

Kayne Anderson MLP Investment CO  
Form N-Q  
April 30, 2007

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**UNITED STATES SECURITIES AND EXCHANGE COMMISSION**

**Washington, D.C. 20549**

**FORM N-Q**

**QUARTERLY SCHEDULE OF PORTFOLIO HOLDINGS OF REGISTERED  
MANAGEMENT INVESTMENT COMPANY**

**Investment Company Act file number 811-21593**

**KAYNE ANDERSON MLP INVESTMENT COMPANY**

(Exact name of registrant as specified in charter)

1800 Avenue of the Stars, Second Floor, Los Angeles,  
California

90067

(Address of principal executive offices)

(Zip code)

David Shladovsky, Esq.

KA Fund Advisors, LLC, 1800 Avenue of the Stars, Second Floor, Los Angeles, California 90067

(Name and address of agent for service)

Registrant's telephone number, including area code: (310) 556-2721

Date of fiscal year end: November 30, 2007

Date of reporting period: February 28, 2007

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SCHEDULE OF INVESTMENTS****FEBRUARY 28, 2007****(amounts in 000 \$)****(UNAUDITED)**

<b>Description</b>	<b>No. of Shares/Units</b>	<b>Value</b>
<b>Long-Term Investments - 163.0%</b>		
<b>Equity Investments(a) - 163.0%</b>		
<b>Pipeline MLP(b) - 134.7%</b>		
Atlas Pipeline Partners, L.P.	401	\$ 19,273
Boardwalk Pipeline Partners, LP	522	19,146
Buckeye Partners, L.P.	157	7,702
Copano Energy, L.L.C.	1,959	129,474
Crosstex Energy, L.P.	2,586	97,174
Crosstex Energy, L.P. Senior Subordinated Units, Unregistered (c)(d)	356	11,911
DCP Midstream Partners, LP	138	5,103
Duncan Energy Partners L.P.(d)	124	2,981
Eagle Rock Energy Partners, L.P.	10	195
Enbridge Energy Management, L.L.C.(e)	399	20,363
Enbridge Energy Partners, L.P.	1,608	84,924
Energy Transfer Partners, L.P.	4,262	235,116
Enterprise Products Partners L.P.	5,359	163,511
Global Partners LP	385	11,142
Hiland Partners, LP	156	8,483
Holly Energy Partners, L.P.	226	10,437
Kinder Morgan Management, LLC(e)	2,907	145,377
Magellan Midstream Partners, L.P.	3,920	165,026
MarkWest Energy Partners, L.P.	908	58,915
Martin Midstream Partners L.P.	202	7,328
ONEOK Partners, L.P.	833	53,951
Plains All American Pipeline, L.P.	2,547	141,344
Plains All American Pipeline, L.P.(c)	565	31,062
Regency Energy Partners LP	663	18,244
Regency Energy Partners LP Unregistered(c)	905	23,680
Sunoco Logistics Partners L.P.	72	4,039
Targa Resources Partners LP(d)	380	9,158
TC PipeLines, LP	228	8,269
TC PipeLines, LP Unregistered(c)	868	29,935
TEPPCO Partners, L.P.	473	20,233
TransMontaigne Partners L.P.	71	2,300
Valero L.P.	481	30,296
Williams Partners L.P.	224	9,694
Williams Partners L.P. Class B, Unregistered(c)	183	7,556
Williams Partners L.P. Unregistered(c)	64	2,720
		1,596,062

**Propane MLP - 9.1%**

Ferrellgas Partners, L.P.	877	20,149
Inergy, L.P.	2,839	88,106
		108,255

**Shipping MLP - 2.0%**

K-Sea Transportation Partners L.P.	140	5,518
Teekay LNG Partners L.P.	355	13,064
Teekay Offshore Partners L.P.	173	5,152
		23,734

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**KAYNE ANDERSON MLP INVESTMENT COMPANY**  
**SCHEDULE OF INVESTMENTS (CONTINUED)**  
**FEBRUARY 28, 2007**  
(amounts in 000 s, except number of option contracts written)  
(UNAUDITED)

