Registration No. 333-

UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM S-1 REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933

Antero Resources Midstream LLC

to be converted as described herein into a limited partnership named

Antero Midstream Partners LP

(Exact Name of Registrant as Specified in Its Charter)

Delaware (State or Other Jurisdiction of Incorporation or Organization) 4922 (Primary Standard Industrial Classification Code Number) 1615 Wynkoop Street

(IRS Employer Identification Number)

46-4109058

1615 Wynkoop Street Denver, Colorado 80202 (303) 357-7310

(Address, Including Zip Code, and Telephone Number, Including Area Code, of Registrant's Principal Executive Offices)

Glen C. Warren, Jr.

1615 Wynkoop Street Denver, Colorado 80202 (303) 357-7310

(Name, Address, Including Zip Code, and Telephone Number, Including Area Code, of Agent for Service)

Copies to:

David P. Oelman Vinson & Elkins L.L.P. 1001 Fannin, Suite 2500 Houston, Texas 77002 (713) 758-2222 Ryan J. Maierson Latham & Watkins LLP 811 Main Street, Suite 3700 Houston, Texas 77002 (713) 546-5400

Approximate date of commencement of proposed sale to the public:

As soon as practicable after this registration statement becomes effective.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box. \Box

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. \Box

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. \Box

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

Large accelerated filer □
Non-accelerated filer ☑ (Do not check if a smaller reporting company)

Accelerated filer ☐ Smaller reporting company ☐

| Title of Each Class of Securities To Be Registered | Amount to be Registered(1) | Offering Price Per Common Unit(2) | Aggregate Offering Price(3) | Amount of Registration Fee(4) |
|---|----------------------------|--------------------------------------|--------------------------------|-------------------------------|
| Common units representing limited partner | 2.055.000 | # 25 00 | 051 055 000 | 00.252 |
| interests | 2,875,000 | \$25.00 | \$71,875,000 | \$8,352 |

- (1) Represents only the additional number of common units being registered and includes common units issuable upon exercise of the underwriters' option to purchase additional common units. Does not include the securities that the Registrant previously registered on the Registration Statement on Form S-1 (File No. 333-193798).
- (2) Based upon the public offering price.
- (3) In accordance with Rule 462(b) promulgated under the Securities Act, an additional amount of securities having a proposed maximum offering price of no more than 20% of the maximum aggregate offering price of the securities eligible to be sold under the Registration Statement on Form S-1 (File No. 333-193798), is hereby registered. The registrant previously registered 43,125,000 common units representing limited partner interests with a proposed maximum aggregate offering price of \$905,625,000 on the Registration Statement on Form S-1, as amended (File No. 333-193798), which was declared effective on November 4, 2014.
- (4) The registrant has previously paid \$64,400 for the registration of \$500,000,000 of proposed maximum aggregate offering price in the filing of the Registration Statement on February 6, 2014 (File No. 333-193798), \$32,200 that was previously paid for the registration of an additional \$250,000,000 of proposed maximum aggregate offering price in the filing of Amendment No. 6 to the Registration Statement on September 18, 2014 (File No. 333-193798) and \$18,084 that was previously paid for the registration of an additional \$155,625,000 of proposed maximum aggregate offering price in the filing of Amendment No. 8 to the Registration Statement on October 27, 2014 (File No. 333-193798).

The Registration Statement shall become effective upon filing with the Securities and Exchange Commission in accordance with Rule 462(b) under the Securities Act of 1933, as amended.

Explanatory Note

This registration statement is being filed with respect to the registration of additional common units representing limited partner interests in Antero Midstream Partners LP, a Delaware limited partnership, pursuant to Rule 462(b) under the Securities Act of 1933, as amended. The contents of the registration statement on Form S-1 (Registration No. 333-193798), initially filed by Antero Resources Midstream LLC with the Securities and Exchange Commission on February 7, 2014, as amended by Amendment No. 1 thereto filed on March 21, 2014, Amendment No. 2 thereto filed on April 17, 2014, Amendment No. 3 thereto filed on May 19, 2014, Amendment No. 4 thereto filed on July 11, 2014, Amendment No. 5 thereto filed on August 21, 2014, Amendment No. 6 thereto filed on September 18, 2014, Amendment No. 7 thereto filed on October 16, 2014, Amendment No. 8 thereto filed on October 27, 2014 and Amendment No. 9 thereto filed on October 29, 2014, and which was declared effective on November 4, 2014, including the exhibits thereto, are incorporated herein by reference.

