Alpha Metallurgical Resources, Inc.
Statement of Coal Resources and Reserves for the
Virginia Complex in Accordance with
United States SEC Standards as of December 31, 2023
Central Appalachian Coal Basin
Virginia, USA

February 2024

Prepared for:
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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

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, 2023, 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 9, 2024

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Appendices

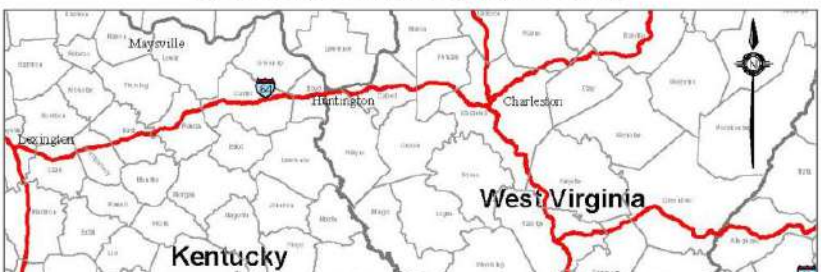
1 Executive Summary

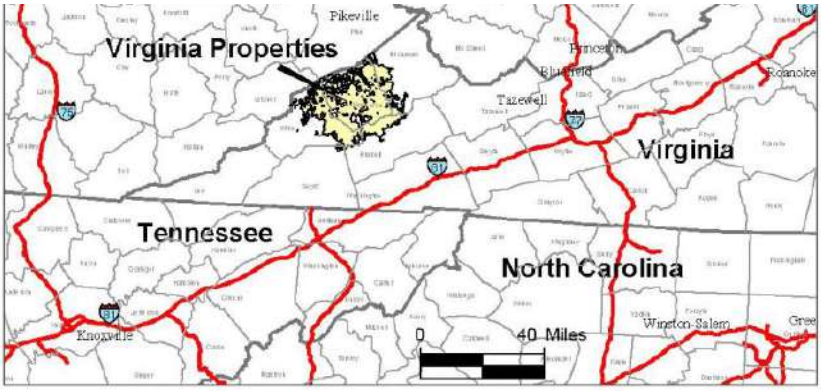
1.1 Property Description

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 **Virginia Complex (*Virginia* or the *Property*)** in Buchanan, Dickenson, Russell and Wise counties, 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 include the McClure River Preparation plant (*McClure*) in Dickenson County Virginia, located along the McClure River and adjacent to a CSX rail line. The McClure Plant is about 9 miles southeast of the town of Clintwood, Virginia, the county seat of Dickenson County, and approximately 30 miles northwest of Lebanon VA; the Tom's Creek Preparation plant in Wise County Virginia is located by Toms Creek, a tributary of the Guest River. The plant is adjacent to a Norfolk Southern (*NS*) rail line, and is about 10 to 15 miles, route dependent, east of the town of Wise Virginia, and approximately 46 miles northwest of Lebanon Virginia (see *Figure 1-1*). The Property is composed of approximately 321,600 total acres of mineral control, of which nearly all are contained within 19 separate leases and 5 owned tracts.

Figure 1-1: Alpha's Virginia Property Location Map





1.2 Ownership

The Virginia property involves a complex combination of previous ownership. Predecessors of Alpha, namely **Alpha Natural Resources (*Alpha*)**, **Dickenson Russell Coal Company**, **Dickenson-Russell Contura LLC**, **Paramont Coal Company Virginia LLC (*Paramont*)**, **Paramont Contura LLC**, and **Clinchfield Coal Company** all previously held mining rights on most of the Property.

1.3 Geology

Coal seams of currently active operations at the Virginia Mine Complex include the Jawbone, Jawbone Rider, Upper Banner, Lower Banner, Big Fork, Kennedy, Aily, Raven splits and Tiller. These seams are all historically utilized as coking coal. Due to the high value of these coking coals, these mineable seams have been extensively mined in the past.

Strata on the Property, among the active sites, are of the Pennsylvanian-aged (approximately 290 to 330 million years ago) Wise Formation. Some of the in-active sites include coals in the overlying Norton Formation. The rock formations between the coal seams are characterized by proportions of sandstone and shale units. In general, the coal seams reach the highest structural elevations along the southeastern margin of the Property, and dip toward the northwest. Several faults with vertical

displacement (north-south Glamorgan Fault, Paw Paw Fault) on the Prater Quadrangle of the Property trend northwest – southeast impact the underground deposit of the Jawbone Rider seam and the 88 Strip surface mine. Furthermore, the Russell Fork fault impacts the Jawbone Rider seam with horizontal offset. Several faults, with minor vertical displacement, run through the Jawbone reserve but appear to have limited impact on mining.

1.4 Exploration Status

The Property has been extensively explored, largely by drilling with continuous coring, and rotary drilling methods often supported by downhole geophysical methods. In addition to exploration means, coal measures obtained from mine exposures have supplemented the database. Most of the 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 were anomalous or not representative, that data was not honored from within the digital databases and for subsequent processing by MM&A.

Ongoing exploration has been carried out by Alpha since acquiring the Virginia Complex. The Alpha acquired exploration data has been consistent with past drilling activities.

1.5 Operations and Development

As of December 31, 2023, underground mine operations were active at Deep Mine 41 (Jawbone Seam), Deep Mine 44 (Rush Branch – Lower Banner Seam), and the Bear Ridge (Upper Banner Seam) deep mine. Deep Mine 41 produces Mid-Vol coal. High Vol-A coal is the product from Deep Mine 44 and by the Bear Ridge deep mine. Deep Mine 46, also referred to as the Ball Ridge Mine, is in the planning/pre-development stage.

Active surface mine operations, with associated Highwall-Miners, include The Long Branch surface mine and 88 Strip. Both mines produce High Vol-A quality coal.

Based on the mine plans developed as part of this TRS, annual deep mine production peaks at 2.5 million tons in 2026. Underground reserves will be depleted in 2058. Annual surface mine production peaks at 0.9 million tons in 2025 and highwall mine production peaks at 0.5 million in 2028. Surface and highwall reserves are both depleted in 2032.

In addition to the mines, the Virginia Complex includes the McClure River and Toms Creek Preparation Plants.

The McClure River Preparation Plant site, with a feed rate capacity of 1,100 raw tons per hour, uses a Heavy Media Vessel for primary separation, Low Density Cyclone for Intermediate Separation and Froth Flotation and Spirals in the Fine Coal Circuit. The plant utilizes both centrifugal and thermal dryers. The McClure River plant produces a product with a dry ash ranging from 8.1% to 27.9% (Middlings) and less

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than 0.8% sulfur. Volatile matter averages 24.2%. For year-end 2023, the average utilization rate of the McClure River Preparation Plant was 52.6%. Product is shipped via the CSX Transportation railroad system from the plant.

The Tom's Creek Preparation Plant, also with a feed rate of 1,100 tons/hour, produces a product with an 8.1% to 19.8% (middlings) ash, and 0.83% to 0.96% sulfur ranges. Volatile matter averages 30.0%. The plant uses centrifugal dryers; a Heavy Media Vessel for primary separation; Low Density and Heavy Media Cyclones for Intermediate Separation; Froth Flotation, Spirals and Columns for the Fine Coal Circuit. For year-end 2023, the average utilization rate of the Tom's Creek Preparation Plant was 43.1%. Product is shipped via the Norfolk Southern railway system from the plant.

1.6 Mineral Resource

A coal resource estimate, summarized in *Table 1-1* was prepared as of December 31, 2023, for property controlled by Alpha.

Table 1-1: Coal Resources Summary as of December 31, 2023

Area	Seam	Coal Resource (Dry Tons, In Situ, Mt)			
		Measured	Indicated	Inferred	Total
Inclusive of Reserve (Converted to Reserve)					
88Strip/3Frks	Upper Banner-Tiller	11,661,700	1,626,900	0	13,288,600
Long Branch	Upper Banner 2 - Lower Banner	2,377,200	528,300	0	2,905,600
Bear Ridge	Upper Banner (4650)	521,500	43,200	0	564,700
Ball Ridge (Deep Mine 46)	Lower Banner (4900)	4,835,900	383,400	0	5,219,300
Long Branch (Deep Mine 45)	Lower Banner (4900)	3,221,600	350,000	0	2,368,900
Rush Branch (Deep Mine 44)	Lower Banner (4900)	2,240,900	600	0	2,241,400
Deep Mine 43	Jawbone Rider (5950)	37,893,900	21,339,100	250,700	59,483,700
Black Dog	Jawbone (6000)	16,105,700	246,400	0	16,352,100
Deep Mine 41	Jawbone (6000)	55,989,800	15,454,600	0	71,444,400
Deep Mine 42	Jawbone (6000)	41,959,700	7,425,900	0	49,385,600
Total Inclusive of Reserve (Converted to Reserve)		**176,807,800**	**47,398,400**	**250,700**	**223,254,200**
Exclusive of Reserve (Not Converted to Reserve)					
Holly Creek	Upper Banner (4650)	5,594,200	2,155,800	0	7,750,000
Bear Ridge	Upper Banner (4650)	180,900	118,100	0	299,000
Ball Ridge (Deep Mine 46)	Lower Banner (4900)	1,003,100	32,000	0	1,035,100
Deep Mine 43	Jawbone Rider (5950)	10,653,400	8,216,300	409,100	19,278,800
Black Dog	Jawbone (6000)	6,367,400	1,859,700	0	8,227,200
Deep Mine 41	Jawbone (6000)	4,704,400	705,000	0	5,409,400
Deep Mine 42	Jawbone (6000)	2,023,900	15,000	0	2,038,900
Total Exclusive of Reserve (Not Converted to Reserve)		**30,527,300**	**13,101,900**	**409,100**	**44,038,300**
Grand Total					
Inclusive of Reserve (Converted to Reserve)		176,807,800	47,398,400	250,700	223,254,200
Exclusive of Reserve (Not Converted to Reserve)		30,527,300	13,101,900	409,100	44,038,300
Grand Total		**207,335,100**	**60,500,300**	**659,900**	**267,292,500**

Note(1): Resource tons are inclusive of reserve tons since they are 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.
Totals may not add due to rounding.
See Appendix A for 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, 2023 for the underground mines, and July 1, 2023 for the surface mines.

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 to the deposit; geological encumbrances associated with overlying and underlying strata; thin seam trends; complex structures; and insufficient exploration data. The listed factors have all been considered. Reserve consideration excludes those portions of the resource area, which exhibit the aforementioned geologic and/ or 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, 2023

	Demonstrated Coal Reserves (Wet Tons, Washed or Direct Shipped)					Quality (Dry Basis)		
	By Reliability Category			By Permit Status				
Seam/Area	Proven	Probable	Total	Permitted	Not Permitted	Ash%	Sulfur%	VM%
Surface Mineable								
88 Strip/Three Forks	133,000	3,973,700	4,106,700	2,083,000	2,023,700	6	0.9	29
88 Strip/Three Forks	414,600	2,318,800	2,733,400	391,200	2,342,200	6	0.9	29
Long Branch	103,900	84,000	187,800	125,300	62,600	5	0.8	32
Long Branch	597,400	101,200	698,600	393,700	304,900	5	0.8	31
Total Surface Mineable	**1,248,800**	**6,477,700**	**7,726,500**	**2,993,300**	**4,733,300**	**6**	**0.8**	**31**
Underground								
Upper Banner (4650)								
Bear Ridge	71,800	11,700	83,500	83,500	0	5	0.7	33
Total Upper Banner (4650)	**71,800**	**11,700**	**83,500**	**83,500**	**0**	**5**	**0.7**	-
Lower Banner (4900)								
Ball Ridge (Deep Mine 46)	1,189,600	92,400	1,282,000	1,282,000	0	6	0.7	29
Long Branch (Deep Mine 45)	713,200	15,500	728,700	728,700	0	6	0.7	30
Rush Branch (Deep Mine 44)	310,600	0	310,600	150,700	159,900	5	0.7	29
Total Lower Banner (4900)	**2,213,400**	**107,900**	**2,321,300**	**2,161,400**	**159,900**	**6**	**0.7**	**29**
Jawbone Rider (5950)								
Deep Mine 43	13,939,400	7,961,200	21,900,600	0	21,900,600	3	0.8	24
Total Jawbone Rider (5950)	**13,939,400**	**7,961,200**	**21,900,600**	**0**	**21,900,600**	**3**	**0.8**	**24**
Jawbone (6000)								
Black Dog	3,970,400	65,000	4,035,400	4,035,400	0	8	0.6	28
Deep Mine 41	15,367,700	4,356,200	19,724,000	16,851,500	2,872,500	9	0.8	26
Deep Mine 42	10,941,400	2,013,900	12,955,400	12,522,800	432,600	7	0.7	26
Total Jawbone (6000)	**30,279,600**	**6,435,100**	**36,714,700**	**33,409,600**	**3,305,100**	**8**	**0.7**	**26**
Total UG Mineable	**46,504,100**	**14,516,000**	**61,020,100**	**35,654,500**	**25,365,600**	**6**	**0.8**	**25**
Grand Total								
Grand Total	**47,752,900**	**20,993,800**	**68,746,500**	**38,647,700**	**30,098,900**	**6**	**0.8**	**25**

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 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.
Totals may not add due to rounding. See Appendix A for detailed breakdown.

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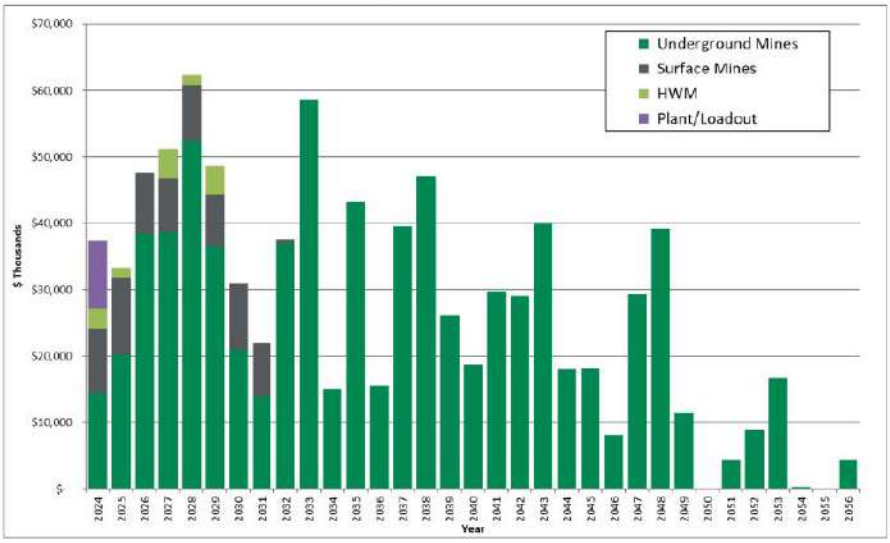
In summary, Alpha controls a total of 68.75 Mt (moist basis) of marketable coal reserves at Virginia, as of December 31, 2023. Of that total, 69 percent are proven, and 31 percent are probable. All 68.75 Mt are leased coal reserves. The maps included in *Appendix C* reflect mining depletion at the time resource/reserve calculation based on Alpha mine maps as of September 30, 2023 for underground mines and as of June 30, 2023 for surface mines. Mine depletion tonnages were supplied by Alpha through the end of 2023, and MM&A deducted this historical production from the mapped reserves in order to estimate reserves as of December 31, 2023.

1.8 Capital Summary

Alpha provided MM&A with information related to the number of currently operating production units at the Virginia complex. 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 mine.

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 Virginia operations is provided in *Figure 1-2* below.

Figure 1-2: Projected Capital Expenditures – Consolidated Virginia Operations



1.9 Operating Costs

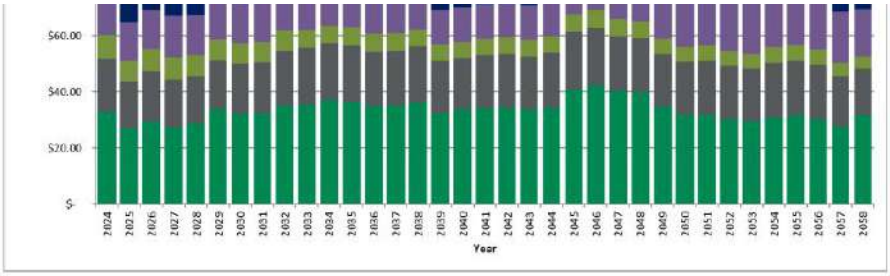
Alpha provided historical costs and budgeted projections of operating costs for its active mines; for Deep Mines 41& 44, and Long Branch surface mine and 88 Strip for MM&A's review. MM&A used the historical cost information as a reference and developed a personnel schedule for each mine. Hourly labor 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 (prep) plant processing, refuse handling, coal loading, property taxes, and 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 $162 to $163 per short ton port pricing, with an average $125.03 per ton netback pricing reflective of the high- and mid -volatile product currently sold at Virginia. 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 Virginia 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 Virginia business unit.

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

Figure 1-3: Virginia 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. The discounted cash flow analysis presented herein is based on an effective date of January 1, 2024.

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 cost 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 Virginia.

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
Underground Mines					
DM 41-42-Black Dog (Jawbone)	37,355	$844,960	$22.62	$1,356,847	$36.32
Long Branch Deep (L. Banner)	729	$34,422	$47.24	$39,024	$53.55
DM44 (Lower Banner)	465	$1,250	$2.69	$6,007	$12.93
DM43 (Jawbone Rider)	21,901	$210,289	$9.60	$558,027	$25.48
Ball Ridge DM46 (L. Banner)	1,282	$33,105	$25.82	$43,388	$33.84
Bear Ridge (Upper Banner)	105	$974	$9.31	$1,329	$12.71
Consolidated Deep Mines	**61,835**	**$1,125,000**	**$18.19**	**$2,004,621**	**$32.42**
Surface Mines					
Long Branch	228	($8,921)	($39.20)	($1,319)	($5.80)
88 Strip	4,287	$47,474	$11.07	$120,152	$28.03
Consolidated Surface Mines	**4,515**	**$38,553**	**$8.54**	**$118,832**	**$26.32**
HWM Operations					
Long Branch HWM	738	$19,898	$26.97	$38,250	$51.84
88 Strip HWM	2,783	$150,671	$54.13	$165,703	$59.53
Consolidated HWMs	**3,521**	**$170,569**	**$48.44**	**$203,953**	**$57.92**
Grand Total	**69,871**	**$1,334,121**	**$19.09**	**$2,327,407**	**$33.31**

Note: (1) LOM tonnage evaluated in the financial model includes October 2023 through December 2023 production for underground mines and July 2023 through December 2023 production for surface mines production (1.12 million total clean tons) which was subtracted from coal reserves in order to make the effective date of the reserves December 31, 2023.

As shown in *Table 1-3,* all of the mines analyzed show positive EBITDA over the LOM. Overall, the Alpha consolidated Virginia operations show positive LOM P&L and EBITDA of $1.3 billion and $2.3 billion, respectively.

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

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

	Total	YE 12/31 2023	YE 12/31 2024	YE 12/31 2025	YE 12/31 2026	YE 12/31 2027	YE 12/31 2028
Production & Sales tons	69,871	1,049	2,991	3,639	3,473	3,494	3,173
Total Revenue	$8,736,279	$132,872	$375,442	$457,763	$436,893	$440,937	$401,144
EBITDA	$2,327,407	$47,516	$98,172	$150,138	$129,938	$139,281	$125,826
Net Income	$1,090,302	$35,806	$59,513	$96,252	$81,452	$85,112	$70,780
Net Cash Provided by Operating Activities	$2,083,587	$29,989	$75,981	$117,142	$113,894	$117,169	$110,011
Purchases of Property, Plant, and Equipment	($892,646)	$0	($37,333)	($33,306)	($47,613)	($51,149)	($62,343)
Net Cash Flow	$1,190,941	$29,989	$38,648	$83,836	$66,281	$66,019	$47,668
	YE 12/31 2029	YE 12/31 2030	YE 12/31 2031	YE 12/31 2032	YE 12/31 2033	YE 12/31 2034	YE 12/31 2035

Production & Sales tons	2,857	2,766	2,748	2,376	2,162	2,065	2,096
Total Revenue	$360,367	$349,158	$346,869	$298,348	$268,886	$256,742	$260,589
EBITDA	$94,611	$97,030	$94,086	$72,063	$66,163	$61,052	$62,116
Net Income	$41,501	$40,348	$39,913	$20,028	$13,960	$15,118	$18,622
Net Cash Provided by Operating Activities	$91,472	$89,227	$88,257	$73,008	$63,660	$60,152	$59,760
Purchases of Property, Plant, and Equipment	($48,685)	($30,985)	($22,070)	($37,542)	($58,580)	($15,065)	($43,200)
Net Cash Flow	$42,787	$58,242	$66,187	$35,466	$5,080	$45,087	$16,559
	YE 12/31 2036	YE 12/31 2037	YE 12/31 2038	YE 12/31 2039	YE 12/31 2040	YE 12/31 2041	YE 12/31 2042
Production & Sales tons	2,183	2,170	2,106	2,356	2,273	2,243	2,224
Total Revenue	$271,511	$269,793	$261,909	$292,967	$282,684	$278,872	$276,558
EBITDA	$70,963	$69,221	$65,351	$87,795	$82,979	$78,517	$75,844
Net Income	$32,262	$28,979	$22,134	$43,305	$45,002	$38,106	$37,913
Net Cash Provided by Operating Activities	$56,442	$61,336	$59,762	$75,101	$76,023	$71,819	$69,380
Purchases of Property, Plant, and Equipment	($15,490)	($39,518)	($47,166)	($26,142)	($18,729)	($29,768)	($29,043)
Net Cash Flow	$40,952	$21,818	$12,596	$48,959	$57,294	$42,051	$40,338
	YE 12/31 2043	YE 12/31 2044	YE 12/31 2045	YE 12/31 2046	YE 12/31 2047	YE 12/31 2048	YE 12/31 2049
Production & Sales tons	2,263	2,232	1,862	1,702	1,786	1,811	1,579
Total Revenue	$281,377	$277,527	$231,517	$211,631	$222,124	$225,263	$196,380
EBITDA	$80,014	$74,350	$43,761	$34,631	$43,741	$45,877	$50,040
Net Income	$37,677	$36,406	$14,532	$8,615	$14,275	$14,689	$21,001
Net Cash Provided by Operating Activities	$71,561	$68,995	$47,641	$35,439	$39,373	$42,494	$46,688
Purchases of Property, Plant, and Equipment	($40,050)	($18,023)	($18,093)	($8,163)	($29,333)	($39,202)	($11,520)
Net Cash Flow	$31,511	$50,972	$29,549	$27,276	$10,040	$3,291	$35,168
	YE 12/31 2050	YE 12/31 2051	YE 12/31 2052	YE 12/31 2053	YE 12/31 2054	YE 12/31 2055	YE 12/31 2056
Production & Sales tons	1,215	956	994	754	486	476	493
Total Revenue	$151,084	$118,939	$123,633	$93,734	$60,404	$59,147	$61,368
EBITDA	$38,443	$26,510	$30,406	$24,364	$13,552	$12,650	$14,219
Net Income	$16,845	$13,824	$16,422	$8,771	$1,413	$5,216	$6,553
Net Cash Provided by Operating Activities	$39,650	$25,647	$27,000	$24,347	$16,507	$13,256	$13,524
Purchases of Property, Plant, and Equipment	$0	($4,320)	($8,844)	($16,706)	($344)	$0	($4,320)
Net Cash Flow	$39,650	$21,327	$18,156	$7,641	$16,163	$13,256	$9,204

	YE 12/31 2057	YE 12/31 2058	YE 12/31 2059	YE 12/31 2060	YE 12/31 2061	YE 12/31 2062	YE 12/31 2063
Production & Sales tons	538	281	0	0	0	0	0
Total Revenue	$66,859	$34,987	$0	$0	$0	$0	$0
EBITDA	$19,327	$9,279	($1,382)	($547)	($276)	($141)	($73)
Net Income	$10,140	$2,654	($2,764)	($1,094)	($552)	($281)	($146)
Net Cash Provided by Operating Activities	$16,695	$13,865	($11,208)	($3,736)	($1,868)	($934)	($934)
Purchases of Property, Plant, and Equipment	$0	$0	$0	$0	$0	$0	$0
Net Cash Flow	$16,695	$13,865	($11,208)	($3,736)	($1,868)	($934)	($934)

Notes :
(1) LOM tonnage evaluated in the financial model includes October 2023 through December 2023 production for underground mines and July 2023 through December 2023 production for surface mines (1.12 million total clean tons) which was subtracted from coal reserves in order to make the effective date of the reserves December 31, 2023.
(2) Results shown for 2023 represent 4th quarter only.

Consolidated cash flows are driven by annual sales tonnage, which grows from 3.0 million tons in 2024 to a peak of 3.6 million tons in 2025. Between years 2026 and 2044, sales ranges from 2.1 million to 3.5 million tons and between years 2045-2058, sales range from 0.3 million tons to 1.9 million tons. Projected consolidated revenue grows from $375.4 million in 2024 to a peak of $457.8 million in 2025. Revenue totals $8.7 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 $117.2 million in 2027 and totals $2.1 billion over the project life. Capital expenditures total $231.7 million during the first five years and $892.6 million over the project's life.

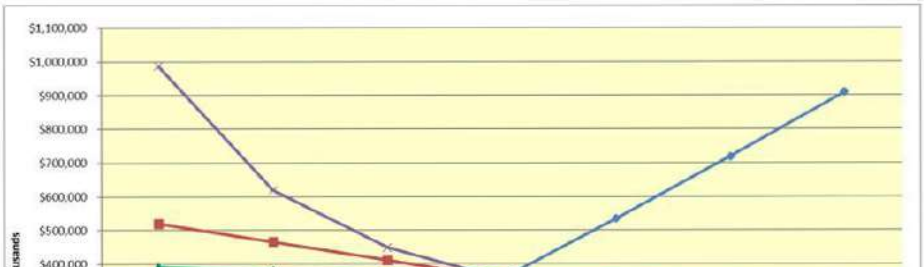
1.10.1 Discounted Cash Flow Analysis

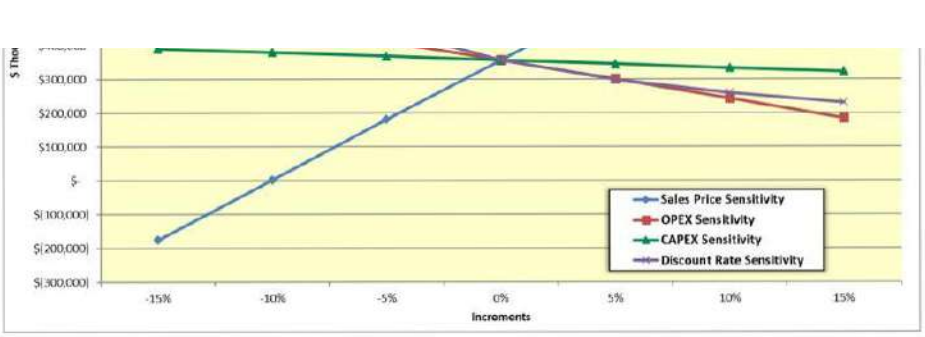
Cash flow after tax, but before debt service, generated over the life of the project was discounted to NPV at a 16.57% discount rate, which represents MM&A's estimate of the constant dollar, risk adjusted WACC for likely market participants if the subject reserves were offered for sale. On an un-levered basis, the NPV of the project cash flows represents the Enterprise Value of the project and amounts to $356.9 million. Alpha is an active producer, and the financial model shows positive net cash flow for each year of the operating life of the Virginia reserves. The pre-feasibility financial model prepared for the TRS was developed to test the economic viability of each coal resource area. 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 Virginia 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 16.57% 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 and operating cost estimates, 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 the **United States Fish and Wildlife (*USFW*)** 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 Virginia 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 concludes that the 68.75 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.

2 Introduction

2.1 Registrant and Terms of Reference

This updated 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 located at the Virginia Complex (*Virginia* or *the Property*) in Buchanan, Dickenson, Russell and Wise Counties, Virginia. 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

The 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*:

Alpha Metallurgical Resources, Inc.
Statement of Coal Resources and Reserves for the
Virginia Complex in Accordance with
United States SEC Standards as of December 31, 2023
Central Appalachian Coal Basin
Virginia, USA

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
	Historical and budgetary operating cost information used to derive cost drivers	

Costs	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, 2023. 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, 2022.

2.4 Personal Inspections

MM&A is very familiar with the Virginia properties, 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 surface mine mines was conducted on September 13, 2023.

3 Property Description

3.1 Location

The Virginia Mine Complex is in the Central Appalachian Basin in southwest Virginia (see *Figure 1-1*) north of Lebanon, Virginia, and U.S. Highway 19 and south of Pikeville, Kentucky. The complex covers part of four counties: Buchanan, Dickenson, Russell and Wise. Surface facilities for the operation are located near the community of McClure, along the McClure River in Dickenson County and near Tom's Creek, a tributary of the Guest River in Wise County. The McClure plant is near the active Jawbone seam Deep Mine No. 41. The Toms Creek Plant is near the town of Coeburn, Virginia and accessed by State Rt. 652. Numerous small communities are present throughout the Property.

The nearest major population centers are Bristol, Virginia (65 miles south) and Roanoke, Virginia (195 miles east), and Charleston, West Virginia (165 miles north), and Lexington, Kentucky (180 miles northwest). The Property is located on the following **United States Geological Survey (*USGS*)** Quadrangles: Elkhorn, Harman, Jenkins East, Clintwood, Haysi, Prater, Vansant, Big A Mtn, Duty, Nora, Caney Ridge, Pound, Flat Gap, Wise, Coeburn, St. Paul and Carbo. The coordinate system and datum used for the model of the Virginia Mine complex and the subsequent maps were produced in the Virginia State Plane South system, NAD 83.

3.2 Titles, Claims or Leases

The Property is composed of over 321,600 total acres of mineral control, nearly all of which is leased. Alpha's control is comprised of over 19 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* list the Virginia property mineral control. 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 – Virginia Complex

Reference File No.	Document Type	Expiration Date [1]	On-going Minimum Royalty [2]	On-going Production Royalty [3]
VD 1	Deed	N/A	N/A	N/A
VD 2	Deed	N/A	N/A	N/A
VD 3	Deed	N/A	N/A	N/A
VD 4	Deed	N/A	N/A	N/A
VD-5	Deed	N/A	N/A	N/A
VL 1	Lease	9/30/2024	No	Yes
VL 2	Lease	3/31/2028	Yes	Yes
VL 4	Lease	Exhaustion	No	Yes

VL 5	Lease	4/7/2028	Yes	Yes
VL 6	Lease	6/23/2028	Yes	Yes
VL 7	Lease	3/27/2027	Yes	Yes
VL 8	Lease	7/22/2024	No	Yes
VL 9	Lease	6/26/2024	No	Yes
VL 10	Lease	7/23/2024	No	Yes
VL 11	Lease	1/7/2024	No	Yes
VL 12	Lease	Exhaustion	No	Yes
VL 13	Lease	6/30/2024	No	Yes
VL 14	Lease	6/21/2027	No	Yes
VL 17	Lease	3/26/2028	No	Yes
VL 18	Lease	12/31/2024	No	Yes
VL 19	Lease	5/22/2027	No	Yes
VL 20	Lease	9/6/2024	No	Yes
VL 21	Lease	3/31/2025	Yes	N/A
VL 22	Lease	8/30/2024	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 against future production royalties.
(3) Royalty rates range from 3% to 9% 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 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 legal teams examine the deeds and title control to minimize this risk. Historically, property control has not posed any significant challenges related to Virginia's operations.

4 Accessibility, Climate, Local Resources, Infrastructure and Physiography

4.1 Topography, elevation, and Vegetation

Topography of the area encompassed by the Virginia mine complex is typical of the Central Appalachian Plateau's physiographic province, being rugged with a dendritic drainage pattern that form narrow river valleys, flanked by steep-sided upland regions. Terrain slopes in the area are mostly steep to very steep with some gently sloping with relatively narrow ridges. North of the Property exists Pine Mountain, a result of compressional forces and movement along the Pine Mountain thrust fault. The flanks of Pine Mountain create a trellis drainage pattern flowing southward, along the northern border of Dickenson County. Surface elevations near the mine complex range from approximately 1,300 feet above sea level at streams to approximately 2,400 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 Virginia property via a well-developed network of primary, secondary, and unimproved roads from U.S. interstates highways. Interstate 81 to the south and Interstate 77 to the east are the primary roads coming into the complex region. Interstate 81 connects with Bristol, Virginia to the southwest and Roanoke, Virginia to the east. Interstate 77 connects with Charleston, West Virginia to the north and via Interstate 64 with Lexington, Kentucky, to the northwest. US Route 19 connects Interstate 81 with Lebanon, Virginia from the south, while US Route 460 connects Interstate 77 with US Route 19 from the east.

