United States
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-Q

☒ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended March 31, 2022
or

☐ **TRANSITION REPORT PURSUANT TO 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from to

Commission File Number: 001-37822

Advanced Emissions Solutions, Inc.
(Exact name of registrant as specified in its charter)

Delaware	**27-5472457**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
8051 E. Maplewood Ave, Suite 210, Greenwood Village, CO	**80111**
(Address of principal executive offices)	**(Zip Code)**

(720) 598-3500
(Registrant's telephone number, including area code)

Not Applicable
(Former name, former address and former fiscal year, if changed since last report)

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☐	Accelerated filer	☐
Non-accelerated filer	☒	Smaller reporting company	☒
		Emerging growth company	☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

Yes ☐ No ☒

Securities registered pursuant to Section 12(b) of the Act:

Class	**Trading Symbol**	**Name of each exchange on which registered**
Common stock, par value $0.001 per share	ADES	Nasdaq Global Market

As of May 4, 2022, there were 19,096,217 outstanding shares of Advanced Emissions Solutions, Inc. common stock, par value $0.001 per share.

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Part I. – FINANCIAL INFORMATION

Item 1. Consolidated Financial Statements

Advanced Emissions Solutions, Inc. and Subsidiaries
Condensed Consolidated Balance Sheets
(Unaudited)

(in thousands, except share data)	As of March 31, 2022	As of December 31, 2021
ASSETS		
Current assets:		
Cash and cash equivalents	$ 79,807	$ 78,753
Receivables, net	13,008	12,622
Receivables, related parties	—	2,481
Inventories, net	10,280	7,850
Prepaid expenses and other assets	7,387	6,661
Total current assets	110,482	108,367
Restricted cash, long-term	10,000	10,027
Property, plant and equipment, net of accumulated depreciation of $8,885 and $7,684, respectively	30,310	30,171
Intangible assets, net	1,155	1,237
Equity method investments	711	2,391
Other long-term assets, net	28,913	33,243
Total Assets	$ 181,571	$ 185,436
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 9,328	$ 10,009
Accrued payroll and related liabilities	3,959	6,477
Current portion of finance lease obligations	957	1,011
Other current liabilities	4,552	5,124
Total current liabilities	18,796	22,621
Long-term finance lease obligations, net of current portion	2,955	3,152
Other long-term liabilities	15,470	12,362
Total Liabilities	37,221	38,135
Commitments and contingencies (Note 7)		
Stockholders' equity:		
Preferred stock: par value of $.001 per share, 50,000,000 shares authorized, none issued	—	—
Common stock: par value of $.001 per share, 100,000,000 shares authorized, 23,724,218 and 23,460,212 shares issued, and 19,106,072 and 18,842,066 shares outstanding at March 31, 2022 and December 31, 2021, respectively	24	23
Treasury stock, at cost: 4,618,146 and 4,618,146 shares as of March 31, 2022 and December 31, 2021, respectively	(47,692)	(47,692)
Additional paid-in capital	102,187	102,106
Retained earnings	89,831	92,864
Total Stockholders' Equity	144,350	147,301
Total Liabilities and Stockholders' Equity	$ 181,571	$ 185,436

See Notes to the Condensed Consolidated Financial Statements.

Advanced Emissions Solutions, Inc. and Subsidiaries
Condensed Consolidated Statements of Operations
(Unaudited)

(in thousands, except per share data)	Three Months Ended March 31, 2022		Three Months Ended March 31, 2021	
Revenues:				
Consumables	$	26,402	$	18,541
License royalties, related party		—		4,066
Total revenues		26,402		22,607
Operating expenses:				
Consumables cost of revenue, exclusive of depreciation and amortization		21,507		13,984
Payroll and benefits		2,626		2,469
Legal and professional fees		2,172		1,803
General and administrative		1,926		1,915
Depreciation, amortization, depletion and accretion		1,506		2,106
Total operating expenses		29,737		22,277
Operating (loss) income		(3,335)		330
Other income (expense):				
Earnings from equity method investments		833		18,312
Interest expense		(86)		(837)
Other		(445)		421
Total other income		302		17,896
(Loss) income before income tax expense		(3,033)		18,226
Income tax expense		—		4,489
Net (loss) income	$	(3,033)	$	13,737
(Loss) earnings per common share (Note 1):				
Basic	$	(0.17)	$	0.76
Diluted	$	(0.17)	$	0.75
Weighted-average number of common shares outstanding:				
Basic		18,344		18,166
Diluted		18,344		18,274

See Notes to the Condensed Consolidated Financial Statements.

Advanced Emissions Solutions, Inc. and Subsidiaries
Condensed Consolidated Statements of Changes in Stockholders' Equity
(Unaudited)

(Amounts in thousands, except share data)	Common Stock Shares	Common Stock Amount	Treasury Stock Shares	Treasury Stock Amount	Additional Paid-in Capital	Retained Earnings	Total Stockholders' Equity
Balances, January 1, 2022	23,460,212	$ 23	(4,618,146)	$ (47,692)	$ 102,106	$ 92,864	$ 147,301
Stock-based compensation	323,742	1	—	—	463	—	464
Repurchase of common shares to satisfy minimum tax withholdings	(59,736)	—	—	—	(382)	—	(382)
Net loss	—	—	—	—	—	(3,033)	(3,033)
Balances, March 31, 2022	23,724,218	$ 24	(4,618,146)	$ (47,692)	$ 102,187	$ 89,831	$ 144,350

(Amounts in thousands, except share data)	Common Stock Shares	Common Stock Amount	Treasury Stock Shares	Treasury Stock Amount	Additional Paid-in Capital	Retained Earnings	Total Stockholders' Equity
Balances, January 1, 2021	23,141,284	$ 23	(4,618,146)	$ (47,692)	$ 100,425	$ 32,454	$ 85,210
Stock-based compensation	381,339	—	—	—	421	—	421
Repurchase of common shares to satisfy minimum tax withholdings	(40,975)	—	—	—	(216)	—	(216)
Net income	—	—	—	—	—	13,737	13,737
Balances, March 31, 2021	23,481,648	$ 23	(4,618,146)	$ (47,692)	$ 100,630	$ 46,191	$ 99,152

See Notes to the Condensed Consolidated Financial Statements.

Advanced Emissions Solutions, Inc. and Subsidiaries
Condensed Consolidated Statements of Cash Flows
(Unaudited)

	Three Months Ended March 31,	
(in thousands)	**2022**	**2021**
Cash flows from operating activities		
Net (loss) income	$ (3,033)	$ 13,737
Adjustments to reconcile net (loss) income to net cash provided by operating activities:		
Deferred income tax expense	—	3,051
Depreciation, amortization, depletion and accretion	1,506	2,106
Operating lease expense	663	379
Amortization of debt discount and debt issuance costs	—	591
Stock-based compensation expense	464	421
Earnings from equity method investments	(833)	(18,312)
Other non-cash items, net	550	(273)
Changes in operating assets and liabilities:		
Receivables and related party receivables	2,095	2,147
Prepaid expenses and other assets	(725)	1,178
Inventories, net	(2,359)	1,548
Other long-term assets, net	3,116	(1,817)
Accounts payable	(692)	(706)
Accrued payroll and related liabilities	(2,518)	(1,043)
Other current liabilities	(1,231)	1,305
Operating lease liabilities	2,680	2,104
Other long-term liabilities	910	(2,113)
Distributions from equity method investees, return on investment	1,501	17,644
Net cash provided by operating activities	2,094	21,947
Cash flows from investing activities		
Distributions from equity method investees in excess of cumulative earnings	1,013	5,607
Acquisition of property, plant, equipment, and intangible assets, net	(1,359)	(1,321)
Mine development costs	(93)	(248)
Proceeds from sale of property and equipment	—	848
Net cash (used in) provided by investing activities	(439)	4,886
Cash flows from financing activities		
Principal payments on term loan	—	(10,000)
Principal payments on finance lease obligations	(226)	(315)
Dividends paid	(20)	—
Repurchase of common shares to satisfy tax withholdings	(382)	(216)
Net cash used in financing activities	(628)	(10,531)
Increase in Cash and Cash Equivalents and Restricted Cash	1,027	16,302
Cash and Cash Equivalents and Restricted Cash, beginning of period	88,780	35,932
Cash and Cash Equivalents and Restricted Cash, end of period	$ 89,807	$ 52,234
Supplemental disclosure of non-cash investing and financing activities:		
Acquisition of property and equipment through accounts payable	$ 10	$ 765

See Notes to the Condensed Consolidated Financial Statements.

Note 1 - Basis of Presentation

Nature of Operations

Advanced Emissions Solutions, Inc. ("ADES" or the "Company") is a Delaware corporation with its principal office located in Greenwood Village, Colorado and operations located in Louisiana. The Company is principally engaged in the sale of consumable air and water treatment solutions including activated carbon ("AC") and chemical technologies. The Company's proprietary technologies in the advanced purification technologies ("APT") market enable customers to reduce air and water contaminants, including mercury and other pollutants, to maximize utilization levels and to improve operating efficiencies to meet the challenges of existing and pending air quality and water regulations. The Company manufactures and sells AC used to capture and remove contaminants for coal-fired power plants and industrial and water treatment markets. The Company also owns an associated lignite mine ("Five Forks Mine") which supplies the primary raw material for manufacturing AC.

Through December 31, 2021, the Company generated substantial earnings from its equity ownership in Tinuum Group, LLC ("Tinuum Group") and Tinuum Services, LLC ("Tinuum Services"), both of which are unconsolidated entities. Both Tinuum Group and Tinuum Services ceased material operations effective December 31, 2021 as a result of the expiration of a tax credit program under Internal Revenue Code Section 45 - Production Tax Credit (the "Section 45 Tax Credit Program"). Tinuum Group provided reduction of mercury and nitrogen oxide ("NOx") emissions at select coal-fired power generators through the production and sale of refined coal ("RC") that qualified for tax credits under the Section 45 Tax Credit Program ("Section 45 tax credits"). The Company also earned royalties for technologies that were licensed to Tinuum Group and used at certain RC facilities to enhance combustion and reduce emissions of NOx and mercury from coal burned to generate electrical power. Tinuum Services operated and maintained the RC facilities under operating and maintenance agreements with Tinuum Group and owners or lessees of the RC facilities. Presently, both Tinuum Group and Tinuum Services continue to wind-down their operations, and the Company expects to receive final cash distributions, which are not expected to be significant, from these entities during 2022.

Basis of Presentation

The accompanying Condensed Consolidated Financial Statements of ADES are unaudited and have been prepared in conformity with accounting principles generally accepted in the United States ("U.S. GAAP") and with Article 10 of Regulation S-X of the Securities and Exchange Commission. In compliance with those instructions, certain information and footnote disclosures normally included in annual consolidated financial statements prepared in accordance with U.S. GAAP have been condensed or omitted.

The unaudited Condensed Consolidated Financial Statements of ADES in this quarterly report ("Quarterly Report") are presented on a consolidated basis and include ADES and its wholly-owned subsidiaries (collectively, the "Company"). Also included within the unaudited Condensed Consolidated Financial Statements are the Company's unconsolidated equity investments: Tinuum Group and Tinuum Services, which are accounted for under the equity method of accounting, and Highview Enterprises Limited (the "Highview Investment"), which is accounted for in accordance with U.S. GAAP applicable to equity investments that do not qualify for the equity method of accounting.