The required opinions and consents are listed on an Exhibit Index attached hereto.

PART II

INFORMATION NOT REQUIRED IN THE PROSPECTUS

ITEM 16. EXHIBITS.

All exhibits previously filed or incorporated by reference in the registrant's Registration Statement on Form S-1, as amended (Registration No. 333-193798), are incorporated by reference into, and shall be deemed to be a part of this filing, except for the following, which are filed herewith:

| Exhibit Number | Description |
|-------------------|---|
| 5.1* - | Opinion of Vinson & Elkins L.L.P. as to the legality of the securities being registered |
| 8.1* - | - Opinion of Vinson & Elkins L.L.P. relating to tax matters |
| 23.1* - | - Consent of KPMG LLP |
| 23.2* - | - Consent of KPMG LLP |
| 23.3* - | Consent of Vinson & Elkins L.L.P. (contained in Exhibit 5.1) |
| 23.4* - | Consent of Vinson & Elkins L.L.P. (contained in Exhibit 8.1) |
| 23.5 – | Consent of Director Nominee (Connor) (incorporated by reference to Exhibit 23.5 to the Registration Statement on Form S-1, as amended (File No. 333-193798), initially filed with the Securities and Exchange Commission on February 7, 2014) |
| 23.6 – | Consent of Director Nominee (Peters) (incorporated by reference to Exhibit 23.6 to the Registration Statement on Form S-1, as amended (File No. 333-193798), initially filed with the Securities and Exchange Commission on February 7, 2014) |
| 24.1 – | Powers of Attorney (included on the signature page to the Registration Statement on Form S-1 (File No. 333-193798) filed with the Securities and Exchange Commission on February 7, 2014 and incorporated by reference herein) |

^{*} Filed herewith.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Denver, State of Colorado, on November 4, 2014.

Antero Resources Midstream LLC

By: Antero Resources Midstream Management LLC,

its sole member

By: /s/ GLEN C. WARREN, JR.

Name: Glen C. Warren, Jr.

Title: President, Chief Financial Officer and

Secretary

Pursuant to the requirements of the Securities Act of 1933, as amended, this Registration Statement has been signed below by the following persons in the capacities and the dates indicated.

| <u>Signature</u> | | <u>Title</u> | <u>Date</u> |
|------------------|--|---|------------------|
| * Paul M. Rady | | Chairman of the Board, Director and Chief Executive Officer (principal executive officer) | November 4, 2014 |
| | /s/ GLEN C. WARREN, JR. Glen C. Warren, Jr. | Director, President, Chief Financial Officer and Secretary (principal financial officer) | November 4, 2014 |
| | * K. Phil Yoo | Chief Accounting Officer and Corporate Controller (principal accounting officer) | November 4, 2014 |
| | * Peter R. Kagan | | November 4, 2014 |
| | W. Howard Keenan, Jr. | | November 4, 2014 |
| *By: | Christopher R. Manning | Director | November 4, 2014 |
| by. | /s/ GLEN C. WARREN, JR. Glen C. Warren, Jr. Attorney-in-Fact | _ | |
| | | II-2 | |

INDEX TO EXHIBITS

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QuickLinks

Explanatory Note
PART II INFORMATION NOT REQUIRED IN THE PROSPECTUS

ITEM 16. EXHIBITS.

SIGNATURES

INDEX TO EXHIBITS

Vinson&Elkins

November 4, 2014

Antero Resources Midstream LLC 1615 Wynkoop Street Denver, Colorado 80202

Ladies and Gentlemen:

We have acted as special counsel to Antero Resources Midstream LLC, a Delaware limited liability company (the "Company"), in connection with the registration under the Securities Act of 1933, as amended (the "Securities Act"), of the offering and sale of common units (the "Common Units") representing limited partner interests in Antero Midstream Partners LP, a Delaware limited partnership to be formed upon conversion of the Company as described in the Registration Statement (the "Partnership"), pursuant to a prospectus forming a part of the Registration Statement on Form S-1 (Registration No. 333-193798), initially filed with the Securities and Exchange Commission on February 7, 2014 (such Registration Statement, as amended at the effective date thereof, being referred to herein as the "Initial Registration Statement"). On the date hereof, the Company has filed a registration statement supplement to the Initial Registration Statement pursuant to Rule 462(b) promulgated under the Securities Act (the "Rule 462(b) Registration Statement") and, together with the Initial Registration Statement, the "Registration Statement"), that incorporates by reference the Initial Registration Statement, which was declared effective on November 4, 2014. The Rule 462(b) Registration Statement relates to the registration of the offer and sale by the Company of an additional 2,875,000 Common Units (the "Additional Units").