Numerous secondary and unimproved roads provide direct access to the mine property, some being federal, state, and town-maintained. These include US Route 58, via State Route 71 connecting Lebanon

to Toms Creek Virginia, and US Route 23 to State Routes 83 and 63 running north-south from Pikeville, Kentucky to McClure, Virginia. 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. The primary transport means of processed coal is CSX Railroad which services the McClure River Loadout located just east of McClure Virginia, and NS Railroad servicing the Tom's Creek Loadout located 2.25 miles north of Coeburn, Virginia.

4.3 Proximity to Population Centers

The Virginia Mine Complex is in southwest Virginia, north of Lebanon, Virginia and south of Pikeville, Kentucky. Several small towns reside in the complex footprint which covers much of Dickenson County

and smaller portions of Buchanan, Russell, and Wise Counties. There are no large population centers within close proximity.

The nearest major population centers are Bristol, Virginia (65 miles south) and Roanoke, Virginia (195 miles east), and Charleston, West Virginia (165 miles north), and Lexington, Kentucky (180 miles northwest).

As of the 2020 Annual County and Resident Population Estimate (www.census.gov), Dickenson County had 14,124 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 comes throughout the year, and annually includes approximately 46 inches of rain and 29 inches of snow. Most rain comes in spring and the early months of summer. Warmer months typically begin in late May and end in early September and range in average temperature from 48 to 82 degrees Fahrenheit. Colder months typically begin in mid to late November and run until mid to late March with average temperatures ranging from 21 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 Virginia. However, weather events could potentially negatively impact efficiency of surface mine and preparation plant operations on a very limited basis and lasting less than a few days.

4.5 Infrastructure

The Virginia Mine Complex has sources of water, power, personnel, and supplies readily available for use. Personnel have historically been sourced from the surrounding communities in Dickenson, and surrounding 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 (*AEP*)**. The

service industry in the areas surrounding the mine complex has historically provided supplies, equipment repairs and fabrication, etc. Alpha's Tom's Creek Prep Plant services consumers with washed coal, which is transported via the adjacent Norfolk Southern rail line at the loadout. The McClure River Prep Plant services consumers with washed coal via CSX rail line accessible from the plant loadout. Haul roads, primary roads, and conveyor belt systems account for transport from the various mine sites to both preparation plant facilities.

5 History

5.1 Previous Operation

The Virginia 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*)**, **Dickenson Russell Coal Company, Dickenson-Russell Contura LLC, Paramont Coal Company Virginia LLC (*Paramont*)**, **Paramont Contura LLC**, and **Clinchfield Coal Company** all previously held mining rights on most of the Property.

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 logs (e-logging). Coal sampling and quality analyses were also employed during the core-exploration process. The development of this report included an assessment of over 6,600 locations of coal measurements, largely comprised of exploration drill holes which often include several to many coal intercepts. In-mine data measurements are included also.

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, and currently logs most of the recent 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 U.S. 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.

Coal seams and zones of economic significance typically range between 24 and 48 inches in thickness. Southwest-Northeast trending regional faults border the Property on the Northwest and southeast sides. They include the Pine Mountain trust fault to the northwest and the St. Paul and Buffalo

Mountain faults to the southeast. Additional faults in the Property have north-south or northwest-southeast trends. A few faults impact the coal deposit and resource extents such as the proximity of Russel Fork fault with the Jawbone Rider seam. Structural slopes of the Property are typically characterized by a shallow dip to the northwest.

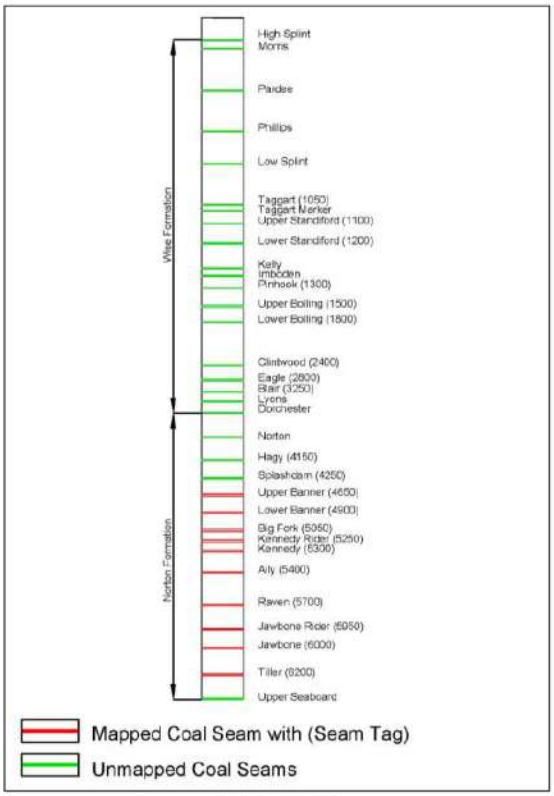
Strata on the Property are of the Pennsylvanian-age Wise and Norton Formations. The base of the Wise formation is the Dorchester coal bed. The Gladeville Sandstone exists between the formations. The rock formations between the coal seams are characterized by sandstone and shale units.

Seams with remaining reserve or resource potential include, in stratigraphically ascending order the: Tiller, Jawbone, Jawbone Rider, Raven, Aily, Kennedy, Lower Banner, Upper Banner, in the Norton Formation and Clintwood, Eagle, Lower Bolling, Upper Bolling, Pinhook, Lower Standiford, Upper Standiford, Taggart Marker and Taggart in the Wise Formation.

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: Virginia Stratigraphic Column



(not to scale)

6.3 Deposits

The Virginia complex currently produces both High-Volatile-A bituminous coal, and a Mid-Volatile bituminous coal as primary products.

Due to the long history of mining in the region and the high value of these 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 seams of interest are generally situated above drainage or near and are therefore accessible via outcrop or through short slopes. The rock formations between the coal seams are characterized mainly by sandstone and 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. Diamond core drilling produces rock core samples from the hole. Data for coal bed correlations and strata mining conditions are derived from core descriptions and geophysical logging (e-logging). Geophysical logs are

produced from a probe that surveys the drill hole void. Rock stratum types are interpreted from log signatures produced from the probe which commonly include a hole caliper, rock density and gamma readings. Coal-quality analyses were also employed during the core-exploration process.

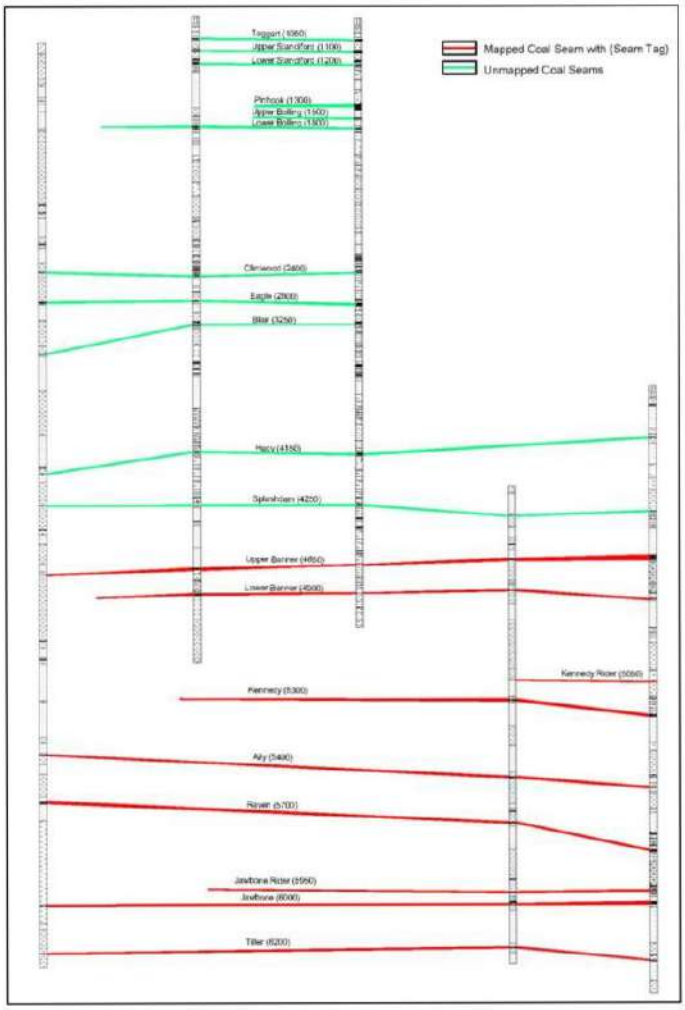
Drill records indicate that independent contract drilling operators have typically been engaged to carry out drilling on the Property. Geophysical logging was typically performed by outside logging firms. MM&A, via its Geophysical Logging Systems subsidiary, has logged a significant number of the past 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 and highwall miner benches, and deep mineable seams. Core logging is carried out by professional geologists in cases where roof and floor strata are of particular interest and in cases where greater resolution and geologic detail are needed. However, most drill hole data come from simplified driller's logs, which lack 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 employed, *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.

A typical cross-section is shown in *Figure 7-1.*

Figure 7-1: Virginia 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 or then used by MM&A.

In 2023, Alpha provided MM&A with data from more than 20 additional holes, mainly gas well holes. Thirteen of the 2023 holes are located in the in the vicinity the Russel Fork River, in or proximate to the Deep Mine 43 area; three holes are located on two ridge tops adjacent to the Wilder surface mine area; six holes are located slightly east of the Three Forks mine area, on ridges east and west of Indian Creek.

Three additional holes are located west of the projected Jawbone Rider mine. New holes located in or proximate to defined coal resource areas were verified and used herein.

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 the 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. In the case of active surface mines, digital U.S.G.S. historical topography was utilized to reference original seam outcrop positions.

7.2 Drilling Procedures

Core drilling methods utilize NX-size ($2^1/_8$ 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 cored holes, the geophysical logs are especially useful in verifying the percent of 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 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 in this application.

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 drill logs were provided to MM&A collectively as a geological database. MM&A geologists were not involved in the production of original core logs but did perform a basic check of drill records and 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 relevant seams.

7.3 Mine Data

Mine data from active underground and surface mines was used to supplement the exploration drillhole records, by seam. In- seam mine data was provided from Alpha through coal section measurement records within maps of active mines. The mine data was processed for seam thickness and coal thickness, by seam and then appended to the Carlson model database for seam model updates. Seam thickness data excluded roof and or floor strata records above and below the measured seam. In 2023, supplemental mine data was utilized for DM 44 (Rush Branch) active underground mine and surface mines 88-Strip and Long Branch.

7.4 Hydrology

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

MM&A is not aware of any significant hydrologic impacts being experienced at any three currently active deep mines or two active surface mines. 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.

7.5 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)* program that was developed by the **National Institute for Occupational Safety and Health (*NIOSH*)**. 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 related to exploration drilling activities 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 US coal sampling technique from core drilling is for the coal core sample, once recovered from the core barrel, to be measured and described into a log, then wrapped in a sealed plastic sleeve and placed into a covered wooden 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

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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 Virginia.

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&A did 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 professional 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.

Additionally, specific to Alpha's Virginia surface operations, a significant dataset was made available related to in-pit quality measurements used during the mining process as a predictive measure prior to mining. This robust dataset is generally based upon bulk or grab samples obtained by employees of Alpha prior to the extraction of coal in surface mined pits. MM&A's review of the datasets suggests a general continuity of sampling procedures. Care was taken by MM&A to determine sampling locations which are commonly tied to both coal seam names and generalized mine locations. The information contained in the dataset does not include a surveyed location point, as the information is generally only relied upon in the short term for assistance in coal blending procedures.

8.2 Lab Procedures

Coal quality testing related to exploration drilling has been performed over many years by operating companies using different laboratories and testing regimens. Some of the samples have raw analyses and washability analysis 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).

Specific to the aforementioned pit-quality sampling and associated datasets, laboratory analysis includes both short proximate analysis and at times, detailed metallurgical characteristics. The dataset contains a combination of raw and washed samples.

In addition to the steps taken to ensure the accuracy of the historical data as described above, Alpha reports that the company employes 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.

9 Data Verification

9.1 Procedures of Qualified Person

MM&A reviewed the Alpha-supplied digital geologic database which consists of data records including drill hole information for holes that lie within and adjacent to the Property along with records for numerous supplemental coal seam thickness measurements; mainly in mine measurements from underground mine maps. Once the initial integrity of the database was established, stratigraphic columnar sections were generated to use in cross-sectional analysis to establish or confirm coal seam correlations. The stratigraphic column correlation method provides a view of seam depths, lithologic strata and thickness intervals to over and underlying seams. Geophysical logs were used wherever available to assist in confirming the seam correlation and to verify proper seam depths, thickness measurements and recovery of coal samples.

After establishing and/or verifying proper seam correlation for all seams the database was used in the geologic model process. Seam thickness, base-of-seam elevation, roof and floor lithology, and overburden maps were independently generated for use in the mine planning process. Maps with seam control data plus geological cross-sections were generated to represent the seam correlations and data integrity.

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 for inclusion in the mine plan, additional samples are taken to help reduce the risk in 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 Virginia Property. The Property 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

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.

Specific to the surface mine reserve areas, exploration quality was supplemented with historical pit sampling. Tabulations were completed based upon annual arithmetic averages on in-pit samples for washed quality. The general consistency in quality suggests confidence in the mines' ability to continue to produce a comparable metallurgical product.

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. Pit analyses of the coal from Virginia were reviewed to verify that the coal quality and characteristics were as expected. The Virginia Property has a long history of saleable production, under various owners, in the Mid-Volatile and High-volatile metallurgical and thermal markets, confirming exploration results.

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); and 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 geologic models to define the coal resources at Virginia. Coal resources were estimated as of December 31, 2023.

11.1 Assumptions, Parameters and Methodology

Geological data was imported into Carlson Mining® (formerly SurvCADD®) software for geological modelling and resource estimates. The imported data, formatted in Microsoft® Excel files, incorporates drill hole collars elevations, 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 establishing correlations, validated coal seam data, including seam 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 lateral extents of the coal deposits is the proper modeling of seam 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 the Alpha Property 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 Classification	Reserve and Resource	Coal resources as reported are 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. For surface-mineable reserves, the QPs responsible for the delineation of coal reserves have opted to classify tons in areas lacking exploration drill hole quality as 100-percent probable as opposed to basing proven and probable classifications upon relative distance from drill holes. Resource classification as stated in the tables is directly derived from drill hole spacing. The QPs have relied upon consistency in historical pit sampling as a justification for reserve delineation in such areas.
Effective Date of Resource Estimate	December 31, 2023	Coal resources were estimated based upon depletion maps as of September 30, 2023 for underground mines and as of June 30, 2023 for surface mines, along with third and fourth quarter 2023 production depletion adjustment.
Effective Date of Reserve Estimate	December 31, 2023	Coal reserves were estimated based upon depletion maps as of September 30, 2023 for underground mines and as of June 30, 2023 for surface mines, along with third and fourth quarter 2023 production depletion adjustment.
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 Jawbone Seam / 27 inches other seams	Minor Exceptions for localized zones of thinner coal
Minimum Mining Thickness	54 inches	
Minimum Total Coal Thickness	30 inches Jawbone Seam / 27 inches other seams	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	

Item	Parameters	Technical Notes & Exceptions*
Out-of-Seam Dilution Thickness for Run-of-Mine Tons Applied to ROM tonnages	2 inches	
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	6.0 percent moisture increase; 95 percent preparation plant inefficiency	
• **Surface-mineable Criteria**		
Mining Type	Surface mining	
	Highwall mining (HWM)	
Coal Density	Used laboratory apparent specific gravity data where available. Otherwise use raw ash formula: Sp. Gr. = (% Raw Ash/100) + 1.25	
	Used estimated specific gravity based on 1.30 specific gravity for coal and 2.25 specific gravity for rock where no lab data was available.	This is also referred to as EVR or Estimated Visual Recovery method.
		EXCEPTION: Used 1800 tons per acre foot for seams with no quality data on surface reserve calculation
Surface Property Control	Controlled	Surface-mineable coal resource estimated where mineral and surface rights are controlled. No resource estimated if mineral rights are not controlled.
	Uncontrolled	Surface-mineable coal resource estimated where surface is uncontrolled if mineral rights are controlled.
Basis for Coal Tonnage	Thickness of recoverable coal less removable partings	Minimum thickness of removable parting for surface-mineable seam is 0.25-foot generally.
Minimum Total seam thickness for Single Cut Contour	2.0 feet (*)	
Minimum Thickness of Principal Seam in Multi-Seam Areas	1.0 foot (*)	
Minimum Thickness of Secondary Seam	0.5 foot	Secondary seam is within 2.5 feet of principal seam
Mine Strip Ratio	18:1 BCY /ton ratio for metallurgical coal & 15:1 BCY/ton for thermal coal	surface mine strip ratios are targets and can vary some by cut or job.
Minimum Total seam thickness for High Wall Miner	2.0 feet (*)	Seam thickness can vary within a panel.
Areas Considered for Surface-mineable Coal Resource	Permitted and potential permit areas provided by Alpha	

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 ¼-mile (1,320 feet) of a point of observation represents a measured resource whereas coal between ¼-mile (1,320 feet and ¾-mile (3,960 feet) from a point of observation is classified as indicated. Inferred resources are commonly assumed to be located between ¾-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 Virginia 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 Jawbone Seam Present in the Virginia Complex

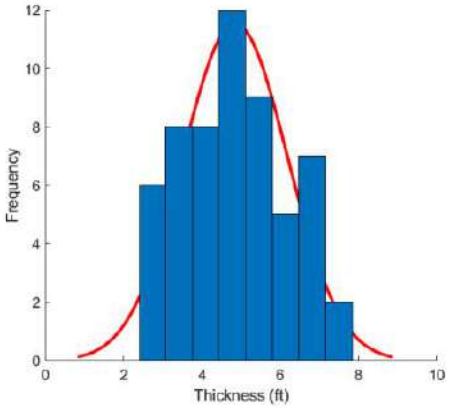
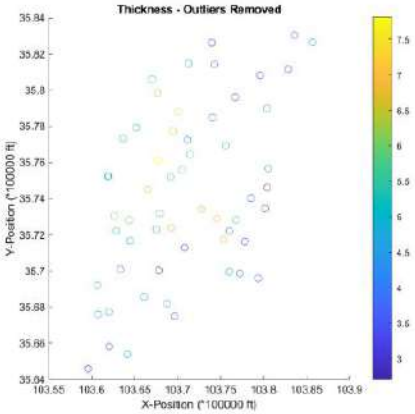
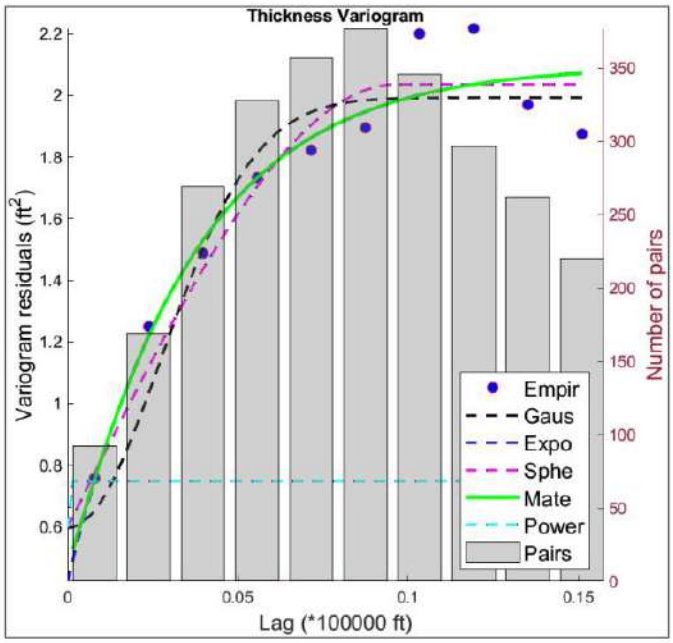


Figure 11-2: Scatter plot of the Total Seam Thickness for the Jawbone Seam Present in the Virginia Complex



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 Jawbone Seam Present in the Virginia Complex

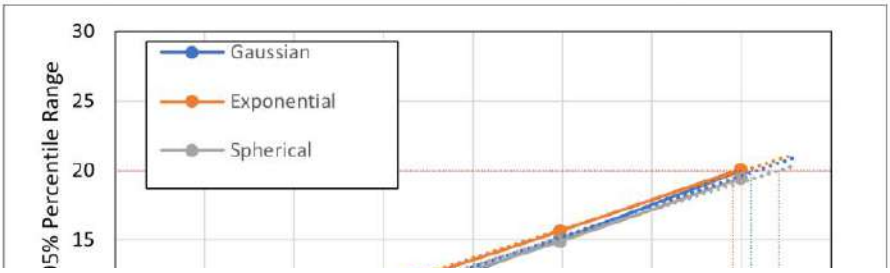


The estimation variance is then calculated using information from the modeled variogram as well as charts published by Journel and Huijbregts (1978). This value estimates the variance from applying a single central measurement to increasingly larger square blocks. Care was taken to ensure any nugget 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 Jawbone seam data for the Virginia 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 11-3*. 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 Jawbone Seam Present in the Virginia Complex



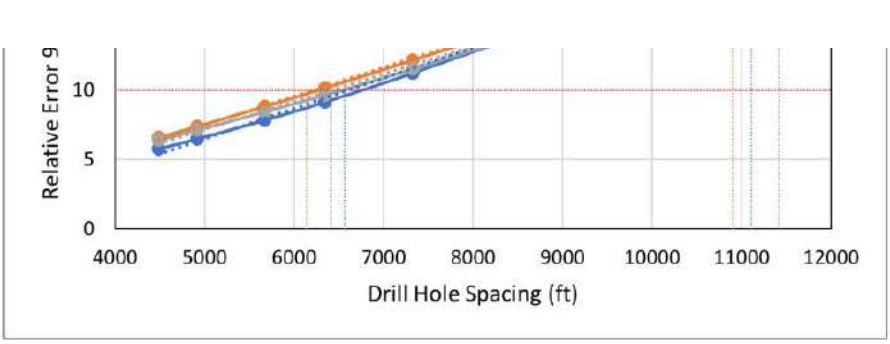


Table 11-2: DHSA Results Summary for Radius from a Central Point

Model:	Measured Radial Distance (10% Relative Error) (Miles)	Indicated Radial Distance (20% Relative Error) (Miles)	Inferred Radial Distance (50% Relative Error) (Miles)
Gaussian:	0.62	1.05	2.34
Spherical:	0.61	1.08	2.50
Exponential:	0.58	1.03	2.39

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 Exponential model recommends using a radius of 0.58 miles for measured resources compared to the historical value of 0.25 miles. With respect to indicated resources the DHSA-recommended drillhole spacing exceeds the historical standards. The Exponential model recommends using a radius of 1.03 miles, while the Gaussian and Spherical models recommend a radius of 1.05 and 1.08 miles, respectively. 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 Virginia Properties contain resource blocks of underground seams which were not deemed to exhibit reserve potential at the time of the study. These resources, identified as resources *exclusive* of

reserves, exist in the Upper Banner, Lower Banner, Jawbone Rider and Jawbone seams. Reasons which may preclude elevation of resources to reserves include, but are not limited to:

1. Limited availability of quality information to document coal seam market characteristics.
2. Block does not meet reserve criteria at this time.
    i. Upper Banner seam, Holly Creek Block HC-B1 is less than 2.5 feet total coal thickness, *Map UB-2.*
    ii. Jawbone Rider Deep Mine 43 Block D2 is a high reject area, *Map JBR-7.*
3. Isolation of resource blocks in which seam access costs are cost prohibitive at the time of the study.
    i. Lower Banner seam, Ball Ridge Block BR-C (*Map LB-4*); Jawbone Rider seam, Deep Mine 43 Block C1A (*Map JBR-7*); Jawbone seam, Black Dog Block BD-E (*Map JB-9*) and Deep Mine 41, Block 41-G (*Map JB-8*) and Deep Mine 42, Block 42-E (*Map JB-9*) have all been classified as resource as they are isolated from the reserve Blocks.
4. Unfavorable economics at the preliminary feasibility study level, yet economics could become attractive in the future under different market conditions.
5. 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. Jawbone Rider seam Deep Mine 43, Block D1 (*Map JBR-7*) and Jawbone seam, Black Dog Block BD-D (*Map JB-9*).
    ii. Holly Creek was previously reported as a reserve although for this reporting period of December 31, 2023, the Property has been reclassified as a resource exclusive of a reserve (not converted to a mine plan). The reclassification is based on projected difficult mining conditions (hard cutting) were encountered at the adjoining mine.
    iii. Jawbone seam, Deep Mine 41. A portion of Block 41-E is now isolated and assigned resource (*Map JB-7*).

11.2.1 Initial Economic Assessment

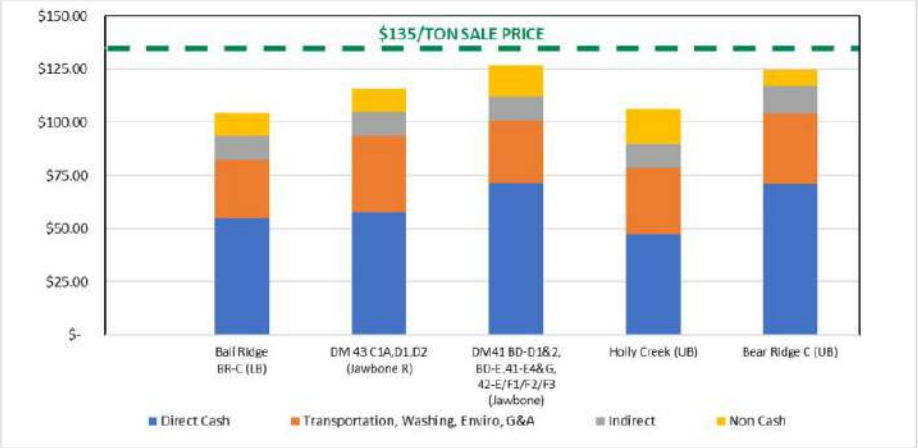
MM&A completed an initial economic assessment to determine the potential economic viability of resources exclusive of reserves (not converted to reserves). MM&A applied relevant technical factors to estimate potential saleable tons without the resource blocks, should the resources be extracted via deep, 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 developed 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 $135 per ton netback FOB loadout (approximately $177 per ton U.S. East Coast basis) for mid-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 Virginia 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

Mine/Resource Block	Seam	Direct Cash	Transportation, Washing, Enviro, G&A	Indirect	Non-Cash	Total Cost	Fully Loaded P&L
Ball Ridge Block BR-C	Lower Banner	$55.19	$27.35	$11.32	$10.64	$104.50	$30.50
Jawbone Rider Blocks C1A,D1,D2	Jawbone Rider	$57.71	$36.05	$11.32	$10.95	$116.03	$18.97
Jawbone Blocks BD-D1&2,BD-E,41-E4&G,42-E/F1/F2/F3	Jawbone	$71.34	$29.67	$11.32	$14.30	$126.63	$8.37
Holly Creek	Upper Banner	$47.50	$31.10	$11.32	$16.28	$106.20	$28.80
Bear Ridge	Upper Banner	$70.75	$33.66	$12.52	$7.73	$124.67	$10.33

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 of all modifying factors, a coal resource estimate, summarized in *Table 11-4*, was prepared as of December 31, 2023, for property controlled by Alpha.

Table 11-4: Coal Resources Summary as of December 31, 2023

Area	Seam	Coal Resource (Dry Tons, In Situ, Mt)			
		Measured	Indicated	Inferred	Total
Inclusive of Reserve (Converted to Reserve)					
88Strip/3Frks	Upper Banner-Tiller	11,661,700	1,626,900	0	13,288,600
Long Branch	Upper Banner 2 - Lower Banner	2,377,200	528,300	0	2,905,600
Bear Ridge	Upper Banner (4650)	521,500	43,200	0	564,700
Ball Ridge (Deep Mine 46)	Lower Banner (4900)	4,835,900	383,400	0	5,219,300
Long Branch (Deep Mine 45)	Lower Banner (4900)	3,221,600	350,000	0	2,368,900
Rush Branch (Deep Mine 44)	Lower Banner (4900)	2,240,900	600	0	2,241,400
Deep Mine 43	Jawbone Rider (5950)	37,893,900	21,339,100	250,700	59,483,700
Black Dog	Jawbone (6000)	16,105,700	246,400	0	16,352,100
Deep Mine 41	Jawbone (6000)	55,989,800	15,454,600	0	71,444,400
Deep Mine 42	Jawbone (6000)	41,959,700	7,425,900	0	49,385,600
Total Inclusive of Reserve (Converted to Reserve)		**176,807,800**	**47,398,400**	**250,700**	**223,254,200**
Exclusive of Reserve (Not Converted to Reserve)					
Holly Creek	Upper Banner (4650)	5,594,200	2,155,800	0	7,750,000
Bear Ridge	Upper Banner (4650)	180,900	118,100	0	299,000
Ball Ridge (Deep Mine 46)	Lower Banner (4900)	1,003,100	32,000	0	1,035,100
Deep Mine 43	Jawbone Rider (5950)	10,653,400	8,216,300	409,100	19,278,800
Black Dog	Jawbone (6000)	6,367,400	1,859,700	0	8,227,200
Deep Mine 41	Jawbone (6000)	4,704,400	705,000	0	5,409,400
Deep Mine 42	Jawbone (6000)	2,023,900	15,000	0	2,038,900
Total Exclusive of Reserve (Not Converted to Reserve)		**30,527,300**	**13,101,900**	**409,100**	**44,038,300**
Grand Total					
Inclusive of Reserve (Converted to Reserve)		176,807,800	47,398,400	250,700	223,254,200
Exclusive of Reserve (Not Converted to Reserve)		30,527,300	13,101,900	409,100	44,038,300
Grand Total		**207,335,100**	**60,500,300**	**659,900**	**267,292,500**

Note(1): Resource tons are inclusive of reserve tons since they are 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.
Totals may not add due to rounding.
See Appendix A for detailed breakdown.

11.4 Qualified Person's Opinion

While there is some stratigraphically controlled seam-thickness variability due to seam splitting, sand 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 – ¼ mile), **indicated** (¼ to ¾ mile), and **inferred** (¾ 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 Virginia 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 Virginia. The footprint of each reserve area is shown on the maps in *Appendix C*. The Mine plan was generated based on 5-year 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 Virginia. 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 for underground and 4.5% for surface reserves 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 long term realization of $162 to $163 per short ton port pricing, with an average $125.03 per ton netback pricing reflective of the high- and mid -volatile product currently sold at Virginia.

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 ¼-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 ¼-mile radius from a valid point of observation was selected to define Measured Resources.

Likewise, the distance between ¼ and ¾ of a mile radius was selected to define Indicated Resources. Indicated Resources may convert to Probable Reserves.

Inferred Resources (greater than a ¾-mile radius from a valid point of observation) have been excluded from Reserve consideration.

12.2 Mineral Reserves

Virginia Properties reserves were derived from multiple coal seams of *Figure 7-1* located on the Property. Reserves are estimated for both surface and underground mining. Surface reserves were derived for two sites Long Branch, and 88-Strip/Three Forks. Each account for coal reserves from multiple seams. Underground reserves were derived from four seams. The underground accessed seams include the Upper Banner seam at Bear Ridge; the Lower Banner seam at Ball Ridge, Long Branch, and Rush Branch Mine 44; the Jawbone Rider seam in Deep Mine 43; and the Jawbone seam in Deep Mine 41, Mine 42 and Black Dog. Demonstrated reserve tons are listed in the discussion below. *Table 12-1* shows the demonstrated tonnage by Proven and Probable status.

12.2.1 Surface Reserves

The two surface mines of the Virginia Properties are both active mines with contour and highwall miner reserves. Estimated LOM average mine ratios (BCY/Ton) do not exceed 29 to 1 for the reserve estimates. Cross sections through drill holes with lithologic records and seam correlation tie lines have been prepared for each surface reserve and are available upon request.

12.2.1.1 Long Branch Surface

The Demonstrated reserve at Long Branch is comprised of 0.19 million surface mine tons and 0.70 million highwall miner tons from three seams. The active Long Branch mine includes permitted reserves to be extracted from the Upper Banner 2, Upper Banner and Lower Banner seams. In 2023, seam data

to be extracted from the Upper Banner 2, Upper Banner and Lower Banner seams. In 2023, seam data of coal section records was extracted per seam from mine maps and utilized to update the geologic model. Locally, previous surface mining exists in each of the three seams while previous deep mines exist in the Upper and Lower Banner. Planned mining methods are by contour strip and highwall miner mainly in new reserve blocks with little reserve in areas previously mined of the three seams.

12.2.1.2 88-Strip & Three Forks Surface

Demonstrated reserve at 88 Strip and Three Forks is comprised of 4.11 million surface mine tons and 2.73 million highwall miner tons from multiple seams for permitted and non-permitted reserve. The two mines are proximate to one another with adjacent mine permits.