Description	No. of Shares/Units	Value
<b>Coal MLP - 6.0%</b>		
Clearwater Natural Resources, LP Unregistered(c)(f)	3,889	\$ 58,334
Natural Resource Partners L.P. Subordinated Units	103	6,511
Penn Virginia Resource Partners, L.P.	230	6,227
		71,072
<b>Upstream MLP(b) - 1.6%</b>		
Atlas Energy Resources, LLC	209	5,089
BreitBurn Energy Partners L.P.	97	2,677
Constellation Energy Partners LLC	215	6,114
Legacy Reserves LP(d)	193	4,671
		18,551
<b>MLP Affiliates - 6.8%</b>		
Atlas Pipeline Holdings, L.P.	73	1,868
Buckeye GP Holdings L.P.	290	5,614
Crosstex Energy, Inc.	209	6,784
Energy Transfer Equity, L.P.	237	7,970
Energy Transfer Equity, L.P. Unregistered(c)	365	12,057
Hiland Holdings GP, LP	161	4,576
Kinder Morgan, Inc.	187	19,724
Magellan Midstream Holdings, L.P.	259	6,325
MarkWest Hydrocarbon, Inc.	249	15,607
		80,525
<b>Other MLP - 2.8%</b>		
Calumet Specialty Products Partners, L.P.	559	22,986
Universal Compression Partners, L.P.	356	10,584
		33,570
<b>Total Long-Term Investments (Cost \$1,283,574)</b>		<b>1,931,769</b>
	<b>Interest</b>	<b>Maturity</b>

	<b>Rate</b>	<b>Date</b>	
<b>Short-Term Investment - 0.1%</b>			
<b>Repurchase Agreement - 0.1%</b>			
Bear, Stearns & Co. Inc. (Agreement dated 2/28/07 to be repurchased at \$1,018), collateralized by \$1,049 in U.S. Treasury Bond Strips (Cost \$1,018)	5.270%	3/01/07	1,018
<b>Total Investments - 163.1% (Cost \$1,284,592)</b>			1,932,787
		<b>No. of Contracts</b>	
<b>Liabilities</b>			
<b>Option Contracts Written(g)</b>			
<b>MLP Affiliate</b>			
Kinder Morgan Inc., call option expiring 3/17/07 @ \$105.00 (Premiums received \$115)		1,000	(125)
<b>Auction Rate Senior Notes</b>			(320,000)
<b>Deferred Taxes</b>			(238,513)
<b>Revolving Credit Line</b>			(107,000)
<b>Other Liabilities</b>			(20,982)
<b>Unrealized Depreciation on Interest Rate Swap Contracts</b>			(317)
<b>Total Liabilities</b>			(686,937)
<b>Unrealized Appreciation on Interest Rate Swap Contracts</b>			2,993
<b>Income Tax Receivable</b>			2,448
<b>Other Assets</b>			8,733
<b>Total Liabilities in Excess of Other Assets</b>			(672,763)
<b>Preferred Stock at Redemption Value</b>			(75,000)
<b>Net Assets Applicable to Common Stockholders</b>			\$ 1,185,024

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**KAYNE ANDERSON MLP INVESTMENT COMPANY  
SCHEDULE OF INVESTMENTS (CONCLUDED)  
FEBRUARY 28, 2007  
(amounts in 000 s)  
(UNAUDITED)**

- (a) Unless otherwise noted, equity investments are common units/common shares.
- (b) Includes Limited Liability Companies.
- (c) Fair valued securities, restricted from public sale.
- (d) Security is currently not paying cash distributions but is expected to pay cash distributions or convert to securities which pay cash distributions within the next 12 months.
- (e) Distributions are paid in-kind.
- (f) Clearwater Natural Resources, LP is a privately-held MLP that the Company believes is a controlled



affiliate of the Company.

- (g) Security is non-income producing.