As the basis for the opinion hereinafter expressed, we examined such statutes, including the Delaware Limited Liability Company Act (the "Delaware LLC Act"), Delaware Revised Uniform Limited Partnership Act (the "Delaware LP Act"), and the Company's respective records and documents, certificates of the Company and public officials, and other instruments and documents as we deemed necessary or advisable for the purposes of this opinion. In such examination, we have assumed (i) the authenticity of all documents submitted to us as originals and the conformity with the original documents of all documents submitted to us as copies and (ii) that a definitive underwriting agreement in the form filed as an exhibit to the Registration Statement with respect to the sale of the Common Units will have been duly authorized and validly executed and delivered by the parties thereto.

Based on the foregoing and on such legal considerations as we deem relevant, we are of the opinion that (i) when the conversion of the Company into the Partnership has been completed as described in the Registration Statement (which conversion will occur after the effectiveness of the Registration Statement and before the issuance of the Additional Units to the underwriters), the Partnership will have been duly formed and will be validly existing as a limited partnership under the Delaware LP Act, (ii) the Additional Units, when issued and delivered on behalf of the Partnership against payment therefor as described in the Registration Statement, will be duly authorized, validly issued, fully paid and non-assessable and (iii) purchasers of the Additional Units will have no obligation under the Delaware LP Act, the Partnership's governing documents or any resolution or other action taken under the Partnership's governing documents, to make further payments to the Partnership or its creditors for their purchase of Additional Units or contributions to the Partnership or its creditors solely by reason of their ownership of Additional Units or their status as limited partners of the Partnership.

The foregoing opinion is limited to the federal laws of the United States of America, the Constitution of the State of Delaware, the Delaware LLC Act and the Delaware LP Act, each as interpreted by the courts of the State of Delaware, and we are expressing no opinion as to the effect of the laws of any other jurisdiction.

Vinson & Elkins LLP Attorneys at Law

Abu Dhabi Austin Beijing Dallas Dubai Hong Kong Houston London Moscow New York Palo Alto Riyadh San Francisco Shanghai Tokyo Washington 1001 Fannin Street, Suite 2500 Houston, TX 77002-6760 Tel +1.713.758.2222 www.velaw.com

We hereby consent to the reference to us under the heading "Validity of Our Common Units" in the Registration Statement and the filing of this opinion as an exhibit to the Registration Statement. We further consent to the incorporation by reference of this letter and consent into any registration statement filed pursuant to Rule 462(b) under the Securities Act with respect to the Common Units. By giving this consent, we do not admit that we are within the category of persons whose consent is required under Section 7 of the Securities Act and the rules and regulations thereunder.

Very truly yours,

/s/ Vinson & Elkins L.L.P.

Vinson & Elkins L.L.P.

Vinson&Elkins

November 4, 2014

Antero Resources Midstream LLC 1615 Wynkoop Street Denver, Colorado 80202

RE: Registration Statement on Form S-1

Ladies and Gentlemen:

We have acted as counsel for Antero Resources Midstream LLC, a Delaware limited liability company (the "Company"), with respect to certain legal matters in connection with the initial offer and sale of common units representing limited partner interests in Antero Midstream Partners LP, a Delaware limited partnership to be formed upon the conversion of the Company as described in the Registration Statement (the "Partnership"), under the Securities Act of 1933, as amended (the "Securities Act"). We have also participated in the preparation of a Prospectus dated October 29, 2014 (the "Prospectus"), forming part of the Registration Statement on Form S-1, No. 333-193798, as amended (such registration statement, together with the registration statement filed by the Company on the date hereof pursuant to Rule 462(b) under the Securities Act, being collectively referred to herein as the "Registration Statement"), filed by the Company with the Securities and Exchange Commission.

This opinion is based on various facts and assumptions, and is conditioned upon certain representations made by the Company as to factual matters through a certificate of an officer of the Company (the "Officer's Certificate"). In addition, this opinion is based upon the factual representations of the Company concerning its business, properties and governing documents as set forth in the Registration Statement.