Results of operations and cash flows for the interim periods are not necessarily indicative of the results that may be expected for the entire year. All significant intercompany transactions and accounts were eliminated in consolidation for all periods presented in this Quarterly Report.

In the opinion of management, these Condensed Consolidated Financial Statements include all normal and recurring adjustments considered necessary for a fair presentation of the results of operations, financial position, stockholders' equity and cash flows for the interim periods presented. These Condensed Consolidated Financial Statements should be read in conjunction with the Company's Annual Report on Form 10-K for the year ended December 31, 2021 (the "2021 Form 10-K"). Significant accounting policies disclosed therein have not changed.

Earnings (Loss) Per Share

Basic earnings (loss) per share is computed using the weighted-average number of shares of common stock outstanding during the reporting period. Diluted earnings (loss) per share is computed in a manner consistent with that of basic earnings per share, while considering other potentially dilutive securities. For the three months ended March 31, 2022 and March 31, 2021, potentially dilutive securities consist of unvested restricted stock awards ("RSA's") and contingent performance stock units ("PSU's").

The following table sets forth the calculations of basic and diluted (loss) earnings per share:

	Three Months Ended March 31,	
(in thousands, except per share amounts)	2022	2021
Net (loss) income	$ (3,033)	$ 13,737
Basic weighted-average common shares outstanding	18,344	18,166
Add: dilutive effect of equity instruments	—	108
Diluted weighted-average shares outstanding	18,344	18,274
(Loss) earnings per share - basic	$ (0.17)	$ 0.76
(Loss) earnings per share - diluted	$ (0.17)	$ 0.75

For the three months ended March 31, 2022 and 2021, potentially dilutive securities convertible to 0.3 million and 0.1 million shares of common stock, respectively, were outstanding but were not included in the calculation of diluted net (loss) income per share because the effect would have been anti-dilutive.

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. There have been no changes in the Company’s critical accounting estimates from those that were disclosed in the 2021 Form 10-K. Actual results could differ from these estimates.

Risks and Uncertainties

The loss of earnings and cash distributions of both Tinuum Group and Tinuum Services will continue to have a material adverse impact on the Company’s financial position, results of operations and cash flows. For 2022, the Company is solely dependent on operations of its APT business and its cash and cash equivalents on hand to provide liquidity over the near and long term. The Company's revenues, sales volumes, earnings and cash flows are significantly affected by prices of competing power generation sources such as natural gas and renewable energy. During periods of low natural gas prices, natural gas provides a competitive alternative to coal-fired power generation and therefore, coal consumption may be reduced, which in turn reduces the demand for the Company's products. However, during periods of higher prices for competing power generation sources, there is an increase in coal consumption and thus demand for the Company's products also increases. In addition, coal consumption and demand for the Company's products are affected by the demand for electricity, which is higher in the warmer and colder months of the year. Abnormal temperatures during the summer and winter months may significantly affect coal consumption and impurities within various municipalities' water sources, and thus impact the demand for the Company's products.

Reclassifications

Certain balances have been reclassified from the prior year to conform to the current year presentation. Such reclassifications had no effect on the Company’s results of operations or financial position in any of the periods presented.

Segments

Operating segments are defined as components of an enterprise about which separate financial information is available that is evaluated regularly by a company's chief operating decision maker ("CODM"), or a decision-making group, in deciding how to allocate resources and in assessing financial performance. As of March 31, 2022, the Company's CODM was the Company's Chief Executive Officer, and the Company concluded that it has one reportable segment, Advanced Purification Technologies ("APT").

Given the wind-down of Tinuum Group and Tinuum Services and the impact on the Company's financial statements, the Company determined the historical RC segment no longer met the qualitative or quantitative criteria to be considered a reporting segment under U.S. GAAP. As a result, including the method in which the CODM allocates resources, beginning January 1, 2022, the Company determined that it had one reportable segment, and therefore has removed its segment disclosures for this Quarterly Report.

New Accounting Standards

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments - Credit Losses (Topic 326) Measurement of Credit Losses on Financial Instruments* ("ASU 2016-13"). The main objective of ASU 2016-13 is to provide financial statement users with more decision-useful information about the expected credit losses on financial instruments and other commitments to extend credit held by a reporting entity at each reporting date. To achieve this objective, the amendments in ASU 2016-13 replace the incurred loss impairment methodology in current U.S. GAAP with a methodology that reflects expected credit losses and requires consideration of a broader range of reasonable and supportable information to form credit loss estimates. ASU 2016-13 is effective for "smaller reporting companies" (as defined by the Securities and Exchange Commission) for fiscal years beginning after December 15, 2022, including interim periods within those years, and must be adopted under a modified retrospective method approach. The Company intends to adopt ASU 2016-13 effective January 1, 2023 and is currently evaluating the provisions of this guidance and assessing the impact on its financial statements and disclosures. The Company does not believe this standard will have a material impact on its financial statements and disclosures.

Note 2 - Customer Supply Agreement

On September 30, 2020, the Company and Norit Activated Carbon - Americas (f/k/a Cabot Norit Americas, Inc.), ("Norit") entered into a supply agreement (the "Supply Agreement") pursuant to which the Company agreed to sell and deliver to Norit, and Norit agreed to purchase and accept from the Company certain lignite-based AC products ("Furnace Products"). The term of the Supply Agreement is for 15 years with 10-year renewal terms that are automatic unless either party provides three years prior notice of intention not to renew before the end of any term.

Under the Supply Agreement, Norit also reimburses the Company for certain capital expenditures incurred by the Company that are necessary to manufacture the Furnace Products. Reimbursements are comprised of revenues earned from capital expenditures incurred that will benefit both the Company and Norit (referred to as "Shared Capital") and revenues earned from capital expenditures incurred that will benefit Norit exclusively (referred to as "Specific Capital"). In the event that Norit ceases to make purchases under the Supply Agreement, Norit is obligated to pay the balance of any outstanding payments for Specific Capital.

Further, under the terms of the Supply Agreement, Norit was obligated to pay the Reclamation Reimbursement (defined below) to the Company for $10.2 million of the Reclamation Costs, inclusive of interest. The Company recorded the Norit Receivable for the Reclamation Reimbursement at its estimated fair value, which was measured using a discounted cash flows valuation model that considered the estimated credit risk associated with the obligor's (Norit's) future performance, which the Company estimated was approximately 1.5%.

On February 25, 2022, the Company received $10.6 million in cash from Norit (the "Norit Payment") as a result of a change in control provision in the Supply Agreement (the "Change in Control"), which occurred as a result of the sale of Norit by its parent, Cabot Corporation. Under the Change in Control, the Company received from Norit full payment of all amounts outstanding under the Reclamation Reimbursement, payment of all unbilled amounts related to Specific Capital for expenditures incurred through February 28, 2022 and payment of $0.8 million related to additional costs due to the third party operator of Marshall Mine (the "Norit Reclamation Costs"). Under the Reclamation Contract, the Company is obligated to remit payment for the Norit Reclamation Costs to the third-party operator of Marshall Mine within a specified timeframe, and such payment was remitted in March 2022. The Change in Control did not impact any other provisions of the Supply Agreement.

As of February 25, 2022, the carrying value of the Reclamation Reimbursement was $9.0 million, which was reflective of the principal balance, adjusted for accretion of interest and payments made to date. Under the Change in Control, the Company received $8.5 million in cash for full payment of the outstanding Reclamation Reimbursement. The Company concluded that the cash proceeds received represented an early payment of a receivable based on a change in contractual terms and accounted for the difference between the cash proceeds received and the carrying amount of the Reclamation Reimbursement of $0.5 million as a loss, which is included in the "Other Income (Expense)" line item in the Condensed Consolidated Statement of Operations for the three months ended March 31, 2022.

Also, under the Change in Control, the Company received $1.3 million in advance of revenues to be recognized in future periods related to Specific Capital and recorded this amount as deferred revenue, which will be recognized as revenues ratably over the remaining contractual term as stipulated in the Supply Agreement.

Note 3 - Acquisition of Marshall Mine

Concurrently with the execution of the Supply Agreement, on September 30, 2020, the Company entered into an agreement to purchase from Norit 100% of the membership interests in Marshall Mine, LLC (the "Marshall Mine Acquisition") for a nominal cash purchase price. Marshall Mine, LLC owns a lignite mine located outside of Marshall, Texas (the "Marshall Mine"). The Company concluded that the Marshall Mine did not have any remaining economic reserves and independently determined to immediately commence activities to shutter it. Accordingly, on September 30, 2020, the Company and a third party entered into a reclamation contract (the "Reclamation Contract") for full reclamation of the Marshall Mine, which is expected to be completed by 2030. Under the terms of the Supply Agreement, Norit was obligated to reimburse the Company for $10.2 million (the "Reclamation Reimbursement") for a portion of the total costs incurred under the Reclamation Contract (the "Reclamation Costs"), which was payable semi-annually over 13 years and inclusive of interest. As discussed in Note 2, on February 25, 2022 as part of the Change in Control, Norit fully paid the outstanding amount owed under the Reclamation Reimbursement and has no further liability related to the Marshall Mine.

The Company accounted for the Marshall Mine Acquisition as an asset acquisition, and it included the acquisition of certain assets and assumption of certain liabilities as well as the incurrence of an obligation for the Reclamation Costs (the "Marshall Mine ARO"). As of March 31, 2022 and December 31, 2021, the carrying value of the Marshall Mine ARO was $4.7 million and $6.3 million, respectively.

As the Marshall Mine Acquisition represented a transaction with a customer of net assets acquired and liabilities assumed from Norit, the Company accounted for the excess of the fair value of liabilities assumed over assets acquired as upfront consideration transferred to a customer, Norit (the "Upfront Customer Consideration"). The amount of the Upfront Customer Consideration was also recognized net of the Reclamation Reimbursements. The total Upfront Customer Consideration is being amortized as a reduction to revenues on a straight-line basis over the expected 15-year contractual period of the Supply Agreement. Amortization of the Upfront Customer Consideration is approximately $0.5 million per year.

The Company also evaluated Marshall Mine, LLC as a potential variable interest entity ("VIE") and determined that it was a VIE and the Company was its primary beneficiary. Therefore, the Company consolidates Marshall Mine, LLC's assets and liabilities in its consolidated financial statements.

The following tables summarize the assets and liabilities of Marshall Mine, LLC and their classification in the Company's Condensed Consolidated Balance Sheets:

	As of		
(in thousands)	**March 31, 2022**	**December 31, 2021**	**Balance sheet component**
Cash	$ 169	$ 914	Current assets
Norit receivable, short-term	—	2,056	Current assets
Property and equipment, net	1,861	1,968	Non-current assets
Norit receivable, long-term	—	6,846	Non-current assets
Restricted cash	10,000	10,027	Non-current assets
Upfront customer consideration	6,855	6,982	Non-current assets
	$ 18,885	$ 28,793	
Accounts payable and accrued liabilities	$ 105	$ 1,065	Current liabilities
Asset retirement obligation, short-term	29	1,775	Current liabilities
Asset retirement obligation, long-term	4,623	4,546	Non-current liabilities
	$ 4,757	$ 7,386	

Note 4 - Leases

The Company's operating and finance lease right-of-use ("ROU") assets and liabilities as of March 31, 2022 and December 31, 2021 consisted of the following items (in thousands):

	As of	
Leases	**March 31, 2022**	**December 31, 2021**
Operating Leases		
Operating lease right-of-use assets, net of accumulated amortization (1)	$ 8,754	$ 6,000
Operating lease obligations, current	$ 2,797	$ 2,157
Long-term operating lease obligations	6,218	4,178
Total operating lease obligation	$ 9,015	$ 6,335
Finance Leases		
Finance lease right-of-use assets, net of accumulated amortization (2)	$ 1,602	$ 1,743
Finance lease obligations, current	$ 957	$ 1,011
Long-term finance lease obligations	2,955	3,152
Total finance lease obligations	$ 3,912	$ 4,163

(1) Operating lease ROU assets are reported net of accumulated amortization of $2.3 million and $1.9 million as of March 31, 2022 and December 31, 2021, respectively.