The 88 Strip surface mine has a history of previous mining. Even though portions of the mine have been reclaimed, select previously mined areas are included in the reserve along with remaining reserve blocks. Reserves from 88 Strip are derived from seven seams that includes the Aily, Raven 2, Raven Upper split, Raven Lower split, Jawbone Rider, Jawbone, and Tiller. The Upper and Lower Raven splits merge into the Raven seam on the south end of the mine area (*Map 88-8*). Also, the Jawbone and Tiller seams are joined and known as the Thick Tiller west of the fault running through the Property (*Map 88-11*). These two seams were joined during deposition, contemporaneously with fault block movement. Elsewhere, the Jawbone and Tiller seams are separated by a sandstone unit named the Counsel sandstone. Most seams at 88 Strip are sufficiently thick to include highwall miner reserves.

In 2023, seam data of coal section records was extracted per seam from mine maps and utilized to update the geologic model.

Some coals included in the surface-mineable reserves lack seam-specific coal quality data. The QPs responsible for the delineation of such surface-mineable coal reserves have opted to classify tons in areas lacking exploration drillhole quality as 100-percent probable as opposed to basing proven and probable classifications upon relative distance from drillholes. Resource classification as stated in the tables is directly derived from drillhole spacing. The QPs at MM&A have relied upon consistency in historical pit sampling as a justification for reserve delineation in such areas.

Three Forks reserves are derived from the seams of 88 Strip plus the Upper Banner, Lower Banner, Big Fork and Kennedy seams which lie above the Aily seam.

12.2.2 Underground Reserves

Underground reserves of the Property are derived from several smaller above drainage deposits in the Upper and Lower Banner seams along with larger seam deposits of the deeper Jawbone Rider and Jawbone seams. Three of the underground mines are currently active, the Rush Branch Mine 44 in the Lower Banner seam, Bear Ridge mine in the Upper Banner seam and Deep Mine 41 in the Jawbone seam. Seam sections through drill holes with roof and floor lithologic records and correlated seam ties have been prepared for each underground reserve and are available upon request.

12.2.2.1 Deep Mine 37 – Holly Creek Upper Banner

Holly Creek was previously reported as a reserve although for this reporting period of December 31, 2023, the Property remains a resource exclusive of a reserve (not converted to a mine plan). The classification is based on projected difficult mining conditions (hard cutting) that were encountered at this mine.

12.2.2.2 Bear Ridge Upper Banner

Bear Ridge is an active mine with 0.08 million tons of permitted, demonstrated reserve remaining. In 2022 the Bear Ridge mine permit was revised to add additional acres. The average seam thickness of the Upper Banner seam at Bear Ridge ranges between 2.5 and over 3 feet thick. Previous mining of the Upper Banner seam exists in the closed underground mines that adjoin the reserve and in the Long Branch surface mine. The Bear Ridge mine extent is limited by creek drainages to the south, low coal trends to the west and east, and existing underground mines to the north. The mine is currently active.

12.2.2.3 Deep Mine 46 – Ball Ridge Lower Banner

The Ball Ridge reserve includes 1.28 million tons of demonstrated reserves from two pods of Lower Banner coal, Ball Ridge West (Block BR-A1/A2) and Ball Ridge East (Block BR-B1/B2). The reserve pods are bounded to the north by stream drainages and low overburden cover but elsewhere by low coal trends. The seam pods are separated in the middle by a low cover zone above the head of Cabin Creek. Seam thickness of the reserve ranges between 2.5 and over 4.0 feet thick. The mine has not been faced up.

12.2.2.4 Deep Mine 45 – Long Branch Lower Banner

The Long Branch reserve in the Lower Banner seam includes 0.73 million demonstrated tons and is proximate to the Long Branch Surface mine. The reserve is permitted and has an approximate average seam thickness of 2.68 feet thick. Previous underground mining of the Lower Banner seam occurred in the Roaring Fork No. 2 Mine that is located immediately adjacent to the south of the Long Branch reserve block. The mine has not been faced up.

12.2.2.5 Deep Mine 44 – Rush Branch Lower Banner

Rush Branch (Deep Mine 44) is currently an active mine. The Rush Branch reserve includes 0.31 million demonstrated permitted and non-permitted tons. In 2023, seam data of coal section records was extracted from DM 44 mine map and utilized to update the geologic model.

In 2022 the Rush Branch mine permit was revised to add additional acres, west of Rockhouse Branch. The revised permit included a portion of resource block RB-C. In 2023, the RB-C block which includes permitted and non-permitted tons, has been reclassified to reserve. Also in 2023, mine block RB-A, north of Rockhouse Branch has been reclassified to reserve. Previous mining of the Lower Banner seam exists in several underground mines located south and north of the mine. Some thin coal zones divide

the reserve blocks which range in seam thickness between 2.5 and over 4.0 feet. The lateral extent of the reserve is bound by multiple stream drainages. The mine is active with two production sections operating.

12.2.2.6 Deep Mine 43 – Jawbone Rider

The Jawbone Rider seam reserve of the proposed Deep Mine 43 includes an estimated 21.90 million demonstrated tons, or 35-percent of the Virginia properties total underground reserve. This below drainage reserve is not permitted and has no previous mining locally. Coal thickness of the Jawbone Rider reserve ranges from about 2.33 feet to over 5.0 feet, yet most of this demonstrated reserve has an average thickness between 2.5 and 3.5 feet. There are several mapped low coal pods excluded from the reserve where drill data records indicate the total coal is less than 2.25 feet thick. The mine has not been faced up.

In 2023, approximately 16 new gas wells received from Alpha were assessed to further define the deposition of the Jawbone Rider seam. Most of the holes are located in or near the southern portion of the reserve boundary. In general, the new seam data from the drill holes aligned with the seam thickness trends of the seam.

The Jawbone Rider reserve is bordered by two faults, the Jess Fault to the Northeast and the Russell Fork fault to the southwest and divided by the Little Paw Paw Fault in the reserve area. Two faults have a greater impact on the reserve. The Russell Fork Fault limits the lateral extent of the reserve in the southwest direction, while displacement of the Little Paw Paw Fault divides the reserve into separate west (ID) and east (ID) blocks. The west block is also divided along the overlying Russell Fork River. Several adverse mineral tracts limit the reserve extent. The potential addition of select adverse blocks could expand the Jawbone Rider resource or reserve in the future. Additional exploration is recommended to delineate coal thickness trends in several locations in the reserve block, and in the proposed permit limits with further resource potential.

12.2.2.7 Deep Mine 41, Deep Mine 42, Black Dog – Jawbone

The Jawbone seam reserve is laterally continuous and incorporates three adjacent reserve areas: Deep Mine 41, Mine 42, and the Black Dog mine. Mine 42 block is currently accessed from Deep Mine 41 and

is not a separate mine. This below-drainage reserve includes 36.71 million demonstrated tons, or 60-percent of the Virginia Properties total underground reserve. Approximately 91 percent of the Jawbone reserve is permitted by the three mine permits. The mineable seam thickness fluctuates across the reserve. Seam heights range from 2.5 feet to over 7.0 feet thick, with an approximate average seam thickness of 4.5 feet. Several faults run through the reserve but appear to have limited impact with mining. Previous mining exists within the permitted boundaries and also east of the Black Dog mine.

Deep Mine 41 is the largest mine in the Jawbone reserve with 19.72 million demonstrated tons. It also has a significant amount of previous mining. Mine 42 block includes 12.96 million demonstrated reserve tons. The Black Dog reserve includes 4.04 million demonstrated tons. It too has a significant amount of previous mining inside the permit boundary.

Proximity to the overlying Jawbone Rider coal and the underlying Jawbone Leader coal have been identified on *Maps JB-8* and *JB-9*. Locations where the Rider coal is less than 10 feet above and where the Leader coal is less than 5 feet below the Jawbone seam have been mapped for the report users benefit. Where the Rider coal is less than 10 feet above, less stable roof and floor mining conditions could exist in the reserve.

In 2023, per recognition of areas where the Leader seam is proximate to the Jawbone seam, MM&A further evaluated the Jawbone to Jawbone Leader seam interval to identify areas where the leader coal is within 2-foot of the Jawbone seam. From the evaluation, several Jawbone-Jawbone Leader areas were identified by these criteria, including a large area in block 42-A. Observations of seam data indicate that, in general, when the Jawbone seam thickness is greater than approximately 4.5 feet, the Jawbone Leader coal is close to or attached to the bottom of the Jawbone seam. The Jawbone-Jawbone Leader joined seam areas commonly have a seam height range of approximately 4.5 feet to over 8.0 feet.

The mine is currently operating seven (7) continuous miner sections.

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, quality, infrastructure and other relevant factors has also been considered.

The results of this TRS define an estimated 68.75 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 based on Alpha mine maps as of September 30, 2023 for underground mines and as of June 30, 2023 for surface mines. Mine depletion tonnages were supplied by Alpha through the end of 2023,

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and MM&A deducted this historical production from the mapped reserves in order to estimate reserves as of December 31, 2023.

Table 12-1: Coal Reserves Summary (Marketable Sales Basis) as of December 31, 2023

	Demonstrated Coal Reserves (Wet Tons, Washed or Direct Shipped)					Quality (Dry Basis)		
	By Reliability Category			By Permit Status				
Seam/Area	Proven	Probable	Total	Permitted	Not Permitted	Ash%	Sulfur%	VM%
Surface Mineable								
88 Strip/Three Forks	133,000	3,973,700	4,106,700	2,083,000	2,023,700	6	0.9	29
88 Strip/Three Forks	414,600	2,318,800	2,733,400	391,200	2,342,200	6	0.9	29
Long Branch	103,900	84,000	187,800	125,300	62,600	5	0.8	32
Long Branch	597,400	101,200	698,600	393,700	304,900	5	0.8	31

Total Surface Mineable	**1,248,800**	**6,477,700**	**7,726,500**	**2,993,300**	**4,733,300**	**6**	**0.8**	**31**
Underground								
Upper Banner (4650)								
Bear Ridge	71,800	11,700	83,500	83,500	0	5	0.7	33
Total Upper Banner (4650)	**71,800**	**11,700**	**83,500**	**83,500**	**0**	**5**	**0.7**	**-**
Lower Banner (4900)								
Ball Ridge (Deep Mine 46)	1,189,600	92,400	1,282,000	1,282,000	0	6	0.7	29
Long Branch (Deep Mine 45)	713,200	15,500	728,700	728,700	0	6	0.7	30
Rush Branch (Deep Mine 44)	310,600	0	310,600	150,700	159,900	5	0.7	29
Total Lower Banner (4900)	**2,213,400**	**107,900**	**2,321,300**	**2,161,400**	**159,900**	**6**	**0.7**	**29**
Jawbone Rider (5950)								
Deep Mine 43	13,939,400	7,961,200	21,900,600	0	21,900,600	3	0.8	24
Total Jawbone Rider (5950)	**13,939,400**	**7,961,200**	**21,900,600**	**0**	**21,900,600**	**3**	**0.8**	**24**
Jawbone (6000)								
Black Dog	3,970,400	65,000	4,035,400	4,035,400	0	8	0.6	28
Deep Mine 41	15,367,700	4,356,200	19,724,000	16,851,500	2,872,500	9	0.8	26
Deep Mine 42	10,941,400	2,013,900	12,955,400	12,522,800	432,600	7	0.7	26
Total Jawbone (6000)	**30,279,600**	**6,435,100**	**36,714,700**	**33,409,600**	**3,305,100**	**8**	**0.7**	**26**
Total UG Mineable	**46,504,100**	**14,516,000**	**61,020,100**	**35,654,500**	**25,365,600**	**6**	**0.8**	**25**
Grand Total								
Grand Total	**47,752,900**	**20,993,800**	**68,746,600**	**38,647,700**	**30,098,900**	**6**	**0.8**	**25**

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 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.
Totals may not add due to rounding.
See Appendix A for 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 Virginia 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 Virginia coal reserves.

13 Mining Methods

Six underground mining areas along with two surface and highwall miner 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 2058, while surface and highwall mining operations are both projected to be completed in 2032.

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)* program that was developed by the **National Institute for Occupational Safety and Health (*NIOSH*)**. 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 Alpha's Virginia operations. 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 the Virginia operations 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 primary mine feeding the McClure Preparation Plant consists of Deep Mine 41 (DM41). In addition, Deep Mine 44 (DM44) and Bear Ridge Contract Mine, 88 Strip and Long Branch surface and highwall miner operations feed both the McClure and Tom's Creek plants. There is a total of ten (10) operating continuous miner sections within these underground mines.

As shown in *Table 13-1*, the areas planned for underground mines produce coal until 2058. Clean coal production varies directly with coal thickness and anticipated mining conditions.

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

Mine Name	2023	2024	2025	2026	2027	2028	2029	2030
DM 41-42-Black Dog (Jawbone)	456	1,747	1,752	1,728	1,660	1,677	1,582	1,476
Long Branch Deep (L. Banner)	0	0	197	292	240	0	0	0
DM44 (Lower Banner)	109	290	65	0	0.0	0	0	0
DM43 (Jawbone Rider)	0	0	0	10	208	366	602	618
Ball Ridge DM46 (L. Banner)	0	116	428	478	260	0	0	0
Bear Ridge (Upper Banner)	18	80	6	0	0	0	0	0
Total	**584**	**2,233**	**2,449**	**2,509**	**2,368**	**2,042**	**2,184**	**2,094**
Mine Name	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**
DM 41-42-Black Dog (Jawbone)	1,455	1,383	1,484	1,438	1,474	1,522	1,521	1,434
Long Branch Deep (L. Banner)	0	0	0	0	0	0	0	0

DM44 (Lower Banner)	0	0	0	0	0	0	0	0
DM43 (Jawbone Rider)	621	610	678	626	621	661	648	672
Ball Ridge DM46 (L. Banner)	0	0	0	0	0	0	0	0
Bear Ridge (Upper Banner)	0	0	0	0	0	0	0	0
Total	**2,076**	**1,992**	**2,162**	**2,065**	**2,096**	**2,183**	**2,170**	**2,106**
Mine Name	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**	**2045**	**2046**
DM 41-42-Black Dog (Jawbone)	1,609	1,567	1,528	1,495	1,543	1,483	1,129	825
Long Branch Deep (L. Banner)	0	0	0	0	0	0	0	0
DM44 (Lower Banner)	0	0	0	0	0	0	0	0
DM43 (Jawbone Rider)	747	706	715	729	719	749	733	877
Toms Creek (Lower Banner)	0	0	0	0	0	0	0	0
Ball Ridge DM46 (L. Banner)	0	0	0	0	0	0	0	0
Bear Ridge (Upper Banner)	0	0	0	0	0	0	0	0
Total	**2,356**	**2,273**	**2,243**	**2,224**	**2,263**	**2,232**	**1,862**	**1,702**
Mine Name	**2047**	**2048**	**2049**	**2050**	**2051**	**2052**	**2053**	**2054**
DM 41-42-Black Dog (Jawbone)	843	838	558	147	0	0	0	0
Long Branch Deep (L. Banner)	0	0	0	0	0	0	0	0
DM44 (Lower Banner)	0	0	0	0	0	0	0	0
DM43 (Jawbone Rider)	943	974	1,021	1,067	956	994	754	486
Ball Ridge DM46 (L. Banner)	0	0	0	0	0	0	0	0
Bear Ridge (Upper Banner)	0	0	0	0	0	0	0	0
Total	**1,786**	**1,811**	**1,579**	**1,215**	**956**	**994**	**754**	**486**
Mine Name	**2055**	**2056**	**2057**	**2058**	**2059**	**2060**	**2061**	**2062**
DM 41-42-Black Dog (Jawbone)	0	0	0	0	0	0	0	0
Long Branch Deep (L. Banner)	0	0	0	0	0	0	0	0
DM44 (Lower Banner)	0	0	0	0	0	0	0	0
DM43 (Jawbone Rider)	476	493	538	281	0	0	0	0
Ball Ridge DM46 (L. Banner)	0	0	0	0	0	0	0	0
Bear Ridge (Upper Banner)	0	0	0	0	0	0	0	0
Total	**476**	**493**	**538**	**281**	**0**	**0**	**0**	**0**

As shown in *Tables 13-2* and *13-3*, the areas planned for surface and highwall mines produce coal until 2032. Clean coal production varies directly with surface mining ratios along with availability of open highwall for the highwall miner units.

Table 13-2: Virginia Complex Surface Mine Production Schedule (x 1,000 Saleable Tons)

Mine Name	2023	2024	2025	2026	2027	2028	2029	2030
Long Branch	37	51	62	51	25	0	0	0
88 Strip	268	512	872	599	639	653	207	207
Total	**306**	**563**	**934**	**650**	**664**	**653**	**207**	**207**
Mine Name	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**
Long Branch	0	0	0	0	0	0	0	0
88 Strip	207	124	0	0	0	0	0	0
Total	**207**	**124**	**0**	**0**	**0**	**0**	**0**	**0**

Table 13-3: Virginia Complex Highwall Mine Production Schedule (x 1,000 Saleable Tons)

Mine Name	2023	2024	2025	2026	2027	2028	2029	2030
Long Branch HWM	107	106	114	127	169	114	0	0
88 Strip HWM	52	89	141	187	294	364	465	465
Total	**159**	**195**	**256**	**315**	**463**	**478**	**465**	**465**
Mine Name	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**
Long Branch HWM	0	0	0	0	0	0	0	0
88 Strip HWM	465	260	0	0	0	0	0	0
Total	**465**	**260**	**0**	**0**	**0**	**0**	**0**	**0**

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 Deep Mine 41 (Maps JB-8, JB-9)

Deep Mine 41 is a well-developed underground mine that supports seven (7) production units. The mine operates in the Jawbone Seam. The mine has been in production since 2010. Full steady state production was reached in 2016 at 1,500,000 clean tons per year and averaging 1,675,000 clean tons per year over the period from 2016 to 2020.

The coal seam is accessed by a side-by-side decline slope. Personnel, supplies and equipment traverse the haul roadside of the slope to access the workings and the belt travels up the opposite side. The slope facility is located near the center of the coal property. Work areas have been developed to the east and west of the slope bottom area. A split shaft is located at slope bottom. The shaft provides intake air, and the mine fan is mounted on the return side of the shaft in an exhausting arrangement.

The depth of cover ranges from 400 feet to 1,200 feet.

Production is scheduled for approximately 248 days each year, which represents production on Monday through Friday. On each day, production sections are scheduled to produce coal on two shifts. The sections are configured as super sections with two continuous miners operated independently on each section. Productivity is planned at the rate of 174 feet of advance per shift of operation.

Principal production equipment per section includes one continuous miner, one roof bolter, two shuttle cars, and one scoop. Coal is extracted from the production face with the continuous miner 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 overland conveyor belt haulage to the McClure Preparation Plant where it is processed and loaded onto CSX rail for transport to the consumer.

The production units do perform secondary recovery where available with mobile roof support (*MRS*) units. The mine plan design includes leaving support pillars in selected areas to prevent subsidence damage to surface structures and features.

Deep Mine 41 is operational at the time of this report; all necessary infrastructure and utilities are in place; all necessary permits have been obtained. Estimated capital expenditures for future ventilation facilities are included within the financial model. The estimated expenditures for site closure and reclamation have been calculated and are included within the financial model as well.

As work areas are completed, the mine will see a reduction in production units starting with two units in 2045, one unit in 2047, two units in 2049, and the final two units in 2050.

13.4.1.2 Deep Mine 44 Rush Branch (Map LB-5)

Deep Mine 44 is located approximately 3.5 miles south of the McClure Preparation Plant. It is currently operational with two (2) continuous mining sections producing coal in the Lower Banner seam on leased mineral property. Deep Mine 44 is a two (2) production section mine with each working section equipped with two (2) Continuous Miners, two (2) Roof Bolters, four (4) Shuttle Cars and two (2) scoops. The production units do perform secondary recovery where available with MRS units. The mine plan design includes leaving support pillars in selected areas to prevent subsidence damage to surface structures and features.

Similar to the Deep Mine 41 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 Toms Creek and McClure Preparation Plants where it is processed and loaded onto the Norfolk Southern and CSX rail system, respectively, for transport to the consumer.

Deep Mine 44 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 2025.

13.4.1.3 Bear Ridge Contract Mine (Map UB-1)

Active at the time of this report, Capital Coal Corporation is operating the Bear Ridge Contract Mine (formerly operated by Four-O Mining). The facility is located on Rush Branch of Roaring Fork of the McClure River approximately 8.7 miles southeast of the McClure Preparation Plant. The mine produces from the Upper Banner Seam.

Estimated depletion occurs just after the beginning of calendar year 2025. The mine produces metallurgical grade coal using one (1) active section with one (1) continuous miner, one (1) roof bolter, two (2) 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, where it is stockpiled prior to being trucked to the Toms Creek and McClure Preparation Plants by highway trucks. The mine site is compact and does not have equipment to scalp rock prior to trucking to the preparation plant.

All necessary permits have been obtained. Estimated expenditures for site closure and reclamation are included in the financial model for this site.

13.4.1.4 Deep Mine 43 (Map JBR-7)

Deep Mine 43 targets the Upper Jawbone Seam. Access would be gained by a haulage slope and ventilation shafts as the coal boundary is completely below drainage. The access is proposed at a location along Frying Pan Creek of Russell Fork, approximately 9.4 miles east of the McClure Preparation Plant.

The coal boundary is bisected by a northwest to southeast trending fault system. The projected plan is to drive through the fault to access the eastern portion of the coal boundary. At the crossing, a ventilation/elevator shaft has been proposed for developing the eastern boundary.

Deep Mine 43 will begin mining as a three (3) section mine and later in its assignment, a fourth production section will be added. Each working section will be operated as a super section with two sets of mining equipment operated 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 two (2) scoops. The production units do perform secondary recovery where available with MRS units. The mine plan design includes leaving support pillars in selected area to prevent subsidence damage to surface structures and features. Coal will be extracted from the working face by the continuous miner and loaded onto

shuttle cars to be transported to the belt feeder on the section conveyor belt. Once on the conveyor belt, the product will be transported to the surface to a stockpile. Highway trucks would transport the product on public highways to the McClure Preparation Plant for a one-way distance of 19.9 miles.

The mine product is expected to average 40 percent recovery due to in-seam rock as well as out of seam dilution occurring from excavating roof or floor rock to have adequate height to operate the underground machinery. Due to the size of this reserve, the option to acquire additional property to construct a small preparation plant also remains but further study of this arrangement would be necessary. This model proposes to reduce the amount of rock being hauled to the preparation plant by screening the run of mine material to reduce the rock content. The installation of a screen system and

a coarse refuse disposal site on controlled surface property would reduce the weight of the hauled material by approximately twelve percent (12%), which would be realized in a cost reduction in the truck haulage costs on a clean ton basis. A similar system was used at Deep Mine 37.

The timing model projects mining to commence in 2026 and be completed in 2058.

13.4.1.5 Deep Mine 45 Long Branch (Map LB-6)

This reserve area is located approximately 8.4 miles southeast of the McClure Preparation Plant and approximately 1.0 miles north of the Bear Ridge Contract Mine. The coal boundary is found in the Lower Banner Seam. An existing surface mine contour bench will be used to access the seam. Coal would be trucked to the Tom Creek and McClure Preparation Plants with highway trucks across a developed coal haul road to the county road system.

This mine includes a starting date of February 2025 with a completion date of November 2027.

Deep Mine 45 will be developed as a one (1) section mine with the working section operated as a super section with 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 two (2) scoops. The production units do perform secondary recovery where available with MRS units. The mine plan design includes leaving support pillars in selected areas to prevent subsidence damage to surface structures and features. Coal will be excavated from the working face by the continuous miner and loaded onto shuttle cars to be transported to the belt feeder on the section conveyor belt. Once on the conveyor belt, the product will be transported to the surface to a stockpile. Highway trucks would transport the product on public highways for a one-way distance of 13.5 miles.

Electrical power can be sourced from the Bear Ridge Contract Mine utility tap approximately 0.5 miles from the proposed site.

13.4.1.6 Deep Mine 46 Ball Ridge (Map LB-4)

This reserve area is located approximately 4.9 miles southeast of the McClure Preparation Plant. The coal seam is the Lower Banner Seam.

Deep Mine 46 will be developed 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 two (2) scoops. The production units do perform secondary recovery where available with MRS units. The mine plan design includes leaving support pillars in selected areas to prevent subsidence damage to surface structures and features. Coal will be excavated from the working face by the continuous miner and loaded onto shuttle cars to be transported to the belt feeder on the section conveyor belt. Once on the conveyor belt, the product will be transported to the surface to a stockpile. Highway trucks would transport the product on public highways for a one-way distance of 8.1 miles to the McClure Preparation Plant.

The site will be constructed along the Lower Banner Seam outcrop. The surface facilities would be positioned along existing roads as a contour cut along the coal seam with a stockpile area located below the mine bench.

A new power substation would be required. A local utility power line is near the site. The power tap can be utilized in the future for the expansion of the southeast portion of Deep Mine 41.

Mining is projected to commence in 2024 and be completed in 2027.

13.4.2 Surface Mines

13.4.2.1 Long Branch (Map LBR-1 through LBR-3)

Figure 13-1: Long Branch Surface Mine Aerial View

The Long Branch reserve area consists of contour and highwall mining of three seams: the Upper Banner 2, Upper Banner, and the Lower Banner seams. Deep mining has taken place in the Upper and Lower Banner seams. Pre-law surface contouring and augering depletion exists on three seams with no evidence of highwall reclamation. The Upper Banner and Lower Banner benches north of Lick Creek are expected to contain large amounts of mined spoil that will require remining to fully expose the seams for highwall mining.

Proposed contouring is limited to areas that have highwall mining potential. Due to steep terrain, restricted spoil placement areas, and existing gas well locations, second-cut contouring is limited to areas where existing contour width is insufficient to accommodate a highwall miner. If practical,

second-cut contouring will be attempted in areas of previous augering to provide solid coal for highwall mining. Unfortunately, a portion of the augering will likely remain requiring the additional steps of grouting the auger holes and/or widening highwall mining web widths effectively reducing overall highwall miner recovery.

The Long Branch reserve does not offer a great deal of flexibility in development due to the large concentration of gas wells and lines that require close coordination with the gas company for their shut-in/plugging and line movement. Additionally, there is no permitted off-bench areas for final or temporary spoil placement. The lack of hollow fill space requires placing mined spoil on contour benches recently highwall mined. Remaining excess mine spoil is placed on mined contour benches that can accommodate additional spoil or is used to reclaim "pre-law" walls within the permit. Contour cuts are deliberately held to the minimal widths necessary to support highwall mining where planned to avoid generating excess swelled spoil.

Alpha presently dedicates one **Caterpillar Inc. (*CAT*)** 993 loader/785 truck spread for excavation. Track dozers are available on the job but are not expected to contribute to production and will be used primarily for reclamation. Continual highwall mining activity will be unlikely due to periods of insufficient highwall exposure. As a result, the operation benefits from multi-skilled operators capable of operating different machinery.

Long Branch surface mining operations are scheduled to conclude in 2027 while highwall mining operations will continue until 2028.

13.4.2.2 88 Strip/Three Forks (Map 88-1 through 88-11)

Figure 13-2: 88-Strip/Three Forks Surface Mine Aerial View

The 88 Strip / Three Forks mine complex is an area that has been mined for more than 50 years. Initially deep and surface mining targeted the Raven, Jawbone, and Tiller seams. In the western portion of the mining complex the Jawbone and Tiller effectively come close together to allow them to be deep mined as one seam known locally as the "Thick Tiller".

Surface mining activity wanned in the 1990s and most of the disturbed areas were reclaimed. Surface mining resumed approximately 10 years later with the recognition that the Jawbone-Tiller seams had more contour, auger and highwall mining potential.

Alpha continues to develop the Jawbone-Tiller seams, concentrating on surface mining previously deep mined areas where pillars were not removed. This effort often involves remining reclaimed spoil placed on upper Raven benches. Strip ratios for the "Thick Tiller" pits can exceed 30:1, but engineered pit/panel alignment, allocation of dozers pushing upper seam spoil into void space of the previously excavated panel and limiting loader/truck contribution to the lower seams significantly reduces the cost per yard. Blast casting of the upper burden also offers limited quick and cheap burden removal. Placement of spoil in adjacent panels requires rehandle of the spoil along the spoil-side high wall to assure safe removal of the targeted Jawbone-Tiller pillars. Although Alpha contends that they have successfully re-mined Thick Tiller in areas of small regular pillar sizes, MM&A limited reserve boundaries to areas where digital records indicate that larger pillars still remain to be excavated. Digital records

have not always been found to be accurate, therefore MM&A believes it is appropriate to periodically drill to confirm pillars remain and have not been "pillared".

Alpha has supplemented mining with contour and highwall mining of additional seams: Jawbone Rider, Raven, and Ailey seams. In 2023 contour and highwall mining activity extended to higher elevation seams of the Kennedy, Kennedy Rider, Big Fork, Lower Banner, and Upper Banner in the Three Forks mining area.

As of the 3rd quarter of 2023, mining excavation is being constrained by permit delays associated with the additional Three Forks permit due to the "Big Sandy crayfish" issue. It is also impacting revisions to existing permit to add additional property to simplify spoil removal from lower seams on the eastern side of Three Forks permit. Until this permit is obtained, mining of the lower seams will require hauling mine spoil vertically to a "cut-thru" connecting areas with adequate spoil storage room. Additional permitting is required before mining can take place on reserves east of Indian Creek and south of Rabbit Ridge.

MM&A believes the 88 Strip mine will slowly transition out of large Thick Tiller coal production due to exhaustion of the larger mineable pillar boundaries. Production will continue east in the previously stated seams and new seams that are primarily in the 3 Forks area of future expansion. The additional seams in the Three Forks area include the Upper Banner, Lower Banner, Big Fork, Kennedy Rider, and Kennedy, all of which are above the Aily seam in the stratigraphic column. Most of the seams show no evidence of previous mining activity. Proposed contouring is limited to areas that have highwall mining potential. Additional areas that bridge contouring were added in selected areas.

88 Strip presently utilizes 3 – CAT 993 loader/785 truck spreads and 3 – D11 track dozers for overburden production. Historically, greater than 16 million cubic yards (*CY*) were mined on a yearly basis due to heavy contribution of dozers, but due to increased emphasis on new seam contouring yearly overburden volumes are expected to be between 14 and 15 million CY by year 2027. Creation of highwalls will primarily involve truck haulage and not dozer pushing. Track dozer production is expected to be limited to Thick Tiller pits.

With a few exceptions contouring and highwall mining will be initiated in lower seams in areas of multi-seam planned activity to aid in reclamation. Highwall mining will target coals greater than 18 inches and average 650 feet penetration depth.

Unless additional reserve areas are recognized only one loader/truck spread will be required to create highwall otherwise the surface activity will outrun the trailing highwall mining activity. Additionally, two more highwall miners are projected to be required in order to exhaust reserves within the same year contour activity ceases in year 2032.

14 Processing and Recovery Methods

14.1 Description or Flowsheet

The Alpha Virginia Operations currently includes the McClure River Preparation Plant and Tom's Creek Preparation Plant in addition to the mines. The plant sites include raw coal storage, clean coal storage, a railroad loadout, and refuse disposal area. Both plants have a feed rate capacity of 1,100 raw tons per hour each.

The McClure River Plant was built by Roberts and Shaefer in 1979 and received an upgrade in 2019. The plant produces a product with a typical ash content of 8.13% and typical sulfur content of 0.71%. Plant equipment includes a heavy media vessel for primary separation, low density cyclone for intermediate separation, froth flotation and spirals in the fine coal circuit. Centrifugal dryers are utilized, and a thermal dryer can be seen in the aerial imagery obtained from Google Earth. During the 2023 reporting year the McClure Plant had an average utilization of 52.59%.

Coarse and fine refuse are disposed of at an adjacent combined refuse area utilizing currently installed vacuum disk filters that could be augmented with new plate-and-frame filter presses when installation is completed. Historically slurry was injected into the adjacent McClure No. 1 Mine with an opportunity to resume this process in a limited capacity moving forward. Due to the topography of the region and limited competition for land resources a new slurry impoundment has started the design phase. The site would be constructed on adjacent property following the acquisition and permitting process for additional long-term refuse capacity. An aerial image of the McClure River Plant and refuse area is shown in *Figure 14-1*.

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Figure 14-1: McClure River Preparation Plant and Refuse Area

The Tom's Creek Plant was built by **The Daniels Company** in 1980 and received an upgrade by **Sedgman Pty Ltd** in 2004. The plant produces a product with a typical ash content of 8.11% with typical sulfur content of 0.83% at a utilization rate of 43.06% in 2023. Plant equipment includes a heavy media vessel for primary separation, low density and heavy media cyclones for intermediate separation, froth flotation, spirals and columns for the fine coal circuit. The plant utilizes centrifugal dryers. Coarse refuse is belted to the top of the adjacent impoundment and also includes a slurry pond. An aerial image of the Tom's Creek Plant and slurry impoundment is shown in *Figure 14-2*.