In our capacity as counsel to the Company, we have made such legal and factual examinations and inquiries, including an examination of originals or copies certified or otherwise identified to our satisfaction of such documents, corporate records and other instruments, as we have deemed necessary or appropriate for purposes of this opinion. In our examination, we have assumed the authenticity of all documents submitted to us as originals, the genuineness of all signatures thereon, the legal capacity of natural persons executing such documents and the conformity to authentic original documents of all documents submitted to us as copies. For the purpose of our opinion, we have not made an independent investigation or audit of the facts set forth in the above-referenced documents or in the Officer's Certificate. In addition, in rendering this opinion we have assumed the truth and accuracy of all representations and statements made to us which are qualified as to knowledge or belief, without regard to such qualification.

We hereby confirm that all statements of legal conclusions contained in the discussion in the Prospectus under the caption "Material U.S. Federal Income Tax Consequences" constitute the opinion of Vinson & Elkins L.L.P. with respect to the matters set forth therein as of the effective date of the Registration Statement, subject to the assumptions, qualifications, and limitations set forth therein. This opinion is based on various statutory provisions, regulations promulgated thereunder and interpretations thereof by the Internal Revenue Service and the courts having jurisdiction over such matters, all of which are subject to change either prospectively or retroactively. Also, any variation or difference in the facts from those set forth in the representations described above, including in the Registration Statement and the Officer's Certificate, may affect the conclusions stated herein.

No opinion is expressed as to any matter not discussed in the Prospectus under the caption "Material U.S. Federal Income Tax Consequences." We are opining herein only as to the federal income

Vinson & Elkins LLP Attorneys at Law Abu Dhabi Austin Beijing Dallas Dubai Hong Kong Houston London Moscow New York Palo Alto Riyadh Shanghai Tokyo Washington First City Tower, 1001 Fannin Street, Suite 2500 Houston, TX 77002-6760 Tel +1.713.758.2222 Fax +1.713.758.2346 www.velaw.com

tax matters described above, and we express no opinion with respect to the applicability to, or the effect on, any transaction of other federal laws, foreign laws, the laws of any state or any other jurisdiction or as to any matters of municipal law or the laws of any other local agencies within any state.

This opinion is rendered to you as of the effective date of the Registration Statement, and we undertake no obligation to update this opinion subsequent to the date hereof. This opinion is furnished to you, and is for your use in connection with the transactions set forth in the Registration Statement. This opinion may not be relied upon by you for any other purpose or furnished to, assigned to, quoted to or relied upon by any other person, firm or other entity, for any purpose, without our prior written consent. However, this opinion may be relied upon by you and by persons entitled to rely on it pursuant to applicable provisions of federal securities law, including persons purchasing common units pursuant to the Registration Statement.

We hereby consent to the filing of this opinion as an exhibit to the Prospectus and to the use of our name under the captions "Material U.S. Federal Income Tax Consequences" and "Legal Matters" in the Registration Statement. We further consent to the incorporation by reference of this opinion and consent to any registration statement filed pursuant to Rule 462(b) under the Securities Act of 1933, as amended, with respect to the common units. By giving this consent, we do not admit that we are within the category of persons whose consent is required under Section 7 of the Securities Act and the rules and regulations thereunder.

Very truly yours,

/s/ Vinson & Elkins L.L.P. Vinson & Elkins L.L.P.

Consent of Independent Registered Public Accounting Firm

The Board of Directors Antero Resources Corporation:

We consent to the use of our report dated September 17, 2014, with respect to the balance sheets of Antero Resources Midstream LLC Predecessor as of December 31, 2012 and 2013, and the related statements of operations and comprehensive income (loss), changes in equity, and cash flows for each of the years in the three-year period ended December 31, 2013, incorporated by reference herein and to the reference to our firm under the heading "Experts" in this Registration Statement on Form S-1 filed pursuant to Rule 462(b) of the Securities Act of 1933.

/s/ KPMG LLP

Denver, Colorado November 3, 2014

Consent of Independent Registered Public Accounting Firm

The Board of Directors Antero Resources Midstream LLC:

We consent to the use of our report dated July 11, 2014, with respect to the balance sheet of Antero Resources Midstream LLC as of June 30, 2014, incorporated by reference herein and to the reference to our firm under the heading "Experts" in this Registration Statement on Form S-1 filed pursuant to Rule 462(b) of the Securities Act of 1933.

/s/ KPMG LLP

Denver, Colorado November 3, 2014