(2) Finance lease ROU assets are reported net of accumulated amortization of $1.3 million and $1.1 million as of March 31, 2022 and December 31, 2021, respectively.

Finance leases

ROU assets under finance leases are included in the "Property, plant and equipment" line item in the Condensed Consolidated Balance Sheets as of March 31, 2022 and December 31, 2021. Interest expense related to finance lease obligations and amortization of ROU assets under finance leases are included in the "Interest expense" and "Depreciation, amortization, depletion and accretion" line items, respectively, in the Condensed Consolidated Statements of Operations for the three months ended March 31, 2022 and 2021.

Operating leases

ROU assets under operating leases and operating lease liabilities are included in the "Other long-term assets" and "Other current liabilities" and "Other long-term liabilities" line items, respectively, in the Condensed Consolidated Balance Sheets as of March 31, 2022 and December 31, 2021.

Lease expense for operating leases for the three months ended March 31, 2022 was $1.1 million, of which $1.0 million is included in the "Consumables - cost of revenue, exclusive of depreciation and amortization" line item and $0.1 million is included in the "General and administrative" line item in the Condensed Consolidated Statements of Operations. Lease expense for operating leases for the three months ended March 31, 2021 was $1.0 million, of which $0.9 million is included in the "Consumables - cost of revenue, exclusive of depreciation and amortization" line item and $0.1 million is included in "General and administrative" line item in the Condensed Consolidated Statements of Operations.

Lease financial information as of and for the three months ended March 31, 2022 and 2021 is provided in the following table:

	Three Months Ended March 31,	
(in thousands)	2022	2021
Finance lease cost:		
Amortization of right-of-use assets	$ 141	$ 174
Interest on lease liabilities	78	79
Operating lease cost	806	459
Short-term lease cost	243	567
Variable lease cost (1)	9	9
Total lease cost	$ 1,277	$ 1,288
Other Information:		
Cash paid for amounts included in the measurement of lease liabilities:		
Operating cash flows for finance leases	$ 78	$ 79
Operating cash flows for operating leases	$ 738	$ 575
Financing cash flows for finance leases	$ 226	$ 315
Right-of-use assets obtained in exchange for new operating lease liabilities	$ 3,418	$ 2,679
Weighted-average remaining lease term - finance leases	2.7 years	3.3 years
Weighted-average remaining lease term - operating leases	4.4 years	1.6 years
Weighted-average discount rate - finance leases	6.29 %	6.18 %
Weighted-average discount rate - operating leases	5.99 %	8.46 %

(1) Primarily includes common area maintenance, property taxes and insurance payable to lessors.

Note 5 - Revenues

Trade receivables represent an unconditional right to consideration in exchange for goods or services transferred to a customer. The Company invoices its customers in accordance with the terms of the contract. Credit terms are generally net 30 from the date of invoice. The timing between the satisfaction of performance obligations and when payment is due from the customer is generally not significant. The Company records allowances for doubtful trade receivables when it is probable that the balances will not be collected.

Receivables, net

The following table shows the components of the Company's Receivables, net:

	As of	
(in thousands)	March 31, 2022	December 31, 2021
Trade receivables, net	$ 12,987	$ 10,476
Other receivables	21	—
Norit Receivable - current	—	2,146
Total Receivable, net	$ 13,008	$ 12,622

Disaggregation of Revenue

For the three months ended March 31, 2022 and 2021, all performance obligations related to revenues recognized were satisfied at a point in time. For the three months ended March 31, 2022 and 2021, approximately 11% and 19%, respectively, of Consumables revenue was generated in Canada, and all other revenues were generated in the U.S.

Note 6 - Inventories, net

The following table summarizes the Company's inventories recorded at the lower of average cost or net realizable value as of March 31, 2022 and December 31, 2021:

	As of	
(in thousands)	March 31, 2022	December 31, 2021
Product inventory, net	$ 5,706	$ 4,901
Raw material inventory	4,574	2,949
	$ 10,280	$ 7,850

Note 7 - Commitments and Contingencies

Legal Proceedings

The Company is from time to time subject to various pending or threatened legal actions and proceedings, including those that arise in the ordinary course of its business. Such matters are subject to many uncertainties and outcomes, the financial impacts of which are not predictable with assurance and that may not be known for extended periods of time. The Company records a liability in its consolidated financial statements for costs related to claims, settlements, and judgments where management has assessed that a loss is probable and an amount can be reasonably estimated. There were no significant legal proceedings as of March 31, 2022.

Surety Bonds and Restricted Cash

As the owner of the Marshall Mine, the Company is required to post surety bonds to ensure performance of its reclamation activities under the Reclamation Contract. As of March 31, 2022 and December 31, 2021, the Company had posted a $16.6 million surety bond, which will remain in place until the Marshall Mine is fully reclaimed, and may be further reduced in amount from time to time as the Company progresses with its reclamation activities. The Company is also required to post collateral of $10.0 million for the surety bonds insuring the performance requirements for the reclamation of Marshall Mine. As of March 31, 2022 and December 31, 2021, the restricted cash is reported as long-term restricted cash on the Condensed Consolidated Balance Sheets.

As of March 31, 2022 and December 31, 2021, the Company had an outstanding surety bond of $7.5 million related to performance requirements under reclamation contracts associated with the Five Forks Mine.

Other Commitments and Contingencies

The Company has certain limited obligations contingent upon future events in connection with the activities of Tinuum Group. The Company, NexGen Refined Coal, LLC ("NexGen") and two entities affiliated with NexGen have provided an affiliate of the Goldman Sachs Group, Inc. with limited guaranties (the "Tinuum Group Party Guaranties") related to certain losses it may suffer as a result of inaccuracies or breach of representations and covenants. The Company also is a party to a contribution agreement with NexGen under which any party called upon to pay on a Tinuum Group Party Guaranty is entitled to receive contributions from the other party equal to 50% of the amount paid. The Company has not recorded a liability or expense provision related to this contingent obligation as it believes that it is not probable that a loss will occur with respect to the Tinuum Group Party Guaranties.

Note 8 - Supplemental Financial Information

Supplemental Balance Sheet Information

The following table summarizes the components of Prepaid expenses and other assets and Other long-term assets, net as presented in the Condensed Consolidated Balance Sheets:

	As of	
(in thousands)	**March 31, 2022**	**December 31, 2021**
Prepaid expenses and other assets:		
Prepaid expenses	$ 3,102	$ 2,571
Prepaid income taxes and income tax refunds	2,899	2,782
Other	1,386	1,308
	$ 7,387	$ 6,661
Other long-term assets, net:		
Right of use assets, operating leases, net	$ 8,754	$ 6,000
Upfront Customer Consideration	6,855	6,982
Mine development costs, net	5,340	5,330
Spare parts, net	4,243	4,598
Mine reclamation asset, net	1,717	1,742
Highview Investment	552	552
Other	1,452	1,193
Norit Receivable	—	6,846
	$ 28,913	$ 33,243

Spare parts include critical spares required to support plant operations. Parts and supply costs are determined using the lower of cost or estimated replacement cost. Parts are recorded as maintenance expenses in the period in which they are consumed or are capitalized if applicable.

Mine development costs include acquisition costs, the cost of other development work and mitigation costs related to the Five Forks Mine and are depleted over the estimated life of the related mine reserves. The Company performs an evaluation of the recoverability of the carrying value of mine development costs to determine if facts and circumstances indicate that their carrying value may be impaired and if any adjustment is warranted. There were no indicators of impairment as of March 31, 2022. Mine reclamation asset, net represents an asset retirement obligation ("ARO") asset related to the Five Forks Mine and is depreciated over the estimated life of the Five Forks Mine.

The following table details the components of Other current liabilities and Other long-term liabilities as presented in the Condensed Consolidated Balance Sheets:

(in thousands)	As of March 31, 2022	As of December 31, 2021
Other current liabilities:		
Current portion of operating lease obligations	$ 2,797	$ 2,157
Current portion of mine reclamation liability	29	1,775
Income and other taxes payable	888	807
Deferred revenue	268	—
Other	570	385
	$ 4,552	$ 5,124
Other long-term liabilities:		
Mine reclamation liabilities	$ 8,317	$ 8,184
Operating lease obligations, long-term	6,218	4,178
Deferred revenue, long-term	935	—
	$ 15,470	$ 12,362

The Mine reclamation liability related to the Five Forks Mine is included in Other long-term liabilities. The Mine reclamation liability related to Marshall Mine is included in Other current liabilities and Other long-term liabilities. The Mine reclamation liabilities represent AROs and activity for the three months ended March 31, 2022 and year ended December 31, 2021 was as follows:

(in thousands)	As of March 31, 2022	As of December 31, 2021
Asset retirement obligations, beginning of period	$ 9,959	$ 21,447
Accretion	157	1,102
Liabilities settled	(1,770)	(10,010)
Changes due to scope and timing of reclamation (1)	—	(2,580)
Asset retirement obligations, end of period	8,346	9,959
Less current portion	29	1,775
Asset retirement obligations, long-term	$ 8,317	$ 8,184

(1) As of June 30, 2021 and December 31, 2021, the Company revised its estimate of future obligations owed for the reclamation of the Marshall Mine primarily based on scope reductions related to future reclamation requirements. As a result, the Company reduced the Marshall Mine ARO by $2.7 million and recorded a corresponding gain on change in estimate of $2.7 million for the year ended December 31, 2021.

Note 9 - Equity Method Investments

Tinuum Group, LLC

As of March 31, 2022 and December 31, 2021, the Company's ownership interest in Tinuum Group was 42.5%. Tinuum Group supplied technology equipment and technical services at select coal-fired generators, but its primary purpose was to put into operation facilities that produce and sell RC that lowers emissions and also qualifies for Section 45 tax credits. The Company concluded that Tinuum Group was a VIE, but the Company does not have the power to direct the activities that most significantly impact Tinuum Group's economic performance, as the voting partners of Tinuum Group have identical voting rights, equity control interests and board control interests, and therefore power is shared. Accordingly, the Company has accounted for its investment in Tinuum Group under the equity method of accounting since inception.

The following table summarizes the results of operations of Tinuum Group:

	Three Months Ended March 31,	
(in thousands)	**2022**	**2021**
Gross profit	$ 964	$ 2,675
Operating, selling, general and administrative expenses	3,197	13,802
Loss from operations	(2,233)	(11,127)
Other income (expenses), net	501	853
(Income) loss attributable to noncontrolling interest	(294)	35,578
Net (loss) income available to members	$ (2,026)	$ 25,304
ADES equity earnings from Tinuum Group	$ 1,012	$ 16,362

For the three months ended March 31, 2022 and 2021, the Company recognized earnings from Tinuum Group's net (loss)/income available to members that were different from its pro-rata share of Tinuum Group's net (loss)/income available to members for those periods, as cash distributions for the three months ended March 31, 2022 and 2021 exceeded the carrying value of the Tinuum Group equity investment.

