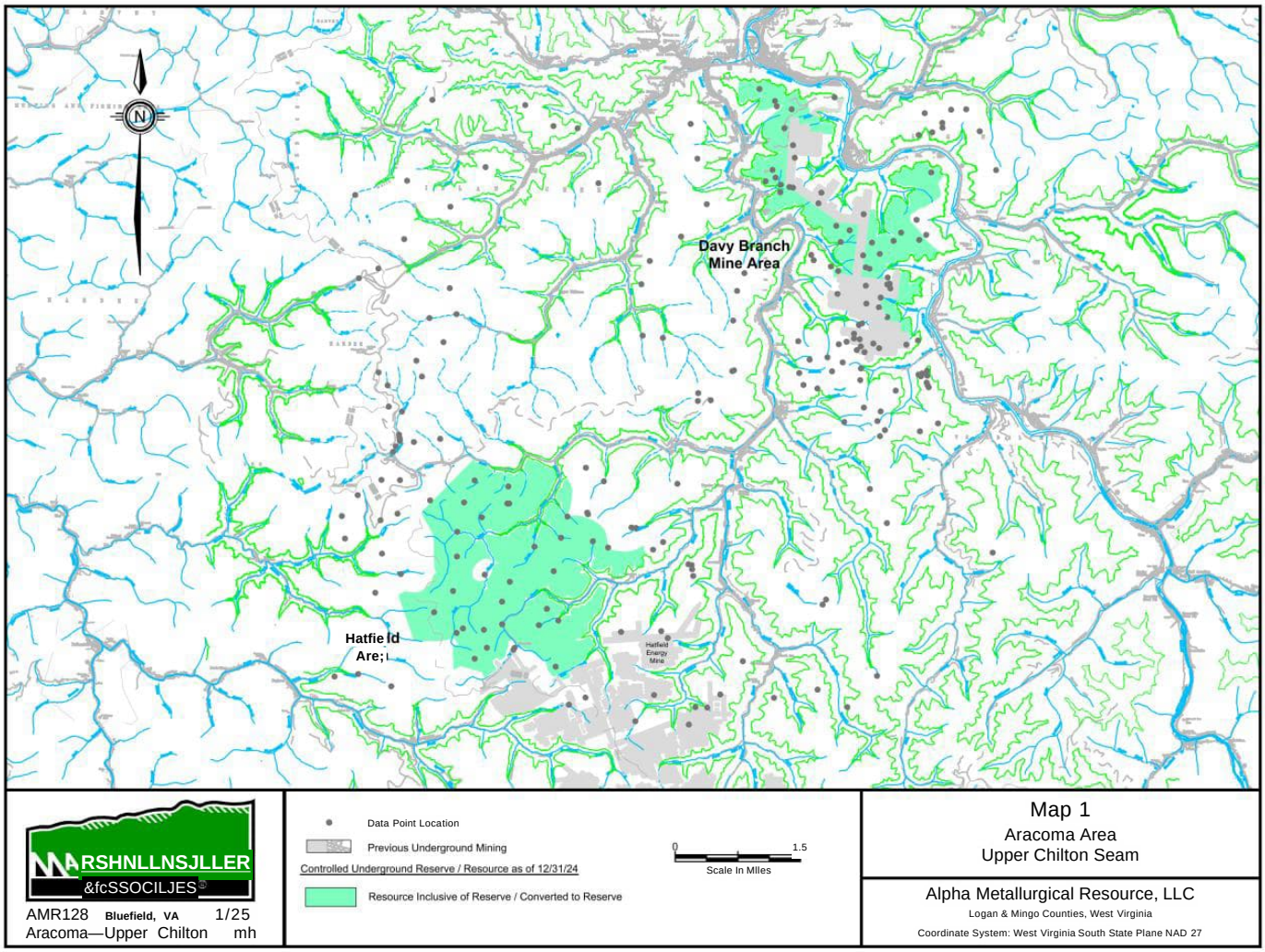
***** 'Environmental costs assumed to include permiting, outfall maintenance, etc.