Figure 14-2: Tom's Creek Preparation Plant and Slurry 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 Dickenson, Wise and Russell 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 Electric Power (*AEP*)**. The service industry in the areas surrounding the mine complex has historically provided supplies, equipment repairs and fabrication, etc.

15 Infrastructure

Alpha's Virginia preparation plants service customers with washed coal, which is transported via the CSX Transportation and Norfolk Southern rail lines at the plant's loadouts. 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 Virginia 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. One major advantage for the operations is that the majority of the raw coal originates from Deep Mine 41 and is transported directly to the preparation plant by conveyors which eliminates truck haulage.

Photographs of the existing facilities are shown in *Figures 15-1* and *15-2*.

Figure 15-1: McClure River Preparation Plant & Surface Facilities

Figure 15-2: Tom's Creek Preparation Plant & Surface Facilities

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.

A typical quality specification for the Virginia products as produced in 2023 is shown in *Table 16-1*.

Table 16-1: 2023 Produced Quality

	MV	HVA
Ash (%)	8.13	8.11
Sulfur (%)	0.71	.83
Volatile Matter (%)	24.16	30.39

The mine production serves both the mid- and high-volatile metallurgical market.

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 $162 to $163 per short ton port pricing, with a LOM average of $125.03 per ton netback pricing reflective of the high- and mid-volatile product currently sold at Virginia. 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 Virginia 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 Virginia business unit.

Table 16-2: Price Forecasts

Coal quality	Market Pricing Per Ton [1] [2]
High-Vol. A	$162
High- Vol. B	$140
Mid-Vol.	$163
Low-Vol.	$163
Thermal	$74

(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 Virginia, since all mining, preparation and marketing is done in-house, the remaining contracts required are:

- **Transportation** – Alpha contracts with the Norfolk Southern Railroad and CSX 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 for the Massey properties acquired by Alpha, including those operations that were active at Virginia 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 (*RECs*) 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 Virginia 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

At the McClure Preparation Plant, coarse and fine refuse are presently placed in an adjacent combined refuse area utilizing existing vacuum disk filters that could be augmented with plate-and-frame filter presses when installation is completed. Initially, combined refuse was placed in the existing fills. The McClure plant has been injecting slurry into the adjacent McClure No. 1 Mine for approximately the past 15 years. There is an opportunity to resume injection in a limited capacity moving forward, and the permitting of two new injection sites is underway. Due to the topography of the region and limited land resources, a new coarse refuse/slurry impoundment has started the design phase. The site would be constructed on adjacent property following the acquisition and permitting process for additional long-term refuse capacity.

Based on a study completed by **Schnabel Engineering, Inc. (*Schnabel*)** in February 2021 using January 2021 updated mapping, McClure River Refuse area has disposal capacity for combined refuse through February 2029 at present production rates. The proposed new coarse disposal/impoundment site has a projected capacity of approximately 20 years.

The refuse disposal site at the Toms Branch Preparation Plant includes an impoundment with coarse refuse fill areas.

As with most operations in the region, continuing to secure additional coarse and fines capacity will be critical to execute the business plan as outlined in this TRS, a process Alpha has historically shown success in navigating. The table below outlines the current estimated capacities and permits of Virginia's fine and coarse impoundments.

Table 17-1: Virginia Refuse Disposal Summary

Refuse Facility	State SMCRA Permit Number	MSHA ID	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 Refuse Life (Yrs.)
McClure River Refuse Area (Virginia)	1402177	1211-VA5-0124-01	Coarse Refuse	No	Active	11	3	8	3
Sallies Branch Slurry Impoundment (Virginia)	1302182	1211-VA5-0133-01A	Slurry Impoundment – Downstream and Upstream	Yes	Active	20.8	20.8	20.8	20.8

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 plants 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

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

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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. 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. Virginia, 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 the **United States Fish and Wildlife Agency (*USFW*)** involvement with state programs.

The mining permits currently held by Alpha Virginia are shown in *Table 17-2*.

Table 17-2: Virginia Mining Permits

Permit	Operation Name	Company	Current Status	Issue	Bond Method	MSHA ID	Current Permit Acreage	Expiration Date	NPDES
1102158	88 Strip	Paramont Contura, LLC	Active	10/26/2016	Pool	44-07163; 44-07300	2,502.15	2/10/2026	VA0082158, VAG400983
1102161	Black Bear Surface Mine	Paramont Contura, LLC	Completion Report; Inactive	11/17/2016	Pool	44-07100; 44-06886	208.52	7/9/2027	VA0082161
1102167	Kiwanis Surface Mine	Paramont Contura, LLC	Active, Not Started	11/22/2016	Pool	Pending	328.57	7/29/2023 (in review)	VA0082167
1102180	Three Forks Surface Mine	Paramont Contura, LLC	Active	12/19/2016	Pool	44-07163	1,705.03	5/29/2024	VA0082180
1102181	Cabin Ridge	Paramont Contura, LLC	Completion Report; Active Reclamation Only	12/19/2016	Pool	44-07322	417.06	12/17/2023 (in review)	VA0082181
1102186	Long Branch Auger Mine	Paramont Contura, LLC	Active	12/20/2016	Pool	44-07381	1,505.23	5/9/2023 (in review)	VA0082186
1102188	Hawks Nest Surface	Paramont Contura, LLC	Completion Report; Active Reclamation Only	12/20/2016	Pool	44-06949	31.67	3/23/2024	VA0082188
1102197	Bold Camp Surface Mine	Paramont Contura, LLC	Active	2/7/2017	Pool	44-07274	367.7	4/26/2021 (in review)	VA0082197
1102233	Butcherknife Surface	Paramont Contura, LLC	Completion Report, Active Reclamation Only	6/14/2017	Pool	44-07257	139.72	1/26/2022 (in review)	VA0082233
1102243	Doe Branch Strip	Paramont Contura, LLC	Active, Not Started	10/11/2017	Pool	Pending	1,085.64	9/14/2020 (in review)	VA0082243
1202159	Deep Mine #37	Paramont Contura, LLC	Active, Not Producing	11/2/2016	Cost	44-07231	65.48	7/23/2023 (in review)	VA0082159
1202160	Deep Mine #44	Paramont Contura, LLC	Active	11/3/2016	Cost	44-07308	27.26	3/18/2023 (in review)	VA0082160, VA0092878
1202171	Deep Mine #41	Paramont Contura, LLC	Active	12/13/2016	Cost	44-07223	35.23	5/2/2023 (in review)	VA0082171, VA0092576
1202173	Powers Branch Deep Mine	Paramont Contura, LLC	Completion Report; Inactive	12/14/2016	Cost	Pending	48.62	1/19/2025	VA0082173
1202174	Deep Mine #25	Paramont Contura, LLC	Completion Letter; Active Reclaimed	12/14/2016	Cost	44-07129	44.6	11/30/2024	VA0082174
1202187	Deep Mine #26	Paramont Contura, LLC	Completion Report; Inactive	12/20/2016	Cost	44-06929	35.97	12/3/2023 (in review)	VA0082187
1202189	Toms Creek North Deep Mine	Paramont Contura, LLC	Completion Report; Active Reclamation Only	1/3/2017	Cost	44-07367	7	10/14/2021 (in review)	VA0082189
1202191	Bear Ridge Deep Mine	Paramont Contura, LLC	Active	1/18/2017	Cost	44-07217	7.98	12/19/2027 (CSMO/NPDES Renewal application was approved 12/15/2023)	VA0082191
1202193	Stonecoal/ Dorton Ally Mine	Paramont Contura, LLC	Completion Report; Active Reclamation Only	1/19/2017	Cost	44-07193	8.18	9/6/2021 (in review)	VA0082193

Permit	Operation Name	Company	Current Status	Issue	Bond Method	MSHA ID	Current Permit Acreage	Expiration Date	NPDES
1202196	Spruce Pine Mine	Paramont Contura, LLC	Completion Report; Inactive	1/31/2017	Cost	44-07159	49.22	10/27/2020 (in review)	VA0082196
1202198	Deep Mine 42	Paramont Contura, LLC	Active	2/7/2017	Cost	44-07223	27.23	6/29/2021 (in review)	VA0082198
1202247	Toms Creek South	Paramont Contura, LLC	Completion Report, Active Reclamation Only	10/23/2017	Cost	44-07388	20.47	10/23/2022 (in review)	VA0082247
1202282	Long Branch Lower Banner Deep Mine	Paramont Contura, LLC	Active, Not Started		Cost	Pending	24.75	11/28/2023 (in review)	VA0082282
1302182	Toms Creek Prep Plant	Paramont Contura, LLC	Active	12/19/2016	Pool	44-05270	501.67	12/20/2023 (in review)	VA0082182, VAG400197
1302195	Moss #2 Prep Plant	Dickenson-Russell Contura, LLC	Active; Temporary Cessation	1/26/2017	Cost	44-06007	125.99	12/29/2023 (in review, Renewal Application Data Dump Provided 1/3/24)	VA0082195
1402177	McClure Prep Plant	Dickenson-Russell Contura, LLC	Active	12/15/2016	Cost	44-04251; 44-05311	505.55	12/21/2023 (in review)	VA0067032, VA0082177
1602175	Hughes Branch Mine	Paramont Contura, LLC	Completion Report, Inactive	12/14/2016	Pool	44-06268; 44-06891; 44-07109	16.25	11/25/2022 (in review)	VA0082175

Note: Permit status and expiration dates are based on information obtained from regulatory agency website and/or Alpha. Permits with expired dates are listed as "in review" due to approval backlogs at the state level.

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. For surface mines, the majority of the expense for backfilling and regrading is completed as part of ongoing mining operations, with only reclamation of final pits and HWM benches required at end-of-mine life. 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 Virginia complex is an operating facility; all necessary permits for current production have been obtained. MM&A knows of no reason that any permits revisions or new permits that may be required cannot be obtained. Based on the Schnabel study discussed in *Section 17.2*, McClure has disposal capacity for combined refuse through February 2029 at present production rates. The proposed new coarse disposal/impoundment site has a projected capacity of approximately 20 years.

Estimated expenditures for site closure and reclamation are included in the financial model for this 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 Metallurgical Resources, Inc.
Statement of Coal Resources and Reserves for the
Virginia Complex in Accordance with
United States SEC Standards as of December 31, 2023
Central Appalachian Coal Basin
Virginia, USA

Alpha provided MM&A with information related to the number of currently operating production units at Virginia. 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 Virginia operations is provided in *Figure 18-1* below. Total capital by mine is summarized in *Table 18-1*.

An additional $10.3 million of capital was included in 2024 for coal preparation plant and loadout upgrades.

Figure 18-1: Projected Capital Expenditures – Consolidated Virginia Operations

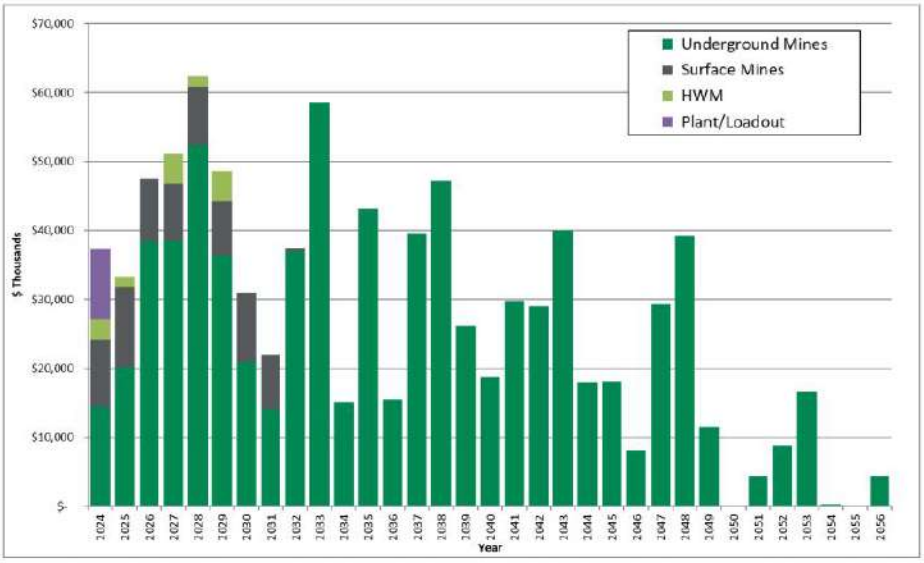


Table 18-1: Summary of Capital Expenditures Schedule by Mine

Item	Total	2023	2024	2025	2026	2027	2028	2029
DM 41-42-Black Dog (Jawbone)	**$462,320**	$0	$10,141	$17,616	$9,463	$37,299	$19,760	$27,855
Long Branch Deep (L. Banner)	**$2,560**	$0	$0	$2,560	$0	$0	$0	$0
DM44 (Lower Banner)	**$0**	$0	$0	$0	$0	$0	$0	$0
DM43 (Jawbone Rider)	**$324,913**	$0	$0	$0	$28,960	$1,300	$32,603	$8,590
Ball Ridge DM46 (L. Banner)	**$4,338**	$0	$4,338	$0	$0	$0	$0	$0
Bear Ridge (Upper Banner)	**$0**	$0	$0	$0	$0	$0	$0	$0
Long Branch HWM	**$4,560**	$0	$1,800	$2,760	$0	$0	$0	$0
88 Strip	**$68,900**	$0	$7,860	$8,820	$9,190	$8,170	$8,430	$7,860
Long Branch HWM	**$1,370**	$0	$1,370	$0	$0	$0	$0	$0
88 Strip HWM	**$13,410**	$0	$1,550	$1,550	$0	$4,380	$1,550	$4,380
Total	**$882,371**	**$0**	**$27,059**	**$33,306**	**$47,613**	**$51,149**	**$62,343**	**$48,685**

Item	2030	2031	2032	2033	2034	2035	2036	2037
DM 41-42-Black Dog (Jawbone)	$20,995	$6,860	$27,566	$25,533	$14,721	$38,192	$11,170	$33,898
Long Branch Deep (L. Banner)	$0	$0	$0	$0	$0	$0	$0	$0
DM44 (Lower Banner)	$0	$0	$0	$0	$0	$0	$0	$0
DM43 (Jawbone Rider)	$0	$7,200	$9,406	$33,047	$344	$5,008	$4,320	$5,620
Ball Ridge DM46 (L. Banner)	$0	$0	$0	$0	$0	$0	$0	$0
Bear Ridge (Upper Banner)	$0	$0	$0	$0	$0	$0	$0	$0
Long Branch HWM	$0	$0	$0	$0	$0	$0	$0	$0
88 Strip	$9,990	$8,010	$570	$0	$0	$0	$0	$0
Long Branch HWM	$0	$0	$0	$0	$0	$0	$0	$0
88 Strip HWM	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$30,985**	**$22,070**	**$37,542**	**$58,580**	**$15,065**	**$43,200**	**$15,490**	**$39,518**

Item	2038	2039	2040	2041	2042	2043	2044	2045
DM 41-42-Black Dog (Jawbone)	$24,013	$11,185	$11,185	$21,880	$27,743	$12,403	$13,703	$9,453
Long Branch Deep (L. Banner)	$0	$0	$0	$0	$0	$0	$0	$0
DM44 (Lower Banner)	$0	$0	$0	$0	$0	$0	$0	$0
DM43 (Jawbone Rider)	$23,152	$14,957	$7,544	$7,888	$1,300	$27,647	$4,320	$8,640
Ball Ridge DM46 (L. Banner)	$0	$0	$0	$0	$0	$0	$0	$0
Bear Ridge (Upper Banner)	$0	$0	$0	$0	$0	$0	$0	$0
Long Branch HWM	$0	$0	$0	$0	$0	$0	$0	$0
88 Strip	$0	$0	$0	$0	$0	$0	$0	$0
Long Branch HWM	$0	$0	$0	$0	$0	$0	$0	$0
88 Strip HWM	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$47,166**	**$26,142**	**$18,729**	**$29,768**	**$29,043**	**$40,050**	**$18,023**	**$18,093**

Item	2046	2047	2048	2049	2050	2051	2052	2053
DM 41-42-Black Dog (Jawbone)	$7,819	$17,956	$3,910	$0	$0	$0	$0	$0
Long Branch Deep (L. Banner)	$0	$0	$0	$0	$0	$0	$0	$0
DM44 (Lower Banner)	$0	$0	$0	$0	$0	$0	$0	$0
DM43 (Jawbone Rider)	$344	$11,377	$35,292	$11,520	$0	$4,320	$8,844	$16,706
Ball Ridge DM46 (L. Banner)	$0	$0	$0	$0	$0	$0	$0	$0
Bear Ridge (Upper Banner)	$0	$0	$0	$0	$0	$0	$0	$0
Long Branch HWM	$0	$0	$0	$0	$0	$0	$0	$0
88 Strip	$0	$0	$0	$0	$0	$0	$0	$0
Long Branch HWM	$0	$0	$0	$0	$0	$0	$0	$0
88 Strip HWM	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$8,163**	**$29,333**	**$39,202**	**$11,520**	**$0**	**$4,320**	**$8,844**	**$16,706**

Item	2054	2055	2056	2057	2058	2059	2060	2061
DM 41-42-Black Dog (Jawbone)	$0	$0	$0	$0	$0	$0	$0	$0
Long Branch Deep (L. Banner)	$0	$0	$0	$0	$0	$0	$0	$0
DM44 (Lower Banner)	$0	$0	$0	$0	$0	$0	$0	$0
DM43 (Jawbone Rider)	$344	$0	$4,320	$0	$0	$0	$0	$0
Ball Ridge DM46 (L. Banner)	$0	$0	$0	$0	$0	$0	$0	$0
Bear Ridge (Upper Banner)	$0	$0	$0	$0	$0	$0	$0	$0
Long Branch HWM	$0	$0	$0	$0	$0	$0	$0	$0
88 Strip	$0	$0	$0	$0	$0	$0	$0	$0
Long Branch HWM	$0	$0	$0	$0	$0	$0	$0	$0
88 Strip HWM	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$344**	**$0**	**$4,320**	**$0**	**$0**	**$0**	**$0**	**$0**

Note: No capital was projected for 4th quarter 2023.

18.2 Operating Cost Estimate

18.2 Operating Cost Estimate

Alpha provided historical costs and budgeted projections of operating costs for its active underground mines (Deep Mine 41 & Deep Mine 44) for MM&A's review, along with its active surface and highwall mines (88 Strip and Long Branch). 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, drilling & blasting, coal preparation plant processing, refuse handling, coal loading, property taxes, and 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*.

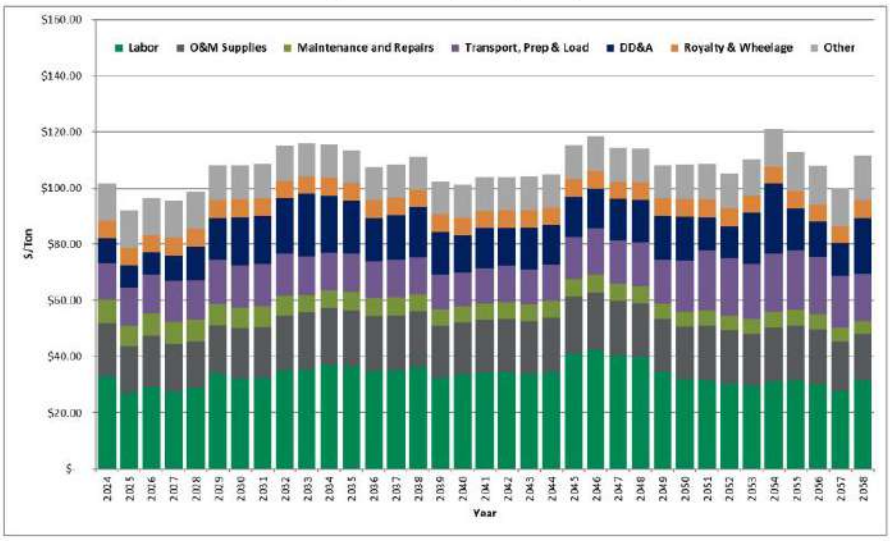
Table 18-2: Estimated Coal Production Taxes and Sales Costs

Description of Tax or Sales Cost	Basis of Assessment	Cost
Federal Black Lung Excise Tax – Underground	Per Ton	$1.10
Federal Black Lung Excise Tax – Surface/Highwall	Per Ton	$0.55
Federal Reclamation Fees – Underground	Per Ton	$0.12
Federal Reclamation Fees – Surface/Highwall	Per Ton	$0.28
Virginia Reclamation Tax – Underground	Per Ton	$0.03
Virginia Reclamation Tax – Surface/Highwall	Per Ton	$0.04
Virginia Reclamation Tax – Coal Preparation/Loadout	Per Ton	$0.15
Virginia Severance Tax	Percentage of Revenue	2%
Royalties – Underground, Surface and Highwall	Percentage of Revenue	5.0%

Notes: 1. Federal black lung excise tax is paid only on coal sold domestically.

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

Figure 18-2: Virginia Operating Costs



19 Economic Analysis

19.1 Economic Evaluation

19.1.1 Introduction

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. The discounted cash flow analysis presented herein is based on an effective date of January 1, 2024.

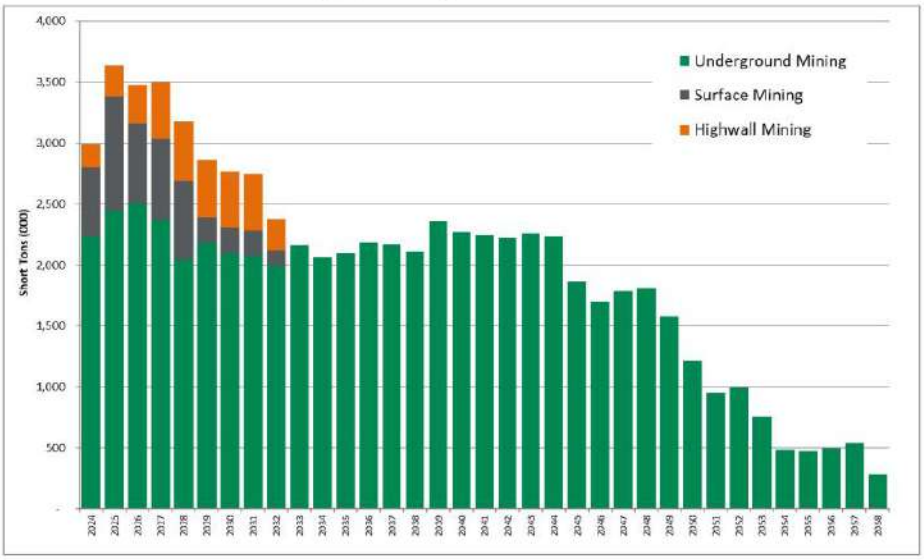
On an un-levered basis, the NPV of the project cash flow after taxes represents the Enterprise Value of the project. The project cash flow, excluding debt service, is calculated by subtracting direct and indirect operating expenses and capital expenditures from revenue. Direct costs include labor, operating 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 metallurgical 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 Virginia 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.

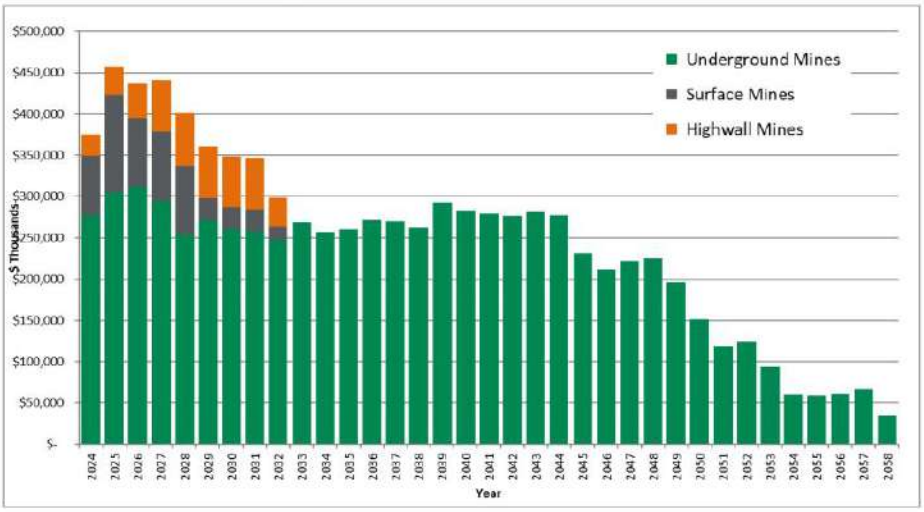
The financial model expresses coal sales prices, operating costs, and capital expenditures in current day dollars without adjustment for inflation. Capital expenditures and reclamation costs are included based on engineering estimates for each mine by year. MM&A also included an estimate of administrative 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 5.0% of the sales revenue.

The projection model also includes consolidated income tax calculations at Alpha's Virginia 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.

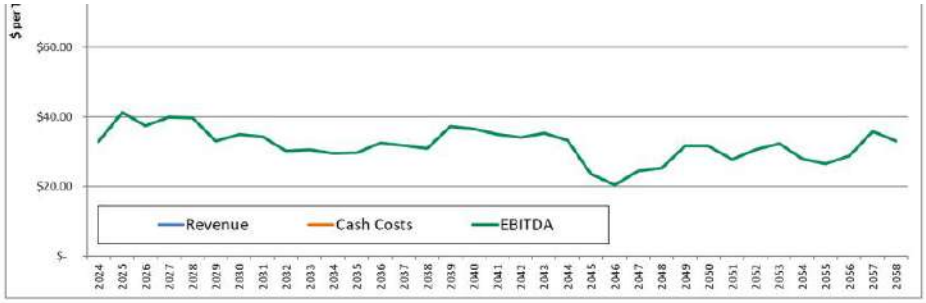
Alpha's projected consolidated annual revenue for the Virginia operations is shown in the chart below:

Figure 19-2: Consolidated Annual Revenue



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

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



The above chart shows an assumed average revenue of $125 per ton, cash costs of $81 to $104 per ton and EBITDA of $20 to $45 per ton. Positive EBITDA per ton averages $33.31 per ton over the life of the operations.

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

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
Underground Mines					
DM 41-42-Black Dog (Jawbone)	37,355	$844,960	$22.62	$1,356,847	$36.32
Long Branch Deep (L. Banner)	729	$34,422	$47.24	$39,024	$53.55
DM44 (Lower Banner)	465	$1,250	$2.69	$6,007	$12.93
DM43 (Jawbone Rider)	21,901	$210,289	$9.60	$558,027	$25.48
Ball Ridge DM46 (L. Banner)	1,282	$33,105	$25.82	$43,388	$33.84
Bear Ridge (Upper Banner)	105	$974	$9.31	$1,329	$12.71
Consolidated Deep Mines	**61,835**	**$1,125,000**	**$18.19**	**$2,004,621**	**$32.42**

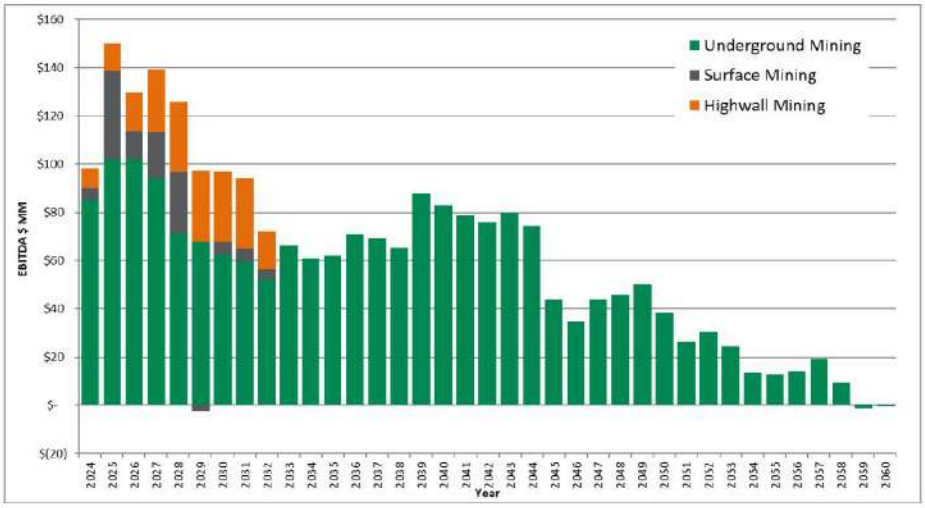
	LOM Tonnage	LOM Pre-Tax P&L	P&L Per Ton	LOM EBITDA	EBITDA Per Ton
Surface Mines					
Long Branch	228	($8,921)	($39.20)	($1,319)	($5.80)
88 Strip	4,287	$47,474	$11.07	$120,152	$28.03
Consolidated Surface Mines	**4,515**	**$38,553**	**$8.54**	**$118,832**	**$26.32**
HWM Operations					
Long Branch HWM	738	$19,898	$26.97	$38,250	$51.84
88 Strip HWM	2,783	$150,671	$54.13	$165,703	$59.53
Consolidated HWMs	**3,521**	**$170,569**	**$48.44**	**$203,953**	**$57.92**
Grand Total	**69,871**	**$1,334,121**	**$19.09**	**$2,327,407**	**$33.31**

Note: (1) LOM tonnage evaluated in the financial model includes October 2023 through December 2023 production for underground mines and July 2023 through December 2023 production for surface mines production (1.12 million total clean tons) which was subtracted from coal reserves in order to make the effective date of the reserves December 31, 2023.

As shown in *Table 19-1*, all of the mines analyzed show positive EBITDA over the LOM. Overall, the Alpha consolidated Virginia operations show positive LOM P&L and EBITDA of $1.3 billion and $2.3 billion, respectively.