The following tables present the Company's investment balance, equity earnings and cash distributions in excess of the investment balance, if any, for the three months ended March 31, 2022 and 2021 (*in thousands*):

Description	Date(s)	Investment balance	ADES equity earnings	Cash distributions	Memorandum Account: Cash distributions and equity earnings in (excess) of investment balance
Beginning balance	12/31/2021	$ —	$ —	$ —	$ (21,779)
ADES proportionate share of loss from Tinuum Group	First Quarter	(861)	(861)	—	—
Recovery of prior cash distributions in excess of investment balance (prior to cash distributions)	First Quarter	(21,779)	(21,779)	—	21,779
Cash distributions from Tinuum Group	First Quarter	(1,012)	—	1,012	—
Adjustment for current year cash distributions in excess of investment balance	First Quarter	23,652	23,652	—	(23,652)
Total investment balance, equity earnings and cash distributions	3/31/2022	$ —	$ 1,012	$ 1,012	$ (23,652)

Description	Date(s)	Investment balance	ADES equity earnings	Cash distributions	Memorandum Account: Cash distributions and equity earnings in (excess) of investment balance
Beginning balance	12/31/2020	$ 3,387	$ —	$ —	$ —
ADES proportionate share of income from Tinuum Group	First Quarter	10,755	10,755	—	—
Cash distributions from Tinuum Group	First Quarter	(19,749)	—	19,749	—
Adjustment for current year cash distributions in excess of investment balance	First Quarter	5,607	5,607	—	(5,607)
Total investment balance, equity earnings and cash distributions	3/31/2021	$ —	$ 16,362	$ 19,749	$ (5,607)

Tinuum Services, LLC

The Company has a 50% voting and economic interest in Tinuum Services as of March 31, 2022 and December 31, 2021. The Company determined that Tinuum Services was not a VIE and further evaluated it for consolidation under the voting interest model. Because the Company does not own greater than 50% of the outstanding voting shares, either directly or indirectly, it has accounted for its investment in Tinuum Services under the equity method of accounting since inception. As of March 31, 2022 and December 31, 2021, the Company’s investment in Tinuum Services was $0.7 million and $2.4 million, respectively.

The following table summarizes the results of operations of Tinuum Services:

	Three Months Ended March 31,	
(in thousands)	**2022**	**2021**
Gross profit (loss)	$ 968	$ (18,522)
Operating, selling, general and administrative expenses	2,545	54,366
Loss from operations	(1,577)	(72,888)
Other income (expenses), net	894	(427)
Loss attributable to noncontrolling interest	323	77,215
Net (loss) income	$ (360)	$ 3,900
ADES equity (loss) earnings from Tinuum Services	$ (180)	$ 1,950

Included in the Consolidated Statements of Operations of Tinuum Services for the three months ended March 31, 2022 and 2021 were losses/earnings attributable to noncontrolling interests of Tinuum Services' VIE entities, which were eliminated in the calculations of Tinuum Services' net income attributable to the Company's interest.

The following table details the carrying value of the Company's respective equity method investments included in the Equity method investments line item on the Condensed Consolidated Balance Sheets and indicates the Company's maximum exposure to loss:

	As of	
(in thousands)	**March 31, 2022**	**December 31, 2021**
Equity method investment in Tinuum Services	$ 711	$ 2,391
Equity method investment in Tinuum Group	—	—
Total equity method investments	$ 711	$ 2,391

The following table details the components of the Company's respective equity method investments included in the "Earnings from equity method investments" line item on the Condensed Consolidated Statements of Operations:

	Three Months Ended March 31,	
(in thousands)	**2022**	**2021**
Earnings from Tinuum Group	$ 1,012	$ 16,362
(Loss) earnings from Tinuum Services	(180)	1,950
Earnings from other	1	—
Earnings from equity method investments	$ 833	$ 18,312

The following table details the components of the cash distributions from the Company's respective equity method investments included as a component of cash flows from operating activities and investing activities in the Condensed Consolidated Statements of Cash Flows. Distributions from equity method investees are reported in the Condensed Consolidated Statements of Cash Flows as "Distributions from equity method investees, return on investment" as a component of cash flows from operations until such time as the carrying value in an equity method investee company is reduced to zero. Thereafter, such distributions are reported as "Distributions from equity method investees in excess of cumulative earnings" as a component of cash flows from investing activities.

	Three Months Ended March 31,	
(in thousands)	**2022**	**2021**
Distributions from equity method investees, return on investment		
Tinuum Services	$ 1,501	$ 3,502
Tinuum Group	—	14,142
	$ 1,501	$ 17,644
Distributions from equity method investees in excess of investment basis		
Tinuum Group	$ 1,012	$ 5,607
Other	1	—
	$ 1,013	$ 5,607

Note 10 - Stockholders' Equity

Stock Repurchase Programs

In November 2018, the Company's Board of Directors (the "Board") authorized the Company to purchase up to $20.0 million of its outstanding common stock under a stock repurchase program (the "Stock Repurchase Program"), which was to remain in effect until December 31, 2019 unless otherwise modified by the Board. In November 2019, the Board authorized an incremental $7.1 million to the Stock Repurchase Program and provided that it will remain in effect until all amounts are utilized or it is otherwise modified by the Board.

As of March 31, 2022, the Company had $7.0 million remaining under the Stock Repurchase Program.

Tax Asset Protection Plan

U.S. federal income tax rules, and Section 382 of the Internal Revenue Code in particular, could substantially limit the use of net operating losses and tax credits if the Company experiences an "ownership change" (as defined in the Internal Revenue Code). In general, an ownership change occurs if there is a cumulative change in the ownership of the Company by "5 percent stockholders" that exceeds 50 percentage points over a rolling three-year period.

On May 5, 2017, the Board approved the declaration of a dividend of rights to purchase Series B Junior Participating Preferred Stock for each outstanding share of common stock as part of a tax asset protection plan (the "TAPP") designed to protect the Company’s ability to utilize its net operating losses and tax credits. The TAPP is intended to act as a deterrent to any person acquiring beneficial ownership of 4.99% or more of the Company’s outstanding common stock.

On March 15, 2022, the Board approved the Fifth Amendment to the TAPP (the "Fifth Amendment") that amends the TAPP, as previously amended by the First, Second, Third and Fourth Amendments that were approved the Board on April 6, 2018, April 5, 2019, April 9, 2020 and April 9, 2021, respectively. The Fifth Amendment amends the definition of "Final Expiration Date" under the TAPP to extend the duration of the TAPP and makes associated changes in connection therewith. Pursuant to the

Fifth Amendment, the Final Expiration Date shall be the close of business on the earlier of (i) December 31, 2023 or (ii) December 31, 2022 if stockholder approval of the Fifth Amendment has not been obtained prior to such date.

Note 11 - Stock-Based Compensation

The Company grants equity-based awards to employees, non-employee directors and consultants that may include, but are not limited to, RSA's, PSU's, restricted stock units and stock options. Stock-based compensation expense related to manufacturing employees and administrative employees is included within the "Cost of revenue" and "Payroll and benefits" line items, respectively, in the Condensed Consolidated Statements of Operations. Stock-based compensation expense related to non-employee directors and consultants is included within the "General and administrative" line item in the Condensed Consolidated Statements of Operations.

Total stock-based compensation expense for the three months ended March 31, 2022 and 2021 was as follows:

	Three Months Ended March 31,	
(in thousands)	2022	2021
RSA expense	$ 427	$ 407
PSU expense	37	14
Total stock-based compensation expense	$ 464	$ 421

The amount of unrecognized compensation cost as of March 31, 2022, and the expected weighted-average period over which the cost will be recognized is as follows:

	As of March 31, 2022	
(in thousands, expect years)	Unrecognized Compensation Cost	Expected Weighted-Average Period of Recognition (in years)
RSA expense	$ 3,625	2.40
PSU expense	245	2.07
Total unrecognized stock-based compensation expense	$ 3,870	2.34

Restricted Stock

Restricted stock is typically granted with vesting terms of three years. The fair value of RSA's is determined based on the closing price of the Company's common stock on the authorization date of the grant multiplied by the number of shares subject to the stock award. Compensation expense for RSA's is generally recognized on a straight-line basis over the entire vesting period.

A summary of RSA activity under the Company's various stock compensation plans for the three months ended March 31, 2022 is presented below:

	Restricted Stock	Weighted-Average Grant Date Fair Value
Non-vested at January 1, 2022	531,623	$ 5.94
Granted	336,079	$ 6.40
Vested	(217,973)	$ 6.47
Forfeited	(12,337)	$ 6.05
Non-vested at March 31, 2022	637,392	$ 6.00

Performance Share Units

Compensation expense is recognized for PSU's on a straight-line basis over the applicable service period, which is generally three years, based on the estimated fair value at the date of grant using a Monte Carlo simulation model. A summary of PSU activity for the three months ended March 31, 2022 is presented below:

	Units	Weighted-Average Grant Date Fair Value	Aggregate Intrinsic Value (in thousands)	Weighted-Average Remaining Contractual Term (in years)
PSU's outstanding, January 1, 2022	88,026	$ 6.65		
Granted	60,565	9.59		
Vested / Settled	—	—		
Forfeited / Canceled	—	—		
PSU's outstanding, March 31, 2022	148,591	$ 7.85	$ 924	2.07

Note 12 - Income Taxes

For the three months ended March 31, 2022 and 2021, the Company's income tax expense and effective tax rates were:

	Three Months Ended March 31,	
(in thousands, except for rate)	2022	2021
Income tax expense	$ —	$ 4,489
Effective tax rate	— %	25 %

The effective rate for the three months ended March 31, 2022 was zero, as the Company incurred pretax loss for this period and the resultant tax benefit was offset by a valuation allowance recorded as of March 31, 2022, as the Company expects to incur pretax loss for the year ended December 31, 2022. The effective rate for the three months ended March 31, 2021 was higher from the federal statutory rate primarily from the impact of estimated state income taxes.

The Company assesses a valuation allowance recorded against deferred tax assets at each reporting date. The determination of whether a valuation allowance for deferred tax assets is appropriate requires the evaluation of positive and negative evidence that can be objectively verified. Consideration must be given to all sources of taxable income available to realize deferred tax assets, including, as applicable, the future reversal of existing temporary differences, future taxable income forecasts exclusive of the reversal of temporary differences and carryforwards, taxable income in carryback years and tax planning strategies. In estimating income taxes, the Company assesses the relative merits and risks of the appropriate income tax treatment of transactions taking into account statutory, judicial and regulatory guidance.

