

Kayne Anderson MLP Investment CO

Form N-Q

October 30, 2007

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: August 31, 2007

Item 1: Schedule of Investments**KAYNE ANDERSON MLP INVESTMENT COMPANY
SCHEDULE OF INVESTMENTS****AUGUST 31, 2007****(amounts in 000 s)****(UNAUDITED)**

Description	No. of Shares/Units	Value
Long-Term Investments - 170.0%		
Equity Investments(a) - 170.0%		
Midstream MLP(b) - 132.1%		
Atlas Pipeline Partners, L.P.	417	\$ 19,363
Boardwalk Pipeline Partners, LP	522	17,320
Buckeye Partners, L.P.	369	18,117
Copano Energy, L.L.C.	3,923	152,963
Crosstex Energy, L.P.	2,614	92,546
Crosstex Energy, L.P. Class C Senior Subordinated Units(c)(d)	356	11,948
DCP Midstream Partners, LP	142	6,444
Duncan Energy Partners L.P.	164	3,923
Eagle Rock Energy Partners L.P.	113	2,485
Enbridge Energy Management, L.L.C.(e)	662	34,475
Enbridge Energy Partners, L.P.	1,487	75,802
Energy Transfer Partners, L.P.	4,262	221,818
Enterprise GP Holdings L.P. Unregistered(c)	1,342	50,033
Enterprise Products Partners L.P.(f)	5,463	161,204
Genesis Energy, L.P.	59	1,739
Global Partners LP	1,464	46,755
Hiland Partners, LP	162	8,096
Holly Energy Partners, L.P.	226	10,301
Kinder Morgan Management, LLC(e)	2,897	139,446
Magellan Midstream Partners, L.P.	3,871	166,438
MarkWest Energy Partners, L.P.	2,183	69,590
Martin Midstream Partners L.P.	295	11,319
NuStar L.P.	550	34,249
ONEOK Partners, L.P.	892	57,108
Plains All American Pipeline, L.P.	3,112	179,082
Regency Energy Partners LP	1,949	62,376
Semgroup Energy Partners LP(d)	211	6,335
Spectra Energy Partners LP(d)	280	7,404
Sunoco Logistics Partners L.P.	144	7,719
Targa Resources Partners LP	434	13,029
TC PipeLines, LP	1,260	46,832
TEPPCO Partners, L.P.	677	27,174
Williams Partners L.P.	473	21,079
		1,784,512

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Propane MLP - 8.6%

AmeriGas Partners, L.P.	128	4,475
Ferrellgas Partners, L.P.	877	19,860
Inergy, L.P.	2,839	92,479
		116,814

Shipping MLP - 2.9%

Capital Product Partners LP	121	3,497
K-Sea Transportation Partners L.P.	249	9,690
Teekay LNG Partners L.P.	383	13,383
Teekay Offshore Partners L.P.	265	7,820
U.S. Shipping Partners L.P.	245	4,728
		39,118

Coal MLP - 4.7%

Clearwater Natural Resources, LP Unregistered(c)(g)(h)	3,889	43,945
Natural Resource Partners L.P.- Subordinated Units	311	10,275
Penn Virginia Resource Partners, L.P.	319	8,870
		63,090

KAYNE ANDERSON MLP INVESTMENT COMPANY
SCHEDULE OF INVESTMENTS (CONTINUED)
AUGUST 31, 2007
(amounts in 000 s, except option contracts written)
(UNAUDITED)

Description	No. of Shares/Units	Value
Upstream MLP(b) - 10.6%		
Atlas Energy Resources, LLC	565	\$ 18,271
Atlas Energy Resources, LLC Unregistered(c)	398	11,536
Atlas Energy Resources, LLC Class D, Unregistered(c)	910	25,812
BreitBurn Energy Partners L.P.	64	2,145
BreitBurn Energy Partners L.P. Unregistered(c)	1,426	45,515
Constellation Energy Partners LLC	198	8,312
Constellation Energy Partners LLC Unregistered(c)	247	9,802
Constellation Energy Partners LLC Class F, Unregistered(c)	312	12,182
Dorchester Minerals, L.P.	119	2,567
Legacy Reserves LP	290	6,733
		142,875
 MLP Affiliates - 6.2%		
Atlas Pipeline Holdings, L.P.	79	3,225
Buckeye GP Holdings L.P.	206	6,468
Crosstex Energy, Inc.	156	5,108
Energy Transfer Equity, L.P.	196	7,192
Energy Transfer Equity, L.P. Unregistered(c)	365	13,408
Hiland Holdings GP, LP	153	4,614
Magellan Midstream Holdings, L.P.	1,221	34,572
MarkWest Hydrocarbon, Inc.(f)	186	9,355
		83,942
 Other MLP - 4.1%		
Calumet Specialty Products Partners, L.P.	644	31,317
Exterran Partners LP	353	12,119
Exterran Partners LP Unregistered(c)	378	12,696
		56,132
 Other - 0.8%		
Arlington Tankers Ltd.	70	1,736
Double Hull Tankers, Inc.	182	2,805
Nordic American Tanker Shipping Limited	82	3,027
Omega Navigation Enterprises, Inc.	185	3,655