The breakdown of projected EBITDA for the consolidated Virginia operations is shown in the chart below:

Figure 19-4: Annual EBITDA



19.1.2 Cash Flow Summary

Alpha's consolidated Virginia 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	YE 12/31 2023	YE 12/31 2024	YE 12/31 2025	YE 12/31 2026	YE 12/31 2027	YE 12/31 2028
Production & Sales tons	69,871	1,049	2,991	3,639	3,473	3,494	3,173
Total Revenue	$8,736,279	$132,872	$375,442	$457,763	$436,893	$440,937	$401,144
EBITDA	$2,327,407	$47,516	$98,172	$150,138	$129,938	$139,281	$125,826
Net Income	$1,090,302	$35,806	$59,513	$96,252	$81,452	$85,112	$70,780
Net Cash Provided by Operating Activities	$2,083,587	$29,989	$75,981	$117,142	$113,894	$117,169	$110,011

Purchases of Property, Plant, and Equipment	($892,646)	$0	($37,333)	($33,306)	($47,613)	($51,149)	($62,343)
Net Cash Flow	$1,190,941	$29,989	$38,648	$83,836	$66,281	$66,019	$47,668

	YE 12/31 2029	YE 12/31 2030	YE 12/31 2031	YE 12/31 2032	YE 12/31 2033	YE 12/31 2034	YE 12/31 2035
Production & Sales tons	2,857	2,766	2,748	2,376	2,162	2,065	2,096
Total Revenue	$360,367	$349,158	$346,859	$298,348	$268,886	$256,742	$260,589
EBITDA	$94,611	$97,030	$94,086	$72,063	$66,163	$61,052	$62,116
Net Income	$41,501	$40,348	$39,913	$20,028	$13,960	$15,118	$18,622
Net Cash Provided by Operating Activities	$91,472	$89,227	$88,257	$73,008	$63,660	$60,152	$59,760
Purchases of Property, Plant, and Equipment	($48,685)	($30,985)	($22,070)	($37,542)	($58,580)	($15,065)	($43,200)
Net Cash Flow	$42,787	$58,242	$66,187	$35,466	$5,080	$45,087	$16,559

	YE 12/31 2036	YE 12/31 2037	YE 12/31 2038	YE 12/31 2039	YE 12/31 2040	YE 12/31 2041	YE 12/31 2042
Production & Sales tons	2,183	2,170	2,106	2,356	2,273	2,243	2,224
Total Revenue	$271,511	$269,793	$261,909	$292,967	$282,684	$278,872	$276,558
EBITDA	$70,963	$69,221	$65,351	$87,795	$82,979	$78,517	$75,844
Net Income	$32,262	$28,979	$22,134	$43,305	$45,002	$38,106	$37,913
Net Cash Provided by Operating Activities	$56,442	$61,336	$59,762	$75,101	$76,023	$71,819	$69,380
Purchases of Property, Plant, and Equipment	($15,490)	($39,518)	($47,166)	($26,142)	($18,729)	($29,768)	($29,043)
Net Cash Flow	$40,952	$21,818	$12,596	$48,959	$57,294	$42,051	$40,338

	YE 12/31 2043	YE 12/31 2044	YE 12/31 2045	YE 12/31 2046	YE 12/31 2047	YE 12/31 2048	YE 12/31 2049
Production & Sales tons	2,263	2,232	1,862	1,702	1,786	1,811	1,579
Total Revenue	$281,377	$277,527	$231,517	$211,631	$222,124	$225,263	$196,380
EBITDA	$80,014	$74,350	$43,761	$34,631	$43,741	$45,877	$50,040
Net Income	$37,677	$36,406	$14,532	$8,615	$14,275	$14,689	$21,001
Net Cash Provided by Operating Activities	$71,561	$68,995	$47,641	$35,439	$39,373	$42,494	$46,688
Purchases of Property, Plant, and Equipment	($40,050)	($18,023)	($18,093)	($8,163)	($29,333)	($39,202)	($11,520)
Net Cash Flow	$31,511	$50,972	$29,549	$27,276	$10,040	$3,291	$35,168

	YE 12/31 2050	YE 12/31 2051	YE 12/31 2052	YE 12/31 2053	YE 12/31 2054	YE 12/31 2055	YE 12/31 2056
Production & Sales tons	1,215	956	994	754	486	476	493
Total Revenue	$151,084	$118,939	$123,633	$93,734	$60,404	$59,147	$61,368
EBITDA	$38,443	$26,510	$30,406	$24,364	$13,552	$12,650	$14,219
Net Income	$16,845	$13,824	$16,422	$8,771	$1,413	$5,216	$6,553
Net Cash Provided by Operating Activities	$39,650	$25,647	$27,000	$24,347	$16,507	$13,256	$13,524
Purchases of Property, Plant, and Equipment	$0	($4,320)	($8,844)	($16,706)	($344)	$0	($4,320)
Net Cash Flow	$39,650	$21,327	$18,156	$7,641	$16,163	$13,256	$9,204

	YE 12/31 2057	YE 12/31 2058	YE 12/31 2059	YE 12/31 2060	YE 12/31 2061	YE 12/31 2062	YE 12/31 2063
Production & Sales tons	538	281	0	0	0	0	0
Total Revenue	$66,859	$34,987	$0	$0	$0	$0	$0
EBITDA	$19,327	$9,279	($1,382)	($547)	($276)	($141)	($73)
Net Income	$10,140	$2,654	($2,764)	($1,094)	($552)	($281)	($146)
Net Cash Provided by Operating Activities	$16,695	$13,865	($11,208)	($3,736)	($1,868)	($934)	($934)
Purchases of Property, Plant, and Equipment	$0	$0	$0	$0	$0	$0	$0
Net Cash Flow	$16,695	$13,865	($11,208)	($3,736)	($1,868)	($934)	($934)

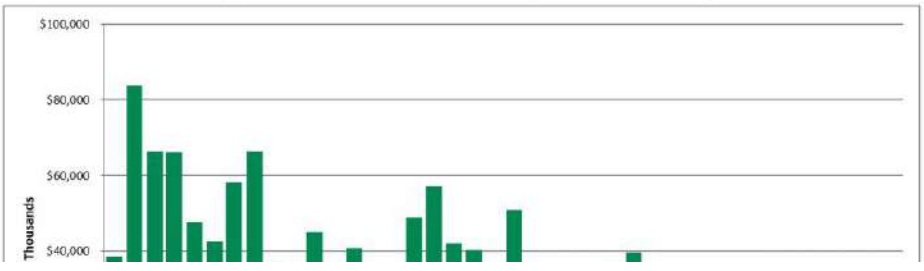
Notes:
(1) LOM tonnage evaluated in the financial model includes October 2023 through December 2023 production for underground mines and July 2023 through December 2023 production for surface mines (1.12 million total clean tons) which was subtracted from coal reserves in order to make the effective date of the reserves December 31, 2023.
(2) Results shown for 2023 represent 4th quarter only.

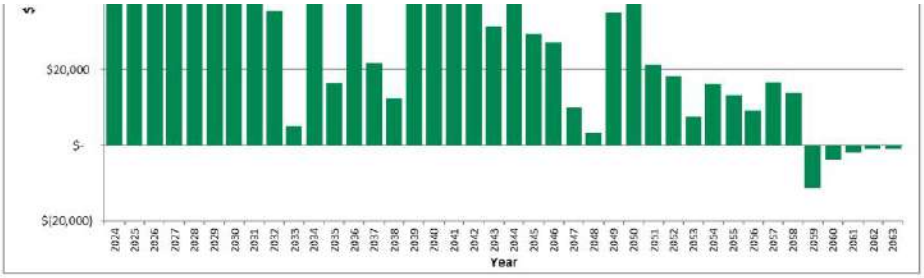
Consolidated cash flows are driven by annual sales tonnage, which grows from 3.0 million tons in 2024 to a peak of 3.6 million tons in 2025. Between years 2026 and 2044, sales ranges from 2.1 million to 3.5 million tons and between years 2045-2058, sales range from 0.3 million tons to 1.9 million tons. Projected consolidated revenue grows from $375.4 million in 2024 to a peak of $457.8 million in 2025. Revenue totals $8.7 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 $117.2 million in 2027 and totals $2.1 billion over the project life. Capital expenditures total $231.7 million during the first five years and $892.6 million over the project's life.

Consolidated Virginia 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 year 2058 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

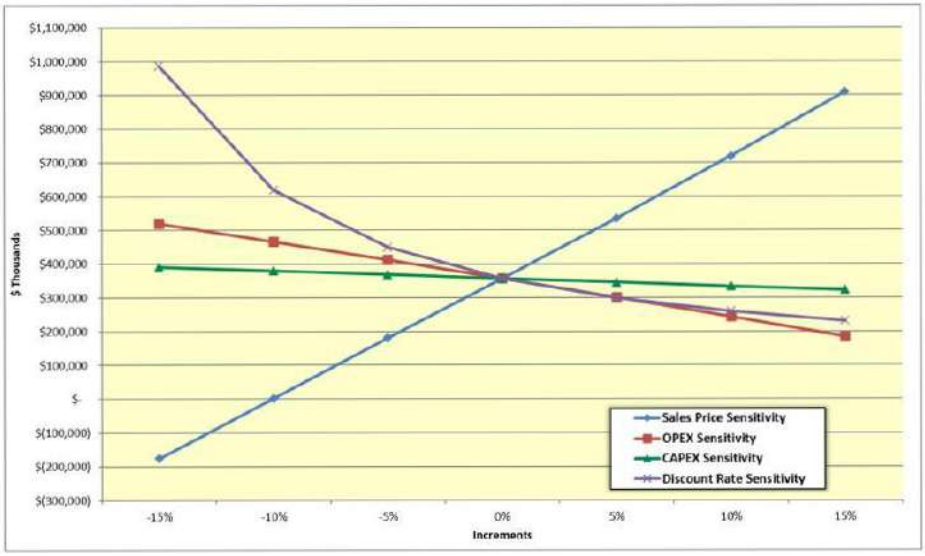
Cash flow after tax, but before debt service, generated over the life of the project was discounted to NPV at a 16.57% discount rate, which represents MM&A's estimate of the constant dollar, risk adjusted WACC for likely market participants if the subject reserves were offered for sale. On an un-levered basis, the NPV of the project cash flows represents the Enterprise Value of the project and amounts to $356.9 million. Alpha is an active producer, and the financial model shows positive net cash flow for each year of the operating life of the Virginia reserves. The pre-feasibility financial model prepared for the TRS was developed to test the economic viability of each coal resource area. 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 Virginia 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 16.57% 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 2021 for reserves effective as of December 31, 2021, for Alpha based on SEC S-K 1300 regulations. MM&A utilized this former evaluation as the basis for the December 31, 2023 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 Virginia 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 68.75 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 which define the Risk Level, are classified from very low to very high.

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 15. 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 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 (≤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 parameters 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

P x C = R			Consequence (C)				
			Insignificant	Minor	Moderate	Major	Critical
			1	2	3	4	5
Probability Level (P)	Remote	1	1	2	3	4	5
	Unlikely	2	2	4	6	8	10
	Possible	3	3	6	9	12	15
	Likely	4	4	8	12	16	20
	Almost Certain	5	5	10	15	20	25

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

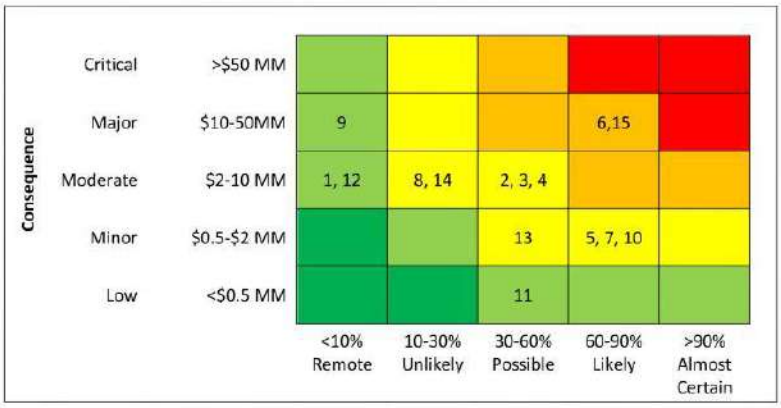
The Virginia Mine Complex (*Virginia*) is located in located in Dickenson, Buchanan, Russell, and Wise Counties, Virginia – is an active operation with three underground mines and two Surface mines. The active underground operations within the Virginia Mine Complex (Deep Mine 41, Deep Mine 44, and Bear Ridge) utilize continuous mining production sections. The method provides continuity, preserving skilled work groups and enabling effective utilization of production equipment. The other active and

projected mines are located above drainage and as such are accessed via drifts. The two active surface mining operations include the Long Branch and 88 Strip. Deep Mine 41 is located below drainage and is accessed by a slope and shaft. Deep Mine 43 will be accessed by a slope and shaft as well.

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 7.6, 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. Clean coal quality related to surface mines is largely justified by historical trends as opposed to exploration data.	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.	3	5	15	Develop mine plan to provide readily available alternate mining locations to sustain expected production level; modify coal sales agreements to reflect coal quality.	3	3	9

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 permits and permit modifications are increasingly delayed or denied.	Interruption of production and delayed implementation of	Comply quickly with testing, treatment and other actions required; continue excellent	3	4	12	Establish and maintain close and constructive working relationships with	3	3	9

	replacement production from new mines.	compliance performance within existing permits.				regulatory agencies, local communities and community action groups.			

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 hearings 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 closed, 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 access at river and ocean terminals is not available.	Fulfillment of coal sales agreements delayed; limited coal storage at mines may increase cost of rehandling; production may be temporarily idled.	Provide adequate storage capacity at mines; coordinate continuously with railroad and shipping companies to respond quickly and effectively to changing circumstances.	4	3	12	Provide back-up storage facility along with personnel, equipment and rehandle plan to sustain production and fulfill sales obligations timely.	4	2	8

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 leads 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 potentially present in coal operations; however, the methane concentration in shallow coal seams is at such low levels that it can be readily managed with frequent testing and monitoring, vigilance, and routine mine ventilation. Methane is not expected to be present in most of the Virginia 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	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 degasification where pillar extraction methods are employed.	2	3	6

	requirements.									

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 safety 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 conditions.	4	2	8

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 increased 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 safety; regular comprehensive safety audits to assure safety standards are maintained.	2	3	6

22.2.8.7 Refuse Disposal

Having sufficient refuse disposal capacity is critical to strategic long-term mine development. Production delays can be caused by the lengthy process associated with identifying, designing and permitting future waste disposal areas.

Alpha's Virginia complex is actively pursuing additional refuse storage areas to acquire and/or permit in order to support the LOM reserves for the Property.

Table 22-17: Refuse Disposal (Risk 15)

Aspect	Impact	Control Measures	Initial Risk Level			Mitigation Measures	Residual Risk Level		
			P	C	R		P	C	R
Failure to acquire and/or permit refuse storage areas to support reserves	Interruption of coal preparation plant operations and increased pressure on mine/plant raw coal storage capacities.	Plant design modifications to reduce refuse volumes produced; strategic property acquisition and design of future refuse storage areas.	4	5	20	Addition of plate frame filters in plant; identify, design and permit additional refuse facilities.	4	4	16

23 Recommendations

Alpha is continuing 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 Geostatitics, 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, LLC
SEC Technical Report - Virginia Complex
Summary of Coal Resource (Short Tons) • Effective December 31, 2023
Appendix A - Table 1

		Coal Resource (Dry Tons, In Situ)									Quality (Dry Basis)		
		By Reliability Category					By Control Type		By Permit Status				
Mine/Area	Seam	Measured	Indicated	Total	Inferred	Grand Total	Owned	Leased	Permitted	Not Permitted	Ash%	Sulfur%	VM%
Holly Creek	Upper Banner (4650)	5,594,000	2,156,000	7,750,000	0	7,750,000	0	7,750,000	7,172,000	578,000	23	0.8	28
Bear Ridge	Upper Banner (4650)	181,000	118,000	299,000	0	299,000	0	299,000	67,000	232,000	-	-	-
Ball Ridge (Deep Mine 46)	Lower Banner (4900)	1,003,000	32,000	1,035,000	0	1,035,000	0	1,035,000	1,035,000	0	25	1.2	23
Deep Mine 43	Jawbone Rider (5950)	10,653,000	8,216,000	18,870,000	409,000	19,279,000	0	18,870,000	0	18,870,000	11	1.0	-
Black Dog	Jawbone (6000)	6,367,000	1,860,000	8,227,000	0	8,227,000	0	8,227,000	8,132,000	95,000	29	0.5	-
Deep Mine 41	Jawbone (6000)	4,704,000	705,000	5,409,000	0	5,409,000	0	5,409,000	1,794,000	3,615,000	25	0.8	27
Deep Mine 42	Jawbone (6000)	2,024,000	15,000	2,039,000	0	2,039,000	0	2,039,000	860,000	1,179,000	42	0.4	16
Grand Total		**30,527,000**	**13,102,000**	**43,629,000**	**409,000**	**44,038,000**	**0**	**43,629,000**	**19,060,000**	**24,570,000**	**20**	**0.8**	**26**

*Note(1): Resource tons are **exclusive** of reserve tons (not converted to reserve).*

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

All resources exclusive of reserves are considered a met market

Totals may not add due to rounding.

Alpha Metallurgical Resources, LLC

SEC Technical Report - Virginia Complex

Summary of Coal Reserve (Short Tons) • Effective December 31, 2023

Appendix A - Table 2

Mine/Area	Seam	Demonstrated Coal Reserves (Wet Tons, Washed or Direct Shipped)										Quality (Dry Basis)		
		By Reliability Category			By Mining Type		By Control Type		By Permit Status		By Market				
		Proven	Probable	Total	Surface	UG	Owned	Leased	Permitted	Not Permitted	Thermal	Met	Ash%	Sulfur%	VM%
88 Strip/Three Forks (SM)	Upper Banner-Tiller	133,000	3,974,000	4,107,000	4,107,000	0	0	4,107,000	2,083,000	2,024,000	821,000	3,285,000	6	0.9	29
88 Strip/Three Forks (HWM)	Upper Banner-Tiller	415,000	2,319,000	2,733,000	2,733,000	0	0	2,733,000	391,000	2,342,000	547,000	2,187,000	6	0.9	29
Long Branch (SM)	Upper Banner 2 - Lower Banner	104,000	84,000	188,000	188,000	0	0	188,000	125,000	63,000	38,000	150,000	5	0.8	32
Long Branch (HWM)	Upper Banner 2 - Lower Banner	597,000	101,000	699,000	699,000	0	0	699,000	394,000	305,000	140,000	559,000	5	0.8	31
Bear Ridge	Upper Banner (4650)	72,000	12,000	84,000	0	84,000	0	84,000	84,000	0	0	84,000	5	0.7	33
Ball Ridge (Deep Mine 46)	Lower Banner (4900)	1,190,000	92,000	1,282,000	0	1,282,000	0	1,282,000	1,282,000	0	0	1,282,000	6	0.7	29
Long Branch (Deep Mine 45)	Lower Banner (4900)	713,000	16,000	729,000	0	729,000	0	729,000	729,000	0	0	729,000	6	0.7	30
Rush Branch (Deep Mine 44)	Lower Banner (4900)	311,000	0	311,000	0	311,000	0	311,000	151,000	160,000	0	311,000	5	0.7	29
Deep Mine 43	Jawbone Rider (5950)	13,939,000	7,961,000	21,901,000	0	21,901,000	0	21,901,000	0	21,901,000	0	21,901,000	3	0.8	24
Black Dog	Jawbone (6000)	3,970,000	65,000	4,035,000	0	4,035,000	0	4,035,000	4,035,000	0	0	4,035,000	8	0.6	28
Deep Mine 41	Jawbone (6000)	15,368,000	4,356,000	19,724,000	0	19,724,000	0	19,724,000	16,851,000	2,873,000	0	19,724,000	9	0.8	26
Deep Mine 42	Jawbone (6000)	10,941,000	2,014,000	12,955,000	0	12,955,000	0	12,955,000	12,523,000	433,000	0	12,955,000	7	0.7	26
Grand Total		**47,753,000**	**20,994,000**	**68,747,000**	**7,727,000**	**61,020,000**	**0**	**68,747,000**	**38,648,000**	**30,099,000**	**1,545,000**	**67,201,000**	**6**	**0.8**	**25**

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 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.

Totals may not add due to rounding.

APPENDIX

B

INITIAL ECONOMIC ASSESSMENT, RESOURCES EXCLUSIVE OF RESERVES (PER TON)


MARSHALL MILLER
& ASSOCIATES®

Alpha Metallurgical Resources, LLC
Initial Economic Assessment, Resources Exclusive of Reserves (per Ton)
Appendix B: Virginia Complex

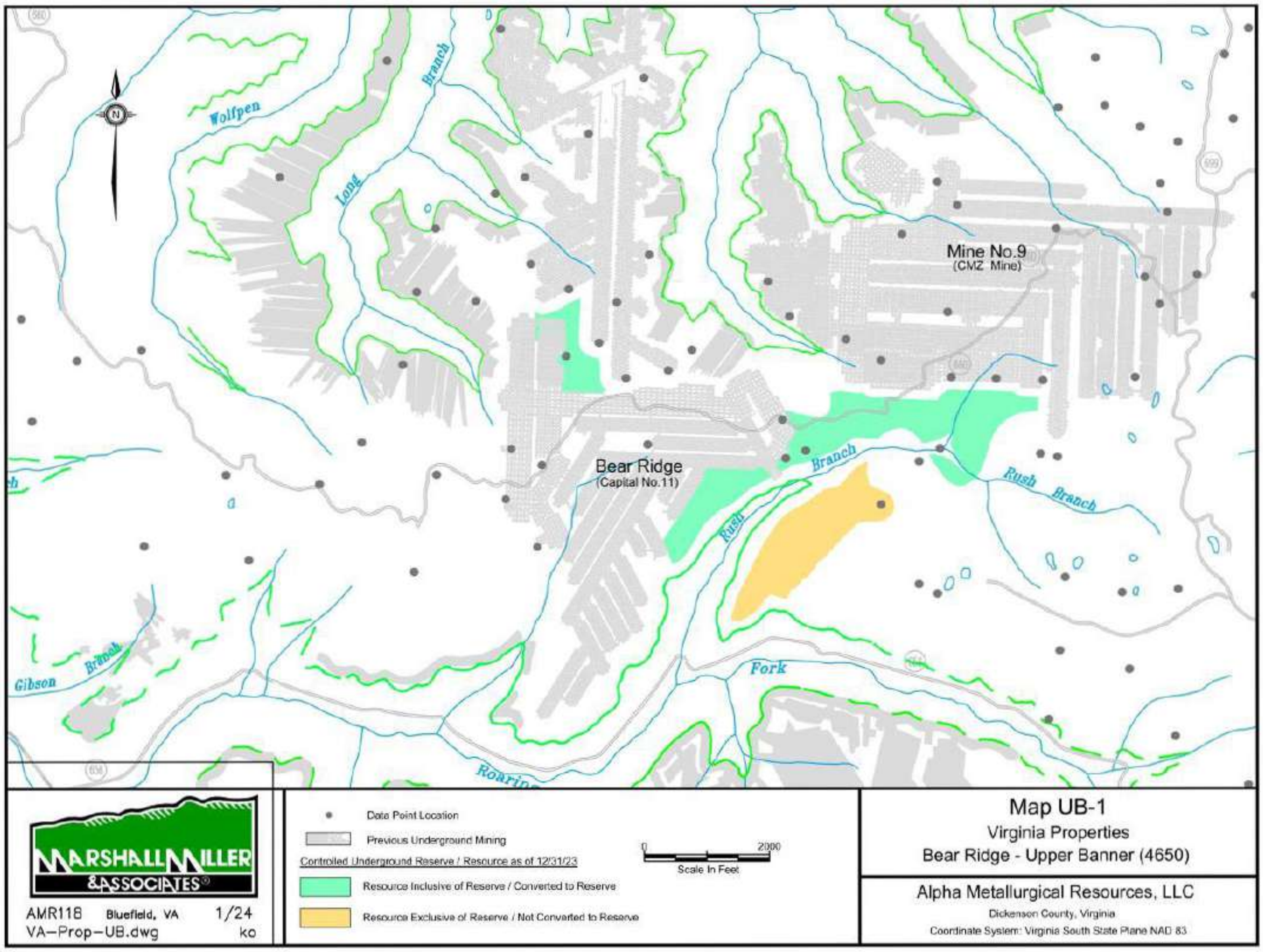
Seam:	Lower Banner	Jawbone Rider	Jawbone	Upper Banner	Upper Banner
Area:	Ball Ridge Block BR-C	Jawbone Rider Blocks C1A,D1,DZ	Jawbone Blocks BD-D1&2,BD-E,41-E4&G,42-E/F1/F2/F3	Holly Creek	Bear Ridge Block C
In-Place Resource Tons (not adjusted for Q4 2023 Depletion)	1,035,080	19,278,897	13,636,557	7,749,980	299,000
Potentially Recoverable Tons*	344,475	3,735,902	3,500,821	2,923,435	104,006
Mining Method	Deep - CM	Deep - CM	Deep - CM	Deep - CM	Deep - CM
Assumed Sales Realization at Plant**	$ 135	$ 135	$ 135	$ 135	$ 135
Initial Capex Estimate to Access Resources***	$ 1,000,000	$ 12,000,000	$ 23,000,000	$ 25,000,000	$ -
Direct Mining Costs:					
Labor****	$ 29.76	$ 31.19	$ 28.61	$ 25.17	$ 38.66
Supplies, Excluding Roof Control	$ 6.77	$ 7.09	$ 7.92	$ 5.72	$ 8.79
Roof Control	$ 10.93	$ 11.46	$ 14.04	$ 9.25	$ 14.20
M&R	$ 4.55	$ 4.69	$ 15.36	$ 4.32	$ 5.36
Power	$ 1.36	$ 1.41	$ 3.61	$ 1.30	$ 1.61
Other	$ 1.82	$ 1.87	$ 1.80	$ 1.73	$ 2.14
Total Direct Cash Costs	$ 55.19	$ 57.71	$ 71.34	$ 47.50	$ 70.75
Transporation, Washing, Environmental & G&A Costs:					
Coal Prep*****	$ 9.10	$ 9.37	$ 20.92	$ 8.65	$ 10.72
Materials Handling	$ 1.50	$ 1.50	$ 1.50	$ 1.50	$ 1.50
Raw Coal Trucking*****	$ 10.01	$ 18.43	$ -	$ 14.20	$ 14.69
Clean Coal Trucking	$ 1.25	$ 1.25	$ 1.25	$ 1.25	$ 1.25
Enviro******	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50
G&A	$ 5.00	$ 5.00	$ 5.50	$ 5.00	$ 5.00
Total Transporation, Washing, Environmental & G&A Costs:	**$ 27.35**	**$ 36.05**	**$ 29.67**	**$ 31.10**	**$ 33.66**
Indirect Cash Costs					
Royalty	$ 6.75	$ 6.75	$ 6.75	$ 6.75	$ 6.75
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	$ 2.70	$ 2.70	$ 2.70	$ 2.70	$ 2.70
Property Tax & Insurance	$ 1.20	$ 1.20	$ 1.20	$ 1.20	$ 2.40
Total Indirect Cash Costs	**$ 11.32**	**$ 11.32**	**$ 11.32**	**$ 11.32**	**$ 12.52**
Non Cash Costs					
Amoritization of Development Capital	$ 2.90	$ 3.21	$ 6.57	$ 8.55	$ -
Depreciation of Initial Equipment and Sustaining Capital	$ 6.73	$ 6.73	$ 6.73	$ 6.73	$ 6.73
Depletion	$ 1.00	$ 1.00	$ 1.00	$ 1.00	$ 1.00
Total Non Cash	$ 10.64	$ 10.95	$ 14.30	$ 16.28	$ 7.73
Total Cash Cost	**$ 93.87**	**$ 105.08**	**$ 112.33**	**$ 89.92**	**$ 116.93**
EBITDA	**$ 41.13**	**$ 29.92**	**$ 22.67**	**$ 45.08**	**$ 18.07**
Fully Loaded Cost	**$ 104.50**	**$ 116.03**	**$ 126.63**	**$ 106.20**	**$ 124.67**
Fully Loaded P&L	**$ 30.50**	**$ 18.97**	**$ 8.37**	**$ 28.80**	**$ 10.33**
Passes Resource Initial Economic Assessment?	**YES**	**YES**	**YES**	**YES**	**YES**

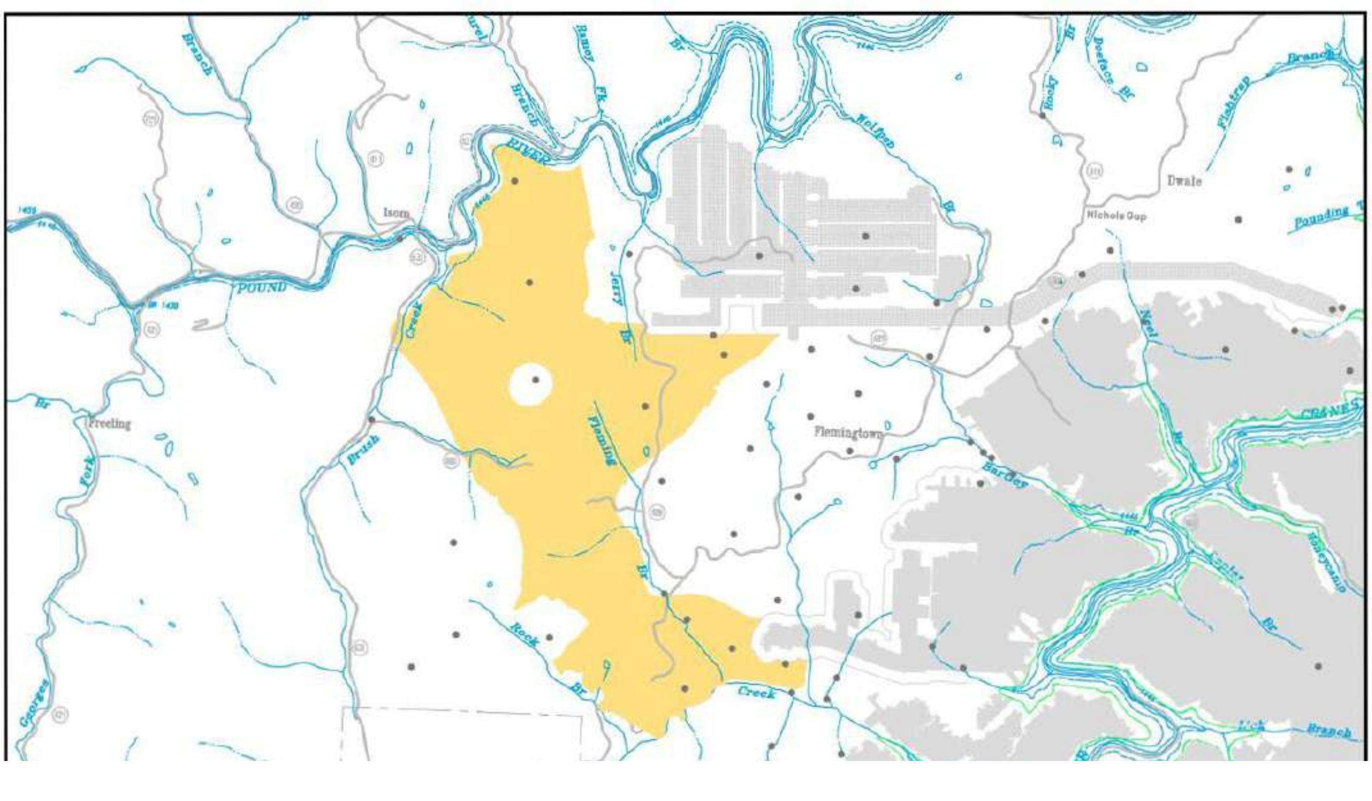
*Potentially recoverable tons are calculated by applying appropriate modifying factors to in-place resource tonnages
**Sales realization represents estimated long range sales price.
***No initial capital required where resources are accessible from existing mines.
****Labor rates are driven based off of super section productivities assuming 250 to 350 feet per unit shift per section.
*****Processing assumed to occur at McClures plant except for Toms Creek, which is processed at Toms Creek plant.
******Environmental costs assumed to include permiting, outfall maintenance, etc.