Note 13 - Fair Value Measurements

Fair value of financial instruments

The carrying amounts of financial instruments, including cash, cash equivalents and restricted cash, accounts receivable, accounts payable and accrued expenses, approximate fair value due to the short maturity of these instruments. The carrying amounts of the Norit Receivable and finance lease obligations approximate fair value based on credit terms and market interest rates currently available for similar instruments. Accordingly, these instruments are not presented in the table below. The following table provides the estimated fair values of the remaining financial instruments:

	As of March 31, 2022		As of December 31, 2021	
(in thousands)	Carrying Value	Fair Value	Carrying Value	Fair Value
Financial Instruments:				
Highview Investment	$ 552	$ 552	$ 552	$ 552
Highview Obligation	$ 221	$ 221	$ 227	$ 227

Concentration of credit risk

The Company's financial instruments that are exposed to concentrations of credit risk consist primarily of cash and cash equivalents. The Company holds cash and cash equivalents at two financial institutions as of March 31, 2022. If an institution was unable to perform its obligations, the Company would be at risk regarding the amount of cash and investments in excess of the Federal Deposit Insurance Corporation limits (currently $250 thousand) that would be returned to the Company.

Assets and Liabilities Measured at Fair Value on a Recurring Basis

As of March 31, 2022 and December 31, 2021, the Company had no financial instruments carried and measured at fair value on a recurring basis.

Assets and Liabilities Measured at Fair Value on a Non-Recurring Basis

The Company accounts for the Highview Investment as an investment recorded at cost, less impairment, plus or minus observable changes in price for identical or similar investments of the same issuer. Fair value measurements, if any, represent either Level 2 or Level 3 measurements. The Highview Investment is evaluated for indicators of impairment such as an event or change in circumstances that may have a significant adverse effect on the fair value of the investment. There were no changes to the carrying value of the Highview Investment for the three months ended March 31, 2022 as there were no indicators of impairment or observable price changes for identical or similar investments.

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion and analysis of our financial condition and results of our operations should be read together with the unaudited Condensed Consolidated Financial Statements and notes of Advanced Emissions Solutions, Inc. ("ADES" or the "Company") included elsewhere in Item 1 of Part I ("Item 1") of this Quarterly Report and with the audited consolidated financial statements and the related notes of ADES included in the 2021 Form 10-K.

The results of operations discussed in this "Management's Discussion and Analysis of Financial Condition and Results of Operations" are those of ADES and its consolidated subsidiaries, collectively, the "Company," "we," "our" or "us."

Overview

We sell consumable products that utilize AC and chemical-based technologies to a broad range of customers, including coal-fired utilities, industrials, water treatment plants, and other diverse markets through a customer supply agreement described below. Our primary products are comprised of AC, which are produced from a variety of carbonaceous raw materials. Our AC products include both powdered activated carbon ("PAC") and granular activated carbon ("GAC"). Our proprietary technologies and associated product offerings provide purification solutions to enable our customers to reduce certain contaminants and pollutants to meet the challenges of existing and potential future regulations. Additionally, we own an associated lignite mine that supplies the primary raw material for the manufacturing of our products.

Through December 31, 2021, we generated substantial earnings from our equity investments in Tinuum Group and Tinuum Services. Both entities ceased operations effective December 31, 2021 as a result of the expiration of a tax credit program under the Section 45 Tax Credit Program. Tinuum Group provided reduction of mercury and nitrogen oxide ("NOx") emissions at select coal-fired power generators through the production and sale of refined coal ("RC") that qualified for tax credits under the Section 45 Tax Credit Program ("Section 45 tax credits"). We also earned royalties for technologies that were licensed to Tinuum Group and used at certain RC facilities to enhance combustion and reduced emissions of NOx and mercury from coal burned to generate electrical power. Tinuum Services operated and maintained the RC facilities under operating and maintenance agreements with Tinuum Group and owners or lessees of the RC facilities. Presently, both Tinuum Group and Tinuum Services continue to wind-down their operations, and we expect to receive final cash distributions from these entities during 2022.

Given the wind-down of Tinuum Group and Tinuum Services and the impact on our financial statements, we determined the historical RC segment no longer met the qualitative or quantitative criteria to be considered a reporting segment under U.S. GAAP. As a result, as well as the method in which the chief operating decision maker ("CODM") allocates resources, beginning January 1, 2022 we determined that we had one reportable segment, and therefore have removed segment disclosures for this Quarterly Report.

Drivers of Demand and Key Factors Affecting Profitability

Drivers of demand and key factors affecting our profitability are sales of our consumables-based solutions for coal-fired power generation, industrials, municipal water customers and other diverse markets served by Norit, whom we supply through the Supply Agreement discussed below. Our operating results are influenced by: (1) changes in our sales volumes; (2) changes in price and product mix; (3) changes in coal-fired dispatch and electricity power generation sources and (4) changes in demand for contaminant removal within water treatment facilities. During the three months ended March 31, 2022, we have continued to see increases in demand for our AC product. As such, we continue to purchase inventory to supplement customer demands in excess of our production capacity and achieve our target inventory levels.

Supply Agreement

On September 30, 2020, we and Norit entered into the Supply Agreement pursuant to which we agreed to sell and deliver to Norit, and Norit agreed to purchase and accept from us, Furnace Products. Under the Supply Agreement, Norit reimburses us for certain capital expenditures incurred by us that are necessary to manufacture the Furnace Products. Reimbursements are comprised of revenues earned from capital expenditures incurred that will benefit both us and Norit (referred to as "Shared Capital") and revenues earned from capital expenditures incurred that will benefit Norit exclusively (referred to as "Specific Capital"). In the event that Norit ceases to make purchases under the Supply Agreement, Norit is obligated to pay the balance of any outstanding payments for Specific Capital.

On February 25, 2022, we received $10.6 million in cash from Norit (the "Norit Payment") as a result of a change in control provision in the Supply Agreement (the "Change in Control"), which occurred as a result of the sale of Norit by its parent, Cabot Corporation. Under the Change in Control, we received from Norit full payment of all amounts outstanding under the Reclamation Reimbursement (defined below), payment of all unbilled amounts related to Specific Capital for expenditures incurred through February 28, 2022 and payment of $0.8 million related to additional Reclamation Costs (the "Norit

Reclamation Costs"). Under the Reclamation Contract, we were obligated to remit payment for the Norit Reclamation Costs to the third-party operator of Marshall Mine within a specified timeframe, and such payment was remitted in March 2022. The Change in Control did not impact any other provisions of the Supply Agreement.

As of February 25, 2022, the carrying value of the Reclamation Reimbursement was $9.0 million, which was reflective of the principal balance, adjusted for accretion of interest and payments made to date. Under the Change in Control, we received $8.5 million in cash for full payment of the outstanding Reclamation Reimbursement. We concluded that the cash proceeds received represented an early payment of a receivable based on a change in contractual terms and accounted for the difference between the cash proceeds received and the carrying amount of the Reclamation Reimbursement of $0.5 million as a loss, which is included within the "Other Income (Expense)" line item in the Condensed Consolidated Statement of Operation for three months ended March 31, 2022.

As of March 31, 2022, we have materially completed the dirt work (i.e., contouring, backfilling, etc.) for the reclamation of Marshall Mine.

Acquisition of Marshall Mine

Concurrently with the execution of the Supply Agreement, on September 30, 2020, we completed the Marshall Mine Acquisition for a nominal cash purchase price. Marshall Mine is a lignite mine located outside of Marshall, Texas. We independently determined to immediately shutter the Marshall Mine and commenced full reclamation activities under the Reclamation Contract. Under the terms of the Supply Agreement, Norit was obligated to reimburse us for $10.2 million, inclusive of interest, over a 13-year term (the "Reclamation Reimbursement") for a portion of the Reclamation Costs. As discussed above, on February 25, 2022 as part of the Change in Control, Norit fully paid the outstanding amount owed under the Reclamation Reimbursement and has no further liability related to the Marshall Mine.

As the owner of the Marshall Mine, we were required to post a surety bond with a third party to ensure performance of our reclamation activities in the amount of $30.0 million under the Surety Agreement. On June 7, 2021, the third party agreed to reduce the Surety Bond amount to $16.6 million. As of March 31, 2022, we were required to post collateral of $10.0 million in the form of restricted cash for the obligations due under the Reclamation Contract.

Results of Operations

For the three months ended March 31, 2022, we recognized net loss of $3.0 million compared to net income of $13.7 million for the three months ended March 31, 2021. The most significant factor impacting results period over period was the decrease in equity earnings from Tinuum Group as the ability to generate Section 45 tax credits, the driver for Tinuum Group's operations, ceased as of December 31, 2021.

The following sections provide additional information regarding these comparable periods. For comparability purposes, the following tables set forth our results of operations for the periods presented in the Condensed Consolidated Financial Statements included in Item 1 of this Quarterly Report. The period-to-period comparison of financial results may not be indicative of financial results to be achieved in future periods.

Comparison of the Three Months Ended March 31, 2022 and 2021

Total Revenue and Cost of Revenue

A summary of the components of our revenues and cost of revenue for the three months ended March 31, 2022 and 2021 is as follows:

	Three Months Ended March 31,		Change	
(in thousands, except percentages)	2022	2021	($)	(%)
Revenues:				
Consumables	$ 26,402	$ 18,541	$ 7,861	42 %
License royalties, related party	—	4,066	(4,066)	(100)%
Total revenues	$ 26,402	$ 22,607	$ 3,795	17 %
Operating expenses:				
Consumables cost of revenue, exclusive of depreciation and amortization	$ 21,507	$ 13,984	$ 7,523	54 %

Consumables and consumables cost of revenue

For the three months ended March 31, 2022, consumables revenues increased from the comparable quarter in 2021 primarily from higher product volumes, which comprised $4.9 million of the total change in consumables revenues. Product volumes were higher in power generation customers primarily due to higher natural gas prices and higher demand for electricity compared to the same quarter in 2021, which contributed to increased utilization of coal-fired generation and increased demand for our products. Total revenues also increased due to favorable pricing mix of our products by approximately $2.8 million.

Our consumables gross margin, exclusive of depreciation and amortization, increased for the three months ended March 31, 2022 compared to the corresponding quarter in 2021 primarily due to the higher product volumes, which resulted in lower fixed costs per pound. Offsetting these improvements from higher product volumes for the three months ended March 31, 2022, consumables gross margin was negatively impacted by the inflationary rise in cost for key raw materials, transportation including fuel, and operational costs to produce and deliver our products. Further negatively impacting consumables gross margin was the requirement to purchase inventory due to increased demand for our products and high utilization of the Red River Plant. We expect to continue purchasing inventory through the remainder of 2022 as a result of ongoing increased demand for our products and high Red River Plant utilization. We will continue to evaluate the need for additional inventory purchases in subsequent years.

We expect that consumables revenues and gross margin will be positively impacted by our product price increase announced in the second quarter of 2022 and our efforts to move our product mix to higher margin products. We anticipate that the product price increases will also help offset the increase in operating costs from purchasing inventory as a result of changes in product mix due to the loss of certain power generation customers, who are shuttering certain of their utilities as part of scheduled closures.

Consumables revenues continues to be affected by electricity demand driven by seasonal weather and related power generation needs, as well as competitor prices related to alternative power generation sources such as natural gas and renewables.

License royalties, related party

As discussed above, Tinuum Group ceased operations as of December 31, 2021 and as a result for the three months ended March 31, 2022, we did not recognize any revenues from license royalties from Tinuum Group.