			11,223
Total Long-Term Investments (Cost \$1,577,144)			2,297,706
	Interest Rate	Maturity Date	
Short-Term Investment - 0.9%			
Repurchase Agreement - 0.9%			
Bear, Stearns & Co. Inc. (Agreement dated 8/31/07 to be repurchased at \$11,760), collateralized by \$12,096 in U.S. Treasury Notes (Cost \$11,753)	5.150%	9/04/07	11,753
Total Investments - 170.9% (Cost \$1,588,897)			2,309,459
		No. of Contracts	
Liabilities			
Option Contracts Written(h)			
Midstream MLP			
Enterprise Products Partners L.P., call option expiring 10/20/07 @ \$30.00 (Premiums received \$178)		1,840	(202)
Auction Rate Senior Notes			(505,000)
Deferred Taxes			(261,825)
Revolving Credit Line			(119,000)
Other Liabilities			(10,890)
Unrealized Depreciation on Interest Rate Swap Contracts			(1,710)
Total Liabilities			(898,627)
Unrealized Appreciation on Interest Rate Swap Contracts			2,246
Income Tax Receivable			2,459
Other Assets			10,726
Total Liabilities in Excess of Other Assets			(883,196)
Preferred Stock at Redemption Value			(75,000)
Net Assets Applicable to Common Stockholders			\$ 1,351,263

KAYNE ANDERSON MLP INVESTMENT COMPANY
SCHEDULE OF INVESTMENTS (CONCLUDED)
AUGUST 31, 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 and restricted security.
- (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)** Security or a portion thereof is segregated as collateral on option contracts written or interest rate swap contracts.

(g) Clearwater Natural Resources, LP is a privately-held MLP that the Company believes is a controlled affiliate.

(h) Security is non-income producing.

From time to time, certain of the Company's investments may be restricted as to resale, particularly private investments that are not registered under the Securities Act of 1933 and cannot, as a result, be offered for public sale for a non-exempt transaction without first being registered. Such restricted investments are valued in accordance with the procedures established by the Board of Directors. The table below shows the number of units held, the acquisition date, aggregate cost, and fair value as

of August 31, 2007, value per unit of such security, percent of net assets applicable to common stockholders and percent of total assets which the security comprises:

Investment	Security	Type of Restriction	Number of Units	Acquisition Date	Cost	Fair Value	Value Per Unit	Percent of Net Assets⁽¹⁾	Percent of Total Assets
Atlas Energy Resources, LLC	Common Units	(1)(2)	398	6/29/07	\$ 10,143	\$ 11,536	\$ 29.00	0.9%	0.5%
Atlas Energy Resources, LLC	Class D Common Units	(1)(2)	910	6/29/07	22,557	25,812	28.35	1.9	1.1
BreitBurn Energy Partners L.P.	Common Units	(1)	1,212	5/24/07	38,333	38,608	31.85	2.9	1.7
BreitBurn Energy Partners L.P.	Common Units	(1)	214	5/25/07	6,565	6,907	32.21	0.5	0.3
Clearwater Natural Resources, L.P.	Common Units	(3)	3,889	(4)	70,255	43,945	11.30	3.2	1.9
Constellation Energy Partners LLC	Common Units	(1)(2)	247	7/25/07	8,705	9,802	39.69	0.7	0.4
Constellation Energy Partners LLC	Class F Common Units	(1)(2)	312	7/25/07	10,756	12,182	39.00	0.9	0.5
Crosstex Energy, L.P.	Class C Senior Subordinated Units	(5)	356	6/29/06	10,022	11,948	33.52	0.9	0.5
Energy Transfer Equity, L.P.	Common Units	(1)	365	11/27/06	9,898	13,408	36.75	1.0	0.6
Enterprise GP Holdings L.P.	Common Units	(1)(2)	1,342	7/17/07	49,541	50,033	37.27	3.7	2.2
	Common Units	(1)(2)	378	7/9/07	13,006	12,696	33.61	0.9	0.5

Exterran
Partners LP

\$ 249,781 \$ 236,877 17.5% 10.2%

- (1) Public security that is unregistered.
- (2) Security is subject to lock-up agreement.
- (3) Private security.
- (4) The Company purchased common units on 8/1/05 and 10/2/06.
- (5) No public market exists for the Class C Senior Subordinated Units. These units convert to exchange listed Common Units on February 16, 2008.

At August 31, 2007, the cost basis of investments for federal income tax purposes was \$1,540,437. At August 31, 2007, gross unrealized appreciation and depreciation of investments for federal income tax purposes were as follows:

Gross unrealized appreciation	\$ 796,675
Gross unrealized depreciation	(27,653)
Net unrealized appreciation	\$ 769,022

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 semi-annual report previously filed with the Securities and Exchange Commission on Form N-CSR on August 3, 2007, with a file number 811-21593.

Other information regarding the Company is available in the Company's most recent semi-annual report. This information is also available on the Company's website at <http://www.kaynefunds.com>; or on the website of the

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: October 30, 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: October 30, 2007

/s/ Terry A. Hart

Name: Terry A. Hart
Title: Chief Financial Officer and Treasurer
Date: October 30, 2007