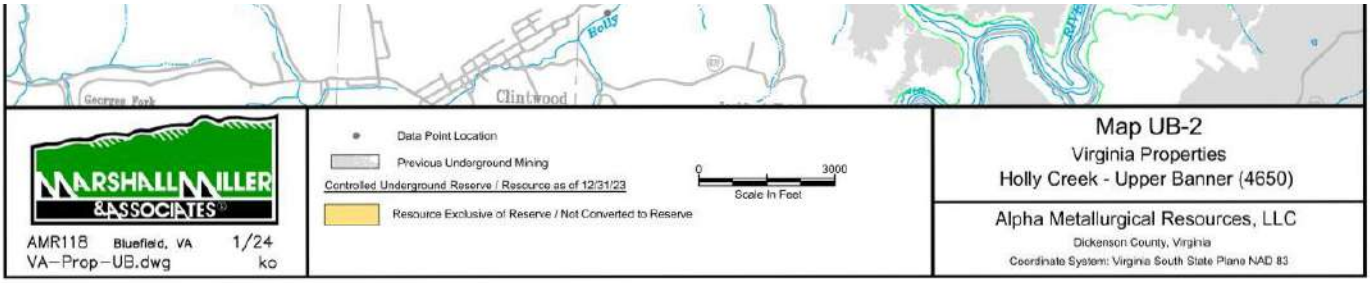
APPENDIX

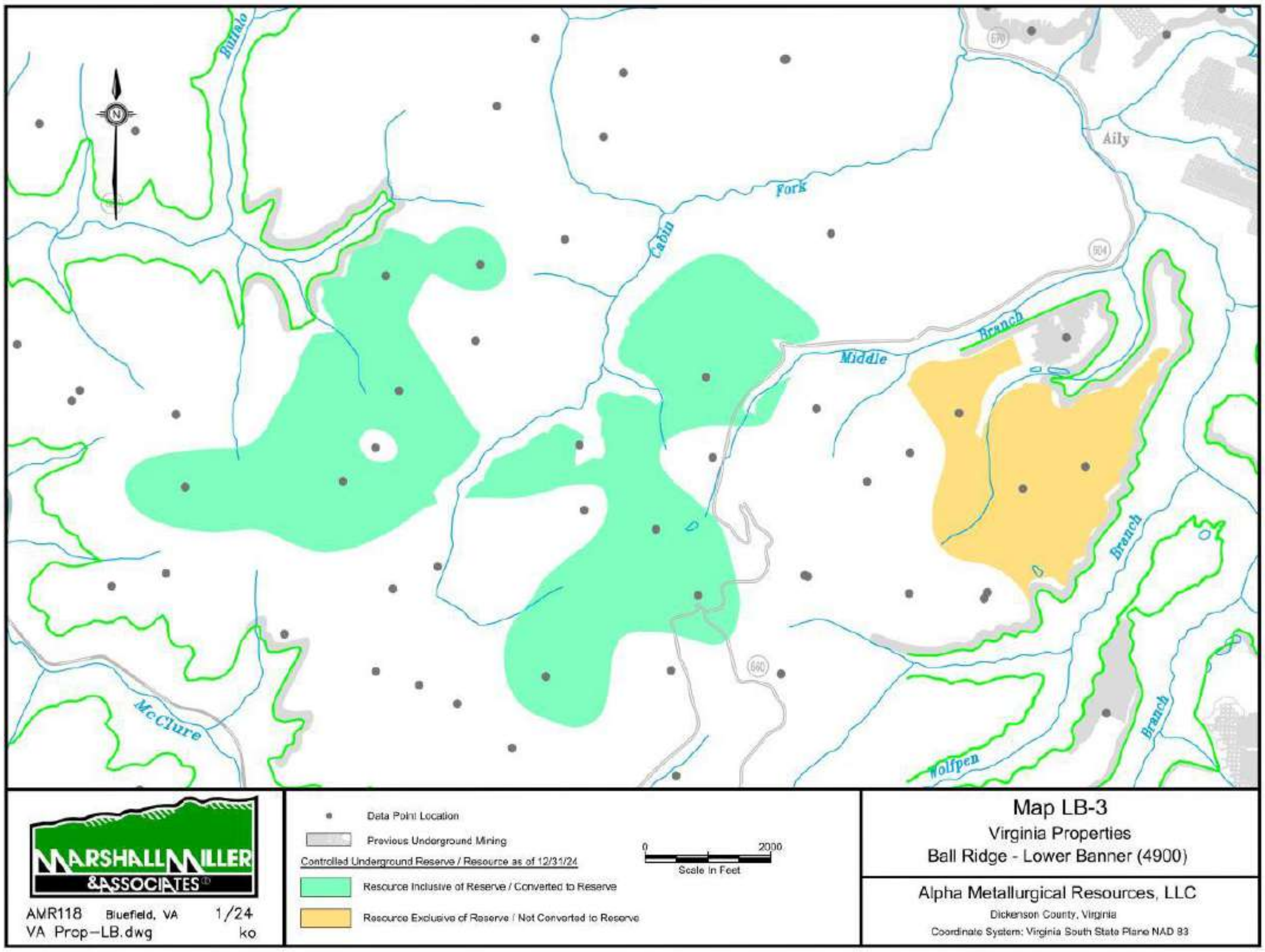
C

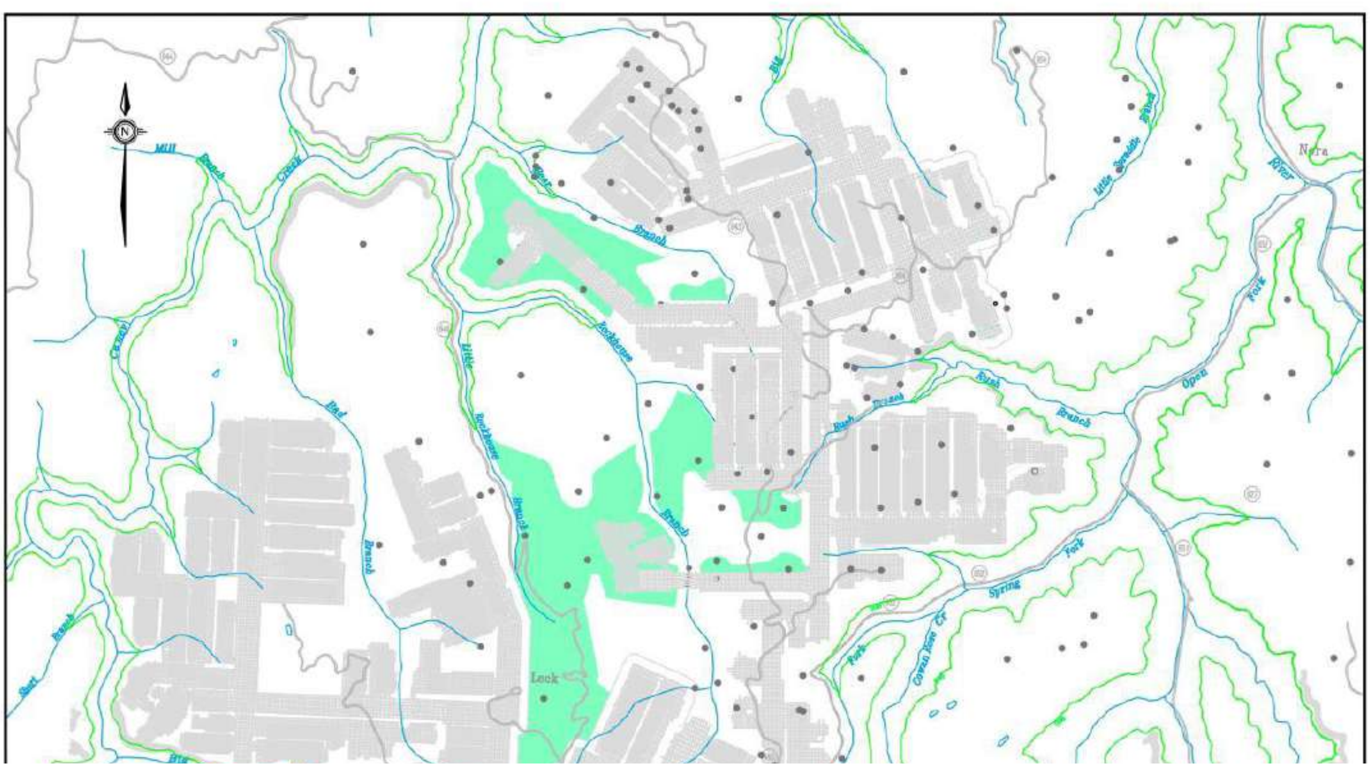
MAPS


Wolfpen
Long
Branch
Mine No.9
(CMZ Mine)
Bear Ridge
(Capital No.11)
Branch
Rush
Rush Branch
Gibson
Branch
Fork
Roaring
MARSHALL MILLER
& ASSOCIATES
AMR118 Bluefield, VA 1/24
VA-Prop-UB.dwg ko
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
2000
Scale In Feet
Map UB-1
Virginia Properties
Bear Ridge - Upper Banner (4650)
Alpha Metallurgical Resources, LLC
Dickenson County, Virginia
Coordinate System: Virginia South State Plane NAD 83


Branch
Branch
Ramey
Fk
Br
RIVER
POUND
Isom
Jerry
Br
Creek
Wolfpen
Br
Rocky
Br
Dwale
Nichols Gap
Pounding
Freeling
Fork
Brush
Fleming
Br
Flemingtown
Bardey
Neel
Br
CRANES
Rock
Br
Creek
Georges
Branch


Georges Fork
Clintwood
Data Point Location
Previous Underground Mining
Controlled Underground Reserve / Resource as of 12/31/23
Resource Exclusive of Reserve / Not Converted to Reserve
0
3000
Scale In Feet
MARSHALL MILLER &ASSOCIATES
AMR118 Bluefield, VA 1/24
VA-Prop-UB.dwg ko
Map UB-2
Virginia Properties
Holly Creek - Upper Banner (4650)
Alpha Metallurgical Resources, LLC
Dickenson County, Virginia
Coordinate System: Virginia South State Plane NAD 83


Buffalo
Fork
Cabin
Aily
Middle
Branch
Branch
McClure
Wolfpen
Branch
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
2000
Scale in Feet
Map LB-3
Virginia Properties
Ball Ridge - Lower Banner (4900)
Alpha Metallurgical Resources, LLC
Dickenson County, Virginia
Coordinate System: Virginia South State Plane NAD 83
MARSHALL MILLER
&ASSOCIATES
AMR118
Bluefield, VA
1/24
VA Prop-LB.dwg
ko


Mill
Branch
Creek
Branch
Branch
Rockhouse
Little
Rockhouse
Branch
Branch
Rush
Rush
Branch
Spring
Fork
Open
Fork
River
Nora
Lick
Branch

MARSHALL MILLER & ASSOCIATES

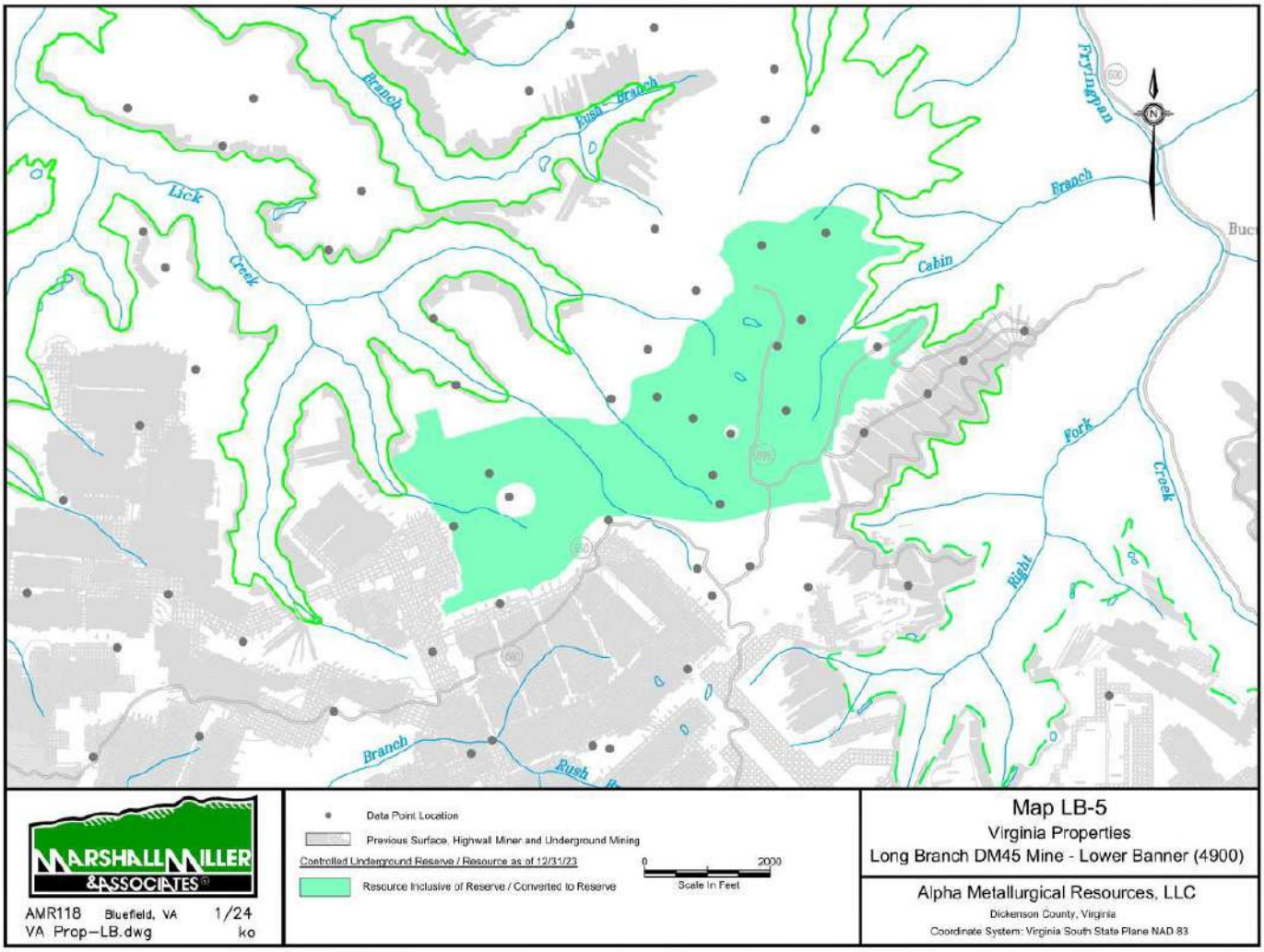
AMR118 Bluefield, VA 1/24
VA Prop-LB.dwg ko

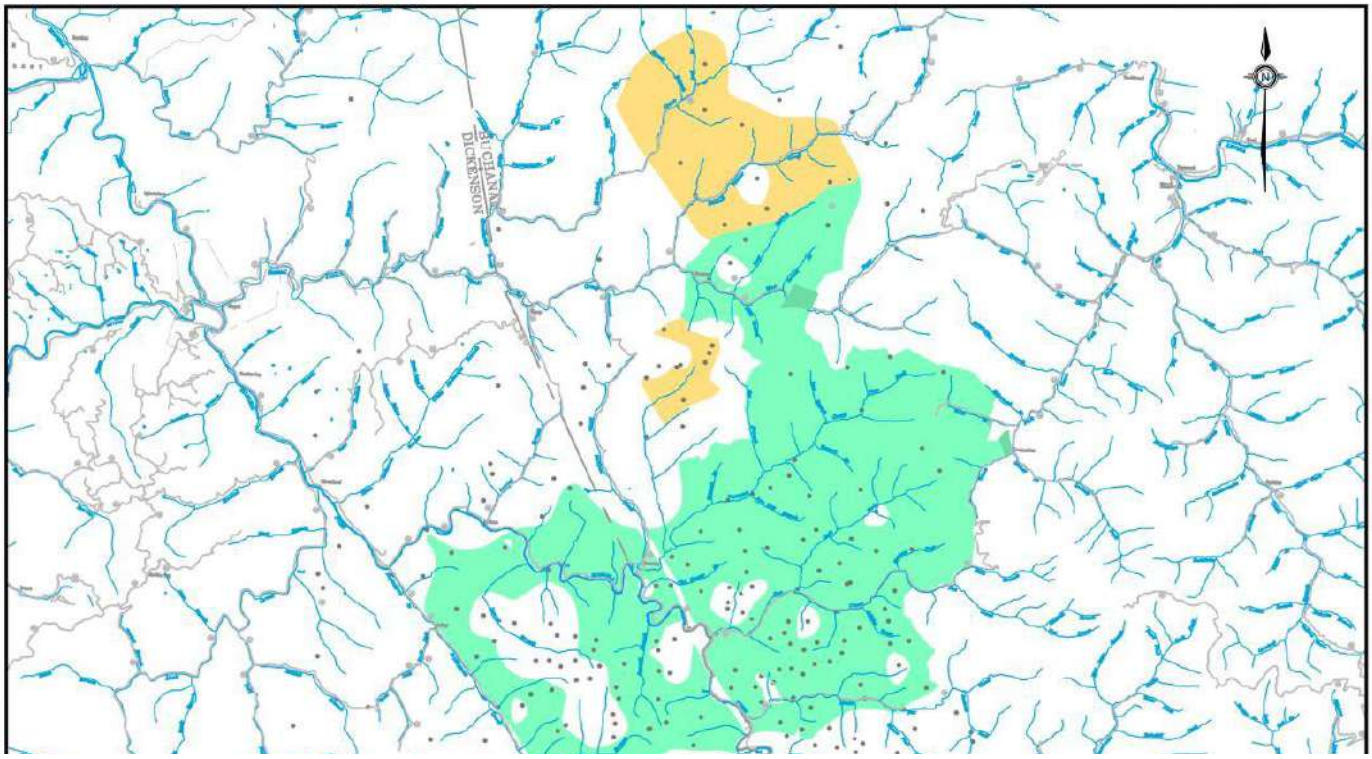
Data Point Location
Previous Surface and Underground Mining
Controlled Underground Reserve / Resource as of 12/31/24
Resource Inclusive of Reserve / Converted to Reserve
Resource Exclusive of Reserve / Not Converted to Reserve

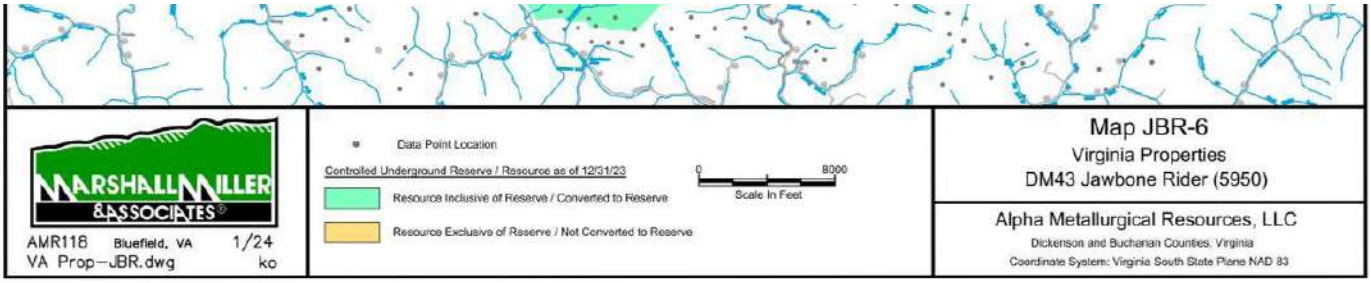
0 3600
Scale In Feet

Map LB-4
Virginia Properties
DM44 Rush Branch - Lower Banner (4900)

Alpha Metallurgical Resources, LLC
Dickenson County, Virginia
Coordinate System: Virginia South State Plane NAD 83


Lick
Creek
Branch
Rush Branch
Cabin
Branch
Fork
Creek
Right
Branch
Rush
Pigeonroost
Buc
N
MARSHALL MILLER &ASSOCIATES
AMR118 Bluefield, VA 1/24
VA Prop-LB.dwg ko
Data Point Location
Previous Surface, Highwall Miner and Underground Mining
Controlled Underground Reserve / Resource as of 12/31/23
Resource Inclusive of Reserve / Converted to Reserve
0
2000
Scale In Feet
Map LB-5
Virginia Properties
Long Branch DM45 Mine - Lower Banner (4900)
Alpha Metallurgical Resources, LLC
Dickenson County, Virginia
Coordinate System: Virginia South State Plane NAD 83


BUCHANAN
DICKENSON
N



MARSHALL MILLER & ASSOCIATES

AMR118 Bluefield, VA 1/24
VA Prop-JBR.dwg ko

Data Point Location

Controlled Underground Reserve / Resource as of 12/31/23

Resource Inclusive of Reserve / Converted to Reserve

Resource Exclusive of Reserve / Not Converted to Reserve

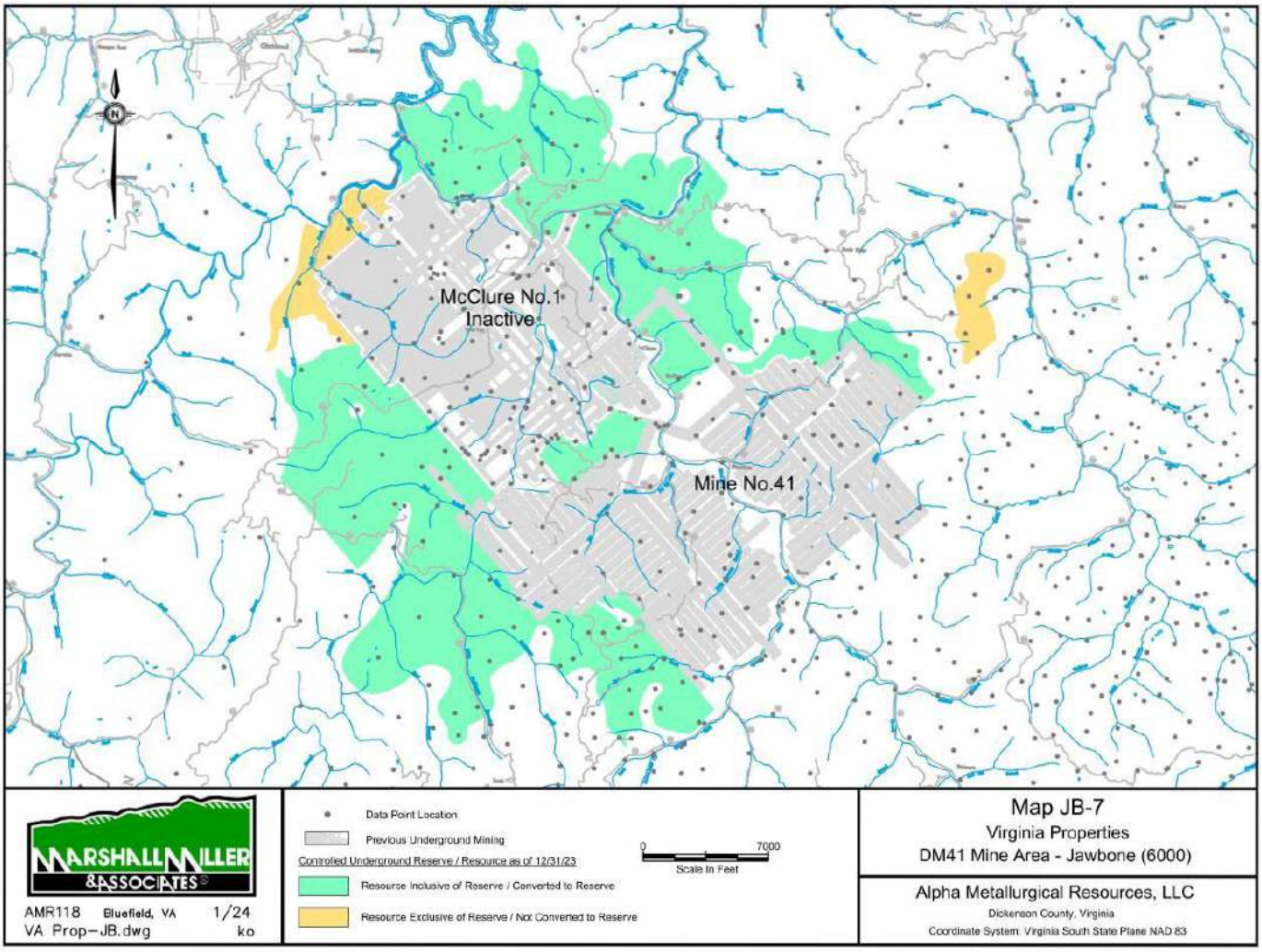
0 8000
Scale In Feet

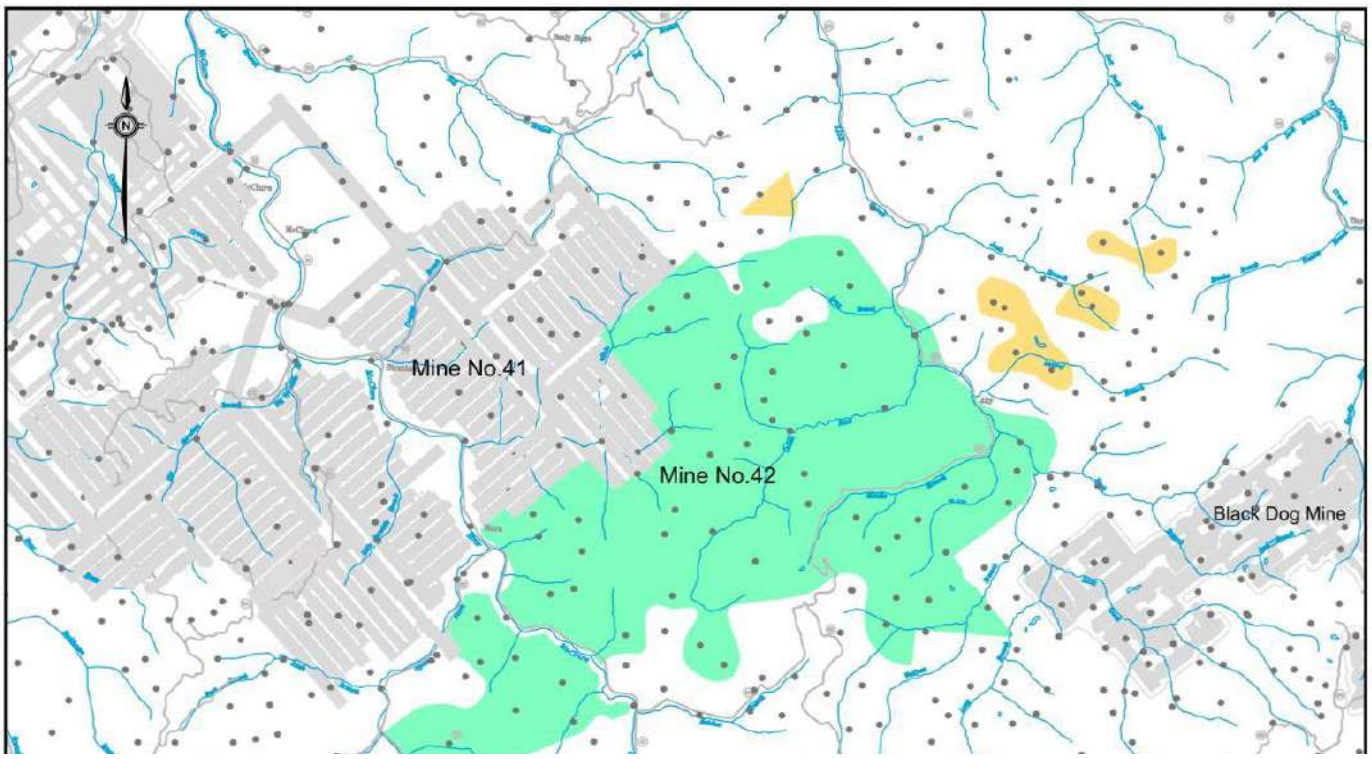
Map JBR-6

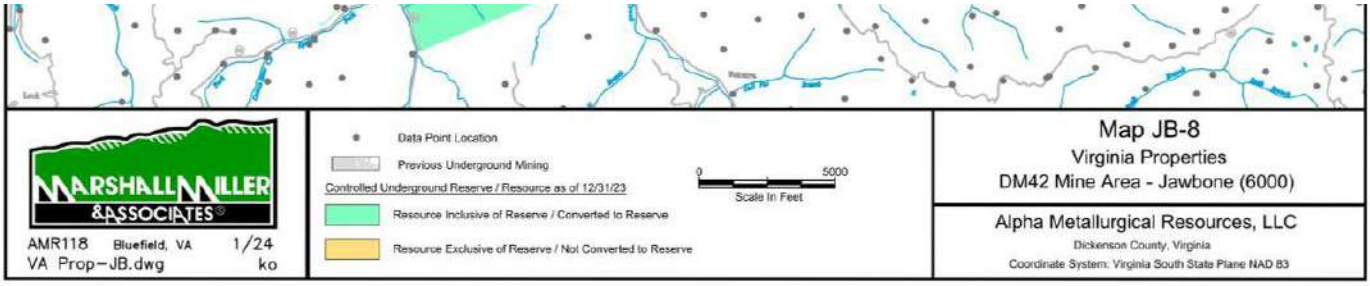
Virginia Properties
DM43 Jawbone Rider (5950)

Alpha Metallurgical Resources, LLC

Dickenson and Buchanan Counties, Virginia
Coordinate System: Virginia South State Plane NAD 83


McClure No.1
Inactive
Mine No.41
MARSHALL MILLER
&ASSOCIATES
AMR118 Bluefield, VA 1/24
VA Prop-JB.dwg ko
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
7000
Scale In Feet
Map JB-7
Virginia Properties
DM41 Mine Area - Jawbone (6000)
Alpha Metallurgical Resources, LLC
Dickenson County, Virginia
Coordinate System: Virginia South State Plane NAD 83


Mine No.41
Mine No.42
Black Dog Mine



MARSHALL MILLER & ASSOCIATES

AMR118 Bluefield, VA 1/24
VA Prop-JB.dwg ko

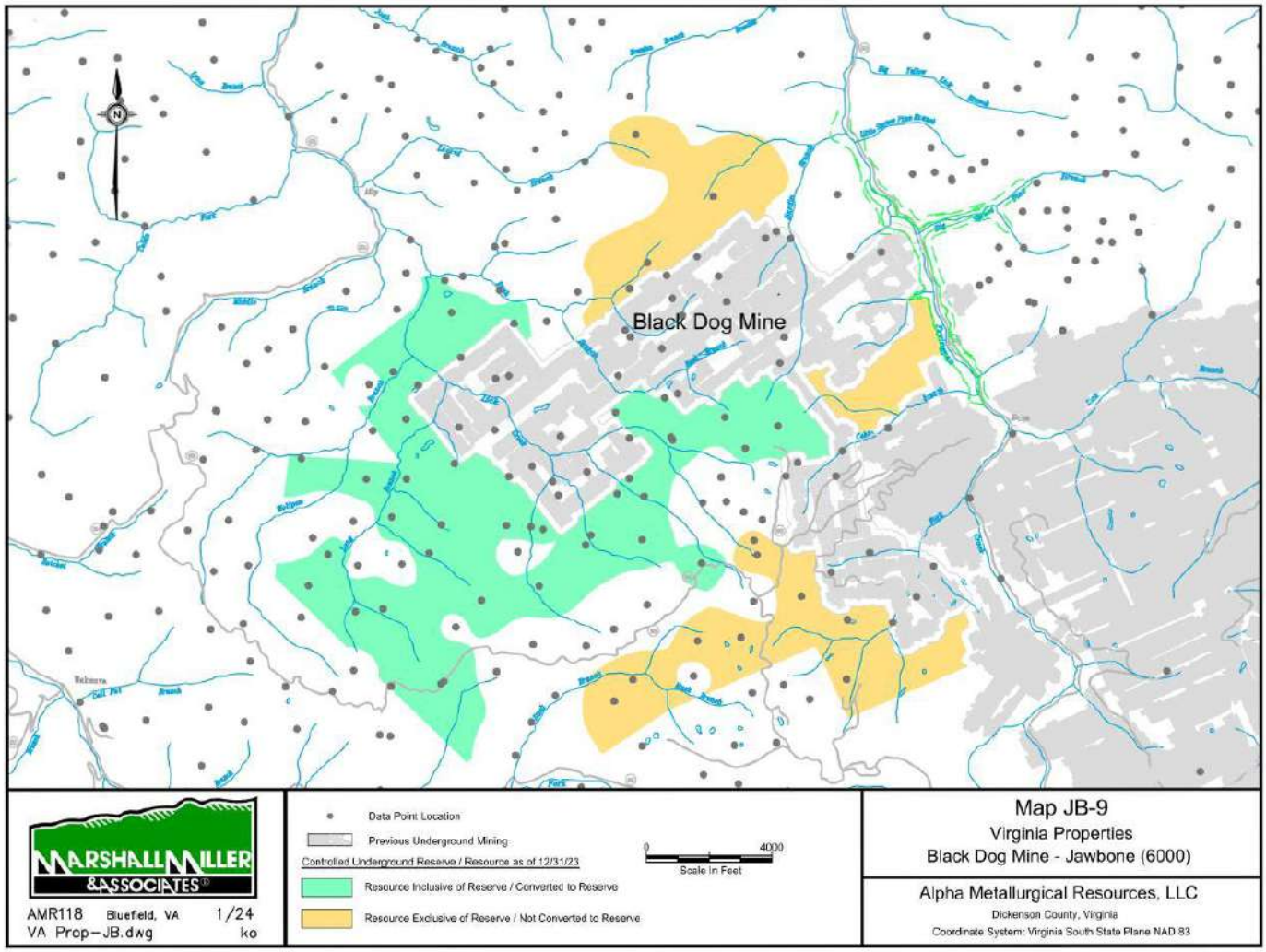
Data Point Location
Previous Underground Mining
Controlled Underground Reserve / Resource as of 12/31/23
Resource Inclusive of Reserve / Converted to Reserve
Resource Exclusive of Reserve / Not Converted to Reserve