APPENDIX

APPENDIX

C

MAPS



MARSHALL MILLER & ASSOCIATES

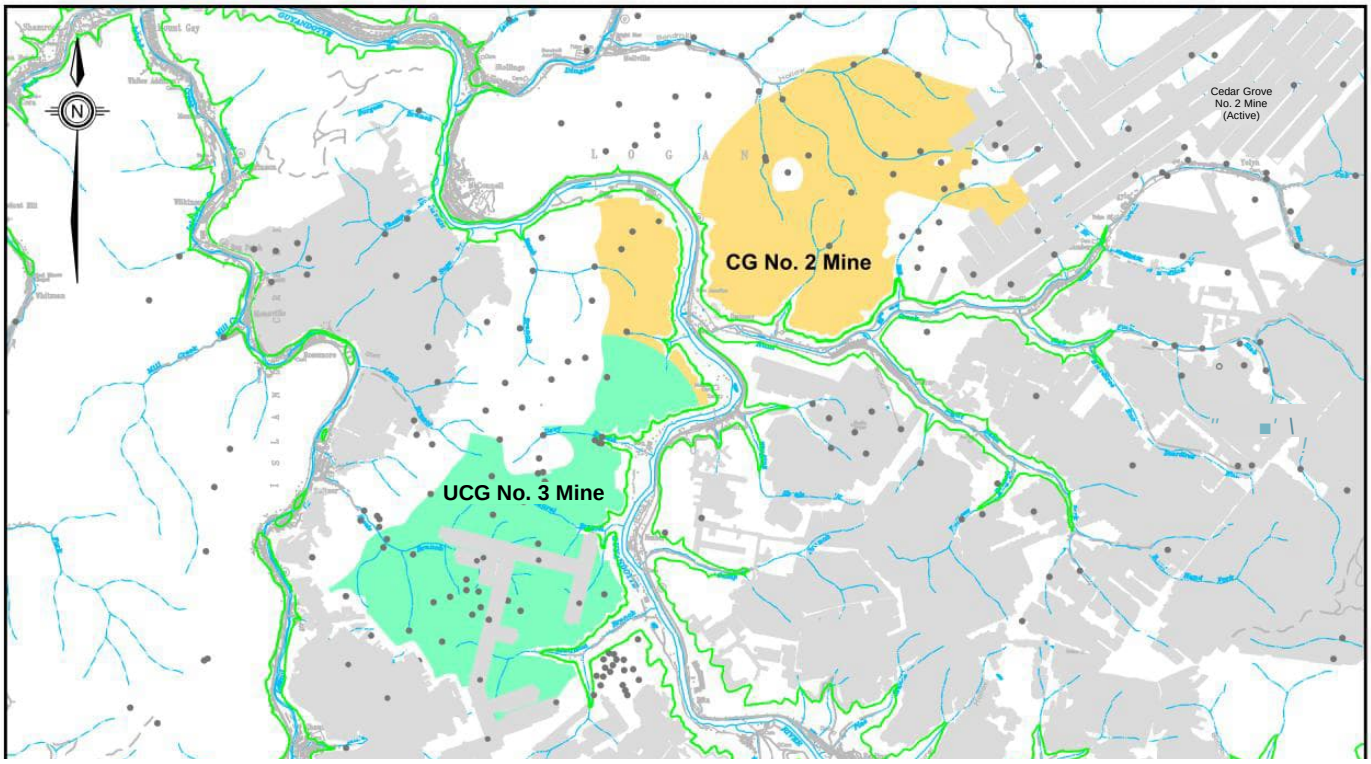
AMR128 Bluefield, VA 1/25
Aracoma—Upper Chilton mh