Other Operating Expenses

A summary of the components of our operating expenses for the three months ended March 31, 2022 and 2021, exclusive of cost of revenue items (presented above), is as follows:

	Three Months Ended March 31,		Change	
(in thousands, except percentages)	2022	2021	($)	(%)
Operating expenses:				
Payroll and benefits	$ 2,626	$ 2,469	$ 157	6 %
Legal and professional fees	2,172	1,803	369	20 %
General and administrative	1,926	1,915	11	1 %
Depreciation, amortization, depletion and accretion	1,506	2,106	(600)	(28)%
	$ 8,230	$ 8,293	$ (63)	(1)%

Payroll and benefits

Payroll and benefits expenses, which represent costs related to selling, general and administrative personnel, increased for the three months ended March 31, 2022 compared to the corresponding quarter in 2021 primarily due to an increase in expense related to the agreements with our executive officers and certain other key employees ("Retention Agreements") of $0.4 million. Offsetting this increase was a decrease in our headcount, which decreased payroll and benefits expense by approximately $0.2 million.

Legal and professional fees

Legal and professional fees increased for the three months ended March 31, 2022 compared to the corresponding quarter in 2021 as a result of costs incurred related to our strategic alternatives review process, including consulting, tax services and legal fees of $0.4 million.

General and administrative

General and administrative expenses had no significant changes quarter over quarter.

Depreciation, amortization, depletion and accretion

Depreciation and amortization expense decreased for the three months ended March 31, 2022 compared to the corresponding quarter in 2021 primarily due to higher production volumes compared to sales volumes for the three months ended March 31, 2022, resulting in $0.4 million less absorption of depreciation in inventory. Further driving the decrease was a decrease in accretion expense of $0.2 million related to the Marshall Mine ARO.

Other Income (Expense), net

A summary of the components of other income (expense), net for the three months ended March 31, 2022 and 2021 is as follows:

	Three Months Ended March 31,		Change	
(in thousands, except percentages)	2022	2021	($)	(%)
Other income (expense):				
Earnings from equity method investments	$ 833	$ 18,312	$ (17,479)	(95)%
Interest expense	(86)	(837)	751	(90)%
Other	(445)	421	(866)	(206)%
Total other income	$ 302	$ 17,896	$ (17,594)	(98)%

Earnings from equity method investments

As discussed above, both Tinuum Group and Tinuum Services ceased operations as of December 31, 2021 and as a result for the three months ended March 31, 2022, we recognized significantly lower earnings from Tinuum Group and a loss from Tinuum Services. The following table details the components of our respective equity method investments included in the Earnings from equity method investments line item in the Condensed Consolidated Statements of Operations:

	Three Months Ended March 31,	
(in thousands)	2022	2021
Earnings from Tinuum Group	$ 1,012	$ 16,362
(Loss) earnings from Tinuum Services	(180)	1,950
Earnings from other	1	—
Earnings from equity method investments	$ 833	$ 18,312

For the three months ended March 31, 2022, we recognized $1.0 million in equity earnings from Tinuum Group compared to our proportionate share of Tinuum Group's net loss of $0.9 million for the quarter. The difference between our pro-rata share of Tinuum Group's net loss and our earnings from the Tinuum Group equity method investment as reported on the Condensed Consolidated Statements of Operations is the result of cumulative distributions received from Tinuum Group being in excess of the carrying value of the investment, and therefore we recognize such excess distributions as equity method earnings in the period the distributions occur. For the remainder of 2022, we expect to recognize such excess contributions as equity method earnings in the period the distributions occur, limited to the carrying value of the Tinuum Group equity investment.

For the three months ended March 31, 2021, we recognized $16.4 million in equity earnings from Tinuum Group compared to our proportionate share of Tinuum Group's net income of $10.8 million for the quarter.

For the three months ended March 31, 2022, earnings from Tinuum Services decreased compared to the corresponding quarter in 2021 due to a decrease in the number of operating RC facilities in which Tinuum Services provided operating and maintenance services due to the expiration of the Section 45 tax credit period on December 31, 2021.

Additional information related to equity method investments is included in Note 9 to the Condensed Consolidated Financial Statements included in Item 1 of this Report.

Interest expense

For the three months ended March 31, 2022, interest expense decreased $0.8 million compared to the three months ended March 31, 2021 primarily due to the Company's pay-off of a senior term loan as of June 1, 2021.

Other

On February 25, 2022, we received $10.6 million in cash from Norit (the "Norit Payment") as a result of a change in control provision in the Supply Agreement (the "Change in Control"), which occurred as a result of the sale of Norit by its parent, Cabot Corporation. Under the Change in Control, we received from Norit full payment of all amounts outstanding under the Reclamation Reimbursement, payment of all unbilled amounts related to Specific Capital for expenditures incurred through February 28, 2022 and payment of $0.8 million related to additional costs due to the third party mine operator (the "Norit Reclamation Costs"). Under the Reclamation Contract, we are obligated to remit payment for the Norit Reclamation Costs to the third-party operator of Marshall Mine within a specified timeframe, and such payment was remitted in March 2022.

As of February 25, 2022, the Reclamation Reimbursement was $9.0 million, which is reflective of the principal balance adjusted for accretion of interest and collection of payments. Under the Change in Control, we received $8.5 million in cash in relation to the outstanding Reclamation Reimbursement. We applied the cash proceeds to the Reclamation Reimbursement and recognized a loss of $0.5 million, which is included in the "Other income (expense)" line item in the Condensed Consolidated Statement of Operations for the three months ended March 31, 2022 .

Income tax expense

For the three months ended March 31, 2022, we recorded no income tax expense or benefit compared to income tax expense of $4.5 million for the three months ended March 31, 2021 primarily due to pretax loss for the three months ended March 31, 2022 of $3.0 million compared to pretax income for the three months ended March 31, 2021 of $18.2 million. We did not recognize a tax benefit for the three months ended March 31, 2022 related to the pretax loss for this period, as we recorded a valuation allowance as of March 31, 2022 based on our forecast of pretax loss for the year ended December 31, 2022.

Non-GAAP Financial Measures

To supplement our financial information presented in accordance with U.S. GAAP (or "GAAP"), we provide non-GAAP measures of certain financial performance. These non-GAAP measures include Consolidated EBITDA and Consolidated Adjusted EBITDA. We have included these non-GAAP measures because management believes that they help to facilitate period to period comparisons of our operating results and provide useful information to both management and users of the financial statements by excluding certain expenses, gains and losses that may not be indicative of core operating results and business outlook. Management uses these non-GAAP measures in evaluating the performance of our business.

These non-GAAP measures are not in accordance with, or an alternative to, measures prepared in accordance with GAAP and may be different from non-GAAP measures used by other companies. In addition, these non-GAAP measures are not based on any comprehensive set of accounting rules or principles. These measures should only be used to evaluate our results of operations in conjunction with the corresponding GAAP measures.

We define Consolidated EBITDA as net income adjusted for the impact of the following items that are either non-cash or that we do not consider representative of our ongoing operating performance: depreciation, amortization, depletion, accretion, amortization of upfront customer consideration that was recorded as a component of the Marshall Mine Acquisition ("Upfront Customer Consideration"), interest expense, net and income tax (benefit) expense. We define Consolidated Adjusted EBITDA as Consolidated EBITDA reduced by the non-cash impact of equity earnings from equity method investments and increased by cash distributions from equity method investments and loss on early settlement of the Norit Receivable. Because Consolidated Adjusted EBITDA omits certain non-cash items, we believe that the measure is less susceptible to variances that affect our operating performance.

When used in conjunction with GAAP financial measures, we believe these non-GAAP measures are supplemental measures of operating performance that explain our operating performance for our period-to-period comparisons and against our competitors' performance. Generally, we believe these non-GAAP measures are less susceptible to variances that affect our operating performance results.

We expect the adjustments to Consolidated EBITDA and Consolidated Adjusted EBITDA in future periods will be generally similar. These non-GAAP measures have limitations as analytical tools and should not be considered in isolation or as a substitute for analyzing our results as reported under GAAP.

Consolidated EBITDA and Adjusted EBITDA

	Three Months Ended March 31,	
(in thousands)	2022	2021
Net (loss) income	$ (3,033)	$ 13,737
Depreciation, amortization, depletion and accretion	1,506	2,106
Amortization of Upfront Customer Consideration	127	127
Interest expense, net	64	729
Income tax (benefit) expense	—	4,489
Consolidated (EBITDA loss) EBITDA	(1,336)	21,188
Cash distributions from equity method investees	2,514	23,251
Equity earnings	(833)	(18,312)
Loss on early settlement of Norit Receivable	535	—
Consolidated Adjusted EBITDA	$ 880	$ 26,127

Liquidity and Capital Resources

Current Resources and Factors Affecting Our Liquidity

As of March 31, 2022, our principal sources of liquidity include:

- cash and cash equivalents on hand, excluding restricted cash of $10.0 million pledged under the Surety Agreement; and
- our operations.

As of March 31, 2022, our principal uses of liquidity included:

- our business operating expenses;
- capital and spare parts expenditures;
- payments on our lease obligations; and
- payments of ARO liabilities associated with the Five Forks Mine and Marshall Mine.

Due to the expiration of the Section 45 tax credit period as of December 31, 2021 and the resultant wind down of Tinuum Group's and Tinuum Services' operations in 2022, distributions from Tinuum Group and Tinuum Services will no longer be a significant source of liquidity.

Tinuum Group and Tinuum Services Distributions

The following table summarizes the cash distributions from our equity method investments for the three months ended March 31, 2022 and 2021:

	Three Months Ended March 31,	
(in thousands)	**2022**	**2021**
Tinuum Services	$ 1,501	$ 3,502
Tinuum Group	1,012	19,749
Other	1	—
Distributions from equity method investees	$ 2,514	$ 23,251

Cash distributions from Tinuum for the three months ended March 31, 2022 decreased by $20.7 million compared to the three months ended March 31, 2021 primarily due to Tinuum Group and Tinuum Services ceasing material operations as of December 31, 2021.

Stock Repurchases and Dividends

In November 2018, the Board authorized us to purchase up to $20.0 million of our outstanding common stock under a stock repurchase program (the "Stock Repurchase Program"), which was to remain in effect until December 31, 2019 unless otherwise modified by the Board. As of November 2019, $2.9 million remained outstanding related to the Stock Repurchase Program. In November 2019, the Board authorized an incremental $7.1 million to the Stock Repurchase Program and provided that it will remain in effect until all amounts are utilized or it is otherwise modified by the Board.

For the three months ended March 31, 2022 and 2021, we did not repurchase any shares under the Stock Repurchase Program or declare or pay any cash dividends to stockholders.

Cash Flows

Three Months Ended March 31, 2022 vs. Three Months Ended March 31, 2021

Cash, cash equivalents and restricted cash increased from $88.8 million as of December 31, 2021 to $89.8 million as of March 31, 2022. The following table summarizes our cash flows for the three months ended March 31, 2022 and 2021, respectively:

	Three Months Ended March 31,		
(in thousands)	**2022**	**2021**	**Change**
Cash and cash equivalents and restricted cash provided by (used in):			
Operating activities	$ 2,094	$ 21,947	$ (19,853)
Investing activities	(439)	4,886	(5,325)
Financing activities	(628)	(10,531)	9,903
Net change in cash and cash equivalents and restricted cash	$ 1,027	$ 16,302	$ (15,275)

Cash flow from operating activities

Cash flows provided by operating activities for the three months ended March 31, 2022 decreased by $19.9 million compared to the three months ended March 31, 2021. The net decrease was primarily attributable to decreases in Earnings from equity method investees of $17.5 million, Deferred income tax expense of $3.1 million, and Depreciation, amortization, depletion and accretion of $0.6 million. Also contributing to the net decrease in cash flows provided by operating activities period over period was a decrease in Distributions from equity method investees, return on investment of $16.1 million. Offsetting the net decrease in cash flows provided by operating activities for the three months ended March 31, 2022 compared to the three months ended March 31, 2021 was a net decrease in net income of $16.8 million for the three months ended March 31, 2022 as a result of net loss recognized for the three months ended March 31, 2021. Further offsetting the net decrease in cash flows provided by operating activities was an increase related to a recognized loss of $0.5 million on the settlement of the Reclamation Reimbursement.