From time to time certain of the Company's investments are restricted as to resale. Such restricted investments are valued in accordance with procedures established by the board of directors. The table below shows the number of shares/units held, the acquisition date, purchase price, aggregate cost, fair value as of February 28, 2007, value per share/unit of such security, percent of net assets applicable to common stockholders and percent of total assets which the security comprises:

Investment	Security	Number of Units	Acquisition Date	Purchase Price	Cost	Fair Value	Value Per Unit	Percent of Net Assets (1)	Percent of Total Assets
Clearwater Natural Resources, L.P.	Common Units (2)	3,889	(3)	\$ 77,855	\$ 72,978	\$ 58,334	\$ 15.00	4.9%	3.0%
Crosstex Energy, L.P.	Senior Subordinated Units (2)	356	6/29/06	10,022	10,022	11,911	33.42	1.0	0.6
		365	11/27/06	10,007	9,895	12,057	33.05	1.0	0.6

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Energy Transfer Equity, L.P. Plains All America Pipeline, L.P.	Common Units (2)	565	12/19/06	27,500	27,093	31,062	54.97	2.6	1.6
Regency Energy Partners LP	Common Units (2)	905	9/21/06	19,012	19,012	23,680	26.17	2.0	1.2
TC PipeLines, LP	Common Units (2)	868	2/22/07	30,000	30,000	29,935	34.50	2.5	1.5
Williams Partners L.P.	Common Units (2)	64	12/13/06	2,324	2,297	2,720	42.83	0.3	0.2
Williams Partners L.P.	Class B Units (2)	183	12/13/06	6,564	6,487	7,556	41.22	0.7	0.4
				\$ 183,284	\$ 177,784	\$ 177,255		15.0%	9.1%

(1) Applicable to common stockholders.

(2) Unregistered security.

(3) The Company purchased common units on 8/1/05 and 10/2/06.

At February 28, 2007, the cost basis of investments for Federal income tax purposes was \$1,236,124. At February 28, 2007, gross unrealized appreciation and depreciation of investments for Federal income tax purposes were as follows:

Gross unrealized appreciation	\$ 708,637
Gross unrealized depreciation	(11,975)
Net unrealized appreciation	\$ 696,662

The identified cost basis for federal tax purposes is estimated based on information available from the Company's portfolio companies. In some cases, this information is very limited. Accordingly, the actual cost basis may prove higher or lower than the estimated cost basis included in this footnote.

Securities valuation policies and other investment related disclosures are hereby incorporated by reference to the Company's annual report previously filed with the Securities and Exchange Commission on Form N-CSR on February 7, 2007, with a file number 811-21593.

Other information regarding the Company is available in the Company's most recent annual report. This information is also available on the Company's website at <http://www.kaynemlp.com>; or on the website of the Securities and Exchange Commission, <http://www.sec.gov>.



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**Item 2: Controls and Procedures**

(a) As of a date within 90 days from the filing date of this report, the principal executive officer and principal financial officer concluded that the registrant's disclosure controls and procedures (as defined in Rule 30a-3(c) under the Investment Company Act of 1940 (the Act)), were effective based on their evaluation of the disclosure controls and procedures required by Rule 30a-3(b) under the Act and Rules 13a-15(b) or 15d-15(b) under the Securities and Exchange Act of 1934.

(b) There were no changes in the registrant's internal control over financial reporting (as defined in Rule 30a-3(d) under the Act) that occurred during the registrant's last fiscal quarter that have materially affected, or are reasonably likely to materially affect, the registrant's internal control over financial reporting.

**Item 3: Exhibits**

1. The certifications of the registrant as required by Rule 30a-2(a) under the Act are exhibits to this report.

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**SIGNATURES**

Pursuant to the requirements of the Securities Exchange Act of 1934 and the Investment Company Act of 1940, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

KAYNE ANDERSON MLP  
INVESTMENT COMPANY

/s/ Kevin S. McCarthy

Name: Kevin S. McCarthy  
Title: Chairman, President and Chief  
Executive Officer  
Date: April 27, 2007

Pursuant to the requirements of the Securities Exchange Act of 1934 and the Investment Company Act of 1940, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

/s/ Kevin S. McCarthy

Name: Kevin S. McCarthy  
Title: Chairman, President and Chief  
Executive Officer  
Date: April 27, 2007

/s/ Terry A. Hart

Name: Terry A. Hart  
Title: Chief Financial Officer and  
Treasurer  
Date: April 27, 2007