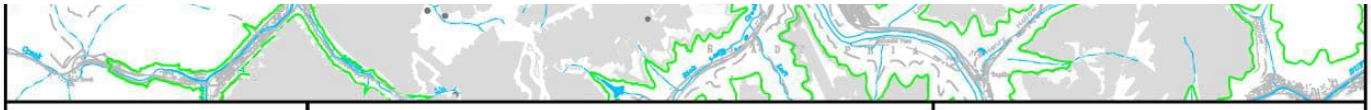
Data Point Location
Previous Underground Mining
Controlled Underground Reserve / Resource as of 12/31/24
Resource Inclusive of Reserve / Converted to Reserve

0 1.5
Scale In Miles

Map 1
Aracoma Area
Upper Chilton Seam

Alpha Metallurgical Resource, LLC
Logan & Mingo Counties, West Virginia
Coordinate System: West Virginia South State Plane NAD 27





MARSHALL MILLER &KSSOCIKTES

AMR128 Bluefield, VA 1/25
Aracoma-UCG mh

Data Point Location

Previous Underground Mining

Controlled Underground Reserve / Resource as of 12/31/24

Resource Inclusive of Reserve / Converted to Reserve

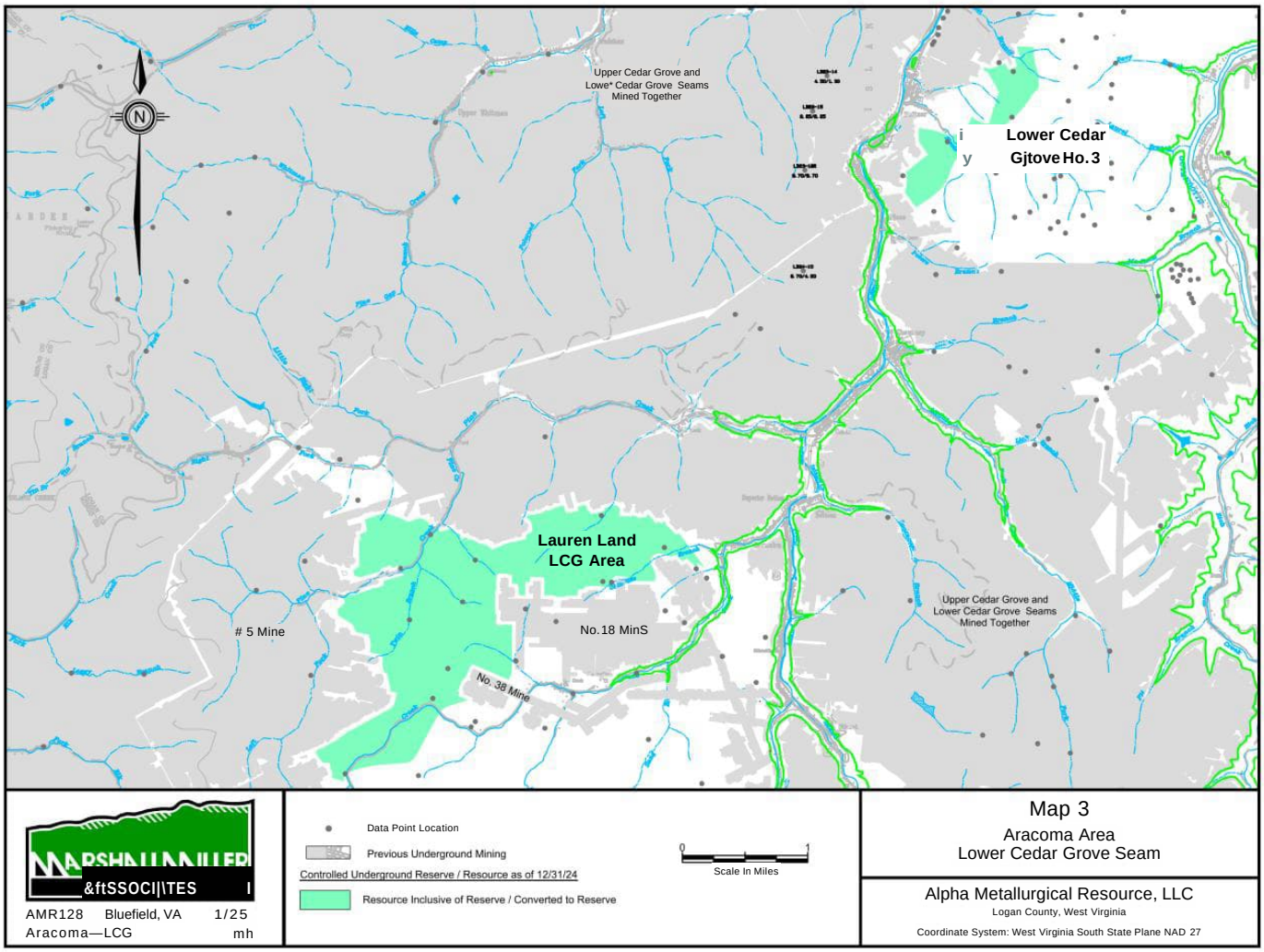
Resource Exclusive of Reserve / Not Converted to Reserve