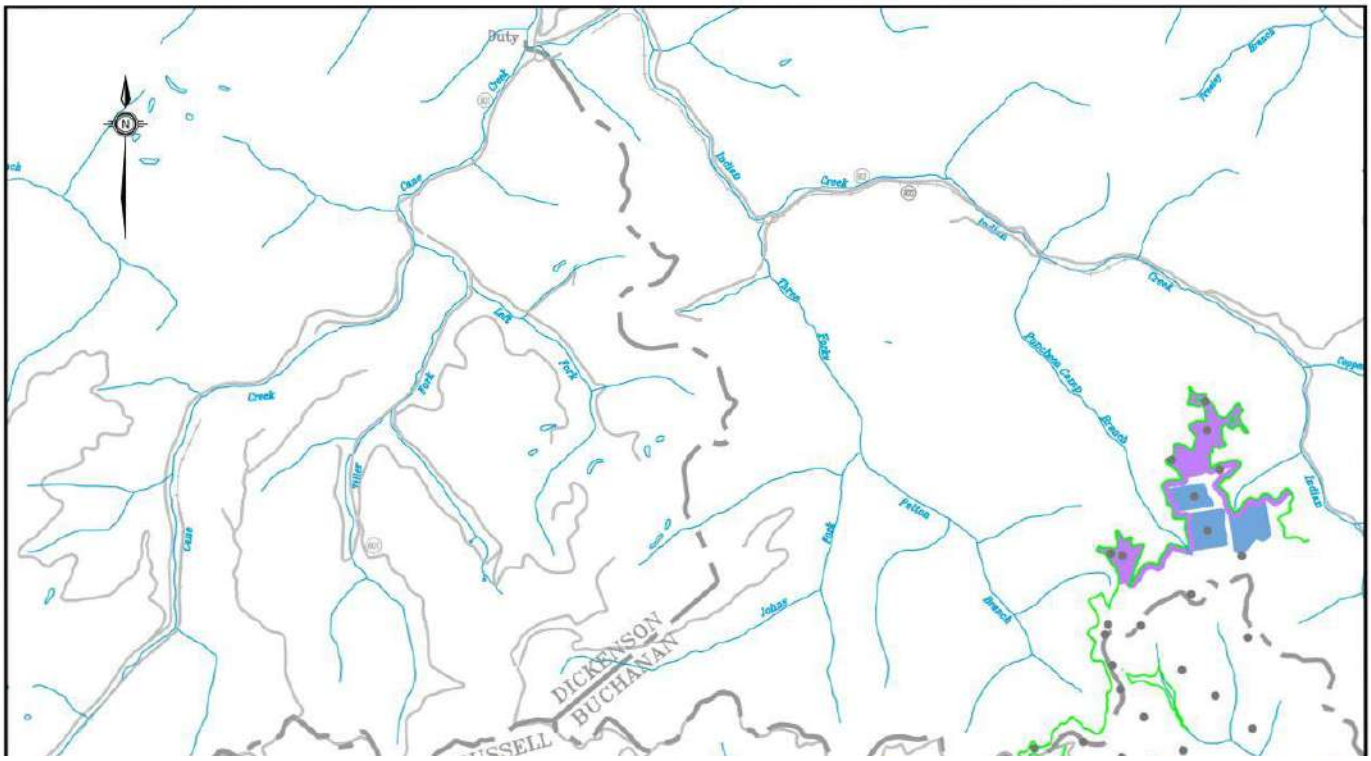
0 5000
Scale In Feet

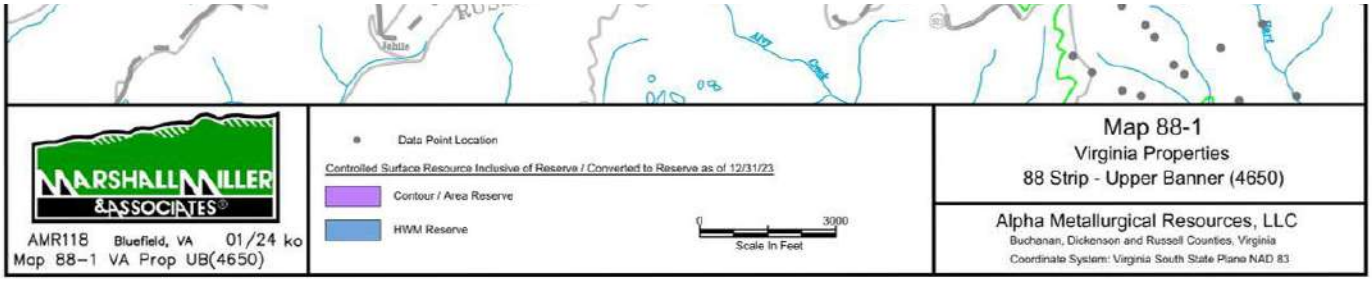
Map JB-8

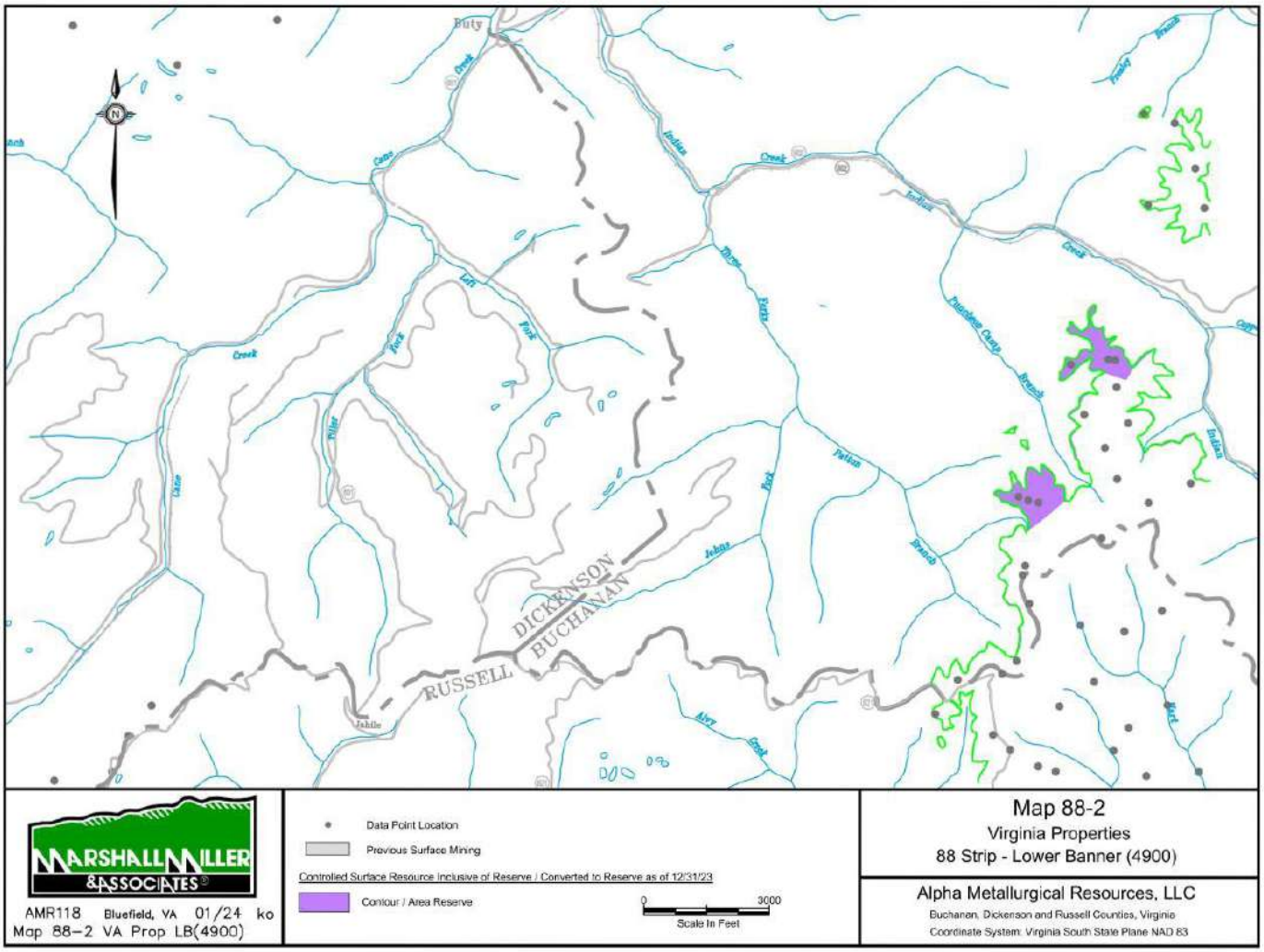
Virginia Properties
DM42 Mine Area - Jawbone (6000)

Alpha Metallurgical Resources, LLC
Dickenson County, Virginia
Coordinate System: Virginia South State Plane NAD 83


Black Dog Mine
MARSHALL MILLER & ASSOCIATES
AMR118 Bluefield, VA 1/24
VA Prop-JB.dwg ko
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
4000
Scale In Feet
Map JB-9
Virginia Properties
Black Dog Mine - Jawbone (6000)
Alpha Metallurgical Resources, LLC
Dickenson County, Virginia
Coordinate System: Virginia South State Plane NAD 83


DICKENSON
BUCHANAN


Jewett
Data Point Location
Controlled Surface Resource Inclusive of Reserve / Converted to Reserve as of 12/31/23
Contour / Area Reserve
HWM Reserve
0
3000
Scale In Feet
MARSHALL MILLER &ASSOCIATES
AMR118 Bluefield, VA 01/24 ko
Map 88-1 VA Prop UB(4650)
Map 88-1
Virginia Properties
88 Strip - Upper Banner (4650)
Alpha Metallurgical Resources, LLC
Buchanan, Dickenson and Russell Counties, Virginia
Coordinate System: Virginia South State Plane NAD 83



MARSHALL MILLER & ASSOCIATES

AMR118 Bluefield, VA 01/24 ko
Map 88-2 VA Prop LB(4900)

Data Point Location

Previous Surface Mining

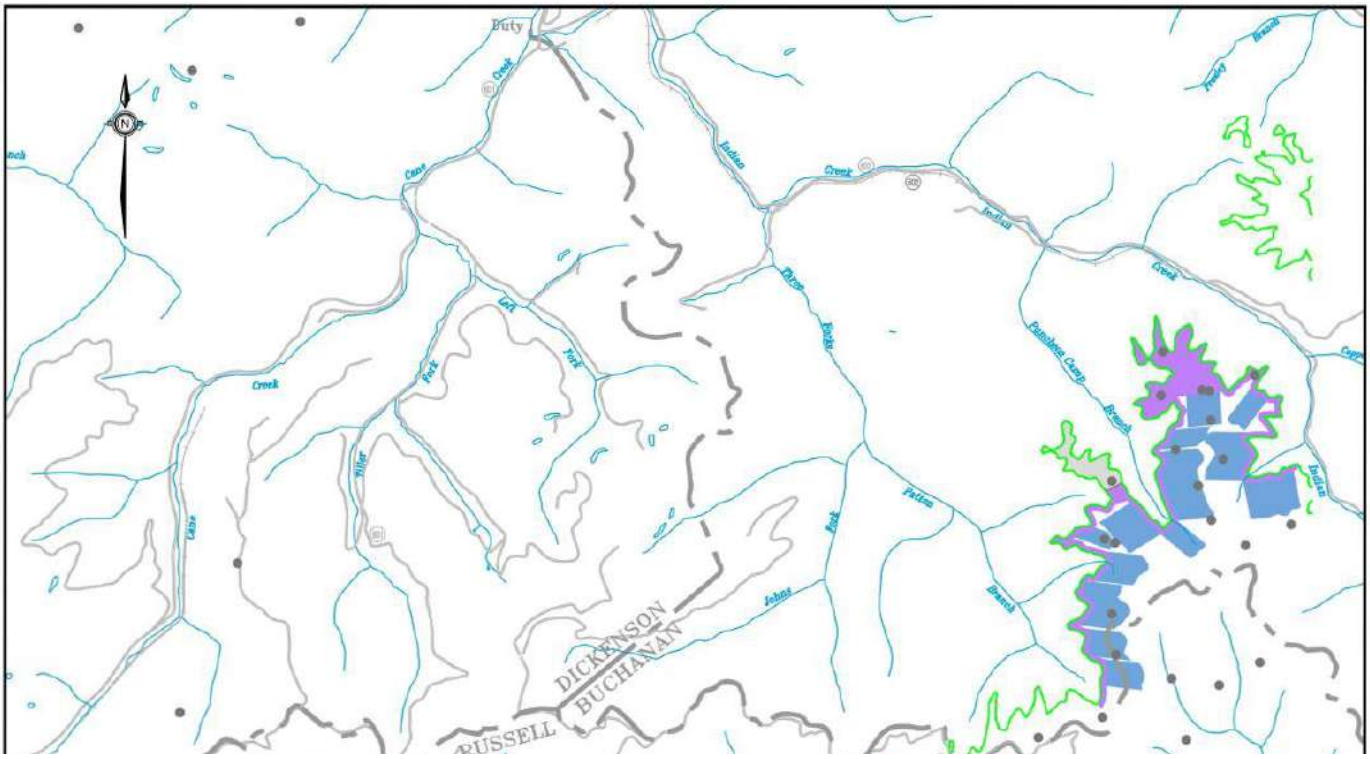
Controlled Surface Resource Inclusive of Reserve / Converted to Reserve as of 12/31/23

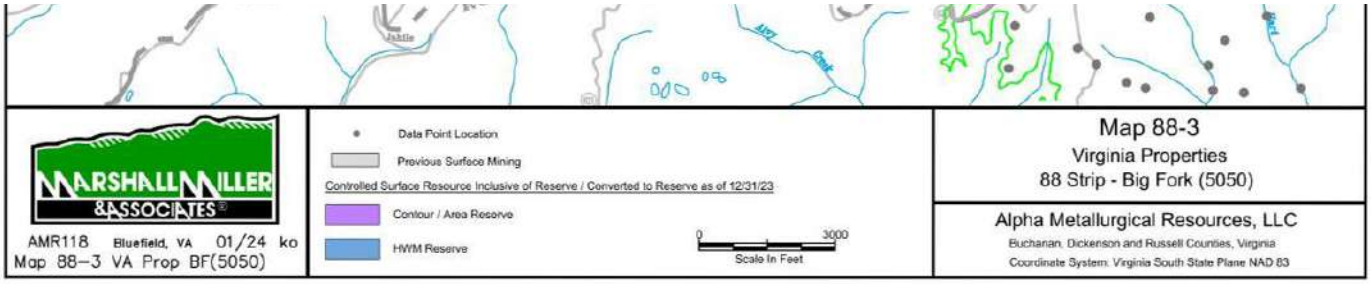
Contour / Area Reserve

0 3000
Scale In Feet

Map 88-2
Virginia Properties
88 Strip - Lower Banner (4900)

Alpha Metallurgical Resources, LLC
Buchanan, Dickenson and Russell Counties, Virginia
Coordinate System: Virginia South State Plane NAD 83





MARSHALL MILLER & ASSOCIATES

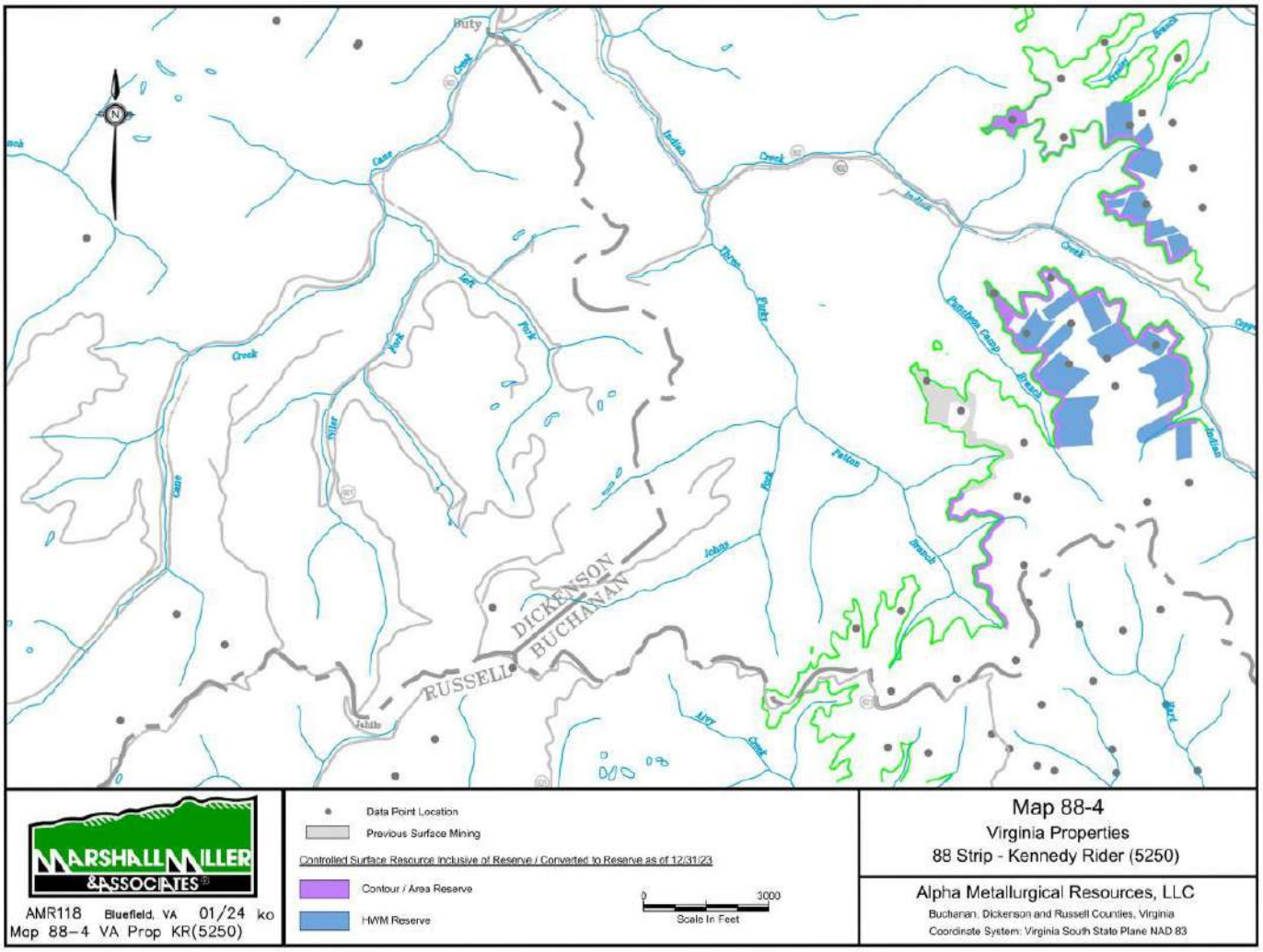
AMR118 Bluefield, VA 01/24 ko
Map 88-3 VA Prop BF(5050)

Data Point Location
Previous Surface Mining
Controlled Surface Resource Inclusive of Reserve / Converted to Reserve as of 12/31/23
Contour / Area Reserve
HWM Reserve

0 3000
Scale In Feet

Map 88-3
Virginia Properties
88 Strip - Big Fork (5050)

Alpha Metallurgical Resources, LLC
Buchanan, Dickenson and Russell Counties, Virginia
Coordinate System: Virginia South State Plane NAD 83



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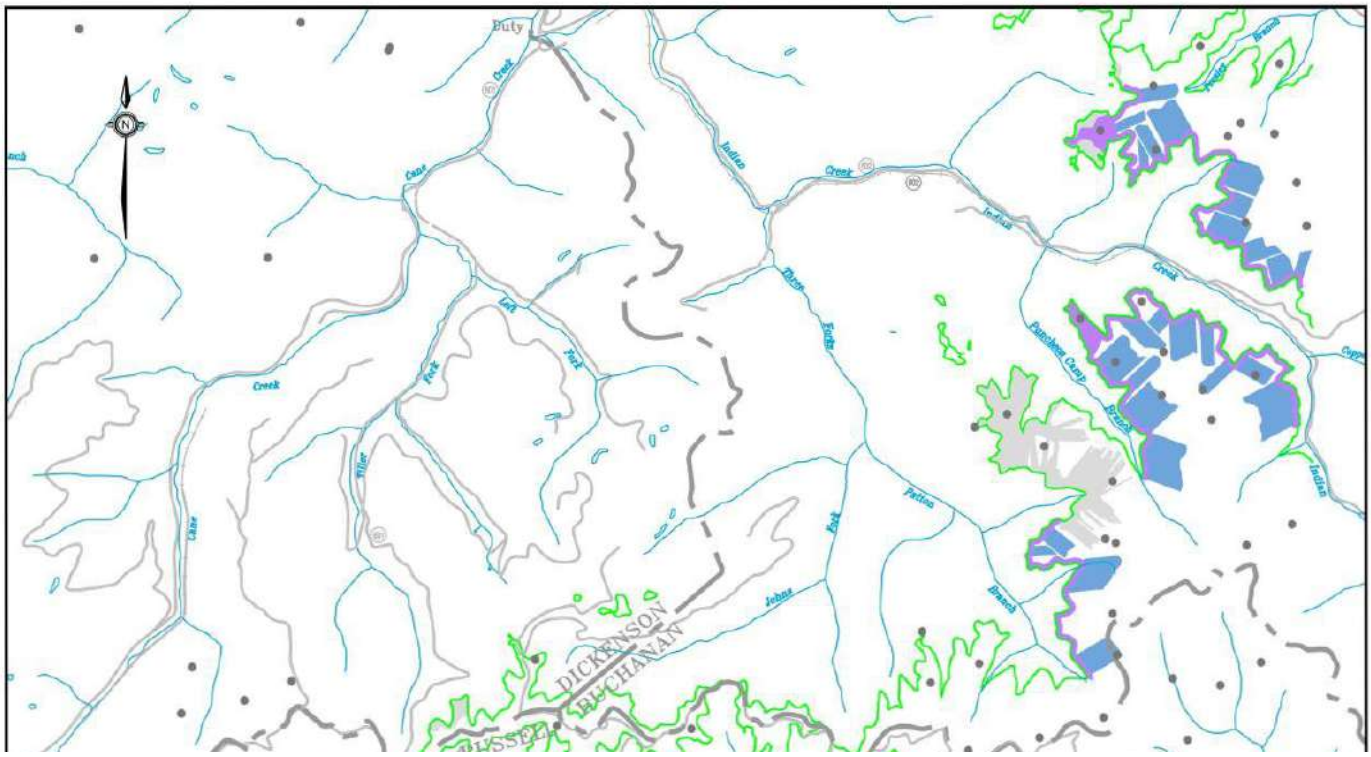
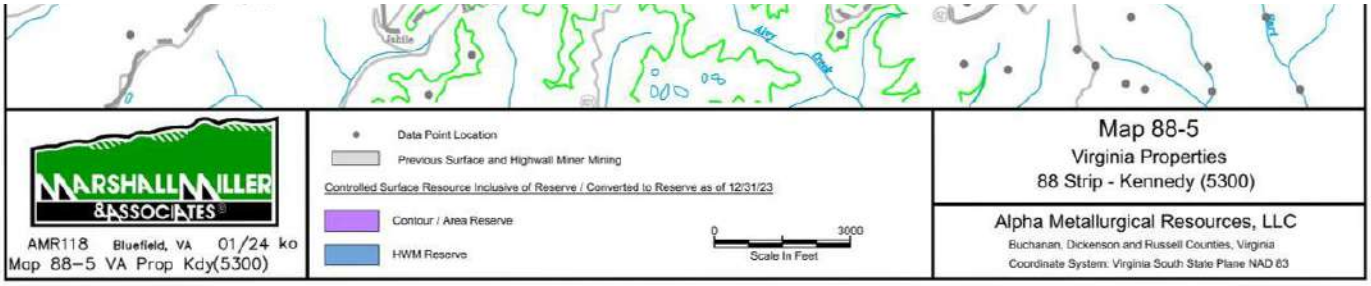
AMR118 Bluefield, VA 01/24 ko
Map 88-4 VA Prop KR(5250)

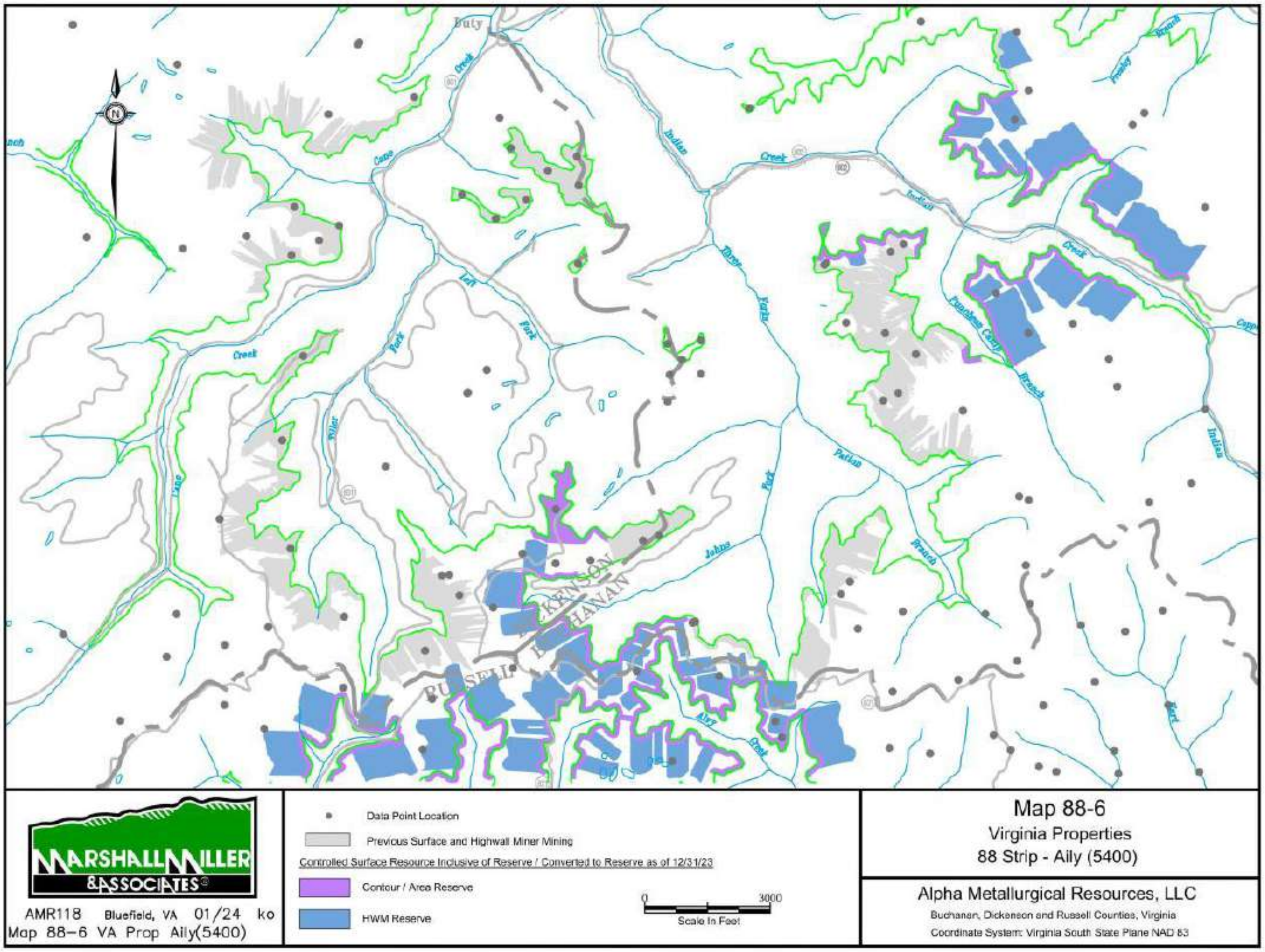
Data Point Location
Previous Surface Mining
Controlled Surface Resource Inclusive of Reserve / Converted to Reserve as of 12/31/23
Contour / Area Reserve
HWM Reserve
0 3000
Scale In Feet

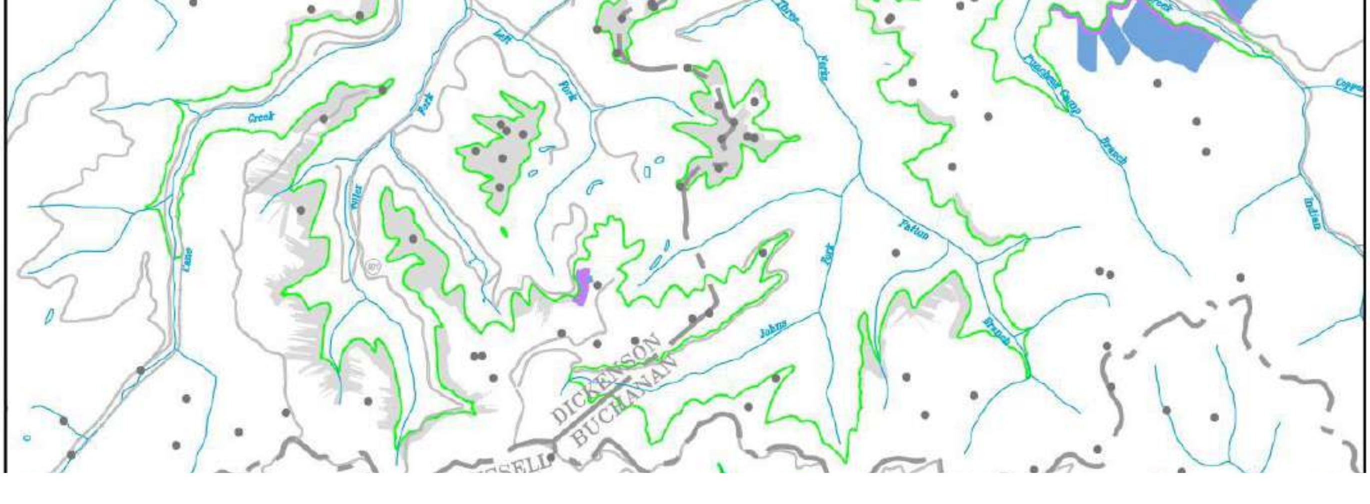
Map 88-4
Virginia Properties
88 Strip - Kennedy Rider (5250)

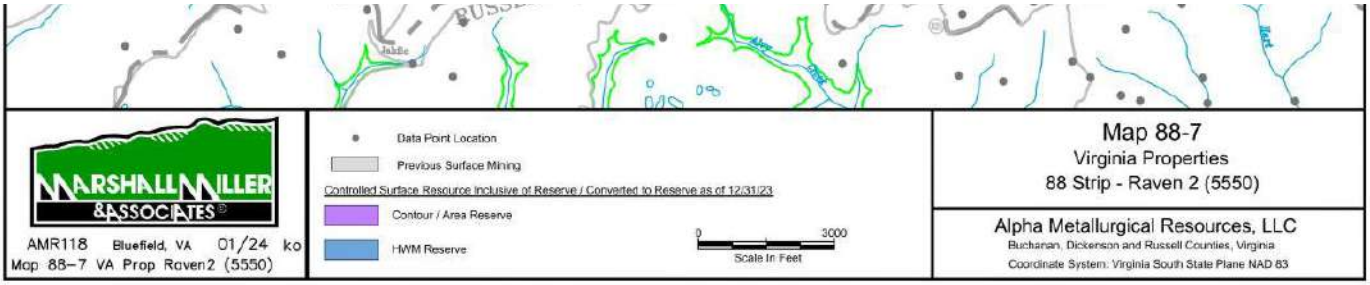
Alpha Metallurgical Resources, LLC
Buchanan, Dickerson and Russell Counties, Virginia
Coordinate System: Virginia South State Plane NAD 83

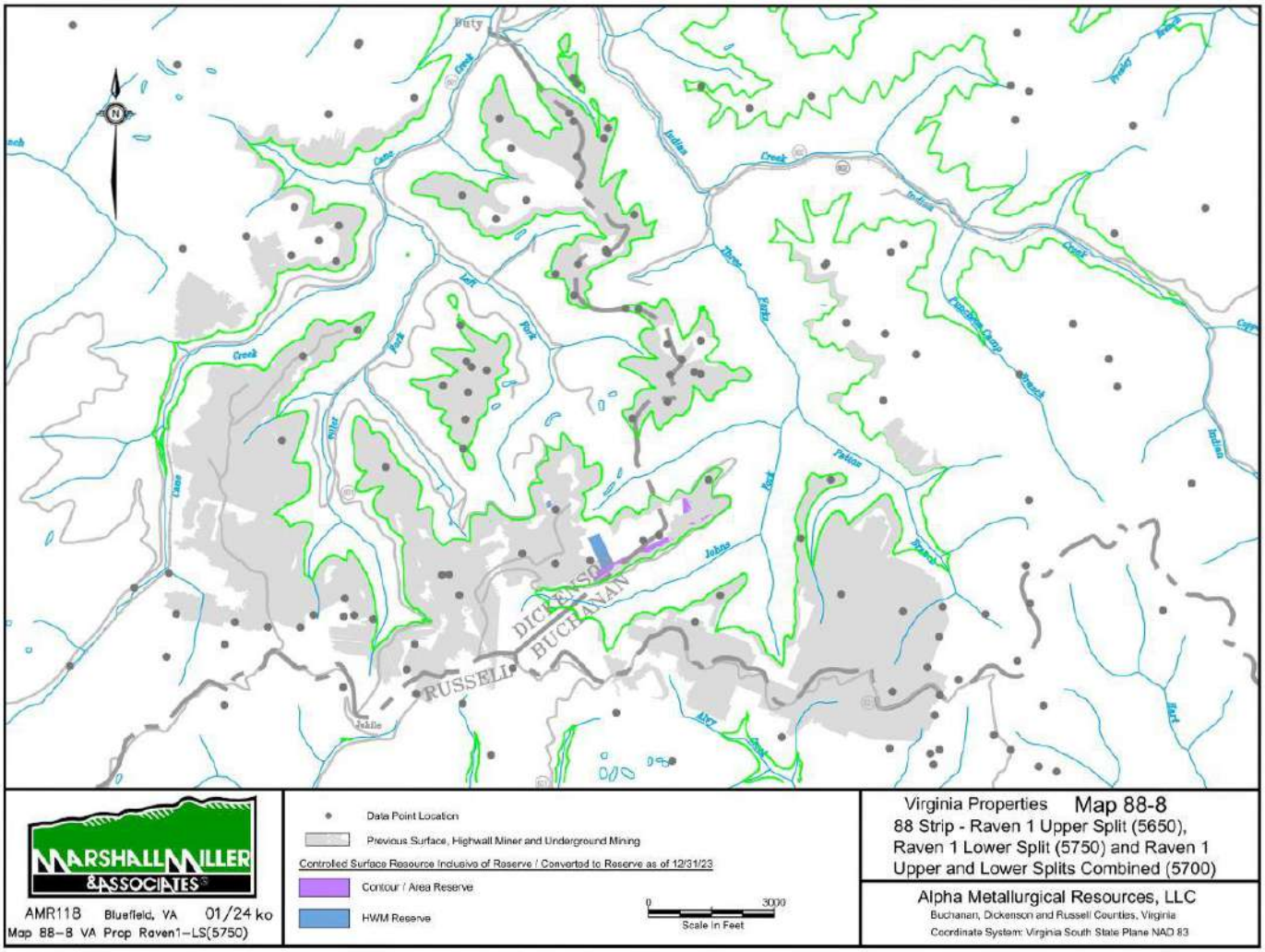



Data Point Location
Previous Surface and Highwall Miner Mining
Controlled Surface Resource Inclusive of Reserve / Converted to Reserve as of 12/31/23
Contour / Area Reserve
HWM Reserve
0
3000
Scale In Feet
MARSHALL MILLER & ASSOCIATES
AMR118 Bluefield, VA 01/24 ko
Map 88-5 VA Prop Kdy(5300)
Map 88-5
Virginia Properties
88 Strip - Kennedy (5300)
Alpha Metallurgical Resources, LLC
Buchanan, Dickenson and Russell Counties, Virginia
Coordinate System: Virginia South State Plane NAD 83