Cash flow from investing activities

Cash flows from investing activities decreased for the three months ended March 31, 2022 compared to the three months ended March 31, 2021 by $5.3 million primarily as a result of a reduction of distributions from equity earnings in excess of cumulative earnings.

Cash flow from financing activities

Cash flows used in financing activities for the three months ended March 31, 2022 compared to the three months ended March 31, 2021 decreased by $9.9 million primarily from decreases in principal loan repayments on a senior term loan.

Material Cash Requirements

For 2022, we expect to incur $13.0 million in capital expenditures compared to $7.6 million incurred in 2021. This increase is primarily the result of forecasted capital improvements to the Red River Plant of approximately $7.0 million, product specific capital expenditures related to the Supply Agreement of approximately $1.0 million and scheduled maintenance improvements.

In May 2021, we entered into the Retention Agreements for the purpose of retaining officers and key employees in order to maintain our current business operations, while we pursue and execute on our strategic initiatives. The total amount owed pursuant to the Retention Agreements is $2.0 million, which we expect to pay in 2022.

We intend to fund the remaining portion of the Reclamation Costs from cash on hand as well as cash flows generated from the Supply Agreement. We believe that as reclamation activities proceed and the related bonded amounts required under the Surety Agreement are able to be reduced, there may be an opportunity to further reduce the collateral requirement. On a normalized basis, our annual capital expenditures, exclusive of any capital specifically procured for Norit under the Supply Agreement or capital for major improvements to the Red River Plant, are expected to average approximately $5.0 million.

We expect that our cash on hand as of March 31, 2022 will provide sufficient liquidity to fund operations for the next 12 months.

For the three months ended March 31, 2022, there were no material changes to our contractual obligations outside of the ordinary course of business from those reported as of December 31, 2021.

As of March 31, 2022, we had outstanding surety bonds of $24.1 million related to performance requirements under reclamation contracts associated with both the Five Forks Mine and the Marshall Mine. As of March 31, 2022, we had restricted cash of $10.0 million for the surety bonds insuring the performance requirements for the reclamation of Marshall Mine. We expect that the obligations secured by these surety bonds will be performed in the ordinary course of business and in accordance with the applicable contractual terms. To the extent that the obligations are performed, the related surety bonds should be released, and we should not have any continuing obligations. However, in the event any surety bond is called, our indemnity obligations could require us to reimburse the issuer of the surety bond.

Critical Accounting Policies and Estimates

Our critical accounting policies and estimates have not changed from those reported in Item 7 - "Management's Discussion and Analysis of Financial Condition and Results of Operations" in the 2021 Form 10-K.

Recently Issued Accounting Standards

Refer to Note 1 of the Condensed Consolidated Financial Statements included in Item 1 of this Quarterly Report for information regarding recently issued accounting standards applicable to us.

Forward-Looking Statements Found in this Report

This Quarterly Report contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act, that involve risks and uncertainties. In particular, such forward-looking statements are found in this Part I, Item 2 above. Words or phrases such as "anticipates," "believes," "expects," "intends," "plans," "estimates," "predicts," the negative expressions of such words, or similar expressions are used in this Quarterly Report to identify forward-looking statements, and such forward-looking statements include, but are not limited to, statements or expectations regarding:

(a) the anticipated effects from the increase in pricing of our AC products;
(b) the anticipated effects from the increase in costs of our AC products related cost increases in supply and logistics;
(c) expected supply and demand for our AC products and services;
(d) increasing competition in the AC market;
(e) the timing and effects of our review of strategic alternatives;
(f) future level of research and development activities;
(g) the effectiveness of our technologies and the benefits they provide;
(h) probability of any loss occurring with respect to certain guarantees made by Tinuum Group;
(i) the timing of awards of, and work and related testing under, our contracts and agreements and their value;
(j) the timing and amounts of or changes in future revenues, backlog, funding for our business and projects, margins, expenses, earnings, tax rates, cash flows, royalty payment obligations, working capital, liquidity and other financial and accounting measures;
(k) the amount of future capital expenditures needed for our business;
(l) awards of patents designed to protect our proprietary technologies both in the U.S. and other countries;
(m) the adoption and scope of regulations to control certain chemicals in drinking water; and
(n) opportunities to effectively provide solutions to U.S. coal-related businesses to comply with regulations, improve efficiency, lower costs and maintain reliability.

The forward-looking statements included in this Quarterly Report involve risks and uncertainties. Actual events or results could differ materially from those discussed in the forward-looking statements as a result of various factors including, but not limited to, timing of new and pending regulations and any legal challenges to or extensions of compliance dates of them; the U.S. government's failure to promulgate regulations that benefit our business; changes in laws and regulations, accounting rules, prices, economic conditions and market demand; impact of competition; availability, cost of and demand for alternative energy sources and other technologies; technical, start up and operational difficulties; our inability to commercialize our APT technologies on favorable terms; our inability to ramp up our operations to effectively address recent and expected growth in our business; loss of key personnel; availability of materials and equipment for our business; intellectual property infringement claims from third parties; pending litigation; as well as other factors relating to our business, as described in our filings with the SEC, with particular emphasis on the risk factor disclosures contained in those filings. You are cautioned not to place undue reliance on the forward-looking statements made in this Quarterly Report and to consult filings we have made and will make with the SEC for additional discussion concerning risks and uncertainties that may apply to our business and the ownership of our securities. The forward-looking statements contained in this Quarterly Report are presented as of the date hereof, and we disclaim any duty to update such statements unless required by law to do so.

Item 3. Quantitative and Qualitative Disclosures about Market Risk

The information under this Item is not required to be provided by smaller reporting companies.

Item 4. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

As required by Rule 13a-15(b) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), we have evaluated, under the supervision of and with the participation of our management, including our principal executive officer and principal financial officer, the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) as of the end of the period covered by this report. Our disclosure controls and procedures are designed to ensure that information required to be disclosed in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms. Based upon this evaluation, our principal executive officer and principal financial officer concluded that our disclosure controls and procedures were not effective as of March 31, 2022 due to the material weakness described in Item 9A. "Controls and Procedures" of the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2021 related to the initial application of the adoption of ASC 606 related to the accounting for freight, which was previously immaterial; an inadequate monitoring of interpretative guidance of previously adopted accounting standards; and a lack of a control related to an annual review of policies and procedures related to material accounts.

Notwithstanding the material weaknesses, management has concluded that the Condensed Consolidated Financial Statements included in this Quarterly Report present fairly, in all material aspects, the Company's financial position, results of operations and cash flows for the periods presented in conformity with accounting principles generally accepted in the United States.

Changes in Internal Control Over Financial Reporting

Under the applicable SEC rules (Exchange Act Rules 13a-15(f) and 15d-15(f) management is required to evaluate any changes in internal control over financial reporting that occurred during each fiscal quarter that materially affected, or is reasonably likely to materially affect, our internal control over financial reporting. As discussed in Item 9A. "Controls and Procedures" of the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2021, we identified a material weakness in our internal control over financial reporting detailed above. During the fiscal quarter ended March 31, 2022, we commenced remediation efforts on our internal control over financial reporting related to the material weakness, which includes enhancements in the monitoring of interpretative guidance of previously adopted accounting standards and a periodic review of policies and procedures associated to material accounts. As of March 31, 2022, the remediation efforts continue and as a result, the material weakness has not yet been remediated. We expect to complete remediation procedures and enhance existing controls by the end of our fiscal quarter ended June 30, 2022, at such time we expect that these controls will be operating and in place for a sufficient period of time to conclude on their effectiveness as of December 31, 2022.

PART II. OTHER INFORMATION

Item 1. Legal Proceedings

From time to time, we are involved in litigation, claims and other proceedings related to the conduct of our business. Information with respect to this item may be found in Note 7 "Commitments and Contingencies" to the consolidated financial statements included in Item 1 of Part I of this Quarterly Report.

Item 1A. Risk Factors

There are no material updates to our risk factors as disclosed in the 2021 Form 10-K.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds

None.

Item 3. Defaults Upon Senior Securities

None.

Item 4. Mine Safety Disclosures

The statement concerning mine safety violations or other regulatory matters required by Section 1503(a) of the Dodd-Frank Wall Street Reform and Consumer Protection Act and Item 104 of Regulation S-K is included in Exhibit 95.1 to this Quarterly Report.

Item 5. Other Information

In May of 2021, the Company entered into agreements ("Retention Agreements") with all of its executive officers and certain other key employees of the organization for the benefit of retaining those officers and key employees in order to maintain the Company's current business operations while it pursues and executes on its strategic initiatives.

On May 4, 2022, the Compensation Committee of the Board of Directors and the Board of Directors approved an amendment to the Retention Agreements ("Amended Retention Agreements") for its executive officers and certain other key employees of the organization. Under the Amended Retention Agreements, if accepted, the employees will receive (i) 40% of the original amount agreed to in the Retention Agreements ("Retention Pay") in August 2022; (ii) 60% of the Retention Pay on the earliest of (1) the date the employee's employment is terminated without Cause or for Good Reason (as those terms are defined in the Retention Agreement or the employee's employment agreement, as applicable), (2) 90 days after a Transaction Date or a Change in Control (as those terms are defined in the Retention Agreement or the employee's employment agreement, as applicable), or (3) in January 2023; and (iii) an additional lump sum payment, ranging from 10% to 40% of the Retention Pay, will also be paid at the earliest of (1) the date the employee's employment is terminated without Cause or for Good Reason (as those terms are defined in the Retention Agreement or the employee's employment agreement, as applicable), (2) 90 days after a Transaction Date or a Change in Control (as those terms are defined in the Retention Agreement or the employee's employment agreement, as applicable), or (3) in January 2023.

In order to receive the Amended Retention Agreements payments, the employees must remain employed at the Company through the dates above.

The total incremental amount payable pursuant to the Amended Retention Agreements is $0.5 million. Under the Amended Retention Agreements, the following executive officers will be paid the following amounts if they satisfy the conditions for payment: Greg Marken, Chief Executive Officer, $59,800; Morgan Fields, Chief Accounting Officer, $50,800; and Joe Wong, Chief Technology Officer, $52,020. The other key employees would be paid an aggregate amount of $0.3 million.

The foregoing description of the Amended Retention Agreements is qualified in its entirety by reference to the forms of Retention Agreement, copies of which are filed as Exhibit 10.1 to this Quarterly Report on Form 10-Q and incorporated herein by reference.