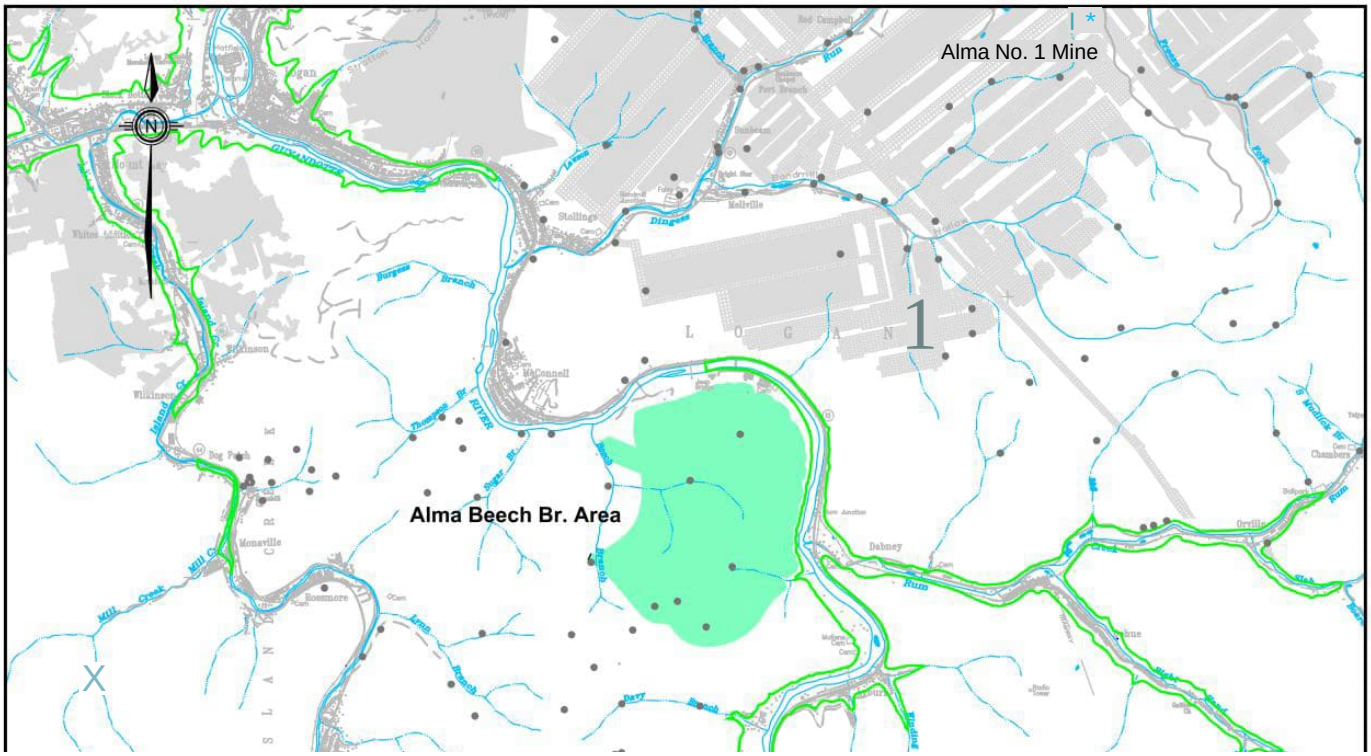
0 1
Scale In Miles

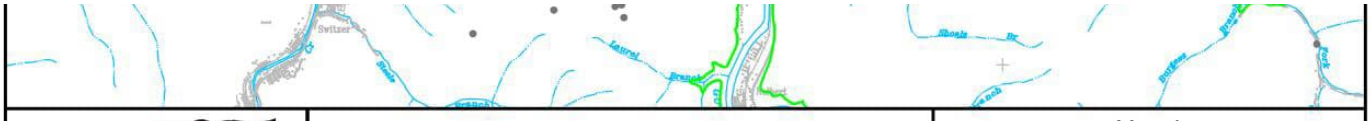
Map 2

Aracoma Area
Upper Cedar Grove Seam

Alpha Metallurgical Resource, LLC
Logan County, West Virginia
Coordinate System. West Virginia South State Plane NAD 27


Upper Cedar Grove and
Lowe* Cedar Grove Seams
Mined Together
Lower Cedar
Gjtove Ho. 3
Lauren Land
LCG Area
5 Mine
No.18 MinS
No. 38 Mine
Upper Cedar Grove and
Lower Cedar Grove Seams
Mined Together
&ftSSOCI|\TES
AMR128 Bluefield, VA 1/25
Aracoma—LCG mh
Data Point Location
Previous Underground Mining
Controlled Underground Reserve / Resource as of 12/31/24
Resource Inclusive of Reserve / Converted to Reserve
Scale In Miles
Map 3
Aracoma Area
Lower Cedar Grove Seam
Alpha Metallurgical Resource, LLC
Logan County, West Virginia
Coordinate System: West Virginia South State Plane NAD 27