Buty
Cane
Creek
Indian
Creek
Left
Fork
Fork
Three
Forks
Johns
Patton
Fork
Branch
Poplar Camp
Branch
Aily
Creek
DICKENSON
BUCHANAN
RUSSELL
MARSHALL MILLER & ASSOCIATES
AMR118 Bluefield, VA 01/24 ko
Map 88-6 VA Prop Aily(5400)
Data Point Location
Previous Surface and Highwall Miner Mining
Controlled Surface Resource Inclusive of Reserve / Converted to Reserve as of 12/31/23
Contour / Area Reserve
HWM Reserve
0
3000
Scale In Feet
Map 88-6
Virginia Properties
88 Strip - Aily (5400)
Alpha Metallurgical Resources, LLC
Buchanan, Dickenson and Russell Counties, Virginia
Coordinate System: Virginia South State Plane NAD 83


Buty
Cane
Creek
Indian
Creek
Left
Fork
Fork
Three
Forks
Johns
Patton
Fork
Branch
Poplar Camp
Branch
DICKENSON
BUCHANAN


Data Point Location
Previous Surface Mining
Controlled Surface Resource Inclusive of Reserve / Converted to Reserve as of 12/31/23
Contour / Area Reserve
HWM Reserve
0
3000
Scale In Feet
Map 88-7
Virginia Properties
88 Strip - Raven 2 (5550)
Alpha Metallurgical Resources, LLC
Buchanan, Dickenson and Russell Counties, Virginia
Coordinate System: Virginia South State Plane NAD 83
AMR118 Bluefield, VA 01/24 ko
Map 88-7 VA Prop Raven2 (5550)



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AMR118 Bluefield, VA 01/24 ko
Map 88-8 VA Prop Raven1-LS(5750)

Data Point Location

Previous Surface, Highwall Miner and Underground Mining

Controlled Surface Resource Inclusive of Reserve / Converted to Reserve as of 12/31/23

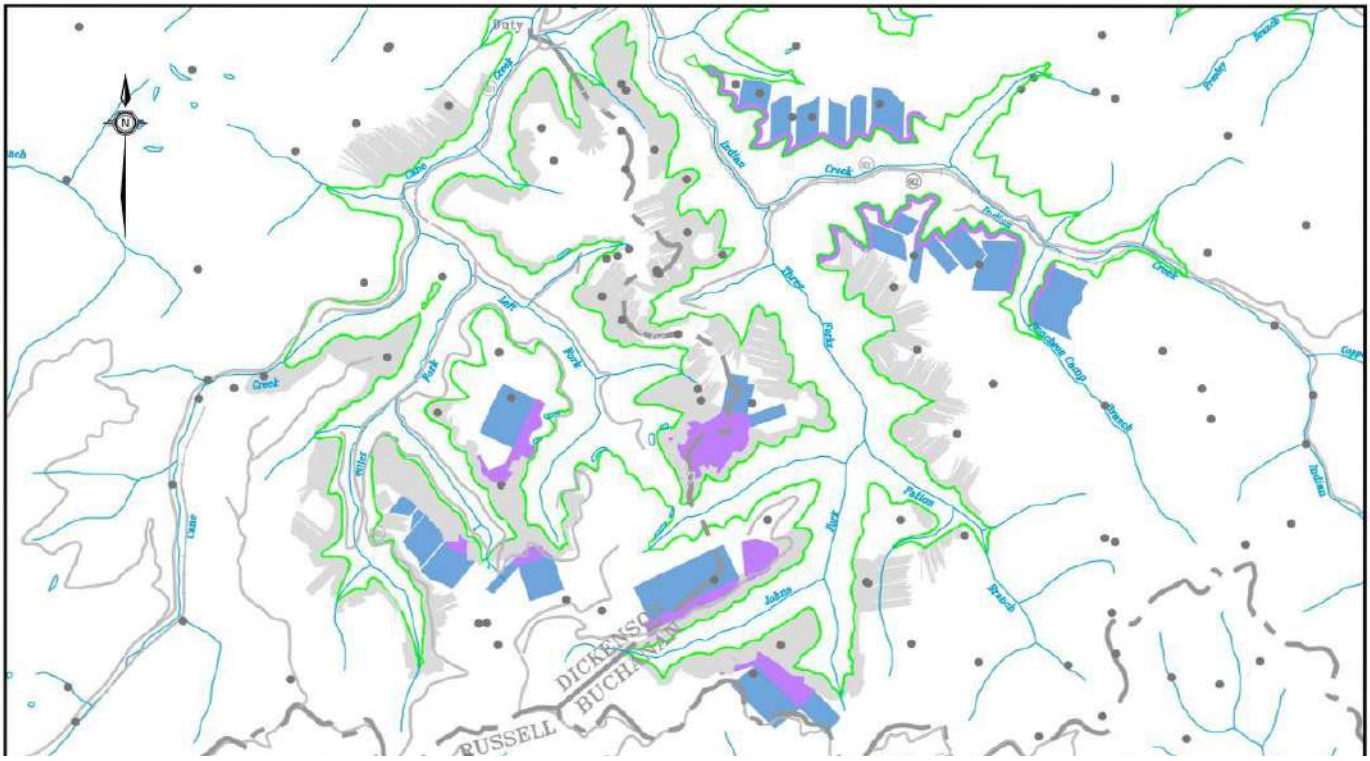
Contour / Area Reserve

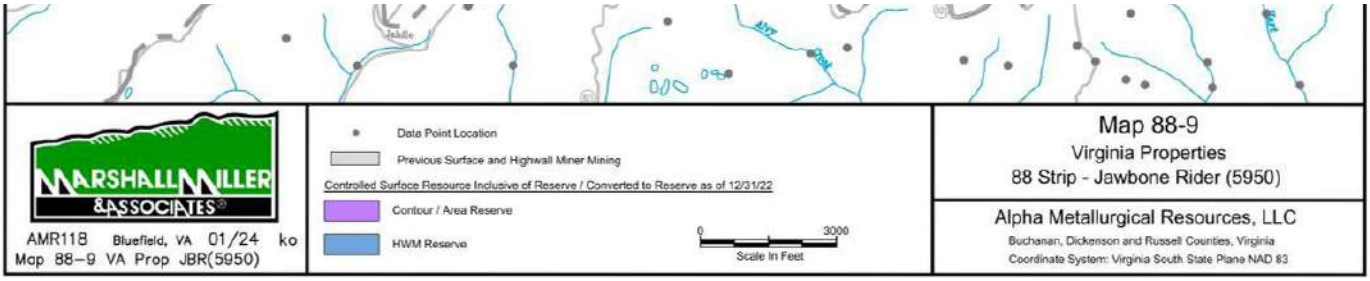
HWM Reserve

0 3000
Scale In Feet

Virginia Properties Map 88-8
88 Strip - Raven 1 Upper Split (5650), Raven 1 Lower Split (5750) and Raven 1 Upper and Lower Splits Combined (5700)

Alpha Metallurgical Resources, LLC
Buchanan, Dickenson and Russell Counties, Virginia
Coordinate System: Virginia South State Plane NAD 83





MARSHALL MILLER & ASSOCIATES

AMR118 Bluefield, VA 01/24 ko
Map 88-9 VA Prop JBR(5950)

Data Point Location

Previous Surface and Highwall Miner Mining

Controlled Surface Resource Inclusive of Reserve / Converted to Reserve as of 12/31/22

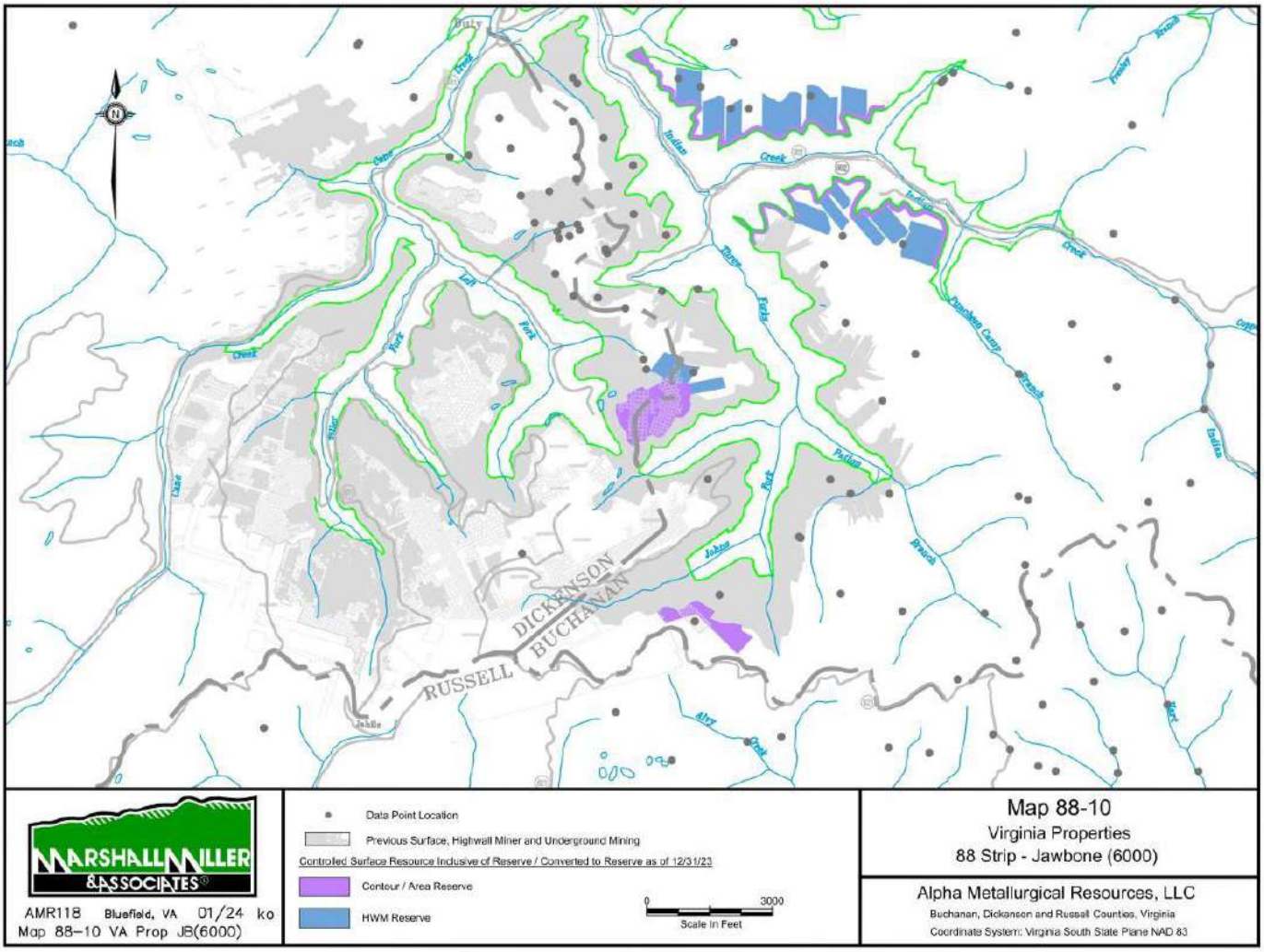
Contour / Area Reserve

HWM Reserve

0 3000
Scale In Feet

Map 88-9
Virginia Properties
88 Strip - Jawbone Rider (5950)

Alpha Metallurgical Resources, LLC
Buchanan, Dickenson and Russell Counties, Virginia
Coordinate System: Virginia South State Plane NAD 83



MARSHALL MILLER & ASSOCIATES

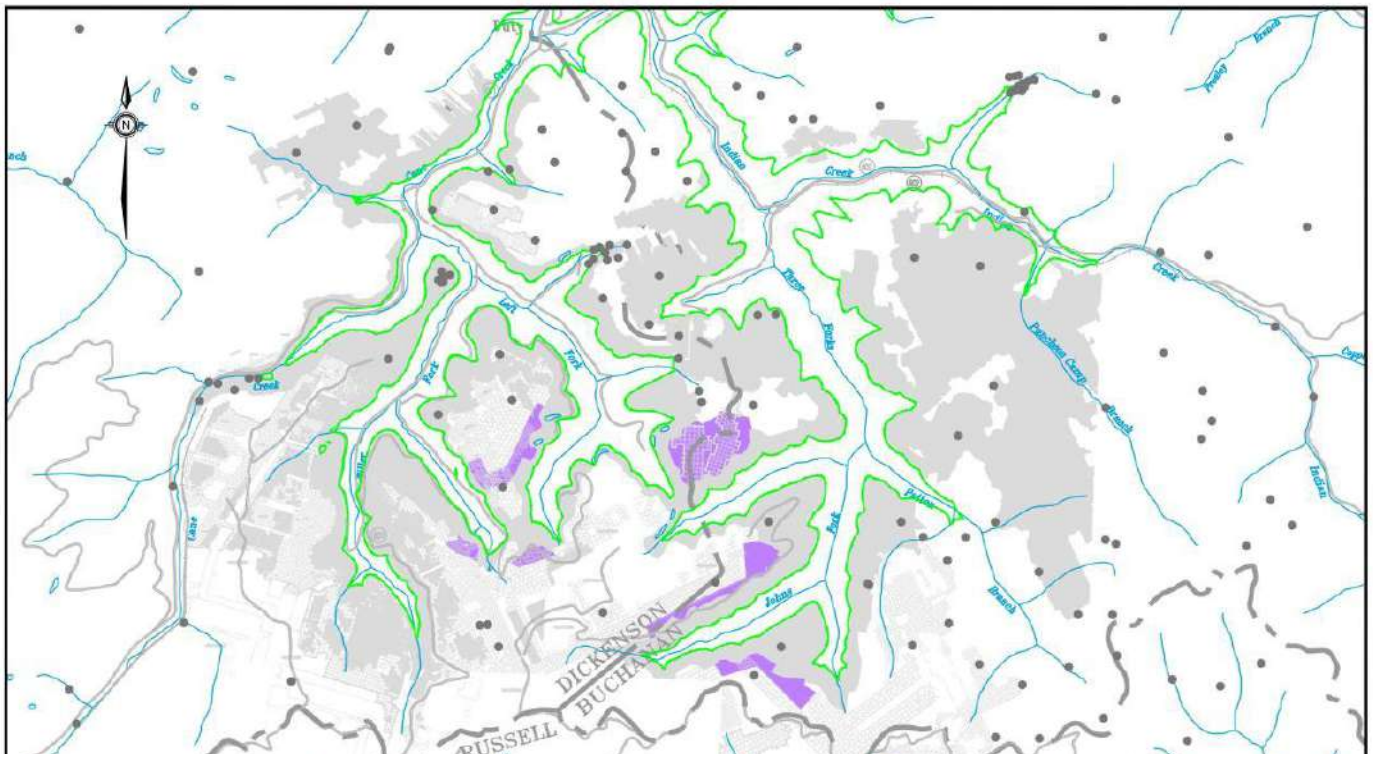
AMR118 Bluefield, VA 01/24 ko
Map 88-10 VA Prop JB(6000)

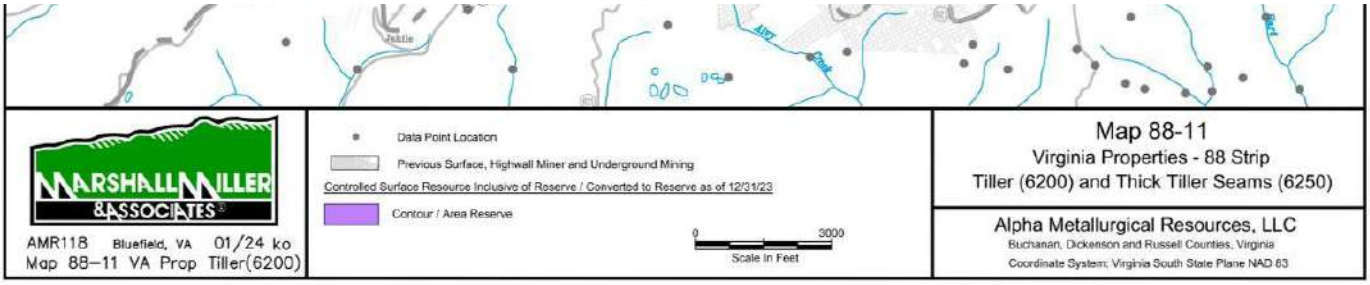
Data Point Location
Previous Surface, Highwall Miner and Underground Mining
Controlled Surface Resource Inclusive of Reserve / Converted to Reserve as of 12/31/23
Contour / Area Reserve
HWM Reserve

0 3000
Scale In Feet

Map 88-10
Virginia Properties
88 Strip - Jawbone (6000)

Alpha Metallurgical Resources, LLC
Buchanan, Dickenson and Russell Counties, Virginia
Coordinate System: Virginia South State Plane NAD 83





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AMR118 Bluefield, VA 01/24 ko
Map 88-11 VA Prop Tiller(6200)

Data Point Location

Previous Surface, Highwall Miner and Underground Mining

Controlled Surface Resource Inclusive of Reserve / Converted to Reserve as of 12/31/23

Contour / Area Reserve

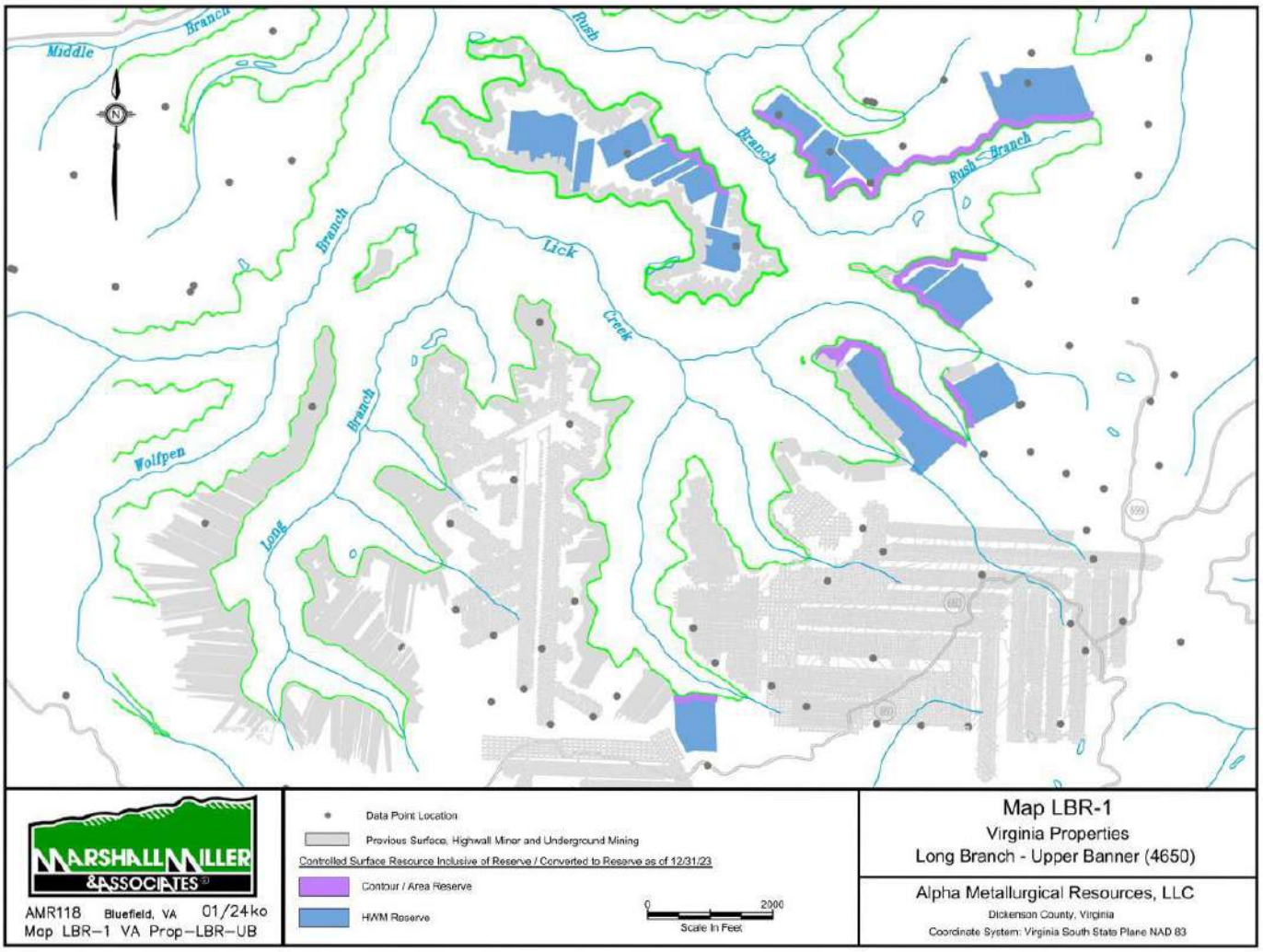
0 3000
Scale in Feet

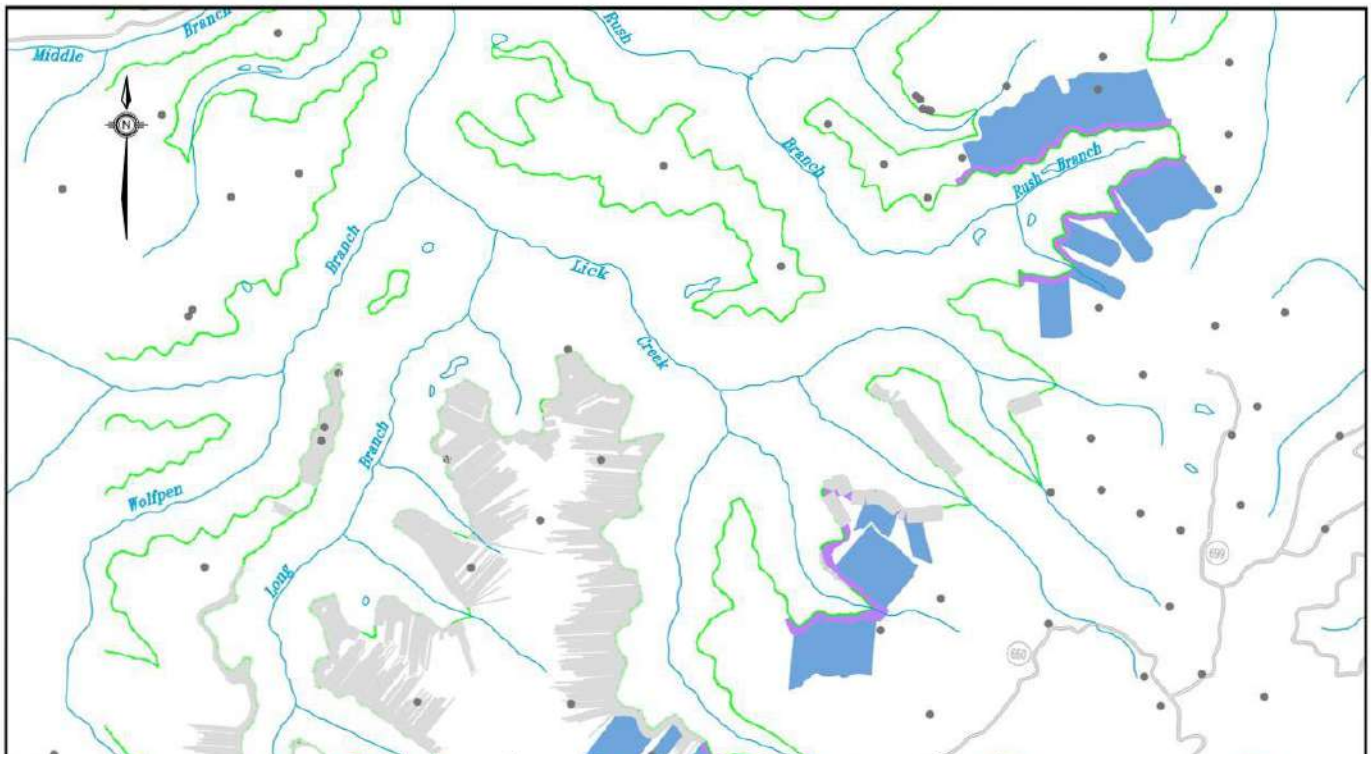
Map 88-11
Virginia Properties - 88 Strip
Tiller (6200) and Thick Tiller Seams (6250)

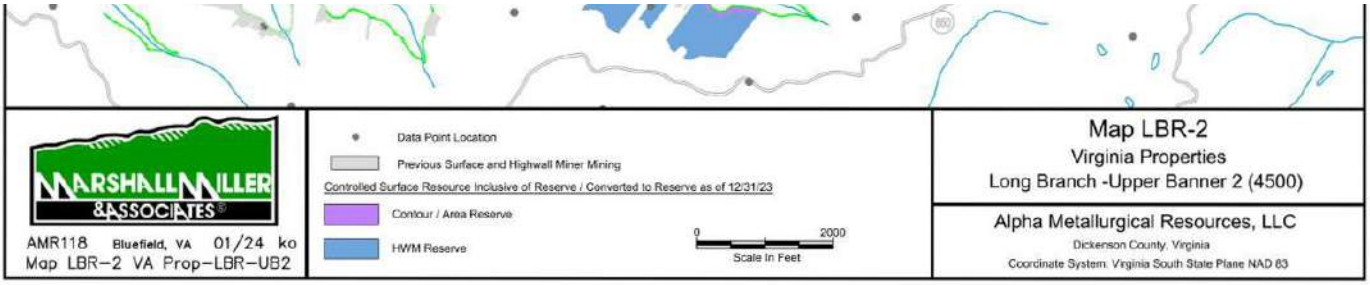
Alpha Metallurgical Resources, LLC

Buchanan, Dickenson and Russell Counties, Virginia

Coordinate System: Virginia South State Plane NAD 83


Middle
Branch
Rush
Branch
Rush Branch
Lick
Creek
Branch
Wolfpen
Branch
Long
Data Point Location
Previous Surface, Highwall Miner and Underground Mining
Controlled Surface Resource Inclusive of Reserve / Converted to Reserve as of 12/31/23
Contour / Area Reserve
HWM Reserve
0
2000
Scale In Feet
MARSHALL MILLER & ASSOCIATES
AMR118 Bluefield, VA 01/24ko
Map LBR-1 VA Prop-LBR-UB
Map LBR-1
Virginia Properties
Long Branch - Upper Banner (4650)
Alpha Metallurgical Resources, LLC
Dickenson County, Virginia
Coordinate System: Virginia South State Plane NAD 83


Middle
Branch
Rush
Branch
Rush Branch
Lick
Creek
Branch
Wolfpen
Branch
Long



MARSHALL MILLER & ASSOCIATES

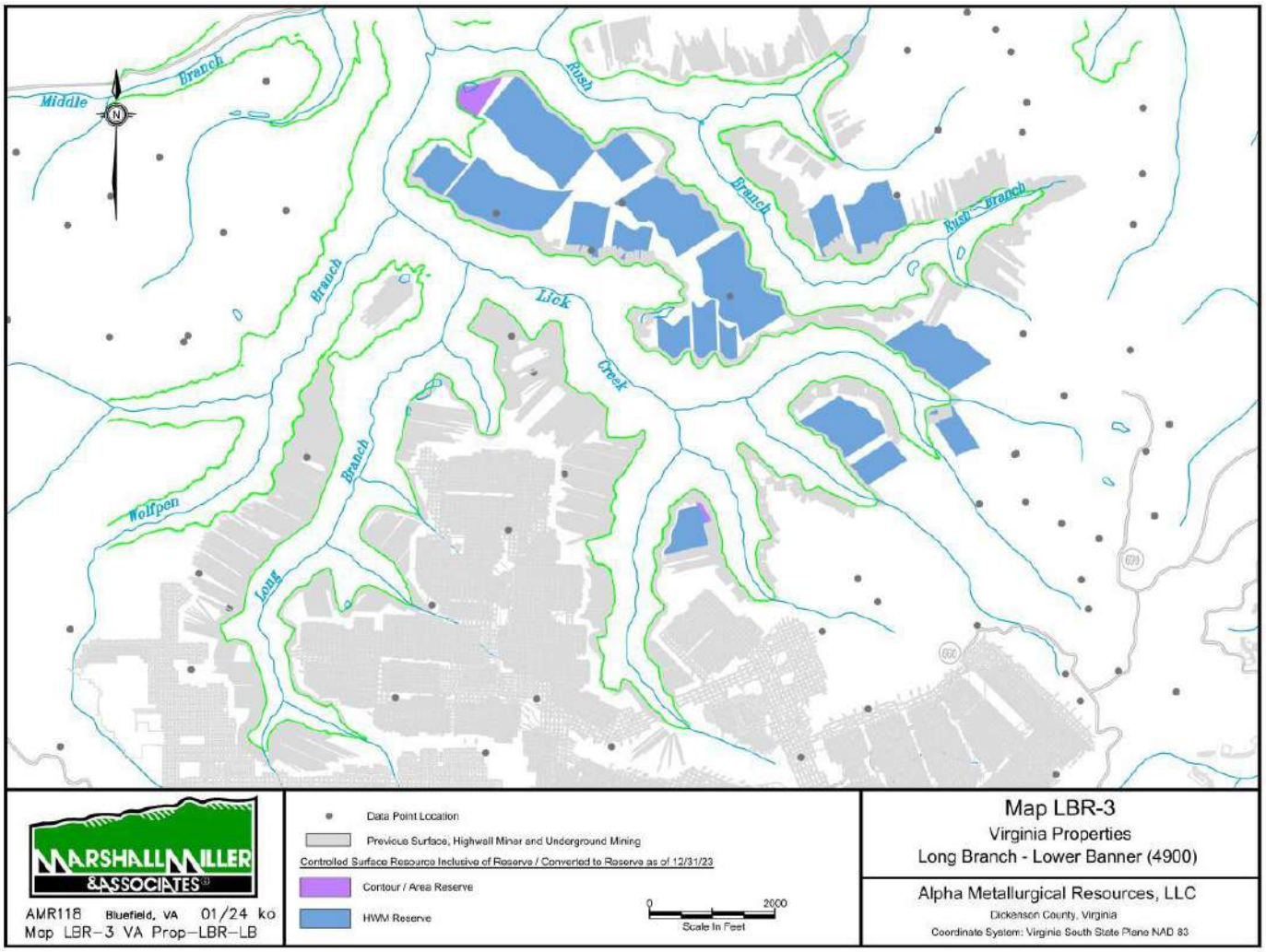
AMR118 Bluefield, VA 01/24 ko
Map LBR-2 VA Prop-LBR-UB2

Data Point Location
Previous Surface and Highwall Miner Mining
Controlled Surface Resource Inclusive of Reserve / Converted to Reserve as of 12/31/23
Contour / Area Reserve
HWM Reserve

0 2000
Scale In Feet

Map LBR-2
Virginia Properties
Long Branch -Upper Banner 2 (4500)

Alpha Metallurgical Resources, LLC
Dickenson County, Virginia
Coordinate System: Virginia South State Plane NAD 83


Middle
Branch
Rush
Branch
Rush Branch
Branch
Lick
Creek
Branch
Wolfpen
Long
609
Data Point Location
Previous Surface, Highwall Miner and Underground Mining
Controlled Surface Resource Inclusive of Reserve / Converted to Reserve as of 12/31/23
Contour / Area Reserve
HWM Reserve
0
2000
Scale In Feet
MARSHALL MILLER & ASSOCIATES
AMR118 Bluefield, VA 01/24 ko
Map LBR-3 VA Prop-LBR-LB
Map LBR-3
Virginia Properties
Long Branch - Lower Banner (4900)
Alpha Metallurgical Resources, LLC
Dickenson County, Virginia
Coordinate System: Virginia South State Plane NAD 83