Item 6. Exhibits

Exhibit No.	Description	Form	File No.	Incorporated by Reference Exhibit	Filing Date
4.6	Fifth Amendment to Tax Asset Protection Plan dated as of March 15, 2022, by and between the Company and Computershare Trust Company, N.A., as rights agent	8-K	001-37822	4.6	March 16, 2022
10.1	Form of Amended Retention Agreement dated May 8, 2022 of Greg Marken, Morgan Fields and Joe Wong*				
31.1	Certification of Principal Executive Officer of Advanced Emissions Solutions, Inc. Pursuant to 17 CFR 240.13a-14(a) or 17 CFR 240.15d-14(a)*				
31.2	Certification of Principal Financial Officer of Advanced Emissions Solutions, Inc. Pursuant to 17 CFR 240.13a-14(a) or 17 CFR 240.15d-14(a)*				
32.1	Certification of Principal Executive Officer and Principal Financial Officer of Advanced Emissions Solutions, Inc. Pursuant to 18 U.S.C Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002*				
95.1	Mine Safety Disclosure Exhibit*				
101. INS	XBRL Instance Document*				
101.SCH	XBRL Schema Document*				
101.CAL	XBRL Calculation Linkbase Document*				
101.LAB	XBRL Label Linkbase Document*				
101.PRE	XBRL Presentation Linkbase Document*				
101.DEF	Taxonomy Extension Definition Linkbase Document*				
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)*				

Notes:
* – Filed herewith.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Advanced Emissions Solutions, Inc.
(Registrant)

May 9, 2022	By:	/s/ Greg Marken Greg Marken Chief Executive Officer (Principal Executive Officer)
May 9, 2022	By:	/s/ Morgan Fields Morgan Fields Chief Accounting Officer (Principal Financial Officer)

AMENDMENT TO THE 2021 RETENTION AGREEMENT

The following is an Amendment to the 2021 Retention Agreement (the “Amendment”), by and between [NAME] (referred to as “you,” or “your”) and ADES, Inc. (the “COMPANY”).

This Amendment will become effective on the date you return an electronically signed copy of the Amendment to the COMPANY provided it is returned no later than 12:00 p.m. Mountain Time on May 8, 2022 (the “Return Date”). If you do not return the signed Amendment to the COMPANY by the Return Date, this offer will expire.

RECITALS

WHEREAS, In May 2021, you and the COMPANY entered into a Retention Agreement providing you with certain benefits for remaining employed with the COMPANY through a certain date (the “Retention Agreement”).

WHEREAS, there continue to be important customer and corporate initiatives the COMPANY wants to complete and you have been identified as an important contributor to assist the COMPANY to complete its business objectives and delivery obligations, and

WHEREAS, in order to meet the COMPANY’s objectives and delivery obligations and to recognize your contribution to COMPANY, you and the COMPANY are willing to enter into this Amendment.

WHEREFORE, for good and valuable consideration, you and the COMPANY hereby agree as follows:

1. Section 4 of the Definitions shall be deleted and replaced with the following:

   4. “Retention Date” means January 18, 2023.

2. Provision 9.a. of the Retention Agreement shall be deleted and replaced in its entirety with the following:

   9.a. If you are employed in accordance with the terms of the Retention Agreement: (i) on August 31, 2022, the COMPANY will pay you 40% off the Retention Pay described in the Retention Agreement as a lump sum in the amount of **$[XXX]**; (ii) upon completion of the Retention Period, the COMPANY will pay you 60% of the Retention Pay described in the Retention Agreement as a lump sum in the amount of **$[XXX]**; and (iii) and upon completion of the Retention Period, the COMPANY will pay you an amount equal to **%** of the two amounts immediately above, a lump sum in the amount of **$[XXX]**. All compensation paid to you, whether pursuant to this paragraph or otherwise, shall be subject to applicable tax withholdings and payroll deductions.

3. This Amendment constitutes a written amendment to the Retention Agreement pursuant to Section 12 of the Retention Agreement.

4. You and the COMPANY agree that this Amendment is strictly limited to the terms herein, that all provisions in the Retention Agreement not modified by this Amendment remain in full force and effect, and that this Amendment will be interpreted and enforced in accordance with the terms of the Retention Agreement.

In order to accept this Amendment, you electronically sign the Amendment by 12:00 p.m. Mountain Time on May 8, 2022. You understand that if you do not return this Amendment signed by you to the COMPANY by this date, this offer will expire.

I have carefully read all aspects of this Amendment and the Retention Agreement. I execute the Amendment voluntarily, fully understanding and accepting all provisions of the Amendment and the Retention Agreement in their entirety and without reservation after having had sufficient time and opportunity to consult with my legal advisors prior to executing this Amendment.

EMPLOYEE	ADA-ES, Inc.
______________________________	By: ______________________________
NAME	[Authorized Signatory]
Date: ______________________________	Date: ______________________________

Exhibit 31.1

Pursuant to Rules 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as Amended

I, Greg Marken, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Advanced Emissions Solutions, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: May 9, 2022

/s/ Greg Marken

Greg Marken
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

Pursuant to Rules 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as Amended

I, Morgan Fields, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Advanced Emissions Solutions, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: May 9, 2022

/s/ Morgan Fields

Morgan Fields
Chief Accounting Officer
(Principal Financial Officer)

Exhibit 32.1

Certification

Pursuant to

18 U.S.C. Section 1350,

as Adopted Pursuant to

Section 906 of the Sarbanes-Oxley Act of 2002

In connection with the Quarterly Report on Form 10-Q of Advanced Emissions Solutions, Inc. (the "Company") for the quarterly period ended March 31, 2022, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), Greg Marken, as the Principal Executive Officer of the Company, and Morgan Fields, as the Principal Financial Officer of the Company, each hereby certifies, pursuant to and solely for the purpose of 18 U.S.C. §1350, as adopted pursuant to §906 of the Sarbanes-Oxley Act of 2002, to the best of his knowledge and belief, that:

(1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Greg Marken

Greg Marken
Chief Executive Officer

May 9, 2022

/s/ Morgan Fields

Morgan Fields
Chief Accounting Officer

May 9, 2022

EXHIBIT 95.1

Mine Safety and Health Administration Safety Data

We are committed to maintaining a safe work environment and working to ensure environmental compliance across all of our operations. The health and safety of our employees and limiting the impact to communities in which we operate are critical to our long-term success. We employ practices and conduct training to help ensure that our employees work safely. Furthermore, we utilize processes for managing, monitoring and improving safety and environmental performance.

The following disclosures are provided pursuant to Securities and Exchange Commission (SEC) regulations, which require certain disclosures by companies required to file periodic reports under the Securities Exchange Act of 1934, as amended, that operate coal mines regulated under the Federal Mine Safety and Health Act of 1977 (the "Mine Act"). The disclosures reflect United States (U.S.) mining operations only.

Mine Safety Information. Whenever the Mine Safety and Health Administration (MSHA) believes that a violation of the Mine Act, any health or safety standard, or any regulation has occurred, it may issue a violation which describes the associated condition or practice and designates a time frame within which the operator must abate the violation. In some situations, such as when MSHA believes that conditions pose a hazard to miners, MSHA may issue an order removing miners from the area of the mine affected by the condition until hazards are corrected. Whenever MSHA issues a citation or order, it generally proposes a civil penalty, or fine, as a result of the violation that the operator is ordered to pay. Citations and orders can be contested and appealed and, as part of that process, are often reduced in severity and amount, and are sometimes vacated. The number of citations, orders and proposed assessments vary depending on the size and type (underground or surface) of the company and mine.

We are required to report citations and orders issued to us by MSHA during the three months ended March 31, 2022, as reflected in our systems. Our required disclosure covers only those mines that were issued orders or citations during the period presented and, commensurate with SEC regulations, does not reflect orders or citations issued to independent contractors working at our mines. Due to timing and other factors, our data may not agree with the mine data retrieval system maintained by MSHA. The proposed assessments for the three months ended March 31, 2022 were taken from the MSHA system as of May 5, 2022.

Additional information about MSHA references we are required to report is as follows:

- *Section 104 S&S Violations*: The total number of violations received from MSHA under section 104(a) of the Mine Act that could significantly and substantially contribute to a serious injury if left unabated.
- *Section 104(b)Orders*: The total number of orders issued by MSHA under section 104(b) of the Mine Act, which represents a failure to abate a citation under section 104(a) within the period of time prescribed by MSHA. This results in an order of immediate withdrawal from the area of the mine affected by the condition until MSHA determines that the violation has been abated.
- *Section 104(d) Citations and Orders*: The total number of citations and orders issued by MSHA under section 104(d) of the Mine Act for unwarrantable failure to comply with mandatory health or safety standards.
- *Section 104(e) Notices*: The total number of notices issued by MSHA under section 104(e) of the Mine Act for a pattern of violations that could contribute to mine health or safety hazards.
- *Section 110(b)(2)Violations*: The total number of flagrant violations issued by MSHA under section 110(b)(2) of the Mine Act.
- *Section 107(a) Orders*: The total number of orders issued by MSHA under section 107(a) of the Mine Act for situations in which MSHA determined an imminent danger existed.
- *Proposed MSHA Assessments*: The total dollar value of proposed assessments from MSHA.
- *Fatalities*: The total number of mining-related fatalities.

Our first mine is located in the Gulf Coast Lignite Region, in Natchitoches Parish, Louisiana (the "Five Forks Mine"). For the three months ended March 31, 2022, there were no citations or orders issued to the Five Forks Mine. Our second mine is located in the Gulf Coast Lignite Region, in Harrison and Panola Counties, Texas (the "Marshall Mine"). For the three months ended March 31, 2022, there were no citations or orders issued to the Marshall Mine.

Pending Legal Actions. The Federal Mine Safety and Health Review Commission (the Commission) is an independent adjudicative agency that provides administrative trial and appellate review of legal disputes arising under the Mine Act. These cases may involve, among other questions, challenges by operators to citations, orders and penalties they have received from MSHA, or complaints of discrimination by miners under section 105 of the Mine Act. The following is a brief description of the types of legal actions that may be brought before the Commission.

- *Contests of Citations and Orders*: A contest proceeding may be filed with the Commission by operators, miners or miners' representatives to challenge the issuance of a citation or order issued by MSHA, including citations related to disputed provisions of operators' emergency response plans.
- *Contests of Proposed Penalties (Petitions for Assessment of Penalties)*: A contest of a proposed penalty is an administrative proceeding before the Commission challenging a civil penalty that MSHA has proposed for the violation. Such proceedings may also involve appeals of judges' decisions or orders to the Commission on proposed penalties, including petitions for discretionary review and review by the Commission on its own motion.
- *Complaints for Compensation*: A complaint for compensation may be filed with the Commission by miners entitled to compensation when a mine is closed by certain withdrawal orders issued by MSHA. The purpose of the proceeding is to determine the amount of compensation, if any, due miners idled by the orders.
- *Complaints of Discharge, Discrimination or Interference*: A discrimination proceeding is a case that involves a miner's allegation that he or she has suffered a wrong by the operator because he or she engaged in some type of activity protected under the Mine Act, such as making a safety complaint. This category includes temporary reinstatement proceedings, which involve cases in which a miner has filed a complaint with MSHA stating he or she has suffered discrimination and the miner has lost his or her position.
- *Applications for Temporary Relief:* An application for temporary relief from any modification or termination of any order or from any order issued under certain subparts of section 104 of the Mine Act may be filed with the Commission at any time before such order becomes final.
- *Appeals of Judges' Decisions or Orders.*

For the three months ended March 31, 2022, there were no pending or legal actions before the Commission at either the Five Forks Mine or the Marshall Mine.