Alma No. 1 Mine
Alma Beech Br. Area
LOGAN



MARSHALL MILLER &frSSOCIKTES

AMR128 Bluefield, VA 1/25
Aracoma—Alma mh

- Data Point Location
- Previous Underground Mining

Controlled Underground Reserve / Resource as of 12/31/24

- Resource Inclusive of Reserve / Converted to Reserve

0 4000'
Scale In Feet

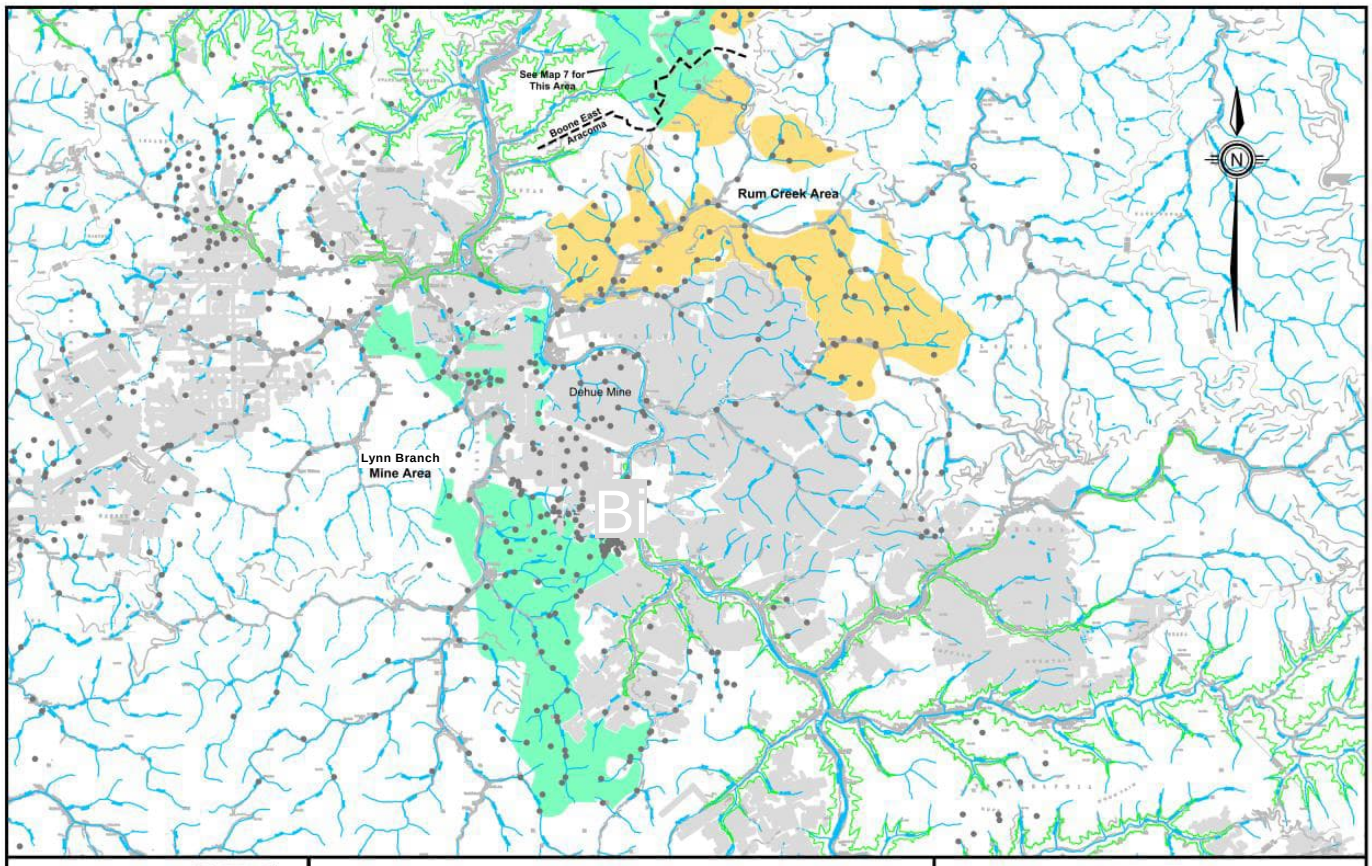
Map 4

Aracoma Area
Alma Seam

Alpha Metallurgical Resource, LLC

Logan County, West Virginia

Coordinate System; West Virginia South State Plane NAD 27



MARSHALL MILLER &h$SOCIKTES

AMR128 Bluefield. VA 1/25
Aracoma—2 Gas mh

Data Point Location

Previous Underground Mining

Controlled Underground Reserve / Resource as of 12/31/24

Resource Inclusive of Reserve / Converted to Reserve

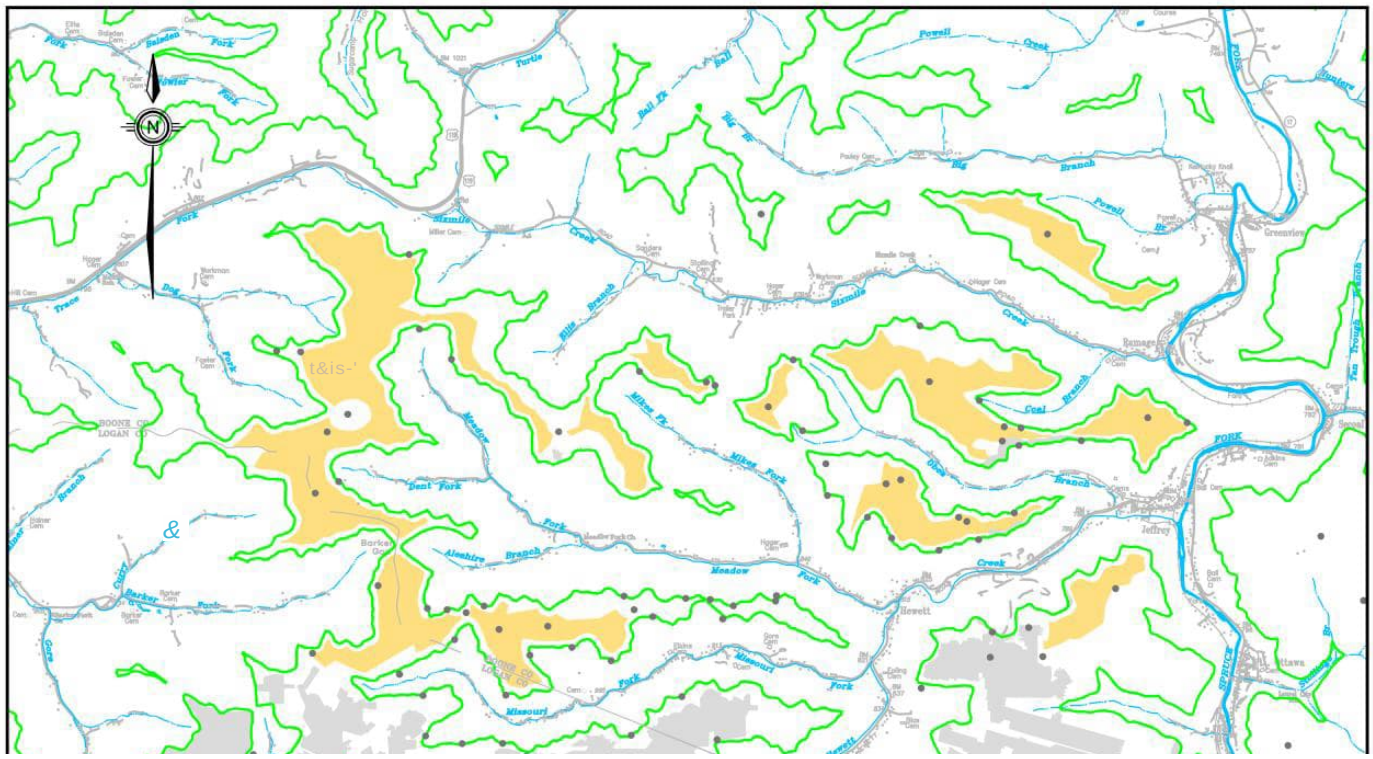
Resource Exclusive of Reserve / Not Converted to Reserve

0 2.5
Scale In Mites

Map 5

Aracoma Area
No. 2 Gas Seam

Alpha Metallurgical Resource, LLC
Logan County, West Virginia
Coordinate System: West Virginia South State Plane NAD *27*



APSHMLN\ILLER
&KSSOCIKTES

AMR128 Bluaflsld, VA 1/25
Boone Eost-Chilton mh

Data Point Location

Previous Underground Mining

Controlled Reserve / Resource as of 12/31/24

Resource Exclusive of Reserve / Not Converted to Reserve

0 4000'
Scale In Feet

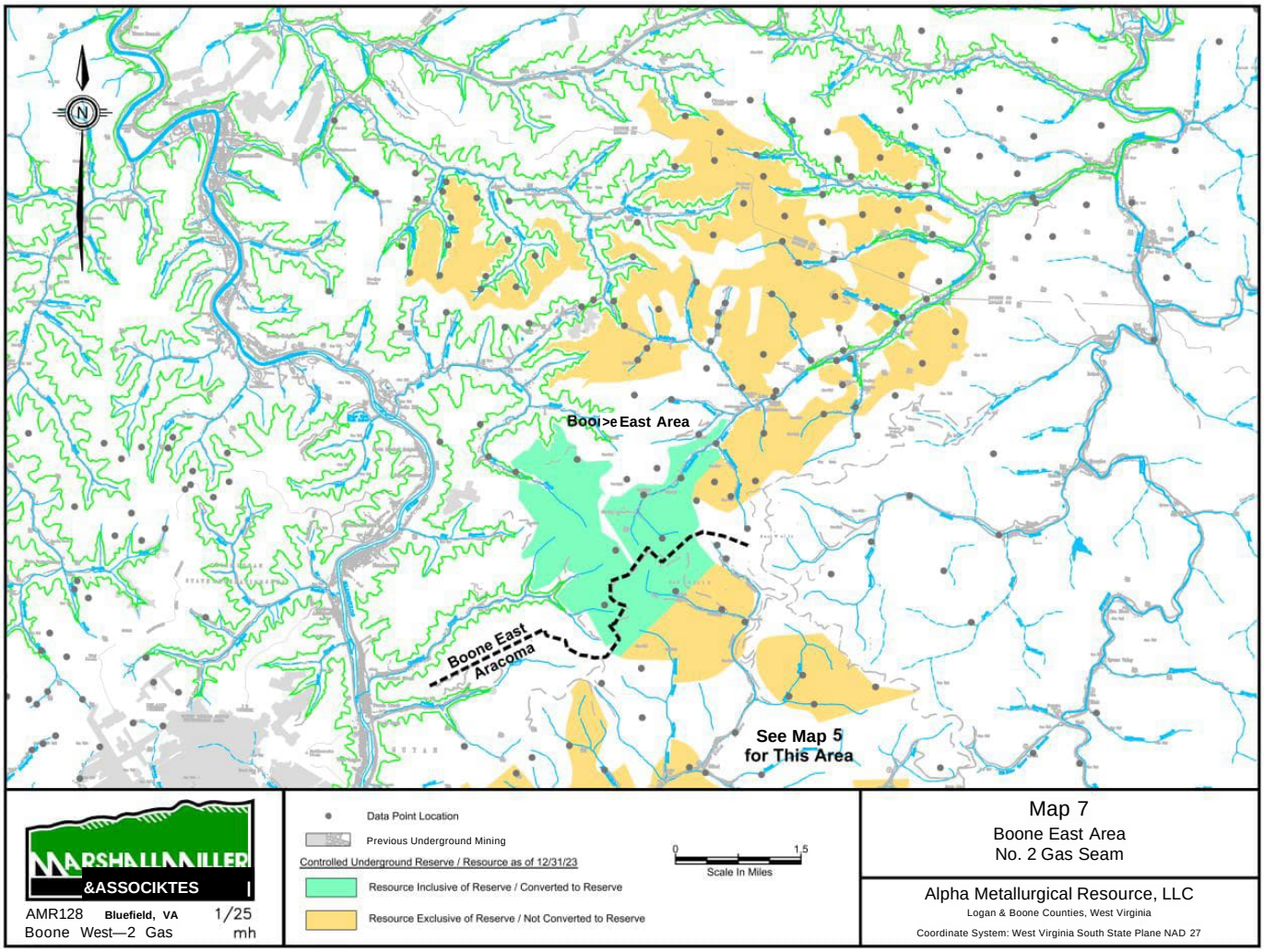
Map 6

Boone East Area
Chilton Seam

Alpha Metallurgical Resource, LLC

Boone & Logan Counties, West Virginia

Coordinate System: West Virginia South State Plane NAD 27



MARSHALL MILLER &ASSOCIKTES

AMR128 Bluefield, VA 1/25
Boone West—2 Gas mh

Data Point Location
Previous Underground Mining
Controlled Underground Reserve / Resource as of 12/31/23
Resource Inclusive of Reserve / Converted to Reserve
Resource Exclusive of Reserve / Not Converted to Reserve

0 1.5
Scale In Miles

Map 7
Boone East Area
No. 2 Gas Seam

Alpha Metallurgical Resource, LLC
Logan & Boone Counties, West Virginia
Coordinate System: West Virginia South State Plane NAD 27